

And the Moral of the Story is?
Investigating the Impact of Mediated Historical Experiences on Empathy and Morality.

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“Barbarity – like Auschwitz – is the incapacity to empathize.

Education after Auschwitz means promoting empathy.”

*Abram, 2010**

* English translation of the German original

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[†] <https://digi-ebf.de/virage>

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Research Paper VI

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Research Paper VII

Frentzel-Beyme, L., Holtze M., Szczuka, J. M., Krämer, N.C. (2022). Posting from the Past - A Longitudinal Study of the Potentials of Parasocial Interaction with a Historical Figure for History Education. *Weizenbaum Journal of the Digital Society*, 3(1). <https://doi.org/10.34669/WI.WJDS/3.1.3>

Zusammenfassung

Die technologische Entwicklung führt zu einer ständigen Veränderung der Medienlandschaft. Dies gilt auch für die mediale Darstellung von Geschichte. Neueste Medienanwendungen, wie Virtual Reality (VR) und Social Media, bieten nicht nur die Möglichkeit, etwas über Geschichte zu erfahren, sondern diese sogar zu erleben. VR-Anwendungen ermöglichen Nutzenden die Perspektiven historischer Personen einzunehmen und Social Media macht es möglich, Geschichte retrospektiv anhand der Biographie einer historischen Person zu erleben und mit dieser zu interagieren. Diese Medienanwendungen wollen nicht nur Wissen über die Vergangenheit vermitteln, sondern im Sinne der Geschichtsbildung ermöglichen, aus der Vergangenheit zu lernen. Demnach gilt die Vermittlung moralischer Werte als zentrales Ziel der historischen Bildung.

Bisherige Forschung legt nahe, dass auch Medien moralische Werte vermitteln können. Die mediale Darstellung moralischer Inhalte, wie moralische Dilemmata oder Situationen, die bestimmte moralische Werte adressieren, dienen zur Vermittlung von Moral. Bisher weitestgehend unerforscht sind jedoch Prozesse, die während der Rezeption moralischer Medien eine Rolle für diese Vermittlung spielen. Neue mediale Darstellungen von Geschichte beinhalten nicht nur moralische Inhalte, sondern zielen auf die emotionale Eingebundenheit der Rezipierenden und die Immersion, das Eintauchen in die Vergangenheit, ab. Bisherige Untersuchungen legen nahe, dass Immersion und emotionale Eingebundenheit die Vermittlung von Moral fördern können. Daher untersucht diese Dissertation den Einfluss des medialen Erlebens von Geschichte auf die Moral von Rezipierenden und nimmt dabei verschiedene moralische Ansätze sowie den Einfluss von Empathie in den Fokus.

In Artikel I wurde zunächst anhand qualitativer Daten untersucht, welche Prozesse bei der Rezeption von historischen neuen Medien eine Rolle spielen und ob Rezipierende den Inhalt basierend auf ihren eigenen moralischen Werten evaluieren. Die Ergebnisse legen nahe, dass das mediale Erleben von Geschichte durch die (1) räumliche und (2) narrative Immersion,

(3) das Erleben sozialer Interaktion mit historischen Personen, die (4) Illusion der Realität, sowie dem (5) Erleben von Emotionen gekennzeichnet ist. Darüber hinaus zeigte sich, dass die Rezipierenden den dargestellten Inhalt anhand ihrer eigenen moralischen Werte evaluierten. Dies gilt als Ausgangspunkt für die weitere Untersuchung des Einflusses des medialen Erlebens von Geschichte auf die Moral.

Artikel II hat anschließend auf Grundlage einer rationalen Perspektive auf Moral untersucht, ob die Perspektivübernahme in historischen VR-Anwendungen die moralische Entwicklung der Rezipierenden fördern kann. Empathie und Perspektivübernahme gelten im rationalen moralischen Ansatz als Grundlage für das Fällen moralischer Urteile. Bisherige Untersuchungen legen nahe, dass die Immersion in VR Empathie und Perspektivübernahme begünstigt. Daher wurde besonders der Einfluss der Immersion auf die Empathie der Rezipierenden in einer quantitativen Studie untersucht. Es zeigte sich, dass die räumliche und narrative Immersion die Empathie positiv beeinflussen. Infolgedessen begünstigt diese die moralische Entwicklung.

Artikel III erweiterte diese Perspektive, um den Einfluss der sozialen Interaktion mit historischen Personen über Social Media auf die Empathie und Moral. In einer quantitativen Langzeituntersuchung zeigte sich, dass das mediale Erleben sozialer Interaktion mit einer historischen Person und die damit verbundenen affektiven und kognitiven Prozesse die Empathie und Moral der Rezipierenden fördern. Artikel VII zeigte darüber hinaus, dass das mediale Erleben sozialer Interaktion durch das Nutzerverhalten auf Social Media beeinflusst wird.

Neben einer rationalen Perspektive auf Moral existiert auch eine intuitive Perspektive auf Moral. Daher untersuchten Artikel IV und V auch, welchen Einfluss das mediale Erleben von Geschichte im Sinne der Immersion und emotionalen Eingebundenheit auf moralische Intuitionen hat. Artikel IV und V zeigten, dass die räumliche und narrative Immersion, sowie die emotionale Eingebundenheit im Sinne des Empfindens von Empathie und physiologischer Erregung, die wahrgenommene Relevanz moralischer Intuitionen beeinflusst. Darüber hinaus

legte Artikel V dar, dass Immersion die Empathie mit historischen Personen fördert. Diese beeinflusste auch die wahrgenommene Relevanz moralischer Intuitionen.

Des Weiteren zeigten die Artikel verschiedenste Einflüsse von Medieneigenschaften auf das mediale Erleben von Geschichte. Artikel II, III, IV und V legten dar, dass technologische Eigenschaften, wie eine 360-Grad Ansicht, die Immersion fördert. Zugleich zeigte Artikel VI in einer qualitativen Inhaltsanalyse, dass mediale historische Darstellungen auf Social Media im großen Maße emotionale Darstellungen nutzen. Eine anschließende explorative quantitative Untersuchung legte nahe, dass diese Emotionen hervorrufen. Artikel IV zeigte jedoch, dass stärkere emotionale Darstellungen nicht zwangsläufig die emotionale Eingebundenheit begünstigen.

Durch die Ergebnisse der sieben Artikel konnte ein Modell entwickelt werden. Dieses beschreibt, wie mediale Darstellungen von Geschichte die Moral und Empathie der Rezipierenden beeinflussen. Das Modell stellt zum einen dar, welchen Einfluss Medieneigenschaften und Nutzenden-Verhalten auf das mediale Erleben von Geschichte haben. Zum anderen beleuchtet das Modell den Einfluss verschiedenster Prozesse des medialen Erlebens von Geschichte auf rationale moralische Urteile, moralische Intuitionen und Empathie. Zudem legen die Ergebnisse nahe, dass moralische Urteile durch ein Zusammenspiel von Empathie, Intuition und rationalen Überlegungen gefällt werden. Zusammenfassend zeigen die Untersuchungen, dass mediales Erleben von Geschichte den Einfluss von Medien auf Moral prägt. Ferner zeigt sich, dass Medien gleichzeitig rationale und intuitive Prozesse der Moral beeinflussen können.

Abstract

Technological developments are constantly changing the media landscape. This also applies to media presentations of history. The latest media applications, such as virtual reality (VR) and social media, offer the opportunity not only to learn about history but also to experience it. VR allows users to take on the perspective of historical figures, and social media makes it possible to experience history retrospectively through the biography of a historical figure and to interact with them. These media applications aim not only to impart knowledge about the past but also to make it possible to learn from the past in the sense of history education. Accordingly, the teaching of moral values is considered a central goal of history education.

Previous research suggests that media exposure influences the morality of recipients. In more detail, moral media content, such as moral dilemmas or situations that address specific moral values, is perceived to influence the morality of recipients in various ways. In this respect, however, the influences of the affective and cognitive processes involved in the reception of media have remained largely unexplored. New media representations of history not only contain moral content but also aim at emotional involvement and immersion of recipients. Previous research suggests that immersion and emotional involvement may facilitate the mediation of morality. Therefore, this dissertation examines the influence of mediated historical experiences on the morality of recipients, focusing on different moral approaches and the impact of empathy.

In Article I, a qualitative study first examined the processes involved in the reception of historical new media and whether recipients evaluate the content based on their own moral values. The results suggest that mediated historical experiences are characterized by (1) spatial and (2) narrative immersion, (3) the experience of social interaction with historical characters, (4) the illusion of reality, and (5) the experience of emotions. Furthermore, it was shown that the recipients evaluated the presented content according to their own moral values.

This serves as a starting point for further research on the influence of mediated historical experiences on morality.

Article II used a rational moral perspective to examine whether perspective taking in historical VR applications can promote moral development in recipients. Regarding the rational approach on morality, empathy and perspective build the basis of moral judgments. Previous research suggests that immersion in VR promotes empathy and perspective taking. Therefore, the influence of immersion on empathy was investigated in a quantitative study, which revealed that spatial and narrative immersion positively influence empathy. As a result, the latter favors moral development.

Article III extends this perspective to the influence of social interaction with historical figures on social media on empathy and morality. A long-term quantitative study demonstrated that experiencing social interaction with a historical figure through media, along with the associated affective and cognitive processes, promotes empathy and morality in recipients. Furthermore, Article VII revealed that the mediated experience of social interaction with a historical figure is influenced by the social media user's behavior.

In addition to a rational perspective on morality, an intuitive perspective on morality exists. Therefore, Articles IV and V further examined the influence of the media experience, in terms of immersion and emotional involvement, on moral intuitions. Articles IV and V demonstrated that spatial and narrative immersion, as well as emotional engagement in terms of physiological arousal and empathic feelings, influenced the perceived relevance of moral intuitions. In addition, Article V suggested that immersion promoted empathy with historical characters, which also impacted the perceived relevance of moral intuitions.

Moreover, the articles showed a variety of influences of media features on the media experience of history. Articles II, III, IV, and V indicated that technological features, such as a 360° view promote immersion. Additionally, Article VI used a qualitative content analysis to show that media representations of history on social media make extensive use of emotional representations. A subsequent exploratory quantitative study suggested that these emotional

presentations can evoke related emotions. However, Article IV showed that a greater extent of emotional representations in media does not necessarily promote emotional engagement.

Based on the findings of the seven articles a model was derived. This model describes how media representations of history influence recipients' morality and empathy. On the one hand, the model shows the influence of media characteristics and user behavior on mediated historical experiences. Second, the model illustrates the influence of various processes of mediated historical experiences on rational moral deliberation, moral intuitions, and empathy. Moreover, the results suggest that moral judgments are made through an interplay of empathy, intuition, and rational deliberation. In conclusion, the studies show that mediated historical experiences shape the influence of media on morality. Furthermore, the findings suggest that media can simultaneously influence both rational and intuitive processes of morality.

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I Introduction

“Barbarity – like Auschwitz – is the incapacity to empathize.

Education after Auschwitz means promoting empathy.”[‡]

In recent years, a wide range of novel media applications dealing with historical topics have gained popularity in history classes, museums, and online (e.g., Lewers, 2022). Social media accounts of historical figures, graphic novels, augmented reality, and virtual reality (VR) addressing historical events have appeared in the media landscape. Such historical media differs from traditional historical media, such as textual narration and movies, as they offer a new way of historical learning: users can gain mediated historical experiences (e.g., Bunnenberg, 2020; Lewers, 2022). However, history education involves not only learning about history but also learning from history (Silfver, 2022). Consequently, teaching empathy and moral values is considered a central goal of history education to prevent the recurrence of past atrocities (e.g., Holocaust education; Eckmann, 2010, 2015). This may also apply to historical media, as historical representations aim to teach moral values and evoke empathy by presenting the atrocities of the past in a particularly compelling way (e.g., the Holocaust), providing a platform for identification and emotional engagement, and addressing moral conflicts and values (e.g., Brauer, 2013, 2016).

Indeed, previous research in media psychology has shown that media can influence the morality of recipients (e.g., Baron-Cohen & Wheelwright, 2004; Eden et al., 2014; Krcmar, 2019; Tamborini, 2012; Tamborini et al., 2012; Wright et al., 2020). However, there are different perspectives on morality in research, resulting in significantly different approaches in these studies. Rational perspectives, as proposed by Kohlberg (1958), assume that moral judgments are primarily reached through rational, reflective deliberation based on empathy, including perspective taking (*rational moral deliberation*). Therefore, studies that refer to this

[‡] Abram, 2010; English translation of the German original

perspective examined the impact of moral conflicts in media that force recipients to weigh different arguments to reach a moral judgment (e.g., Krcmar, 2013; Tamborini et al. 2016; Wright et al., 2020). Other studies, referring to a social-intuitionist approach to morality which proposes that moral judgments are mainly reached based on gut feelings stemming from innate *moral intuitions* (Haidt, 2001; Haidt & Joseph, 2007). Referring to this approach, studies showed that the exposure to moral exemplars in media that addresses specific moral intuitions (e.g., fairness) affect the salience of those intuitions in subsequent moral decisions (e.g., Eden et al., 2014; Tamborini, 2012). Taken together, the research suggests that historical media can influence recipients' morality. On the one hand, referring to the rationalist perspective, historical media that offer new perspectives, experiences, and observations of moral actions may influence rational moral deliberation. On the other hand, from an intuitive perspective, moral exemplars in historical media may influence the salience of related moral intuitions. However, previous research has mainly focused on the influence of moral content: (narrative) media that illustrate moral conflicts or moral intuitions (e.g., Bilandzic, 2011). The influence of the recipients' engagement in moral media has been little explored and studied so far.

As novel historical media offer recipients beyond moral content the opportunity to gain their own experiences in the past (Bunnenberg, 2018) and, consequently, to (emotionally) engage more strongly with moral content (e.g., Holocaust), they are a promising starting point to investigate the influence of the recipients' engagement in moral media. Here, increased recipients' engagement should be achieved through a variety of dramaturgical tools and technical features (e.g., Berg et al., 2023; Bunnenberg, 2018; Lewers, 2022). For example, personalization and emotionalization should offer a platform for emotional engagement and identification (Berg et al., 2023). Moreover, different technologies and accompanied characteristics like VR technology should support the recipients' immersion into the past (e.g., Lewers, 2022). Likewise, in historical social media approaches the platform's characteristics may fire the users' engagement, as users can chose to actually engage with a historical figure by, for instance, sending private messages (e.g., Berg et al., 2023; Kyewski et al., 2018).

Consequently, users may shift their attention to the presented historical content, more strongly engage with historical moral media, and gain the impression that they actually experienced the past (e.g., Agrawal et al., 2020; Berg et al., 2023; Lewers, 2022). Therefore, within the current work, the recipient's experience while being exposed to novel historical media is defined as *mediated historical experience* and includes the recipients' immersion and emotional engagement.

Taken together, besides offering media content that addresses moral conflicts and specific moral values, novel historical media offers a platform for experiencing the past and support the recipients' engagement with moral historical content. In line with that, first empirical investigations indicated that the recipients' engagement in narrative media can promote moral reasoning (Eden et al., 2017). Furthermore, the applications offer a platform for empathy, including perspective-taking (e.g., Herrera et al., 2018; Mado et al., 2021; Schutte & Stilinović, 2017). This may further influence the recipients' morality when considering the rational perspective on morality (see Kohlberg, 1958).

Therefore, the present dissertation asks how mediated historical experiences impact the recipients' morality, including empathy. To answer this research question, the work puts the recipients' mediated historical experience into the center of investigation and focuses on the latest historical media: social media and VR (Berg & Lorenz, 2022; Lewers, 2022). Following the logic that rational moral deliberation and moral intuitions are two parallel processes that coexist (see Haidt, 2001), the dissertation takes both aforementioned perspectives on morality into account. In conclusion, this thesis investigates (1) how moral intuitions and rational moral deliberation are influenced by the recipients' engagement in historical media. This is, so far, in this context, one of the first investigations that took both perspectives to morality into account and, furthermore, examines how they relate to each other. Second, the present work examines (2) how media characteristics and users' interaction habits influence mediated historical experiences. To follow this logic, the dissertation refers to individual parts of seven research papers that used different methodological approaches to

answer the overall research questions within two empirical parts. In the end, this thesis derives a first overarching model that depicts the impact of historical media on the recipients' mediated historical experience and, in turn, the impact on morality.

II History in New Media Formats: A Novel Way of Teaching Morality?

More frequently, museums are using VR applications, historical figures are on social media, and innovative print media is used in classrooms (e.g., graphic novels; e.g., Bunnenberg, 2018; Manca, 2021). The goal is to make history more interesting and appealing, especially to young people. Therefore, such media-based approaches to history are becoming more and more visible in informal learning settings (e.g., on the internet; Berg & Lorenz, 2022; Manca, 2021) as they are known to increase the engagement in history (e.g., Haythornthwaite, 2015; Henig & Ebbrecht-Hartmann, 2022). Well-known examples are, for instance, the VR application of the Anne Frank House. In a freely accessible VR application, users get the opportunity to explore the family's hiding place in World War II by using VR glasses at home (Meta, 2018). They can walk through the secret Annex, view selected exhibits (e.g., Anne's diary), and listen to parts of Anne's diary entries. In another project, the Anne Frank House brought Anne Frank on YouTube. By aiming to bring Anne's diary entries to life, the museum published videos in several languages on YouTube, in which an actress presents Anne and tells her story in the now-familiar VLOG format (Anne Frank House, 2022; "What if Anne Frank had a camera instead of a diary?"). Similarly, in 2020, a German public broadcaster brought a historical figure on Instagram: the resistance fighter Sophie Scholl in World War II (Sophie Scholl, n.d.; SWR, 2023). The account retrospectively portrays Sophie Scholl's life from May 1st, 1942, to February 22nd, 1943, when she was executed for her resistance to the Nazis.

What all these media applications have in common is that they include moral content, for instance by showing moral conflicts (e.g., Should Sophie Scholl rebel against the regime and, consequently, endanger her family?; SWR, 2023) or scenes that address specific moral values (e.g., fairness, care; see Chapter 4.3). Moreover, due to their technological and dramaturgical

characteristics, such media applications may be able to evoke empathy and promote users' engagement in such moral content in a new and stronger way compared to previously known media applications dealing with historical topics (e.g., documentaries; Bujic et al., 2020; Jones & Sommer, 2018). The evocation of empathy in history learning settings is one central goal of history education to decrease the distance between past and present, and moreover, teach ethics and moral values (Brauer, 2013, 2016). In line with that, the promotion of moral consciousness has found its way into many curricula (e.g., Pandel, 2017; Silfver, 2022): Individuals should learn to be able to decide whether something is right or wrong.

However, it should be mentioned that the evocation of empathy in historical learning settings is viewed critically. The researchers highlight that it is not possible to feel with/like someone in the past, as one's perspectives are influenced by the current worldviews and circumstances (e.g., Bunnenberg, 2020). Likewise, in the community of media psychology researchers, there is an ongoing discussion about the ethical issues of media applications that create the impression of a realistic recreation of other perspectives (e.g., Slater et al., 2020). Here, both disciplines emphasize that it is not possible to actually experience how someone else feels with the help of media. This especially applies to historical media applications. Media presentations are always a subjective construction of a perspective on the past, and the users' perspective is always influenced by their 21st-century viewpoint (Bunnenberg, 2020). However, other researchers highlight that the evocation of empathy in historical learning settings is necessary to decrease the distance between the past and the present, and, furthermore, educate about morality (Brauer, 2013). Therefore, in many curricula, past events like the Holocaust have "become a principal part of civic moral education" (Allwork, 2015, p. 288). In line with that, research has shown that people learn about the history of the Holocaust from a variety of sources, such as movies, literature, popular, and digital media (Burkhardt, 2021; Allwork, 2015). In this sense, such novel media offerings (e.g., social media, VR) may make history more interesting, facilitate access to history and past events, evoke empathy, and teach moral lessons.

1 Media and Morality

Thus, by illustrating past atrocities, historical media often address moral conflicts and show (im)moral behavior (e.g., Holocaust, e.g., Allwork, 2015; Brauer, 2013). For instance, the application of the Anne Frank House provides insights into the perspective of persecuted Jews in World War II and, moreover, illustrates resulting moral conflicts. Consequently, the question arises of how the ability of perspective-taking, the addressing of moral conflicts and values in historical media applications influence the recipients' morality.

In media psychology research, there is a wealth of empirical evidence and theoretical considerations suggesting that moral values not only guide media selection behavior but are also influenced by media reception (e.g., Eden et al., 2014; Tamborini, 2012; Tamborini et al., 2012). It is proposed that the presentation of moral conflicts and (im)moral behavior in media promotes the recipients' engagement with ethical principles and moral conflicts (Bartsch & Hartmann, 2017). By using media as a "moral sandbox" (Eden et al., 2017) users can gain new perspectives on moral conflicts that they would not have experienced in real life. This might especially apply to media applications that deal with the past: Users can gain perspectives on the past that they can hardly experience otherwise. Furthermore, it is proposed that media offers recipients the opportunity to observe the outcomes of moral judgments and (im)moral behavior without fearing any risk (e.g., Grizzard et al., 2015). Based on the resulting evaluations of protagonists' moral decisions or moral conflicts in the media, users potentially adjust their own moral system (e.g., Tamborini, 2012; Zillmann, 2002).

1.1 Moral Intuition vs. Rational Moral Deliberation

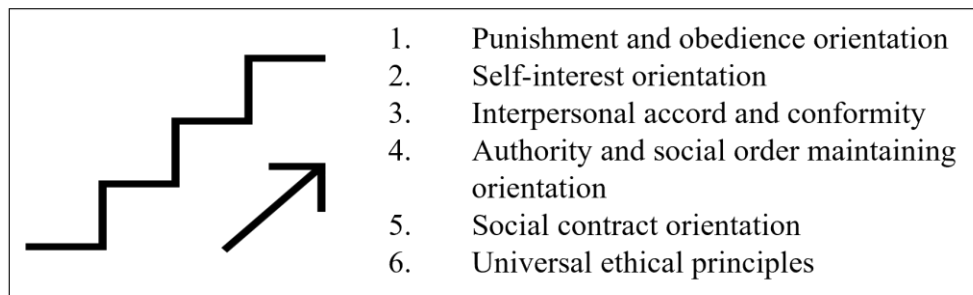
However, when focusing on the influence of media on the recipients' morality, it is important to consider that different perspectives on morality exist: a rationalist and a social-intuitionist approach (e.g., Haidt, 2001; Kohlberg, 1958). Whereas the rationalist approach assumes that moral judgments are reached through cognitive deliberation processes in which different arguments are weighed, the intuitionist approach assumes that moral judgments are

mainly reached intuitively, based on gut feelings. Consequently, moral judgments are made automatically (moral intuitions) or consciously (rational moral deliberation).

First approaches to morality assumed that the nature of moral judgments lies in rational thought processes of deliberation. The most prominent approach is Kohlberg's (1958) stage model of moral development. He assumed that people are intrinsically motivated to explore their environment: people act as "moral scientists" who construct and simulate (social) experiences to develop their own moral orientation. As a result, people's moral orientation is constantly influenced by experience. This can include daily life situations but may also apply to experiences gained through media exposure. Based on interviews in which Kohlberg (1958) confronted participants of different ages with moral dilemmas and asked them to justify their decisions, he proposed that the moral development proceeds in six successive stages, accompanied by the individuals' cognitive development. Each stage describes a different state of moral orientation (for a detailed overview see Figure 1).

Figure 1

Overview of Kohlberg's (1958) Stage Model of Moral Development



Kohlberg (1958) suggested that the individuals' moral orientation differs depending on the factors to which individuals orientate. Whereas individuals orientate in stage one on a close circle (e.g., family) and, therefore, orientate themselves towards punishment and obedience, they orientate in stage six on a larger circle towards universal ethical principles. Although he originally proposed this developmental perspective mainly for children and adolescents, it was later emphasized that not everybody reaches the final stages (Kohlberg & Kramer, 1969). Consequently, within adults, moral orientation and the ability to make moral

rational judgments can vary based on different stages. Nevertheless, this approach is viewed critically (e.g., Haidt, 2001). A major point of criticism is that he only interviewed boys to derive his stage model and did not consider multiple cultures. Indeed, subsequent research has shown that women and girls more often orientate towards social norms (Gilligan, 1977). Consequently, it stands to reason how the aforementioned stage process can be transferred to all human beings.

A further critical point is that this approach tends to downplay the role of intuitions and emotions or even overlook them completely (e.g., Haidt, 2001). Therefore, Haidt (2001) proposed the social-intuitionist approach. Building on this, Haidt & Joseph (2007) introduced the Moral Foundations Theory, which focuses on a more intuitive and emotionally driven perspective on morality. They conceptualized different moral intuitions from an evolutionary understanding of intuitive motivations adapted from the work of Lazarus (1991). Based on this, the researchers derived five moral foundations: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Haidt & Joseph, 2007), which were extended by a sixth foundation in subsequent years: liberty/oppression (see Graham et al., 2013). Thereby, care includes cherishing and protecting others; fairness describes the value of rendering justice according to shared rules; loyalty depicts the value of standing with individual groups, including family and nation; authority describes the value of legitimizing authorities and traditions; sanctity refers to religious notions of striving to live in an elevated, more noble way (Haidt & Joseph, 2007), and liberty describes feelings of reactance people feel toward those who dominate them and restrict their liberty (Graham et al., 2013). While the expression of these foundations may differ across culture groups (e.g., what is impure to one group may not be to another), Haidt and Joseph (2007) argue for the innate existence of these foundations in all human beings. However, this perspective is also partly criticized, as the empirical testing of innate intuitions cannot be guaranteed, moreover, the assumptions of the specific named number of foundations are questioned (e.g., Suhler & Churchland, 2011).

Nevertheless, in recent years, there has been increasing support for the role of intuitions in moral judgments. However, both conscious reasoning and intuition may play a role in moral judgments, as well as justifications (Greene, 2003; Pizarro & Bloom, 2003; Pizarro et al., 2003). Moral judgments might rather be reached based on two parallel processes: an automatic emotional one and a controlled cognitive one. Another perspective suggests that moral judgments initially arise as moral intuitions generated by automatic processes, and the primary role of conscious reasoning is not to generate moral judgments but to provide a post hoc basis for moral justification (Haidt, 2001). This means that individuals might have a gut feeling about whether something is right or not and subsequently justify their decision based on available information. Furthermore, moral judgments may be more likely to be reached through a process of rational deliberation when the automatic processing is not possible, for instance, when two moral intuitions are in conflict (Tamborini, 2012). Consequently, a dual process of morality that compromises rational reflective deliberation comparable to Kohlberg's (1958) assumptions and moral intuitions as two parallel processes is reasonable. In summary, although intuitions may often dominate when making moral judgments, rational moral deliberation may be especially forced when unusual, new situations arise that require a moral judgment. In these cases, automatic processes may not apply. Moreover, both processes may influence each other when it comes to a moral judgment (e.g., Haidt, 2001). Therefore, it is important to investigate how both processes of moral judgments are influenced by media. In conclusion, this dissertation focuses on both perspectives as morality: rational moral deliberation and moral intuitions; assuming them to be parallel processes that converge when making moral judgments and justifications.

1.2 Resulting Differences in Media Effects on Morality

Because of the differences in these processes, the critical factors for the media's influence on morality vary. Studies that focused on rational moral deliberation processes mainly investigated the impact of moral conflicts in narrative media (Cingel & Krcmar, 2020;

Krcmar, 2019; Krcmar & Cooke, 2001) whereas studies examining the impact on moral intuitions have mainly investigated how the salience of specific moral intuitions in media affects the salience of related moral intuitions within recipients (e.g., Eden et al., 2014; Grizzard et al., 2017).

Taking the rationalist approach to morality into account, studies have shown that the confrontation with moral dilemmas in narratives supports the recipients' moral development according to Kohlberg's theory of moral development (e.g., dilemma stories; Blatt & Kohlberg, 1975; Upright, 2002; Wismaliya et al., 2018). This means that through exposure to moral conflicts in narratives, recipients could improve their ability to integrate and weigh different perspectives when making moral judgments. Narrative media may provide recipients a space to work in a moral laboratory where they can explore and reflect on moral issues without having to face the consequences of their own moral choices (Hakemulder, 2000). Moreover, a growing number of investigations using VR applications can be found in which the impact of experiencing a moral dilemma in VR (e.g., trolley dilemma) on the recipients' moral judgments is investigated (e.g., Benvegna et al., 2021; Niforatos et al., 2020; Pan & Slater, 2011). Furthermore, by following theories such as the *Social Cognitive Theory of Moral Thought and Action* (Bandura, 1992), it is assumed that moral behavior in media can affect the recipients' moral orientation (e.g., Wright et al., 2020). This could also apply to portrayals of historical figures in media. The presentation of historical figures in social media or in biographical series/movies may offer insights into the life and (moral) actions, values of a historical figure and, consequently, influence the recipients' moral orientation.

By focusing on moral intuitions, Tamborini (2012) suggested in the *Model of Intuitive Morality and Exemplars* (MIME) that media consumption can affect the salience of moral intuitions. The MIME suggests, based on the exemplification theory (Zillmann, 2002), that the presentation of moral exemplars (e.g., helping behavior) in media increases the salience of related domains (e.g., care) in memory, which can, in turn, influence recipients' moral judgments (Tamborini, 2012; Tamborini et al., 2017). This phenomenon was explained based

on two cognitive heuristics: availability and representativeness (Tversky & Kahneman, 1974): “The media’s recent and frequent use of specific exemplars will influence the availability heuristic directly, strengthening the exemplars’ influence on judgments” (Tamborini, 2012; p. 48). Also, subsequent empirical research proved Tamborini’s (2012) assumptions (e.g., Eden et al., 2014; Grizzard et al., 2017; Holl & Melzer, 2021). For instance, Eden and colleagues (2014) showed that the consumption of moral content can prime the salience of related intuitions by asking participants to expose themselves to moral media content (serial drama) over eight weeks (Eden et al., 2014). Furthermore, media figures may act as moral exemplars and prime intuitive moral responses (Tamborini, 2011).

In conclusion, theoretical considerations and empirical investigations suggest that media applications dealing with historical topics can affect both rational moral deliberation and moral intuitions. On the one hand, rational moral deliberation may be supported by offering new perspectives, experiences and, allowing the observation of moral actions of historical figures, which helps recipients to consider different perspectives when making moral judgments. On the other hand, moral exemplars in historical media applications may prime related moral intuitions presented in historical media. Consequently, it is reasonable that historical media affects the recipients’ morality in different ways.

1.3 The Role of Empathy and Perspective Taking

Nevertheless, when investigating the influence of media on morality, empathy should not remain unnoticed. Especially in rational approaches on morality, empathy and perspective are attributed a crucial role (Kohlberg & Kramer, 1969). Researchers argue that, for example, when someone must decide whether it is right or wrong to help refugees, one part of the moral decision-making process is to change perspective and find out how they would feel/think about it and derive an individual judgment. Therefore, empathy is perceived to promote rational moral deliberation processes. Empathy includes a cognitive and affective dimension that should be considered independently as they also differ by brain structures involved

(Reniers et al., 2011; Shamay-Tsoory et al., 2009). The cognitive component refers to the aforementioned example: perspective-taking and describes the individuals' ability to put themselves in the position of others to understand their point of view and feelings. Perspective-taking is understood as a cognitive, rational mechanism in which emotions play no significant role: feelings are imagined, but individuals do not necessarily feel with others. On the other hand, affective empathy includes affective responses, such as emotional contagion.

Within media research, empathy is differentiated as a recipients' trait (e.g., Mitchell et al., 2021) and empathy as an emotional response to media (empathic responses; e.g., Zhou et al., 2021). Whereby empathy as a trait refers to the individual's general non-context-specific ability of affective and cognitive empathy, empathic responses describe the context-specific experience of empathy as a consequence of media exposure. Here, research on immersive environments has shown that the recipients' ability of empathy supports their engagement with media (e.g., Nicovich et al., 2005). Furthermore, the recipients' engagement with media has been found to promote empathic responses (e.g., Herrera et al., 2018; Mado et al., 2021; Schutte & Stilinović, 2017). For instance, Herrera and colleagues (2018) showed that the experience of being homeless in VR is connected to empathic feelings towards homeless people. In line with these and other investigations on VR technology, which enables recipients the opportunity of perspective taking (e.g., Barbot & Kaufman, 2020; Bujić et al., 2020; Troeger & Tümler, 2020; van Loon et al., 2018; Ventura et al., 2020), VR has gained popularity as "ultimate empathy machine" (Milk, 2015). But also, by taking other media formats such as textual narration or social media posts into account, researchers have found effects on empathic responses (e.g., Bal & Veltkamp, 2013; Johnson, 2012; Scherer et al., 2022). However, a meta-analysis by Martingano and colleagues (2021) investigated the impact of different media applications on empathy, taking into account the aforementioned distinction between cognitive and affective empathy. They concluded that reading fiction, which requires deciphering characters' intentions and motives, leads to improvements in cognitive empathy. In contrast, the researchers found that especially immersive media experiences can increase

empathy, but these effects are limited to improvements in affective empathy rather than cognitive empathy (Martinango et al., 2021). Consequently, historical media may be more likely to support affective empathic responses (e.g., feeling with or like someone of the past) than to support cognitive empathic responses (e.g., taking the perspective of someone in the past).

Moreover, when empathy is considered as a trait in media research it is assumed to be relatively stable during media reception and rather influences of empathy on other media effects (e.g., emotional responses, immersion) are investigated (e.g., Mitchell et al., 2021). However, long-term analyses revealed influences of media exposure on trait empathy (e.g., social media; media violence in movies; e.g., Vossen & Valkenburg, 2016). To explain these findings, a cognitive developmental perspective can be applied, which suggests that empathy also develops through experience and engagement with the environment (see Eisenberg & Strayer, 1987). Consequently, also historical media may offer recipients the opportunity to gain new experiences, which promote their ability of empathy.

However, as already mentioned, the usage of media applications as an “empathy nudging tool” (Ramirez et al., 2021; Slater et al., 2020) is discussed. It is criticized that such applications, especially VR, might create the impression that they can enable users to actually experience how it is to be someone else (e.g., homeless), whereby they can truly not enable such act of perspective taking. This might especially apply to the application context of history. Here, empathy is defined as “the skill to re-enact the thought of a historical agent in one’s mind” (Yilmaz, 2007; p. 331). In this regard, history education researchers state that people of the 21st century are not able to understand and experience how it was to be someone in the past as the thoughts are necessarily connected to knowledge and norms of the present time (e.g., Bunnenberg, 2020). However, whether recipients’ indeed think that they can feel with someone of the past has not been studied so far. Furthermore, empathy and empathic responses may be able to promote the influence of historical media on empathy in several ways. By referring to the rationalist approach to morality, the promotion of empathy through

historical media may support rational moral deliberation processes as they offer mediated experiences, which may promote perspective-taking. Furthermore, empathic (emotional) responses may also influence moral intuitions by fostering the activation of related moral intuitions in memory (see Bildanzic, 2011). Here, it might be reasonable that emotionally charged experiences may remain stronger in memory and, therefore, promote the salience of related moral intuitions. Therefore, the interplay between the influence of historical media on empathy and empathic responses, and, in turn, their impact on rational moral deliberation and moral intuitions should be investigated.

III Empirical Approach

Consequently, research implies that (historical) media can influence the recipients' empathy and morality in different ways. However, previous research mainly focused on the impact of (moral) media content on moral intuitions, moral orientation, empathic responses, and empathy. There is a lack of empirical investigations and theoretical considerations regarding the recipients' engagement, meaning cognitive and affective processes, during media exposure. The importance of such processes is, for instance, indicated by a previous investigation of Eden and colleagues (2017), who found that the recipient's self-reported narrative engagement promotes moral reasoning. Furthermore, Tamborini (2012) emphasized in the MIME that there are several other factors despite media content, that affect the impact of media on morality. Thereby, he, for instance, highlighted the importance of emotions, while media exposure by following the Exemplification Theory (Zillmann, 2002). He argues that emotionally charged memories from media exposure may be remembered more strongly than those that weren't emotionally charged. Therefore, it may be reasonable that the recipients' emotional engagement in historical media promoted by their media characteristics fosters the influence on the recipients' morality. In line with that, the moderating role of emotional (empathic) responses to media on moral processes is still not sufficiently investigated and suggests a crucial interaction.

Therefore, in the following parts different affective and cognitive processes that may be triggered due to the characteristics of novel media applications and promote the recipients' (emotional) engagement in historical media will be introduced and discussed. Building on this, the empirical part of this dissertation will first address influences of such affective and cognitive processes, while media reception on morality and further present how media characteristics and user behavior impact these processes. Thereby, the present work takes both processes of morality into account: moral intuitions and rational moral deliberation. Here, the empirical investigations focus on media applications in historical media context that have reached popularity within recent years: virtual reality and social media (e.g., Bunnenberg, 2020; Berg, 2023).

2 Presence: The Immersion into the Past

Novel historical media are known for aiming at the recipients' (emotional) engagement based on different dramaturgical and technological characteristics: Users should be immersed in the past and be able to actually experience history (Lewers, 2022). For example, virtual reality applications should be able to make time travels real (e.g., Bunnenberg, 2018, 2010). Frequently used dramaturgical tools within such applications are (1) personalization, (2) fictionalization and (3) emotionalization (e.g., Berg et al., 2023), which were extended by (4) immersive technological characteristics (e.g., Bunnenberg, 2018). (1) Personalization describes the presentation of the past based on one well-known historical figure (e.g., Anne Frank; Sophie Scholl; Bergmann, 1979). This dramaturgical tool aims to make history more tangible through the biography of a historical figure. Beyond that, producers of historical media make use of (2) fictionalization by, for instance, adding some fictitious characters to embellish the story. Fictionalization includes the fact that every presentation of the past is necessarily a perspective-bound retelling (Hardtwig, 1988). Furthermore, (3) emotionalization in historical media is a popular dramaturgical tool that is intended to decrease the distance between past and present by supporting the recipients' emotional involvement in the historical content

(Brauer, 2013). In addition, (4) immersive technological characteristics are used to immerse recipients in the past and support their emotional engagement (e.g., Bunnenberg, 2020; Lewers, 2022). However, at this point it is important to mention that emotionalization, fictionalization and immersion in historical media presentations are viewed critically on the part of historians (e.g., Bunnenberg, 2018, 2020). Historians assume that the aforementioned dramaturgical and technological tools decrease the recipients' reflection of the content and could overwhelm recipients emotionally, as they address emotionally charged topics like the Holocaust. Whether this criticism is valid, however, remains unclear due to the lack of empirical studies. Furthermore, such dramaturgical and technological tools could indeed foster the recipients' engagement and, consequently, promote the influence of historical media on their morality without emotionally overwhelming them. Therefore, this relation should be investigated empirically. In the following, the potential of novel historical media to (emotionally) engage recipients will be addressed.

One central goal of novel historical media applications, like VR, is the recipients' immersion into the presented past (Bunnenberg, 2020; Lewers, 2022). Agrawal and colleagues (2020) defined immersion as a "phenomenon experienced by an individual when they are in a state of deep mental involvement in which their cognitive processes [...] cause a shift in their attentional state such that one may experience disassociation from the awareness of the physical world." (p. 407). Consequently, recipients' who are immersed shift their attention to the mediated historical reality and are "involved, absorbed, engaged, engrossed" (Witmer & Singer, 1998). However, there is an "absence of definitional consensus" about the usage of the term immersion (Agrawal et al., 2020, p. 404). On the one hand, immersion is used to describe the technological properties of media applications (e.g., Slater & Wilbur, 1997). On the other hand, immersion is used to describe the recipients' consciousness experience, while media usage that is triggered by (immersive) media characteristics (e.g., Agrawal et al., 2020; Witmer & Singer, 1998; Seth et al., 2012; the influence of technological immersion on presence will be addressed in Chapter 6). Therefore, to distinguish more clearly between both concepts, within

this dissertation, the term technological immersion to describe the characteristics of technology and the term presence to describe the recipients' psychological state while being exposed to media as proposed by Slater (1999).

In the following, relevant facets of presence as response to the investigated media applications addressing historical topics will be described and discussed in regard to the aforementioned characteristics of novel media formats.

2.1 Facets of Presence

Presence was mainly used to describe the recipients' experience in virtual environments (e.g., Slater & Wilbur, 1997). However, the experience of presence is not limited to VR technology and has been studied in a variety of domains: from literary works, music, and movies to video games and VR (Agrawal et al., 2020). Therefore, presence describes rather "a basic property of conscious experience" during media reception (Seth et al., 2012, p. 12), which can have different facets (e.g., spatial presence, social presence, narrative presence e.g., Heeter, 1992; IJsselsteijn & Riva, 2003; Lee, 2004).

Many investigations refer to presence as the "sense of being there" (Slater & Wilbur, 1997) promoted by immersive technological characteristics. This understanding of presence highlights a location dimension presence. Here, presence describes a state of consciousness (Slater & Wilbur, 1997) in "which one feels present in the mediated environment rather than in the immediate physical environment" (Steuer, 1992; p. 75). Users experience themselves as being in the mediated historical environment even if they are physically in another place. Therefore, this dimension is defined as spatial presence (Witmer & Singer, 1998), and was later distinguished in the dimensions self-location and possible action (Hartmann et al., 2015). Possible action describes the recipients' perception of being able to move things within the mediated environment. In this vein, (1) *spatial presence* is used to describe the experience of feeling located within the mediated historical environment that can be computer-generated (e.g., VR) but also created through textual presentations (e.g., Agrawal et al., 2020).

Other definitions of presence highlight the “perceptual illusion of nonmediation” (Lombard & Ditton, 1997). As producers of media applications dealing with historical topics aim to create an (2) *illusion of reality*: the presentation of the past should be experienced as authentic, realistic, or even as real (e.g., Lewers, 2022; Bunnenberg, 2018, 2020; SWR, 2021). This dimension may play a crucial role during media reception, as well. From a history education perspective, the illusion of reality could be described as the non-existence of the consciousness of fictionality. The consciousness of fictionality describes the recipients’ ability to distinguish between fact and fiction and is perceived as a central goal of history education (e.g., Löfström et al., 2021; for a detailed overview about the concept see Pandel, 1987). However, history education researchers argue that especially novel historical media that aim to create a historical virtual reality may decrease the recipients’ consciousness of fictionality: recipients may perceive the mediated historical environment as actual real (e.g., Bunnenberg, 2018). Furthermore, when recipients experience the mediated historical environment as actual real, they may further be able to more strongly engage in historical media as there is no discrepancy between the presented those that is considered to be an appropriate presentation of the past. Therefore, (2) illusion of reality as dimension of presence may play a crucial role when being exposed to historical media.

A further dimension of presence in media psychology research describes the (3) “feeling of being there with a real person” (*social presence*; Oh et al., 2018). Due to personalization in novel media applications, describes this dimension of presence might be triggered, as well. Personalization describes the “presentation of historical facts on the basis of the biography of great and therefore important personalities”, and can already be found in many places in historical culture – for example in the form of documentaries, exhibitions, or feature about prominent historical figures (Bergmann, 1988; Berg et al., 2023). Consequently, within this context of applications social presence describes the experience of being together with another (historical) figure. A similar phenomenon was observed by Horton and Wohl (1956), who noticed that recipients of mass media experienced a “simulacrum of

conversational give and take” (p. 215) with media personas. The researchers named this phenomenon parasocial interaction (PSI). However, this type of social presence is characterized by one-sidedness as the media persona is controlling the interaction and cannot react to the recipients’ responses (Horton & Wohl, 1956; Lombard & Ditton, 1997), whereby social presence can also occur in mediated situation when two individuals engage, for instance, when talking on the phone (Lombard & Ditton, 1997). Therefore, PSI must be considered distinct from the concept of social presence. In contrast to social presence, PSI also promotes affective, as well as cognitive processes of recipients, which are defined by the term (4) *parasocial interaction processing* (e.g., Hartmann & Schramm, 2008). Affective responses are, for instance, the experience of empathy with the media persona, and cognitive responses include, for instance, the evaluation of the media persona. In conclusion, within this dissertation (3) social presence describes the feeling of being there with a historical figure in any mediated historical environment and, (4) parasocial interaction processing describes the affective and cognitive parasocial interaction with a mediated historical figure.

The impact of media on morality lies mainly in the exposure to narrative media (see Tamborini, 2012). Also, most of the novel media applications dealing with historical topics include narration. This might be especially grounded in the dramaturgical tool of fictionalization, which is realized through narration within historical media applications (e.g., Berg, 2023). Therefore, the last dimension of presence this dissertation focuses on is (5) *narrative presence*. Narrative presence is evoked through the mediated plot and describes the recipients’ experience of being part of a presented story (Agrawal et al., 2020): “one has left the actual world and entered the story” (Busselle & Bilandzic, 2009; p. 341). Even though narrative presence is mostly examined and observed in investigations on the impacts of textual media (e.g., books; Green & Brock, 2000; Murray, 2017), research showed that narrative presence is not limited to textual media and can be observed in any media that includes a story plot (e.g., VR, movies; Green et al., 2008).

2.2 The Role of Emotions and Arousal

Furthermore, by the emotionalization of the displayed historical content, producers aim to emotionally involve recipients' and decrease the distance between the past and reality (Brauer, 2016). However, as already mentioned the use of emotions and, consequently, the recipients' emotional engagement with historical media presentations is viewed with doubt from the perspective of history education researchers (e.g., Lewers et al., 2022; Berg et al., 2023). As such applications mainly address atrocities of the past which are inevitably connected to specific emotions (e.g., guilt; Brauer, 2016), it is feared that such emotional presentations can lead to an emotional overload, especially, when they force the recipients' immersion in the media presentation (Bunnenberg, 2020; for a detailed presentation of this relation see Chapter 6.2). Here, historians refer to the Beutelsbacher Consensus, which includes the prohibition of emotionally overwhelming people when dealing with history (Schiele & Schneider, 1977). In line with that, studies have shown that emotional presentation in media led to related self-reported emotional responses (e.g., Riva et al., 2007). Furthermore, also on a theoretical basis the experience of presence is perceived to be linked to emotional engagement (e.g., Green & Brock, 2000). This may apply to all aforementioned facets of presence, as studies showed this relation for narrative presence (Green & Brock, 2000; Ryan, 2003), and spatial presence (e.g., Shin et al., 2018). Moreover, as mentioned beforehand parasocial interaction processing includes affective processes like emotional contagion (Hartmann & Schramm, 2008; Schramm & Hartmann, 2019).

However, it remains unclear whether recipients actually experience emotions during historical media exposure or rather have learned to report feeling certain "stereotypical" emotions, as suggested by Brauer (2016). Since emotions are not limited to one dimension and do not involve only conscious processes (e.g., Keltner & Gross, 1999; Scherer, 1984), taking into account unconscious affective processes such as physiological arousal may be a promising approach to investigate this. Kleinginna and Kleinginna (1981) also emphasized that emotions are characterized by a complex interaction of subjective and objective factors consisting of

affective, cognitive, conative, and physiological components. The affective component consists of the subjective experience of situations, such as feelings of arousal. The cognitive component refers to how emotionally relevant situations are perceived and evaluated. Consequently, there may be a difference between the actual physiological arousal of recipients during historical media exposure, and their attribution of specific emotions, such as empathy or guilt. In line with this, previous research has shown that the experience of presence and empathic reactions are characterized by an unconscious dimension: physiological arousal, in addition to the aforementioned cognitive dimensions (de Kort et al., 2006; Gorini et al., 2011; IJsselsteijn et al., 2000; Visch et al., 2010). Therefore, the dissertation distinguishes between physiological reactions to media and emotions as cognitive reactions to media to illustrate the influence of affective unconscious processes, and cognitive conscious processes of emotions. Both are seen as part of the historical process of media reception.

3 The Mediated Historical Experience: *Research Paper I: And what comes after time travel? An Empirical Analysis of «Emerging» from History-Related Virtual Reality.*

To figure out which dimensions indeed play a central role when being exposed to novel historical media, this research paper analyzed qualitatively the recipients' self-reported experiences in 360°-VR addressing historical topics. Building on this, the investigation can give detailed insights into the recipients' reception processes by considering dimensions of social presence, spatial presence, and narrative presence, as well as emotions. As previous research indicated that emotions presented in the media content positively predicts emotional responses, and the experience of presence (e.g., Baños et al., 2004; Riva et al., 2007), the impact of the extent of content's emotionality on these dimensions was investigated on a qualitative level. Moreover, to get a first impression of whether recipients' experience the content as morally relevant and, moreover, evaluate the content regarding their own moral system (as proposed by Tamborini, 2012, see Chapter 1.2), the self-reported expressions of moral consciousness describing the ability to distinguish between good and bad were examined (see

Pandel, 2007). Moral consciousness is a central goal of history education (Silfver, 2022) and offers a first approach to investigate the recipients' moral evaluation, while historical media exposure. In a laboratory experiment with 2 (emotionality of the content: high vs. less emotional) x 2 (reception of additional information: yes vs. no) between-subjects design ($N = 70$) recipients were asked to provide textual responses to what they had experienced within the VR application. The VR application was a 360°-VR application in which recipients were put in the perspective of a prisoner in the German Democratic Republic (GDR). Participants were asked to use this VR application with the aid of VR goggles (cardboard). In interdisciplinary collaboration of media psychology and history didactics, the self-reported expressions of presence, emotions, and moral consciousness were examined.

The qualitative analysis (deductive and inductive) revealed expression of presence in the dimensions: spatial presence, social presence, and narrative presence. Thereby narrative presence was the dominant one (64 %), followed by social presence (41 %) and spatial presence (40 %). Furthermore, the qualitative analysis revealed only in 35 % of the recipients' answers a consciousness of reality, which means that only one-third of the recipients' reported actively that they were aware of the fact that this application did not show the reality (ref. "illusion of reality"; see Chapter 2.1). Moreover, roughly one-sixth of the answers included expressions of negative emotions (e.g., "I felt uncomfortable.") followed by a few expressions of positive emotions (e.g., "interested"). Taking the impact of the extent of content's emotionality into account the analysis indicated on a descriptive level that the extent of content's emotionality supported expressions of presence. However, in this investigation it was not found that a higher content's emotionality supported the expression of emotions.

Furthermore, the qualitative analysis revealed expression of moral consciousness showing a moral evaluation of the seen historical content (17.1 %). In more detail, recipients showed expressions of evaluation of the actions of the presented figures (e.g., "The way the Stasi employees treat the prisoners was very rough [...]"). These findings illustrate that recipients of historical media applications that deal with atrocities of the past evaluate the seen

actions regarding their moral orientation, which supports the suggestions of Zillmann (2006), who proposed that recipients interpret media based on their own moral norms and perceptions.

Taken together, the investigation highlights that recipients experience presence within historical virtual environments, and demonstrates the different dimensions of presence when being exposed to immersive historical media. Furthermore, the study showed that recipients recognize emotions when being confronted with history in immersive applications. Here negative emotions were reported the most, but also positive emotions occurred. These findings deliver important contributions regarding the doubts of history education researchers, who assumed that recipients will be emotionally overwhelmed (e.g., Bunnenberg, 2018; 2020). The results suggest that negative emotional presentations (e.g., harmful treatment) do not necessarily lead to the experience of negative emotions. However, these findings should be treated with caution because the research did not specifically ask participants to report what emotions they were experiencing. Participants were only asked to report what they experienced. Nevertheless, the results suggest that the experience of negative emotions may not be as central as assumed.

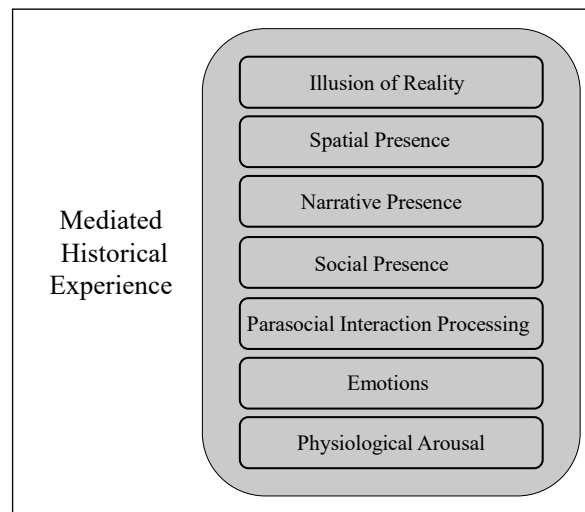
Taken together, although negative emotions have been reported in some cases the study indicates that negative emotions were not that salient for recipients. Furthermore, also positive emotions like excitement are reported, which implies that recipients may also connotate such immersive historical media positively. Furthermore, regarding the influence of historical media on morality, the investigation demonstrates that recipients evaluate the presented historical content based on their own moral norms and perceptions. These findings are an important starting point for further investigating the influence of recipients' engagement with such media on recipients' morality, as they show that recipients recognize and tend to engage with morally relevant actions.

In conclusion, findings of a research article I illustrate, which mechanisms occur while historical media reception. Consequently, they reinforce the aforementioned theoretical

considerations. Based on these findings and the previous theoretical considerations, the present work focuses on different dimensions of presence and emotions when investigating the recipients' engagement in historical media. These dimensions cover, (1) the feeling of being located within a mediated historical environment (spatial presence), (2) the illusion of reality, (3) the experience of the presence of a historical figure (social presence), (4) the affective and cognitive parasocial interaction processing of mediated figures, (5) the absorption in the presented story (e.g., being a prisoner in the German Democratic Republic; narrative presence), the (6) cognitive conscious dimension of emotions, and (7) physiological arousal. All these dimensions will be summarized as *mediated historical experience* in this dissertation (see Figure 2).

Figure 2

Dimensions of the Mediated Historical Experience



4 Empirical Part I: Do Mediated Historical Experiences Influence Morality?

Consequently, there are reasonable assumptions, which processes occur while historical media exposure and form the recipients' mediated historical experience. In regard to these, previous research indicates potential influences of these dimensions on resulting media effects (e.g., belief changes). For example, the recipients' engagement, in terms of presence and emotional responses, proved to be an influencing factor when focusing on impacts of media exposure on different aspects (e.g., Green & Brock, 2002). For example, by investigating belief

changes through media, studies have shown a stronger influence on the recipients' beliefs when they experienced spatial presence in a virtual environment (e.g., Bujić et al., 2020). Moreover, Green & Brock (2002) proposed that narration can have persuasive effects in terms of belief changes, which are promoted by the recipients' experience of narrative presence. These assumptions were supported by subsequent empirical investigations that examined persuasiveness of narrative media applications (e.g., Green & Sestir, 2017; van Laer et al., 2014). Here, the accompanying emotional engagement as well as attentional focus on the media content might be possible explanations for such found effects. This means that, on the one hand, recipients may focus more strongly on the media content, and recognize relevant information, and, on the other hand, the emotional engagement can decrease the reflective processing of what is seen: the attitudes presented are less questioned. This might also apply to influences on morality – recipients may more strongly focus on the moral content and take over the moral attitudes. In line with that, by examining the effects of media exposure on morality, empirical studies already indicate that the recipients' experience of presence may be able to promote the recipients' engagement with morality in media. For instance, Eden and colleagues (2017) showed that the self-reported experience of narrative presence promotes moral reasoning while media exposure and provokes reflections concerning one's own values (Hakemulder, 2008). Moreover, when considering the MIME (Tamborini, 2012), emotional responses and the experience of presence may play a crucial role, as Connolly and Hardman (2009) suggested that morally relevant situations are associated with emotions, which are, in turn, assumed to make mediated moral experiences vivid, and memorable when making moral judgments. In conclusion, it can be assumed that the historical media promotes the experience of presence and the recipients' emotional engagement through their dramaturgical and technological characteristics. The experience of presence and the emotional engagement may, in turn, promote the recipients' moral evaluation of (im)moral actions within media (see Eden et al., 2017), and the influence of media on morality. Recipients' may more strongly focus on

and emotionally engage with the moral (historical) media content (see Green & Brock, 2002), and, in turn, more strongly remember this when making moral judgments.

Furthermore, also in this context the influence of empathy should not remain unnoticed. It is suggested that the experience of presence offers recipients “a platform for the experience of empathy” (Schutte & Stilinović, 2017, p. 709), as it leads to a deeper understanding of other perspectives (De La Peña et al., 2010). This may especially affect rational moral deliberation processes, which are grounded in perspective-taking (see Chapter 1.1). There are several empirical studies that proved that the experience of presence while media exposure is strongly connected to empathic responses (e.g., Shin, 2018; van Loon et al., 2018). For instance, in an experiment Shin and colleagues (2018) found that the experience of social presence within VR supports empathic responses. The researchers explained this through the experience of connectedness with the presented figures in VR accompanied by the experience of social presence. Also, parasocial interaction processing contains affective processes including empathic responses. Therefore, emotional responses to historical media may be able to support moral deliberation processes. However, a meta-analysis focusing on these relations in the context of VR highlighted that the experience of presence in VR rather promotes affective empathy than cognitive empathy (Ventura et al., 2020). Consequently, media experiences might be rather promoting affective empathic responses than actually changing the recipients’ general ability of empathy. However, an influence of empathy as consequence to narrative media exposure on moral rational reasoning processes is proposed (Bilandzic, 2011). Nevertheless, the impact of empathic responses on rational moral deliberation has still not been investigated in detail.

Moreover, some investigations showed that media exposure can influence the users’ ability of empathy. For instance, Vossen and Valkenburg (2016) found that social media usage can support adolescents’ general ability of empathy. These can be explained by theoretical considerations from a cognitive developmental perspective, which suggest that empathy develops through individuals’ engagement with their environment (see Eisenberg & Strayer,

1987). This means that individuals develop empathy through (social) experiences they made in their daily life. This may also apply to historical media exposure. In line with that, researchers argue that media exposure also triggers empathy within recipients as they need to take the perspective of a character to understand the plot, the emotional structure, and character evaluations (Busselle & Bilandzic, 2008). According to the aforementioned theoretical assumptions about the development of empathy (Eisenberg & Strayer, 1987), this may also affect their ability to empathize. Thus, the opportunity of perspective taking in narrative media through the experience of narrative presence may influence subsequent rational moral deliberation processes (moral orientation). Furthermore, it is proposed that also in intuitive morality processes affective empathic responses play a role (Bilandzic, 2011). Here, it can be argued that the empathic emotional involvement in media may promote the salience of related moral intuitions, as emotional memories are more easily remembered (Connolly and Hardman, 2009). Taken together, the theoretical considerations and previous empirical investigations suggest that not only recipients' ability of empathy can be affected through historical media, but also empathic responses can occur. Both could promote the influence of media on morality. Whereby an increase in the recipients' ability of perspective-taking (cognitive empathy) may promote moral orientation, empathic emotional response may promote the influence of media on related moral intuitions.

In conclusion, based on the aforementioned theoretical consideration, the following empirical part investigates the impact of mediated historical experiences on the recipients' morality by considering the intuitive approach to morality by Haidt & Joseph (2007), and the rationalist approach of Kohlberg (1958). Furthermore, as empathy is perceived as an important factor influencing the recipients' rational moral deliberation process (moral orientation), further investigations regarding the impact mediated historical experiences on empathy are presented. Based on the aforementioned theoretical considerations regarding the interplay of moral orientation and empathy, as well as the influence of empathic emotional responses to media on related moral intuitions, the interplay of morality and empathy is

studied. In more detail, the following empirical studies will illustrate how different dimensions of mediated historical experiences (presence and emotions) affect empathic responses, empathy, moral intuitions, as well as the moral orientation of recipients. Therefore, the part answers the following research question:

Research question

Do [1] mediated historical experiences and [2] empathic responses affect [a] related moral intuitions [b] moral orientation [c] moral behavior(al intention)?

In the following related findings of the studies included the cumulus are presented that aim to answer the aforementioned research question. Relevant underlying theoretical assumptions and empirical findings will be illustrated within the presentation of the individual studies. However, as most of the studies not only investigate the influence of dimensions of mediated historical experiences, empathic responses, and empathy on morality, but also investigated influences of media or user characteristics on mediated historical experiences and empathy, the presentation of the studies is basically divided in two empirical parts (see Table 1). Therefore, the following first empirical part will only refer to relevant manipulations, and results of the research articles that address the aforementioned research objectives (for an overview see Figure 3).

Figure 3

Overview of the Research Objectives within Empirical Part I

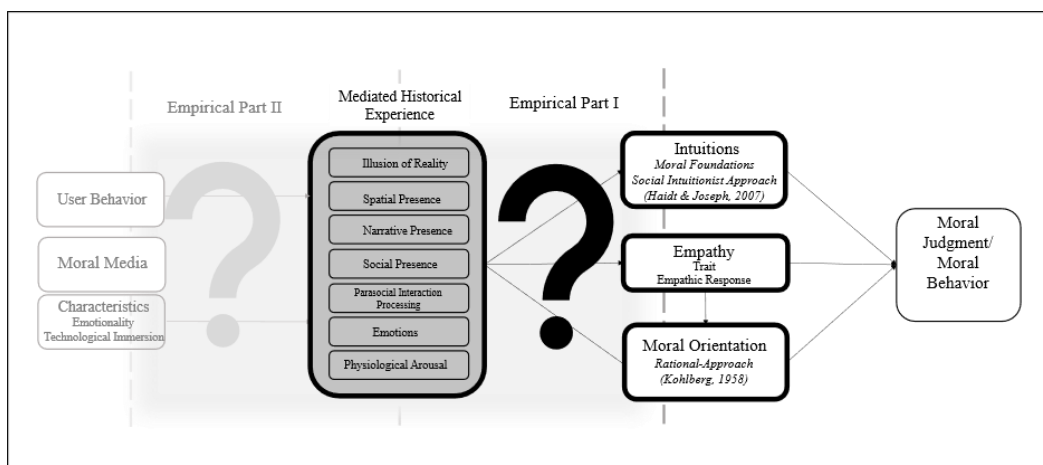


Table 1 provides an overview of the different empirical parts, the research question addressed and the respective contributions of the research articles.

Table 1

Overview of the Presentation of Individual Findings of the Research Papers in the Following Empirical Parts

	Empirical Part I Do [1] mediated historical experiences and [2] empathic responses affect [a] related moral intuitions [b] moral orientation [c] moral behavior(al intention)?	Empirical Part II 1. Do [a] technological immersion and [b] emotional representations affect mediated historical experiences? 2. Do user interaction habits influence mediated historical experiences?
Research Paper II: Back to the Past – An Experimental Investigation about the Effects of Immersive Historical Environments on Empathy and Morality. <small>L. Frentzel-Beyme & N. C. Krämer, 2022</small>	X	X
Research Paper III: Time Travels on Instagram: A Longitudinal Investigation of the Effects of Parasocial Interaction with a Historical Person on the Followers' Empathy and Moral Orientation. <small>L. Frentzel-Beyme, M. Holtze, J. M. Szczuka, N.C. Krämer, 2023</small>	X	
Research Paper IV: Historical Time Machines – Experimentally Investigating Potentials and Impacts of Immersion in Historical VR on History Education and Morality. <small>L. Frentzel-Beyme & N. C. Krämer, 2023</small>	X	X
Research Paper V: The Past has Touched me – Investigating the Effects of Physiological Reactions to Historical VR on the Recipients' Morality. <small>L. Frentzel-Beyme, W. A. IJsselsteijn, N.C. Krämer, 2023</small>	X	X
Research Paper VI: #Histogram: Investigating Emotions in Historical Representations on Instagram. <small>F. Zargar, L. Frentzel-Beyme, E. Lewers, B. Koczy, N.C. Krämer, 2023</small>		X
Research Paper VII: Posting from the Past - A Longitudinal Study of the Potentials of Parasocial Interaction with a Historical Figure for History Education. <small>L. Frentzel-Beyme, M. Holtze, J. M. Szczuka, N.C. Krämer, 2022</small>		X

4.1 A Rationalist Perspective on Morality in VR: *Research Paper II: Back to the Past—An Experimental Investigation of the Effects of Immersive Historical Environments on Empathy and Morality.*

Virtual reality (VR) has reached popularity as the ultimate empathy machine (Milk, 2015). As empathy including perspective taking is perceived to be a detrimental factor for rational moral deliberation processes (see Kohlberg & Kramer, 1969), this paper put empathy in the center of investigation, and focused on the rational morality approach. Hence, the study aimed to answer whether the opportunity of perspective taking in historical VR promotes the recipients' general ability of empathy and, further, promotes their moral development according to Kohlberg's (1958) stage model. Drawing on previous investigations, which highlighted a relationship between the experience of presence in VR and empathy (e.g., De La Peña et al., 2010), this investigation examined whether the experience of narrative presence, and spatial presence is related to empathy. Building on this, the study examined the impact of empathy on the individual's moral development according to Kohlberg's stage model (1958). Consequently, this research article focused on the rational approach of morality. As moral orientation as proposed by Kohlberg (1958) was so far mostly assessed qualitatively based on interviews, and only a few complex, extensive questionnaires to assess the moral orientation of adolescent, and young adults exist (e.g., Defining Issue Test; Rest, 1975), a new questionnaire was developed to assess moral orientation quantitatively. The developed questionnaire assessed based on four dilemmas and related moral arguments the level of moral orientation as proposed by Kohlberg (1958; for a detailed description see research paper in Chapter VI).

Furthermore, the study investigated besides moral orientation, the influence on moral behavioral intention. Therefore, despite the well-known attitude-behavior gap (Fishbein & Ajzen, 1975; Hardy, 2006), it was examined whether moral orientation, and empathy were connected to moral behavioral tendencies, as research has demonstrated a relationship between moral orientation and moral behavioral intention (e.g., Lu et al., 2020; Shields et al., 2018). Therefore, an online experiment with an one-factorial between-subject design was conducted ($N = 289$; German citizen) in which recipients were exposed to different types of

historical media that differed in their technological characteristics: They either read a picture story, watched a video in standard 2D format or a 360° video[§]. However, all media applications addressed the perspective of a prisoner in the GDR. The results revealed positive relationships between narrative presence, spatial presence, and empathy. Narrative presence was found to be more strongly related to empathy than spatial presence, suggesting an important role of narration in eliciting empathy in immersive historical environments. Empathy, in turn, was positively related to moral orientation and behavior which is in line with Kohlberg's (1958) on moral orientation. However, no causal relation between presence and empathy can be assumed. The theoretical assumptions suggest that not only empathy promotes the experience of presence but also mediated historical experience can promote empathy (see Eisenberg & Strayer, 1987). Moreover, the results highlighted the key role of empathy when focusing on moral development through (immersive) media. Nevertheless, no direct relation between moral orientation and moral behavioral intention was found. The study suggests that the experience of spatial and narrative presence in historical virtual environments is positively related to empathy and moral development. Consequently, research paper II could demonstrate in a first step that the recipients' engagement in terms of narrative and spatial presence is positively related to empathy, which, in turn, can promote the recipients' moral development as suggested by Kohlberg (1958).

Taken together, the research paper provided a new measure to assess the level of moral orientation as proposed by Kohlberg (1958). Moreover, the findings underline the relation between consciousness processes in terms of narrative presence, and spatial presence while media exposure and its impact on the recipients' rational moral deliberation. Furthermore, the study highlighted the relation between emotional engagement and presence while being exposed to historical media. However, the influence of other dimensions of historical mediated experiences on moral orientation is still not examined.

[§] The manipulation of this factor and resulting findings will be considered in Chapter 6.3.1.

4.2 A Rationalist Perspective on Morality on Social Media: *Research Paper III: Time Travels on Instagram: A Longitudinal Investigation of the Effects of Parasocial Interaction with a Historical Person on the Followers' Empathy and Moral Orientation.*

Therefore, paper VII extended the previous findings of spatial presence, narrative presence on empathy and morality with a perspective on the effects of parasocial interaction processing on empathy and morality. Therefore, the investigation focused on presentations of historical figures in the central role of a social media channel. Within such social media representation of historical figures, producers use the presentation from a first-person perspective, which is known for fostering parasocial interaction processing (Horton & Wohl, 1956; Schramm & Hartmann, 2008, 2019). Following the assumption that social interactions promote the development of empathy, and moral orientation (Eisenberg & Strayer, 1987; Kohlberg, 1958), it was examined whether the affective and cognitive parasocial interaction processing of the presentation of a historical person on Instagram affects the followers' empathy, and moral orientation as it offers new perspectives (of the past). Here, especially the cognitive parasocial interaction processing may influence subsequent rational moral deliberation processes of recipients as it includes for instance that they connect the historical figures' experiences to their own memories. Therefore, it could be assumed that such mediated historical experiences through the parasocial interaction with a historical figure influence following rational moral deliberation. To investigate this, a longitudinal study with two measurement time points ($N_{t1} = 239$; $N_{t2} = 89$) was conducted. Here the sample only included actual followers of a German historical Instagram account (@ichbinsophiescholl). Participants were asked about their interaction with the historical figure on Instagram, empathy, and moral orientation. In line with the assumption, positive relationships between parasocial interaction processing and empathy, as well as moral orientation were found. Affective parasocial interaction processing turned out to be positively related to cognitive empathy and cognitive parasocial interaction processing turned out to be positively connected to affective empathy. Such findings highlight a reciprocal relation between affective and cognitive processes. Also, the long-term analysis indicated that following a historical figure over time can affect the

followers' empathy when frequently interacting. Furthermore, in line with Kohlberg's (1958) assumptions on morality, cognitive empathy was related to moral orientation. Taken together, the study demonstrates that the parasocial interaction processing of a historical figure can promote the recipients' ability of empathy when frequently interacting. Furthermore, it shows that the recipients' engagement in historical media is decisive for the impact of media on morality as no direct relations between the recipients' actual interaction with the historical figure, and moral orientation was found. It was the recipients' parasocial interaction processing that was positively related to empathy and moral orientation. Therefore, the findings underline the role of the recipients' engagement when considering the influence of media on morality. Furthermore, they highlight that the recipients' empathy and moral orientation is also influenced by mediated social experiences. In conclusion, the research papers II and III demonstrate that the recipients' engagement in moral historical media affects rational moral deliberation processes by referring to Kohlberg's (1958) stage model of moral development. Therefore, the following studies will extend these findings by also taking the intuitionist perspective into account.

4.3 Both Perspectives of Morality in VR: *Research Paper IV: Historical Time Machines – Experimentally Investigating Potentials and Impacts of Immersion in Historical VR on History Education and Morality.*

As this study also took the influence of historical media on moral intuitions into account, the investigation followed The Model of Intuitive Morality and Exemplars (MIME, Tamborini, 2012), which proposed that media can activate related moral intuitions (for a detailed description see Chapter 1.2). Furthermore, the investigation started with findings of Eden and colleagues (2017), who suggested that the experience of narrative presence supports moral reasoning. Therefore, this study investigated the effects of presence (spatial and narrative), and emotional responses on salience of related moral intuitions. To examine this, the research paper first analyzed the occurrence of different moral intuitions in the scenes presented in the historical VR. Here, fairness and authority were the dominant ones. Moreover, based on the

findings of research paper II, which indicated that spatial presence and narrative presence are related to empathy and, in turn, moral orientation, this investigation examined direct effects of spatial presence, narrative presence on moral orientation. Furthermore, the influence of the recipients' emotional engagement on moral orientation was examined by following the assumptions that emotionally charged experiences will more likely be remembered afterwards (Connolly and Hardman, 2009) and, therefore, more likely influence subsequent rational moral decision (moral orientation). To examine this, two experiments following a 2 (emotionality of content) \times 2 (reception of additional information) between-subjects design were conducted, in which participants were exposed to historical VR via a media player (Experiment 1, $N = 493$; German citizen) or VR goggles (Experiment 2, $N = 99$; German citizen)**. In line with the assumptions both studies showed that the recipients' experience of spatial presence, narrative presence and emotional responses can prime content related moral intuitions (e.g., fairness). Moreover, narrative presence turned out to be positively related to moral orientation which highlights the impacts of narratives. Emotional responses and spatial presence showed small negative effects on moral orientation. Consequently, research paper IV demonstrated that the recipients' engagement in historical media in terms of spatial, narrative presence and emotional engagement promotes the salience of related moral intuitions. These findings highlight the role of the recipients' engagement when considering the influence of media on moral intuitions. Furthermore, the study suggests that the engagement in the historical moral plot can directly promote moral development according to Kohlberg's (1958) stage model. Taken together, the previous studies imply that the recipients' engagement in historical media, on the one hand, promotes the activation of related moral intuitions and, on the other hand, supports moral ration deliberation processes and subsequently moral development.

** The manipulation of this factor and resulting findings will be presented in Chapter 6.3.4.

4.4 Bringing the Intuitive and Rationalist Approach Together: *Research Paper V: The Past has Touched me - Investigation the Impact of Historical VR on the Recipients' Morality Considering Physiological Reactions.*

However, the aforementioned investigations examined the impacts of the recipients' experience of spatial presence and emotional reactions in historical virtual environments on the recipients' empathy, and morality based on self-reported measures. Based on the assumptions that emotions and presence are characterized by cognitive and physiological dimension (see Chapter 3), this study focused on the recipients' physiological arousal while media exposure. This focus is of special interest in the context of historical media presentations as individuals are socialized how to feel about specific historical events (e.g., Brauer, 2016). One example of this is, that German citizens might have gained the impression that they should feel guilty and sad about the Holocaust. As a consequence, they would indicate feeling guilty or sad when being asked how they felt after being exposed to media applications dealing with the Holocaust, even when they are not that emotionally touched. A similar phenomenon applies to the self-reported assessment of presence (e.g., IJsselstein et al., 2000). Here, the users' expectations when using VR technology might affect their answer behavior in self-reported measures of presence. Consequently, the study can illustrate whether rather cognitive processes affect the influence of media on morality, or rather the underlying affective processes are decisive for the influence of users' engagement in moral media on morality. Consequently, this investigation aimed to include a more objective measure to the investigation of processes during media exposure on the recipients' morality. Therefore, the study focused on the experience of spatial presence in historical content (VR) and physiological responses during media reception in the first place. Moreover, it was examined whether spatial presence and physiological arousal are connected to empathic responses. Furthermore, building on research papers II and IV, was investigated whether spatial presence, physiological arousal, and situational empathy activated related moral intuitions, supporting the moral orientation towards universal ethical principles. By aiming to bring the two processes of moral judgments together, it was investigated whether moral intuitions affect deliberate moral

thinking (moral orientation; see Haidt, 2001). Lastly, based on previous research showing that immersive environments can support prosocial behavioral tendencies (e.g., Herrera et al., 2018; Mado et al., 2021; Schutte & Stilinovic, 2017), that were mediated by the experience of presence, this investigation further investigated the impacts on moral behavioral tendencies and actual moral behavior (i.e., donation behavior).

To examine this, a laboratory experiment was conducted ($N = 96$; Dutch citizen) in which the participants' physiological arousal (skin conductance responses) was assessed while they were either exposed to the VR application of the Anne Frank House, or a graphic novel that included the same information and picture material^{††}. The study showed that spatial presence was positively connected to empathy towards Anne Frank which, in turn, activated related moral intuitions and moral behavioral tendencies. Moreover, the physiological arousal while media exposure turned out to activate related moral intuitions. Therefore, in line with Haidt's (2001) assumptions regarding the two-process model of morality, the study demonstrated that moral intuitions and rational moral deliberation (moral orientation) are connected and, both, impacted moral behavioral tendencies. Furthermore, recipients in the VR group showed significantly more willingness to engage in moral behavior (i.e. donating). Consequently, the study highlights the role of affective processes while historical media exposure (physiological arousal) and empathic emotional responses, when considering the priming of related moral intuitions as these processes did not impact moral orientation. Furthermore, the study could demonstrate the relation between moral intuitions and moral orientation, which underlines the assumptions that both processes can co-exist and influence each other (see Haidt, 2001). Lastly, the study highlight that affective and cognitive processes forming the recipients' engagement while historical media exposure are important, when considering the influence of media on morality, whereby these factors may not influence actual moral behavior.

^{††} The manipulation of this factor and resulting findings will be adressed in Chapter 6.3.2.

5 Conclusion: How Mediated Historical Experiences Impact Morality

The above-described empirical studies have illustrated different effects of the dimension of mediated historical experiences on morality and empathy. In particular, the effects of presence (spatial, narrative, and social), emotions (self-reported and physiological arousal) and empathic responses were considered. In the following, the results of the studies are briefly summarized and discussed. An in-depth discussion of the overall findings of the dissertation takes place in Chapter 8.

5.1 Empathy

The studies showed relations between narrative presence, spatial presence, and parasocial interaction processing and empathy (research papers II, III). Research paper II showed a stronger relationship between narrative presence and empathy than the relationship between spatial presence and empathy. These findings support Busselle & Bilandzic's (2008) hypothesis that narratives promote empathy because, for example, perspective taking is necessary to understand the plot and the actions of the protagonists. Moreover, in another investigation considering offerings of history on social media it was found that parasocial interaction processing is related to empathy (research paper III). These findings underline previous findings that showed that parasocial interaction processing is related to the recipients' ability of empathy (e.g., Scherer et al., 2022). However, the long-term analysis extended this perspective on this relation by a causality perspective, as it indicated that parasocial interaction processing might also affect the recipients' ability of empathy over time. These findings may be explained by theoretical considerations that propose a cognitive development of empathy (Eisenberg & Strayer, 1987). In this sense, individuals' empathy is continuously influenced by social experiences. Therefore, research paper III implies that these may also apply to social experiences gained through historical media. Taken together, the findings suggest that the recipients' engagement with a historical figure in media can support empathy by giving new perspectives and insights. Moreover, research paper IV took empathic responses

into account, and showed that the experience of spatial presence supported empathic response as a consequence to media exposure. This finding illustrates that the recipients' involvement including the attentional shift to the media representation can support empathic responses.

Taken together, the findings suggest that different dimensions of presence can promote empathic responses and, moreover, that mediated historical experience can also promote the recipients' ability of empathy over time.

5.2 Morality

Moreover, empathic responses and the recipients' ability of empathy were found to be related to morality in different ways. First, research paper II and III highlighted the key role of empathy including perspective taking when considering the rationalist approach of Kohlberg (1958). The study has shown that empathy was positively related to moral orientation. This means that those participants that had a high ability of empathy (cognitive and affective) more likely made moral judgments based on Kohlberg's stage six of moral orientation: the orientation towards universal ethical principles. Moreover, research paper V has shown that empathic responses activate moral intuitions but also moral behavioral tendencies. The findings underline the assumptions of Bilandczic (2011), who proposed that empathy plays a role in both deliberation but also moral intuitions.

By considering the impacts of presence and emotional responses on morality according to Kohlberg's (1958) definition, research paper IV has shown that the experience of narrative presence was positively related to moral orientation. However, emotional responses and spatial presence have shown small negative effects on moral orientation (research paper IV). Moreover, research paper III has shown that parasocial interaction processing was related to the moral orientation towards universal ethical principles. These findings highlight the relations between affective and cognitive processes as a consequence of experiencing social presence (PSP; Schramm & Hartmann, 2008, 2019) and moral orientation according to Kohlberg's (1958) perspective on morality. Here, the processing of the presented historical figure, which acted according to high moral standards might have affected the recipients' own

moral orientation (Dumbach, 2017). However, the findings of research paper II strengthen the attitude-behavior gap (Fishbein & Ajzen, 1975) by showing that a high moral orientation did not automatically lead to moral behavioral intentions.

Taking the social intuitionist perspective on morality into account (Haidt, 2001), the studies have shown that mediated historical experiences can prime content related moral intuitions (e.g., fairness, research paper IV). Here, research paper IV has shown, in line with the assumptions, that the recipients' experience of spatial presence, narrative and emotional response can prime related moral intuitions. Furthermore, research paper V has shown that the actual physiological arousal while media exposure activates related moral intuitions. These findings highlight that moral intuitions are affected by affective and cognitive processes while historical media exposure. Furthermore, research paper V could demonstrate the relation between moral intuitions, and moral orientation, which underlines the assumptions that both processes can co-exist and influence each other (see Haidt, 2001). Although both constructs of morality were found to be related to moral behavioral tendencies, none was related to actual moral behavior (i.e., donation behavior).

To sum it up, the studies have shown that the recipients' experience while being exposed to media applications dealing with historical topics affects the effects on the recipients' morality and empathy. Here, especially cognitive, conscious processes of the mediated historical experience in terms of narrative presence, and parasocial interaction processing turned out to impact rational moral deliberation in terms of moral orientation (research papers II, III). On the contrary, moral intuitions were also affected by affective conscious (emotional and empathic responses), and unconscious (physiological arousal) processes (research papers IV, V). Furthermore, cognitive conscious processes like spatial presence were found to promote the salience of related moral intuitions (research paper IV). Moreover, the studies highlight the relationship between empathy and morality regarding both examined perspectives on morality (research papers II, III, V). Consequently, the empirical investigations underline that due to the different approaches on morality the impacts of media differ:

Whereby moral intuitions are mainly affected when emotional responses to moral situations in media occur, the moral orientation is influenced when recipients' process the presented moral content cognitively.

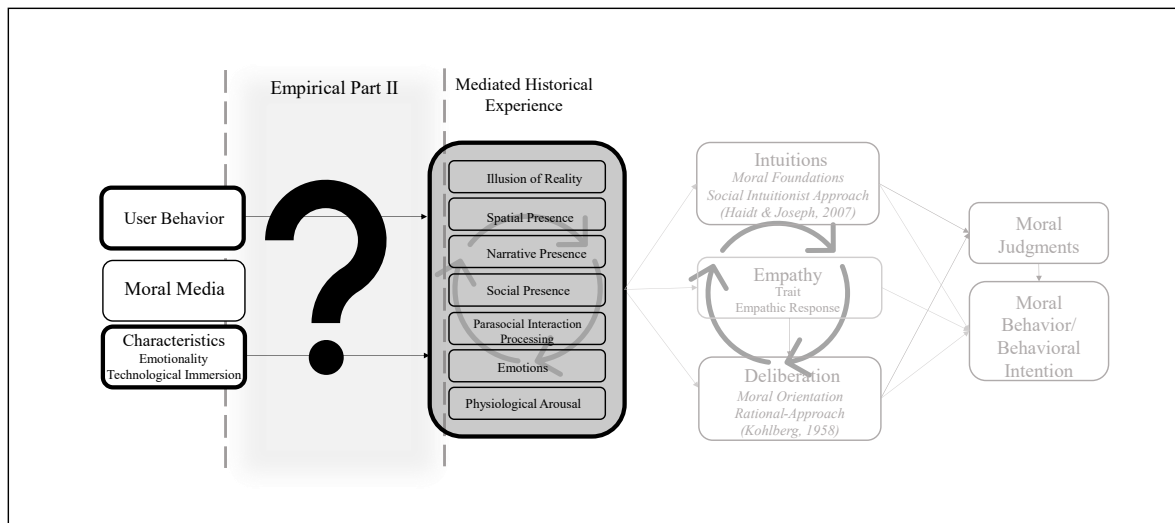
6 Empirical Part II: Influences on Mediated Historical Experiences

In conclusion, the previous empirical part has shown that mediated historical experiences influence the recipients' empathy and morality. However, the dimensions investigated when considering mediated historical experiences are influenced by media and user characteristics (e.g., Slater & Wilbur, 1997; Riva et al., 2007). For instance, the recipients' emotional engagement in media is affected by the level of emotional presentation within media (e.g., Riva et al., 2007). Same may apply to historical media presentations: If historical media includes high emotional content, recipients' may be more likely emotionally engaged. Same can be assumed for the experience of presence. Here, previous investigations and theoretical considerations suggest that the media's potential to promote presence depends on technological characteristics (Slater & Wilbur, 1997; Breves et al., 2020). Furthermore, besides media characteristics, the users' engagement behavior is considered to promote the recipients' engagement in terms of presence. For instance, investigates suggest that the more recipients actually interact with media persona on social media, the stronger is the experience of parasocial interaction (e.g., Kyewski et al., 2018) and, consequently, parasocial interaction processing. Therefore, this empirical part investigates the impact of media characteristics and, moreover user behavior, on the recipients' mediated historical experiences: presence, emotional responses, physiological arousal (see Figure 4).

As the second empirical part addresses the influence of media characteristics, and user behavior on mediated historical experiences, potential factors that may influence mediated historical experiences will be introduced in detail and discussed in the following.

Figure 4

Illustration of the Subject of Investigation in the Second Empirical part (Empirical Part II)



6.1 The Interplay of Technological Immersion and Presence

As presence turned out to be an influential factor when considering the influence of media on morality, it is important to investigate which factors influence the experience of presence. When considering presence, especially, technological features of media applications are perceived as determinant factors (e.g., Agrawal et al., 2020). Slater and Wilbur (1997) suggested that the *technological immersion* of media applications can objectively be determined based on different technological characteristics: display information (inclusive, extensive, surrounding, vivid), the proprioceptive matching of body movement (body matching), and display information, virtual body, and plot. The researchers stated that this approach offers the opportunity to determine the extent of technological immersion of a technology (metric) rather than only classifying a technology binary as immersive or non-immersive. Thereby, inclusiveness describes to which extent a display/technology can shout out the physical reality. For instance, VR glasses blend out the physical environment through their architecture. When users put on VR goggles, they are automatically unable to see the actual physical environment because the sides of the goggles block it out. Extensiveness depicts the extent of sensory modalities a device offers (e.g., sound; haptic). Surroundingness specifies

the extent to which a display delivers panoramic rather than a limited narrow field. As a result, videos in 360° format can be considered as more technologically immersive than videos in standard format. Vividness describes the richness, information content, and quality of displays (e.g., visual color resolution). Besides characteristics of the technology's display, proprioceptive matching is named as a further immersive characteristic of media applications. Proprioceptive matching describes the match between the user's proprioceptive feedback about body movement and the information generated on the displays. For instance, if users wear VR glasses and turn their heads to the left, the viewpoint within the VR should be adjusted to the left as well. Virtual body describes the user's self-presentation within a virtual environment (e.g., through an egocentric view). Plot stands for the storyline a technology displays. This includes autonomy: the extent to which objects in the virtual environment have their independent behavior (Zeltzer, 1992), and responses of other virtual actors to actions (Heeter, 1992).

Cummings and Bailenson (2016) proposed "the more immersive the system, the more likely an individual will feel present within the mediated environment, and the more likely that the virtual setting will dominate over physical reality in determining user responses." (p. 3). Consequently, they propose a linear positive relation between technological immersion and presence. In line with that, many investigations in different contexts of application showed that the experience of presence is influenced by the extent of technological immersion (Breves, 2020; Fonseca & Kraus, 2016; J. Lee et al., 2017; Troeger & Tümler, 2020). For instance, Troeger and Tümler (2020) showed a greater extent of spatial presence for VR games compared to desktop games (i.e., inclusiveness). Lee and colleagues (2017) demonstrated in an experiment that presence increases, if users can naturally move in a virtual environment with the aid of a walking simulator (proprioceptive matching). However, the relation between technological immersion and presence in the context of novel media applications dealing with historical topics has not yet been investigated. Furthermore, the positive influence of technological immersion on presence may not apply for all dimensions of mediated historical experiences.

While the view that technological immersion supports spatial presence dominates especially in VR research (e.g., Cummings & Bailenson, 2016), technological immersion does not necessarily affect the experience of narrative presence (e.g., Pressgrove & Bowman, 2021). For instance, no differences in the experience of narrative presence were found when comparing the exposure to movies and text (Green et al., 2004) or a standard 2D video, 360° VR and HMD-VR (Pressgrove & Bowman, 2021). While these researchers argue in line with the empirical findings that technological immersion characteristics might rather distract from the presented narration, other researchers argue that technological immersion may enhance narrative presence as it offers more insights into the story (e.g., what is happening behind; Sukalla, Bilandzic, et al., 2016; Sukalla, Shoenberger, & Bolls, 2016). Therefore, the relationship between technological immersion and narrative presence should be investigated in the context of historical media.

Regarding the impact of technological immersion on social presence, empirical findings are ambiguous. Some investigations comparing more technological immersive media applications to less technological immersion applications could show an increase in social presence (e.g., immersive virtual environments vs. traditional media; Ma, 2020). Whereby others did not find significant differences in social presence depending on the extent of technological immersion (e.g., Oh et al., 2018). In context of mediated communication formats, researchers observed following the *media richness theory* (Daft & Lengel, 1986) that those media formats offering more verbal and non/verbal cues (e.g., video-chat) than others (e.g., textual chats) promote the experience of social presence (co-presence, e.g., Appel et al., 2012; Bente et al., 2004). However, here, not only the technological characteristics might be decisive for the experience of presence but also the verbal and nonverbal expression of the mediated interaction partner (e.g., Horton & Wohl, 1956). Especially the body address of a media persona supports parasocial interaction processing (e.g., Hartmann & Goldhoorn, 2011). Taken together, the theoretical considerations and empirical findings suggest that more technological immersive media might be able to support parasocial interaction processing. However,

technological immersion does not seem to be the dominant predictor for the experience of social presence, rather the mediated interaction partners expressed behavior seems to be decisive (e.g., Hartmann & Schramm, 2008).

Besides impacts on presence, research has shown that technological immersion supports emotional responses (e.g., Gall et al., 2021). For instance, Gall and colleagues (2021) have shown that technological immersion aspects intensify the emotional processing of virtual environments. Moreover, Makransky and Lilleholt (2018) found that technological immersion directly impacted emotional responses and presence. Consequently, technological immersion aspects might not only impact the experience of presence but also emotional responses within recipients of historical media applications.

Taken together, research in other application contexts implicate the technological immersion characteristics play a detrimental role for the creation of different dimensions of mediated historical experiences. A look at the media formats that are studied within the dissertation: social media and VR shows that they are classified by different levels of technological immersion. Furthermore, while VR is highly present in novel media presentations of history (e.g., Bunnenberg, 2020), the technological characteristics are not similar (Lewers, 2022). While some applications are only characterized by a panoramic view (360°-VR), others also offer the opportunity to interact within the virtually created historical environment (Head-Mounted-Display (HMD)-VR). When referring to the aforementioned characteristics of technological immersion introduced by Slater & Wilbur (1997) one can conclude that 360°-VR and HMD-VR are characterized by surroundingness and HMD-VR, furthermore, has embodiment. Moreover, 360°-VR can be used via a media platform's media player and users can look around by using the mouse or keyboard but also with VR goggles, which extend the characteristics to inclusiveness. But also, the technological immersive characteristics of social media accounts displaying historical figures differ so far from other media formats like textual narration, as they offer more vividness and extensiveness. In conclusion, novel media formats addressing historical topics are characterized by a different

extent of technological immersion, which suggests that they support mediated historical experiences in terms of presence. What all digital historical media formats have in common is that they are characterized by a higher technological immersion characteristic than textual narration.

6.2 The Role of Emotional Presentations

As emotional engagement was shown to play a significant role when considering the influence of media on morality (see Chapter 5), the question arises, which factors can promote the recipients' emotional engagement. In line with that, the media content itself is seen as a detrimental factor that influences the recipients' engagement in narrative media (e.g., Green & Brock, 2002; Slater & Wilbur, 1997). History education researchers observed the usage of the dramaturgical tool of emotionalization within novel media applications that address historical topics (e.g., Bunnenberg, 2018, 2020). As an example, in a VR application that deals with the German Democratic Republic in the 1970s, recipients were put in the perspective of a prisoner of the state security service (Stasi). The media application used emotionalization in so far as it, for instance, includes scenes in which the prisoner was treated harmfully by prison guards. In this regard, the scholars expressed concerns as they proposed that these media applications may emotionally overwhelm recipients (e.g., Lewers, 2022). Also, investigations in other contexts of applications have shown that emotional presentations lead to related emotional responses, and promote the experience of presence (e.g., Riva et al., 2007; Shin et al., 2018; Felnhofner et al., 2015). Moreover, researchers highlight that emotions during media reception do not differ fundamentally from those experienced in daily life situations (K. R. Scherer, 1998). This may also apply to emotions displayed by a media persona. Emotional representations of media persona (e.g., through mimicry) are perceived to support the experience of related emotional responses within recipients (e.g., Hatfield et al., 2014; Hatfield et al., 1993). Consequently, the presentation of sadness by a media persona in historical media may support feelings of sadness within recipients. Here, emotional contagion is often used as an explanatory

approach. Emotional contagion describes an automatic and unconscious process (e.g., Choi & Kim, 2021): the emotional contagion of the protagonist's expressed emotions (e.g., "If X felt sad, I felt sad as well."). Through automatic imitation and feedback people "catch" the emotion of the other person (Hatfield et al., 2009). Over time, scholars examined whether emotional contagion is also possible in the context of computer-mediated communication. For instance, researchers found that individuals receiving more positive posts on social media reported more positive feelings compared to negative feelings (Choi & Kim, 2021). Consequently, emotional representations of historical figures, as well as emotionalized historical content might support the experience of emotional responses. Moreover, emotional presentations were found to support the experience of presence (especially in VR; Diemer et al., 2015). For instance, Baños et al. (2004) found that emotional content inducing sadness impacts the experience of presence. Consequently, emotional presentations in historical media applications may not only impact recipients' emotional responses but also the extent of experienced presence.

6.3 Empirically Investigating the Role of Technological Immersion and Emotionality

Taken together, the previous part suggests that technological immersion and emotional presentations in historical media promote the recipients' mediated historical experiences. It can be assumed that historical media that is characterized by more technological immersion promotes especially the experience of spatial presence (e.g., Slater & Wilbur, 1997), whereby the influence of technological immersion on narrative presence (e.g., Pressgrove & Bowman, 2021; Sukalla, Bilandzic, et al., 2016) and social presence (e.g., Appel et al., 2012; Oh et al., 2018) cannot be fully derived. Furthermore, emotional presentations in historical media may promote, on the one hand, recipients' emotional responses to historical media (e.g., Riva et al., 2007), and, on the other hand, the experience of presence (e.g., Gall et al., 2021).

Therefore, the following empirical part addresses the subsequent research question:

Research question

Do [a] technological immersion and [b] emotional representations affect mediated historical experiences?

Same as in the first empirical part, the second (empirical part) will only address individual findings of the research papers included in the cumulus that refer to the aforementioned research question: The influence of technological immersion and emotional presentations on presence and emotions. Consequently, some of the research papers were already presented in the first empirical part (see Table 1, p. 29).

6.3.1 The Influence of Technological Immersion on Spatial Presence and Narrative Presence: *Research Paper II: Back to the Past—An Experimental Investigation of the Effects of Immersive Historical Environments on Empathy and Morality*^{‡‡}

In order to contribute to the research question of this empirical part, this paper addressed the influence of technological immersion on narrative and spatial presence. In particular, this investigation focused on the immersive properties of surroundingness (panoramic view) and vividness (richness of displayed information; Slater & Wilbur, 1997). One goal of the study was to compare recipients' experiences of presence in novel, more immersive technologies (e.g., 360° video) with traditional media used in history education (e.g., text, film). Moreover, the relationship between narrative and spatial presence in historical virtual environments, and emotional reactions (positive and negative affect) on a cognitive level was investigated. An online experiment was conducted with a representative sample of the German population ($N = 289$). In a one-factorial between-subjects design, participants were exposed to historical media that differed in their degree of technological immersion; participants either read a picture story, watched a video, or watched a 360° video. The media content was the same in all experimental conditions: The perspective of a prisoner in the

^{‡‡} Individual findings of this research paper were already presented in the first empirical part when considering the influence of presence on empathy and rational moral deliberation (see Chapter 4.1).

German Democratic Republic (GDR) in the 1970s. After exposure to the media application, participants were asked to answer several questions assessing narrative and spatial presence as well as the actual emotional constitution (positive and negative). Consistent with previous research, results have shown that technological immersion positively affected spatial presence, whereas narrative presence was not affected by technological immersion. More specifically, spatial presence differed significantly between the text and 360° video conditions, as well as between standard video format and 360° video. In addition, the analysis has shown a significant moderate correlation between emotional reactions (positive and negative) and spatial presence, as well as a strong correlation between narrative presence and emotional reactions (positive and negative). The study highlighted a strong relationship between spatial presence and narrative presence. In conclusion, the results indicate that the experience of spatial presence depends on technological immersion, while narrative presence was not influenced by the technological immersion aspects investigated. Furthermore, both spatial and narrative presence are strongly related to negative and positive affective responses (emotions). Consequently, the study highlights that technological immersion influences spatial presence and further highlights the interplay of presence and emotions while historical media exposure. Furthermore, the findings imply that narrative presence may not be influenced by technological characteristics.

6.3.2 The Influence of Technological Immersion on Spatial Presence and Physiological Arousal: Research Paper V: *The Past has Touched me – Investigation the Impact of Historical VR on the Recipients' Morality Considering Physiological Reactions*^{§§}

Building on the previous investigation, this research paper investigated the effects of technological immersion in immersive virtual historical environments on spatial presence and physiological arousal. As the previous research on historical immersive technologies has only examined presence through self-reported measures, this research also considered the actual

^{§§} Findings of this research paper were already presented in the first empirical part when considering the influence of spatial presence, physiological arousal and empathic responses on moral intuitions and moral orientation (see Chapter 4.4).

physiological arousal of recipients, as presence is known to be associated with automatic, unconscious responses (e.g., physiological arousal; e.g., IJsselsteijn et al., 2000). Therefore, the study aimed to compare recipients' experience of spatial presence and physiological arousal within a graphic novel to highly immersive VR media. The laboratory experiment included a sample of Dutch citizens ($N = 96$). In a one-factorial between-subjects design, participants were exposed to historical media that differed only in their level of technological immersion; participants either read a graphic novel or used the Anne Frank House VR application. Both included the same information and visuals. In line with the hypotheses, a higher experience of spatial presence was found when participants used the VR application. However, no significant differences in physiological arousal were found, nor was the experience of spatial presence related to physiological arousal. Exploratory analysis has shown that physiological arousal was positively related to prior knowledge about Anne Frank and her story. These findings indicate that the recipients' individual (prior) involvement may be an important factor that influences the recipients' physiological engagement within historical media. Consequently, the research papers II and V suggest that the technological immersive characteristics of historical media promote the experience of spatial presence and empathic emotional responses. Moreover, technological characteristics in this context of application did not significantly affect unconscious affective processes like the recipients' physiological arousal. Therefore, the findings suggest that presence and emotional responses may rather come from the recipients' appraisal of the situation (see Arnold, 1960), and highlight the cognitive component of these dimensions. Nevertheless, the influence of emotional presentations in historical media on these dimensions remains unexplored. Therefore, the following research papers take into account the influence of emotional presentations in different historical media.

6.3.3 Emotional Presentations on Social Media: Research Paper VI: #Histogram: An Investigation of Emotions in Historical Representations on Instagram.

This research paper is an approach to the usage of emotional presentations in historical media. Therefore, this investigation focused on the representation of historical

figures in social media by taking the German Instagram Account @ichbinsophiescholl into account. Here, producers emphasized that the emotional and partly fictional representations of historical figures (e.g., the resistance fighter Sophie Scholl in World War II, @ichbinsophiescholl) on Instagram should provide emotional, subjective access to the past (SWR, 2021). However, as already mentioned in Chapter 2.2, the usage of emotions in historical representations is highly controversial within the community of historical education researchers (e.g., Bunnenberg, 2020; Lewers, 2022) as they are thought to emotionally overwhelm learners (e.g., Bunnenberg, 2020), and reduce their ability to distance themselves from the representation and distinguish fact from fiction, which is essential for learning processes (Oswalt, 2012). Therefore, this investigation aimed to analyze in interdisciplinary collaboration of media psychology and history education researchers, the extent of emotional representations in historical social media by using the German Instagram account @ichbinsophiescholl as an example. In the qualitative content analysis, the posts of the Instagram account were analyzed regarding the amount and level of emotions displayed. The Instagram account contains 270 posts, from which those showing historical figures from a first-person perspective were selected. It was decided to choose these photos to analyze facial expressions that display emotional expressions (116 images; ~ 43 %). A deductive approach was used for the analysis, and a coding system was developed to analyze the nonverbal behavior displayed (facial expressions; oriented towards the Facial Action Coding System; Ekman & Friesen, 1978). Specific movements of the facial muscles were associated with basic emotions: happiness, sadness, fear, and anger. Based on qualitative content analysis, the 116 items were distributed among the four emotions as follows: 44.8 % were assigned to joy, 15.5 % to sadness, 13.8 % to fear, 14.7 % to anger, and unspecified (11.2 %). The qualitative analysis suggested that facial movements were consciously used to display specific emotions within the produced, constructed Instagram posts of historical Instagram accounts, as the majority of posts displayed specific emotions. In addition, the analysis has shown that within the posts depicting people on the Instagram account, the expression of joy was the majority.

Building on these findings, an explorative quantitative online experiment ($N = 170$) with a within-subjects design was conducted to investigate whether the presentation of emotions in social media posts of a historical figure support related emotional responses within recipients. The results indicate that Instagram posts that display specific emotions through nonverbal cues are more likely to lead to the report of related emotions. For example, recipients were more likely to report the experience of positive emotions than negative emotions when viewing a historical figure expressing joy. Taken together, this research paper highlights that emotional presentations are used in novel historical media formats like social media and, furthermore, indicates that these presentations can influence the recipients' emotional state.

6.3.4 The Influence of the Emotional Level and Technological Immersion in VR: *Research Paper IV: Historical Time Machines: Experimentally Investigating Potentials and Impacts of Immersion in Historical VR on History Education and Morality.****

To further contribute to the research question of this empirical part, this research paper investigated the influence of the level of emotional presentations in VR. In two studies, the effect of the level of content's emotionality on narrative presence, spatial presence, and emotional responses (positive and negative affect) were investigated. Based on previous research showing that VR leads to related emotional responses (e.g., Riva et al., 2007), it was hypothesized that the level of content's emotionality would positively influence emotional responses to historical VR. Based on the findings of research paper II and previous investigations in other contexts of applications, it was assumed that the level of content emotionality would support the experience of spatial presence and narrative presence, as both are strongly associated with emotions (e.g., Green & Brock, 2002; Riva et al., 2007).

Additionally, the effect of technological immersion on recipients' experience of spatial and narrative presence was examined by comparing the use of a 360° video with the use of the same video with VR goggles to gain insights into the influence of the technological immersion

*** Other findings of this research paper were already presented in the first empirical part when considering the influence of presence on empathy and rational moral deliberation (see Chapter 4.3).

aspect inclusiveness. Two experiments following a 2 (emotionality of content) × 2 (reception of additional information) between-subjects design were conducted, in which participants were exposed to historical VR via a media player (Experiment 1, $N = 493$) or VR goggles (Experiment 2, $N = 99$). Contrary to the expectations, the results of the study have shown that the level of content's emotionality did not support recipients' engagement in terms of spatial presence, narrative presence, and emotional response in historical VR. This means that participants, who viewed the part of the historical VR that was rated as more emotional did not report feeling more present or emotionally aroused afterward. Furthermore, the results have shown that recipients who used VR goggles reported a higher experience of narrative presence and spatial presence than those who used the platform's media player to watch the 360°-VR. Taken together, the results highlight the impact of the technological immersion aspect inclusiveness on spatial presence and narrative presence. Furthermore, the findings imply that the level of emotional presentations in historical media may not significantly influence the experience of presence nor the self-reported emotional engagement.

6.4 Empirically Investigating The Role of Users' Interaction Habits

Consequently, the previous presented empirical findings could show that media characteristics can influence different dimensions of mediated historical experiences. However, besides media characteristics, users' dedication to media influences their actual media engagement (e.g., Lim et al., 2015). The users' interaction opportunities also depend on the technological characteristics of media. For example, social media offers a range of interaction opportunities: Users can like posts, comment, send direct messages, respond to stories and so on. Consequently, on social media users can actively choose to which extent they engage with a historical figure, and, in turn, with historical moral media content. In this regard, a previous study has shown that the user's interaction with a media persona on Facebook promotes parasocial interaction processing (Kyewski et al., 2018). Therefore: the user's interaction on social media may promote mediated historical experiences. This may also apply to other media

formats. For instance, also VR offers different possibilities to interact with a (historical) virtual environment (Slater & Wilbur, 1997). Here, previous investigations found that the user's behavior within a virtual environment influences the experience of spatial presence (Balakrishnan & Sundar, 2011; Kim et al., 2018). For example, Balakrishnan and Sundar (2011) found that users experienced a higher sense of presence within VR when they navigated themselves through the mediated environment. Consequently, users' interaction habits may influence their mediated historical experiences. Therefore, the following part will answer the subsequent research question:

Research question

Do user interaction habits influence mediated historical experiences?

Based on these findings the present work will be able to not only illustrate how media characteristics influence the recipients' engagement in historical media but also how users' behavior affects their mediated historical experiences and consequently influence how strongly historical media will impact their morality.

6.4.1 The Influence of Users' Interaction Habits on Social Media: *Research Paper VII: Posting from the Past - A Longitudinal Study of the Potentials of Parasocial Interaction with a Historical Figure for History Education.*

This research paper investigated the influence of users' interaction habits on social media on the parasocial interaction processing. Thereby, this paper focused on the German historical Instagram account @ichbinsophiescholl. On this social media account, the representation of the historical figure *Sophie Scholl* is presented from a first-person narrative by nonverbally and verbally addressing followers in stories or posts. Consequently, it offers personalized access to moral historical media. This type of representation is known to promote the experience of parasocial interaction: the illusion of face-to-face interaction with a media figure (Horton & Wohl, 1956). However, the concept of PSI was originally defined by one-sidedness, control of the interaction by the media figure, and a lack of mutual development between the two parties. In contrast, the technological features of social media platforms

provide several interaction opportunities (e.g., commenting, liking) that allow followers to interact with media figures. Previous studies have shown that actual interaction with a media figure on social media can promote PSI (Kyewski et al., 2018; McLaughlin & Wohn, 2021). Although investigations already showed that recipients experience social presence with real figures (e.g., newscaster) as well as fictitious media characters, this context of applications may be a special case, as the displayed historical figure is a fictional presentation of a real person whose life has already passed (e.g., Berg et al., 2023). Therefore, this longitudinal study investigated whether the users' actual interaction with a historical figure on social media (e.g., liking, commenting) supported parasocial interaction processing and, further, whether parasocial interaction processing increases over time (see Horton & Wohl, 1956). Since users' interests are known to influence which social media accounts they engage with (e.g., Parmelee & Roman, 2019), it was further investigated whether the followers' interest in historical topics promoted their interaction on social media. By further taking the relation between different facets of presence into account, it was examined whether parasocial interaction processing decreases the consciousness of reality, as previous research has shown that the users' engagement in fictional presentations decreases their ability to distinguish between fiction and reality (Jarzyna, 2021). To examine this, followers of the German historical Instagram account: *ichbinsophiescholl* were surveyed at two different points of time ($N_{t1} = 239$; $N_{t2} = 84$). The results have shown that followers' actual interaction with the historical Instagram account promoted parasocial interaction processing, whereby actual interaction was related to the followers' general interest in history. Although parasocial interaction processing did not differ significantly between the two measurement time points, the long-term analysis indicated an increase in parasocial interaction processing over time when followers frequently interacted with the historical figure on Instagram. Moreover, it was found that the parasocial interaction processing with a historical figure on social media was negatively related to their consciousness of fictionality (see illusion of reality, see Chapter 2.1). Consequently, this longitudinal investigation highlights that users' interaction behavior promotes their mediated

historical experience by promoting parasocial interaction processing and, moreover, supports the illusion of reality. Furthermore, the study illustrates the role of user characteristics in terms of topic-related interests in this context. Here, it was shown that the topic-related interest supports users' interaction behavior with the historical figure online and, therefore, promotes the experience of parasocial interaction and, subsequently, parasocial interaction processing. Consequently, the study highlights that user characteristics and behavior can promote the recipients' engagement in historical media.

7 Conclusion: Influences on Mediated Historical Experiences

This empirical part investigated the influence of media characteristics and user interaction behavior on mediated historical experiences. Furthermore, the interplay of the dimension of mediated historical experiences was examined. In the following the main findings are summarized and briefly discussed below. A detailed theoretical discussion, interpretation, and embedding of the results is given in Chapter 8.

Taking the interplay of the dimensions of mediated historical experiences into account, several investigations illustrate the interplay between emotional responses (positive and negative) and presence (research papers II, IV). Here, the relation was found for spatial presence and narrative presence, which is in line with previous research investigating the relations between emotions and presence by taking other media applications into account (e.g., Shin et al., 2018; Green & Brock, 2002). Furthermore, research paper II found a moderate relation between the experience of narrative presence and spatial presence. Consequently, those recipients who felt more present within the virtual location they were exposed to, also felt more present within the related plot. These findings highlight the relationship between these dimensions of presence. By considering the definitions of dimensions (e.g., Agrawal et al., 2020), the findings suggest that the recipient's attention to the focused historical environment may further promote the attentional focus on the presented plot, and vice versa. Furthermore, research paper VII indicated that parasocial interaction processing was positively related to

the illusion of reality. This finding implies that recipients who strongly engage with historical media are less aware of the fictionalization, and construction character of the history presentations. Also, contrary to previous research (e.g., IJsselsteijn et al., 2000; de Kort et al., 2007), the experience of spatial presence was not significantly related to physiological arousal when being exposed to historical media applications (research paper V). Here, rather the recipients' prior knowledge was found as a detrimental factor that promoted physiological arousal. Consequently, the findings imply that rather recipients' predispositions are detrimental when considering the affective responses to historical media than technological characteristics, or cognitive processes that are fired by technological characteristics.

Taking the influence of emotional presentations into account it was shown that emotional representations are used within presentations of historical figures on social media (research paper VI). These findings highlight the role of emotional presentation within historical media presentations, and contributes to the ongoing discussion of history education researchers, who assume that such approaches to history on social media may emotionally overwhelm users by emotionally displaying the atrocities of the past (e.g., Berg et al., 2023; Bunnenberg, 2022; Berg; Burkhardt, 2022). Furthermore, research paper IV has shown that the level of content's emotionality in immersive historical media applications did not promote emotional responses, or the experience of presence. The results suggest that historical media applications are emotionally charged either way because they address historical topics associated with specific emotions (e.g., guilt, grief; Holocaust; Brauer, 2016). As a result, the degree of emotional representation within media applications may not be as influential in terms of emotional responses. In summary, the empirical findings indicate that the exposure to historical media applications is connected to the experience of emotions (e.g., research papers II, IV, VI) and, moreover, indicates that producers of historical social media use emotional presentations (i.e., emotionalization; research paper VI). However, against expectations of history education researchers (e.g., Lewers, 2022), it was found that besides

displaying negative emotions (e.g., fear) within historical media presentations on social media positive emotional representations are shown as well.

Moreover, in line with previous investigation in other contexts of applications (e.g., Breves, 2020; Fonseca & Kraus, 2016; Lee, Kim, & Kim, 2017; Troeger & Tümler, 2020), the studies have shown that technological immersion is a decisive factor that influences the experience of spatial presence (research papers II, IV, V). Furthermore, inclusiveness (Slater & Wilbur, 1997, see Chapter 6.1) was shown to promote the experience of narrative presence (research paper IV), whereby extensiveness did not turn out as influential technological characteristics that promotes narrative presence (research paper II). Consequently, technological immersion may be more influential in promoting spatial presence than narrative presence.

In sum, this empirical part illustrates that mediated historical experiences are influenced by media characteristics (technological immersion and displayed emotions), and users' interaction habits. Furthermore, they highlight the influence of other personal characteristics, like prior-experience and historical interest. Consequently, media and user characteristics can be perceived as detrimental factors that influence the recipients' engagement in (moral) historical media and, further, decide how strongly their morality is affected.

IV Discussion

So far research that investigated the influence of media exposure on morality mainly focused on the effect of moral media content. Such investigations suggest that also historical media including moral content can influence the recipients' morality. However, studies indicated that the recipients' engagement, in terms of emotional engagement and the recipients' immersion in media content, can promote the influence of media on the recipients' beliefs (e.g., Green & Brock, 2002; Green et al., 2019) and, moreover, support moral reasoning when being exposed to moral media (e.g., Eden et al., 2017). Nevertheless, so far, the recipients'

engagement with the media content has been mainly left unnoticed. This dissertation aimed to fill this research gap by taking the recipients' engagement in historical media into account. Here, the dissertation focused on the latest historical media applications: social media and VR which aim to provide recipients' the opportunity to engage with the past more strongly and, moreover, actually experience it (e.g., Lewers, 2022; Berg & Lorenz, 2022). Consequently, it was asked how the recipients' engagement in historical media mediates the influences of moral historical media on the recipients' morality. Thereby, the dissertation took two prominent perspectives on morality into account: the rationalist and intuitive perspective. Rationalist approaches on morality as proposed by Kohlberg (1958) assume that moral judgments are reached through a process of rational deliberation promoted by the recipients' ability of empathy including perspective taking. Consequently, an individuals' morality is supported by their engagement with the environment and other perspectives. This also applies to media (e.g., Wright et al., 2020). In contrast, the intuitive approach to morality suggests that moral judgments are mainly reached based on moral gut feelings derived from different innate moral intuitions (Haidt, 2001; Haidt & Joseph, 2007). It is suggested that the presentation of moral intuitions in media can promote the salience of these moral intuitions in subsequent moral judgments (Tamborini, 2012). Therefore, previous investigations that examined the influence of moral media on the recipients' morality differed depending on the perspective of morality they referred to. As both perspective on morality can coexist and might come together when making moral judgments (e.g., Haidt, 2001), this dissertation asked how the engagement with historical media can, on the one hand, promote rational moral deliberation by offering new perspectives and, on the other hand, affects the salience of related moral intuitions. Furthermore, it is investigated whether moral intuitions and rational moral deliberation indeed influence each other.

Overall, the dissertation makes several theoretical contributions. On the one hand, it illustrates the role of recipients' engagement with moral (historical) media content when considering its impact on morality, and extends previous theoretical considerations of the

influence of media on morality. On the other hand, the dissertation brings together both perspectives on morality and thus provides an overarching overview of the influence of media on morality.

8 General Conclusions from Empirical Studies

The empirical studies allow several derivations regarding the role of recipients' engagement (here: mediated historical experience, see Chapter 3) in moral historical media when considering its influence of morality. Furthermore, the studies illustrate how media and user characteristics influence mediated historical experiences. In the following, the main findings will be discussed, and put in the context of application by also considering a history educational perspective. In the end, a three-component model is proposed which illustrates first that media and user characteristics affect mediated historical experience. Second, it presents how affective and cognitive processes of mediated historical experiences affect empathy, moral intuitions, and moral orientation. Following this logic, first the dynamics of processes of mediated historical experiences will be illustrated and discussed. Then, the influences of media and users' characteristics will be presented, followed by the impact of mediated historical experiences on empathy, moral intuitions, and moral orientation. Lastly, an overarching model is illustrated derived through the empirical studies of this dissertation that shows how mediated historical experiences influence empathy and morality.

8.1 Dynamics of Mediated Historical Experiences

The studies of the dissertation illustrate the connection of different processes during media exposure. In more detail, the investigations showed a complex interplay of those dimensions of mediated historical experiences, which were classified in Chapter 3: illusion of reality, narrative presence, spatial presence, social presence, and emotions (physiological arousal, self-report). In this regard, in the following the main findings of the dissertation are discussed.

8.1.1 The Interplay of Narrative and Spatial Presence

Several studies showed that spatial presence and narrative presence are related (research article II, IV). To interpret these findings, it is necessary to focus on the definitions of both concepts. Spatial presence is defined as the “sense of being there” (Slater & Wilbur, 1997; p. 604), whereas narrative presence describes the immersion in narration (Green & Brock, 2000). Consequently, spatial presence is mainly characterized by a location-dimension as reaction to visual elements (e.g., in VR; Phillips & McQuarrie, 2010), whereby the focus of narrative presence lies in the narration and presented plot. Thus, the results suggest that the attentional focus on the mediated environment (spatial presence) may also support attentional focus on the presented action (narrative presence) and vice versa. However, when considering the measures of narrative presence and spatial presence used in the studies, similarities in the items can be found (Hartmann & Schramm, 2008; Green & Brock, 2000). This should be considered when interpreting these findings. Furthermore, the similarity in the items and definitions highlight that already the conception, and definition of both concepts have common features. For instance, both concepts share an attentional focus favoring media (e.g., Agrawal et al., 2020). Therefore, the relation is not surprising.

However, the findings also highlight that spatial presence, and narrative presence are indeed distinct concepts as they are only moderately related (Hofer, 2013; Nowak, 2001; Wissmath et al., 2009). This is further underpinned by other findings of the dissertation’s studies, which show differences in the factors that influence them (see Chapter 8.2). These findings are of particular interest as, so far, there is no uniformity in the way these concepts are considered in media research (e.g., Agrawal, 2020). While some research considers the concepts separately, other studies have often used both concepts interchangeably when examining immersion in media research. As the present findings highlight that narrative presence, and spatial presence are indeed distinct concepts that influence each other, the findings provide important empirical evidence that the two concepts should be treated separately in research. Furthermore, this is of great importance in the present work, as both

concepts showed different influences on morality and empathy (see Chapters 8.4.2, 8.4.4). Taken together, the results show that narrative presence and spatial presence influence each other in narrative media exposure. Furthermore, they suggest that narrative presence and spatial presence are different concepts that should be treated separately in media research.

8.1.2 Emotions as Part of Historical Media Exposure

Regarding the recipients' emotional engagement in historical media, several studies highlighted the relation between emotional responses and the experience of presence (research papers I, II, IV, V). As an example, research paper II showed that the experience of spatial presence and narrative presence were strongly positively related to positive and negative emotions. In more detail, the study found that recipients, who were immersed in the historical virtual environment of a Stasi prison in the GDR in the 1970s (spatial presence) and, moreover, immersed in the perspective of a prisoner within this prison (narrative presence) reported stronger experiences of positive and negative emotions afterwards. These findings allow the theoretical derivation that the experience of presence in novel historical media is accompanied by emotional engagement. Such a relation was already proposed by Green & Brock (2002) in regard to the experience of narrative presence when being exposed to textual narration. Therefore, the findings not only extend these assumptions to the context of immersive historical media like VR but also extend this relation to the concept of spatial presence. Furthermore, the findings are of particular interest in this context of application as they show that the immersion in historical media not only supports related emotions, but also positive emotions like interest in history (research papers I, II). Regarding the relation between presence and emotional engagement, other researchers emphasized that the experience of presence does not have to automatically lead to emotional responses as, similarly to real life, mediated situations do not necessarily evoke emotional responses (Slater, 2004). Here, the scholar highlighted the role of the recipients' personal involvement. Therefore, the present findings, further, imply that in the context of media applications dealing with historical topics, recipients tend to engage emotionally. One explanation for this could be that those

presentations of the past atrocities (e.g., The Holocaust) are perceived to be connected to emotions like sadness and guilt (Brauer, 2016; Gundermann et al., 2021; Sheppard, 2022). This could, for instance, be grounded in socialization processes: Individuals learn how they should feel about the past and consequently attribute these feelings to situations when being confronted with atrocities of the past. Therefore, this effect can be especially observed in the German population, who are perceived to “learn” to feel guilty with the victims of the Holocaust (e.g., Brauer, 2016). Furthermore, such relations between the exposure to past atrocities and emotional engagement could be grounded in the recipients’ biographical involvement in the presented historical topics (e.g., Holocaust, GDR, World War II; Brauer, 2016). In more detail, if recipients know that their families have suffered under the German Nazi Regime in World War II, they may be more likely to be emotionally moved when being exposed to historical content related to it (e.g., Green, 2010). When referring to the *appraisal theory* (Arnold, 1960) the findings may underline the cognitive component of emotions as they suggest that specific context-specific factors, like their prior-knowledge, influence the emotion appraisal after historical media exposure.

Moreover, the present work showed that prior knowledge about the presented historical topic was also correlated to the recipients’ physiological arousal (research paper V). This, furthermore, underlines the role of prior experiences with the subject in this context of application. Also, because physiological arousal was not related to spatial presence and affective, empathic responses in research paper V as previous investigations indicated (e.g., de Kort et al., 2007; Eisenberg et al., 1987), the aforementioned role of prior experiences should not remain unnoticed in this application context. In conclusion, the recipients’ personal involvement may have a high impact. Furthermore, the findings suggest that not only the media itself is decisive for the recipients’ perception of specific feelings, but there are also several other (individual) factors that influence emotions when being exposed to historical media (see Chapter 8.3.2). These are important findings in this context of application as historical presentations, and accompanied presentations of past atrocities are perceived as an

emotionally charged topic. With respect to the Beutelsbacher Consensus (see Schiele & Schneider, 1977), the findings emphasize that the general attribution of specific emotions to historical events should not remain unnoticed: If recipients are generally more involved in the topic, they may more likely emotionally engage in historical media on a cognitive and affective level.

Taken together, these findings indicate that emotions play a significant role in the exposure to novel historical media: recipients tend to emotionally engage. Moreover, the findings give an important contribution to the ongoing debate of history education researchers regarding the usage of emotions in such media (see Bunnenberg, 2018; Lewers, 2022). First, the findings show on a descriptive level that an emotional overload of the recipient does not necessarily have to be feared as the reported emotions were only moderate. Second, the studies highlight that besides related negative emotions due to the presentation of atrocities of the past, recipients also report positive emotions. Here the novel, entertainment factor of such media (e.g., VR), which supports the recipients' interest, curiosity, and enjoyment of such media applications may be a possible explanation. However, the findings indeed show that negative emotions like sadness and guilt are triggered by such historical media applications (research papers I, II). As the investigations further highlight that the experience of presence promotes the recipients' emotional reaction, it can indeed be assumed that such novel media formats that aim to immerse recipients into the historical media content more likely lead to stronger emotional reactions than traditional media like textual narration or movies. Lastly, the findings suggest that the recipients' general involvement in the presented historical topic may influence their emotional engagement in historical media on cognitive and affective level. To investigate this relation in more detail, for instance by considering the recipients' biographical influences (e.g., if their families have been victims of the Holocaust), future research should be done.

8.2 Media Characteristics Shape Mediated Historical Experiences

With respect to the media applications studied (social media and VR), the dissertation illustrates the influence of two media characteristics on mediated historical experiences: technological immersion and content's emotionality. In the following the main findings will be presented and discussed.

8.2.1 Technological Immersion Promotes the Experience of Presence

The studies showed that also in the context of historical media applications technological immersion positively affected spatial presence (research papers II, IV, V). Here, the investigations showed that different technological immersion aspects positively affected spatial presence: surroundingness, inclusiveness, extensiveness, vividness, proprioceptive matching, and virtual body (see Slater & Wilbur, 1997; Chapter 6.1). For instance, in research paper V, spatial presence was significantly higher when using a VR with HMD compared to reading a graphic novel. In research paper IV, the experience of spatial presence differed significantly between using VR goggles and watching the same 360°-VR application in the platform's media player. Similar relations were already found in other contexts of application (e.g., Fonseca & Kraus, 2016; Breves, 2020). In sum, the studies showed that the experience of spatial presence is supported by the richness of technological immersion of historical media applications. However, contrary to previous investigations in this context of applications the relation does not seem to be linear (e.g., Cummings & Bailenson, 2016). This means that one cannot say that a higher level of technological immersion necessarily supports the experience of spatial presence. It is much more the case that individual technological immersion aspects, like surroundingness and inclusiveness, turned out to be determined factors that supported the experience of presence. An example is that recipients reported a higher sense of spatial presence when wearing VR goggles compared to watching the same 360-degree VR application via the platform's media player (research paper IV). Here, the hiding of the physical environment through the glasses can be a possible explanation for the recipients' inevitably attentional focus in favor of the mediated historical environment.

Regarding the impact of technological immersion on narrative presence, the empirical findings were ambiguous. Research paper II did not find differences in narrative presence depending on technological immersion aspects. Research paper IV showed significant differences in narrative presence depending on the used technology (media player vs. VR goggles). Previous investigations that focused on other media applications so far did not find any differences in narrative presence depending on the media technological immersive characteristics (e.g., virtual gardening; Pressgrove & Bowmann, 2021). Therefore, the findings suggest that the technological immersion aspect inclusiveness may again be a determinant factor (research paper IV). This, again, can be explained due to the media devices characteristics: VR goggles automatically block out the physical environment which, in turn, promotes the recipients' attentional shift in favor of the presented historical content.

Furthermore, against previous findings in other application contexts, physiological arousal was not influenced by technological immersion (research paper V). Here, other factors like the recipients' biographical engagement, and knowledge about the presented historical content played a more influential role. This influence could be further confirmed by the emotionally charged topics, and the relation of history and emotions (Brauer, 2016). As a consequence, such emotional presentations of the past may generally lead to emotional reactions and, therefore, technological characteristics might not be that influential than in other contexts of application that are less emotionally charged. Furthermore, these findings underline the differences between the cognitive, conscious component and affective, unconscious component of presence (physiological arousal). The findings suggest that recipients integrate the circumstances when reporting presence which leads to an effect of technological characteristics on presence, whereby affective, unconscious processes like physiological arousal may not be directly affected by technological characteristics. However, it is important to consider that these differences may especially apply to the context of historical media as they are generally emotionally charged, and technological characteristics are therefore not that influential, as previous studies in other application contexts have found

differences in physiological arousal depending on technological immersive characteristics (e.g., de Kort et al., 2007).

In conclusion, the most important findings regarding the influence of technological immersion on presence are, first, that the studies could show that especially the technological immersion aspect of inclusiveness has a detrimental impact on narrative presence and spatial presence. These findings contribute to the theoretical assumption in so far as they highlight that some technological immersion aspects might be more influential than others. Furthermore, it highlights the high differences in the experience of presence between using an 360°-VR in the platform's media player and VR goggles. Consequently, the findings highlight that media characteristics, such as physically hiding the surroundings through VR goggles, are influential factors for the experience of spatial and narrative presence. Second, the studies suggest that spatial presence is more strongly influenced by technological characteristics than narrative presence. These findings further contribute empirical evidence to the suggestion of treating the concepts spatial presence and narrative presence separately in research.

8.2.2 The Tension Between Emotional Representations and Emotional Overload

Regarding the effects of emotional presentations in media applications dealing with historical topics, the findings contribute to the understanding of emotional presentations in historical media and their impact on emotional responses. The dissertation offers first empirical investigations regarding this relation in the context of application. First, the qualitative content analysis of research paper VI demonstrated that emotional presentations are commonly used in presentations of historical figures on social media. Noteworthy, the analysis revealed that contrary to what the content (e.g., resistance against Nazi Regime in World War II) suggests, also the presentation of positive emotions (e.g., happiness) is commonly used. These are important findings in so far as they show that against expectations such emotionally charged topics like the atrocities of the Nazi regime in World War II, and the resistance fight, which ends with the execution of the presented historical figure are not only presented by negative connotated emotional presentations like fear, and sadness but also by

positive connotated emotional presentations like happiness are used. As research shows that on Instagram the presentation of positive emotions in posts is the majority (Waterloo et al., 2018), one possible explanation for this finding could be that producers of historical social media accounts make use of the logics and modes of presentation of the used platform. Consequently, the findings make a significant contribution regarding the ongoing debate within the community of historians, society, and press who fear that such historical social media accounts could violate the prohibition of emotional overload (e.g., Berg et al., 2023; Hespers, 2022). Furthermore, the findings contribute empirical data to the objections of critics who asked if such a presentation of the past is indeed an adequate way to address the atrocities of the past (e.g., Berg et al., 2023; Hespers, 2022). In addition, research paper VI indicated that the presentation of emotions based on nonverbal cues by the historical figure on social media influences the followers' emotional state. With reference to previous studies in the social media context (e.g., Ferrara & Yang, 2015) it can be assumed that the more emotions were displayed, the more likely followers were affected emotionally (negatively and positively). Similar to face-to-face situations, recipients may be emotionally affected by the interaction partner's emotional expressions (Hatfield et al., 1993). Consequently, especially in regard to the amount of emotional presentation in images which are, moreover, combined with textual emotional expression in captions (e.g., Waterloo et al., 2018), such historical social media accounts can be criticized from a history education perspective. The findings indicate that against suggestions of history education researchers, such historical social media use the emotionalization of the historical content to a great extent. These are important findings from a history education perspective as previous investigations found that the emotional engagement in (historical) media can distract from the historical content and, therefore, decrease the factual knowledge transfer (e.g., Ahn et al., 2022; Parong et al., 2021). Consequently, the findings suggest that the emotional presentation of history accompanied by the recipients' engagement with historical media is not an adequate tool for the transfer of historical knowledge.

When taking immersive historical media (VR) into account, one study of the dissertation showed that the extent of displayed emotions did not have a significant impact on the experienced emotions (research paper IV). This means that being exposed to historical media that were rated as particularly emotional did not lead to significant higher emotional responses. On the one hand, these findings could imply that historical media is in general emotionally charged and that the extent of emotionality did not have a significant impact on the recipients' emotional engagement. On the other hand, with a view on the descriptive values of the reported emotions (research papers I, II, IV) the findings might indicate that such emotional presentations do not lead to such strong negative emotions as assumed by history education researchers. However, the previously presented influencing factors on emotional engagement should not be left unnoticed (e.g., prior knowledge, the experience of presence).

In conclusion, the studies give first empirical insights into the mechanisms of emotional presentations in novel historical media. Research paper VI showed that indeed emotional presentations are commonly used within historical media presentations on social media. Interestingly, the qualitative content analysis showed that not only negative connotated emotional presentations are used as suggested by history education researchers (see Burkhardt, 2021) but also positive emotions are displayed by the historical figure online. These findings suggest that producers make use of the common stylistic means of social media. Also, regarding the reported emotions it was found that not only negative emotional responses occurred (research papers I, II, V). This can on the one hand be explained by the novel entertainment factor of such media (e.g., VR; social media), which may support the recipients' interest, curiosity, and enjoyment of such media applications. On the other hand, such positive emotions may be a response to the positive emotional presentations of, for instance, a historical figure on social media (see research paper VI). Taken together, it can be concluded that emotional presentations lead to emotional responses and, furthermore, that positive as well as negative emotions play a role in mediated historical experiences.

8.3 The Influence of The User

Besides media characteristics, user characteristics may influence mediated historical experiences. In this dissertation, the focus was placed on two aspects: user behavior during media exposure specifically in relation to the investigated media (social media), and other personal characteristics and predispositions that were found to influence recipients' mediated historical experiences. The following section will present and discuss the main findings.

8.3.1 User Behavior Promotes Historical Experiences

Within research paper VII it was found that the recipients' engagement with a historical media account affected parasocial interaction processing: „the interpersonal processes between persona and user that take place during media exposure” (Schramm & Hartmann, 2008, p. 386). These findings suggest that the way and manner how recipients engage with historical media content influences their mediated historical experiences. For example, those recipients, who interacted more on social media platforms, for example by writing comments or private messages, processed the presented historical content more affectively and cognitively through the personalized access to history (research paper VII). However, whether this relation is indeed causal cannot be fully clarified. By referring to previous investigations (Scherer et al., 2022), it can be assumed that an increase parasocial interaction processing, in turn, supports the creation of parasocial relationships: “an enduring relationship that a media user forms with a mediated performer” (Dibble et al., 2016, p.1). The experience of an intimate relationship with a media persona might, in turn, also foster the recipients' interaction with the media persona. This means that recipients experiencing a parasocial relationship with historical figures as consequence to parasocial interaction processing might more likely interact with historical figures online by, for instance, commenting or liking their posts. This, in turn, might promote parasocial interaction processing. To clear this interesting interplay of parasocial relationships, parasocial interaction processing and actual interaction on social media with historical figures, future research should be done. However, it can still be concluded

that the recipients' interaction with historical media promotes their mediated historical experiences, including the affective and cognitive processing of the historical content.

8.3.2 The Influence of Personal Characteristics and Predispositions

Moreover, the investigation showed that the recipients' interest in historical topics supports their interaction with historical media online. This further highlights the impact of personal characteristics (also discussed in 3.1.2). Similar effects can be expected for other media applications. For example, in the case of immersive historical media applications on popular online video platforms (e.g., YouTube), it can be assumed that the recipients' interest will affect whether and to what extent they engage with historical content (e.g., Slater & Wilbur, 1997). Furthermore, especially when considering the users' interaction behavior on social media, personal characteristics like the general tendency to interact on social media may influence their actual behavior. In this vein, research indicates that individuals have a general tendency regarding the extent to which they interact on social media, which consequently affects social media influences (e.g., Meier & Krause, 2022). While some people generally engage strongly, for instance, by writing comments or reacting to stories, others are more passive social media users who mainly watch posts and stories and rarely actually interact with media persona online. Therefore, this personal characteristic may also influence mediated historical experiences independently of the recipients' interest in the topic. However, again, these relations cannot be assumed to be clearly causal. The studies of the present work were able to show that processes of mediated historical experiences are positively related to topic-related interests (research papers IV, VII). For instance, research paper VII showed that parasocial interaction processing with a historical figure on Instagram was positively related to the interest in the historical figure. Likewise, research paper IV found a positive relation between the experience of presence in historical immersive environments, and interest in the historical topic afterwards. Therefore, the relation between topic-related interest and engagement might be rather reciprocal than causal. However, the findings highlight the positive influence of users' interest on mediated historical experiences and vice versa.

Consequently, the findings highlight the role of individual characteristics and predispositions on the recipients' affective and cognitive processes during historical media exposure. Therefore, the dissertation's studies emphasize that especially in the context of historical media the influential factors like interest in the historical topic, and prior knowledge (see Chapter 8.2.2) promote the recipients' engagement in historical media. Consequently, the influence of personal characteristics should always be thought of when investigating media influences.

8.4 Influences on Morality and Empathy

The previous chapter addressed the influence of media characteristics and user behavior on mediated historical experiences. In the following, the main findings regarding the impact of (historical) moral media and mediated historical experiences on empathy and morality will be presented.

8.4.1 Recipients Evaluate (Im)Moral Behavior During Media Reception

Research paper I illustrated that recipients evaluate presented (im)moral behavior in regard to their own moral values in the context of historical media applications. The qualitative research showed that users of the VR applications, which placed them in the perspective of a prisoner in the GDR in the 1970s, especially evaluated the immoral actions of the prison guards (e.g., body search upon arrival; interrogation methods). They, for instance, reported perceiving the behavior of the prison guards as harmful. These findings strengthen the suggestions of Tamborini (2012) who proposed in the Model of Intuitive Morality and Exemplars (MIME) that the recipients' moral evaluation is one part of media reception. Based on the disposition theory of Zillmann (1996), Tamborini (2012) argued that the user's affective reaction to media content will be positive to the extent they perceive it as consistent with their moral-domain system. Although the studies could not provide information about the recipients' evaluation of the historical media application in relation to their moral evaluation, the findings contribute first empirical evidence regarding this assumption in the context of novel historical media:

Moral evaluation is one part of the historical media exposure. In conclusion, research paper I highlights that moral evaluation is one part of the reception process of moral historical media. Furthermore, the findings imply that recipients perceived the presented historical media content as morally relevant. Both findings are a starting point to see how historical media exposure affects the recipients' morality. Here, the following findings offer deeper insights by illustrating how different processes during media exposure influence the recipients' morality.

8.4.2 The Key Role of Narrative Presence

Several studies highlighted the key role of the experience of narrative presence while historical media exposure when considering the influence of media on morality and empathy (research papers II, IV). For example, research paper II showed a strong relation between empathy and narrative presence. Here, on the one hand, the recipients' general ability of empathy might support the experience of narrative presence (e.g., Johnson, 2012). On the other hand, the attentional focus on the presented plot (e.g., Green & Brock, 2000) may promote the recipients' empathy as recipients can gain new experiences (Eisenberg & Strayer, 1987). This could also be one explanation for the findings regarding the impact of narrative presence on moral orientation (research paper IV). Here, also the attentional focus on the moral plot may, on the one hand, promote the perception of experiences and, on the other hand, support narrative perspective-taking: recipients are immersed into another perspective (e.g., a prisoner of the GDR). Of course, the second explanation can only apply to media applications that show a specific perspective. Nevertheless, both reasons could explain how this process during media exposure affects moral rational processes afterwards.

Furthermore, Green & Brock (2002) highlighted the recipients' emotional, less reflective processing of the presented content when experiencing narrative presence. The researchers suggested that recipients who were strongly involved in the narration did not question the content and, therefore, were more likely to adopt the presented attitudes. The present findings indicate that this could also apply to moral attitudes and presented moral foundations. The experience of narrative presence when being confronted with the

presentation of emotional, moral content promotes the salience of related intuitions (research paper IV). In this regard, narrative presence and emotional engagement were positively related to related moral intuitions (e.g., fairness). Additionally, Tamborini (2012) suggested that morally charged content is more likely to be remembered. Here, Tamborini (2012) referred in the MIME to the exemplification theory (Zillmann, 2002), which proposes that events portrayed in a vivid, emotional, and concrete manner will have a stronger influence. The studies in the dissertation were able to empirically demonstrate an interplay of emotional presentations, the experience of narrative presence, and the accompanying emotional engagement that promoted the impact of media content on related moral intuitions. A further possible explanation could be that the recipients' increased engagement in the narration, which creates the impression that they are part of the presented story, may support the impression that they actually gain an experience in the past, which is consulted in subsequent moral judgments. But also here, the attentional focus on the presented moral plot may just support the perceived salience of moral intuitions in media which subsequently supports the salience of those moral intuitions after media exposure.

In conclusion, the studies provide important empirical contributions to the suggested short-term effects proposed in the MIME. The MIME suggests that the presentation of moral exemplars in media promotes the salience of related moral intuitions afterwards (see Chapter 1.2). The present findings extend this relation by emphasizing the significant role of recipients' emotional and narrative engagement in emotional (historical) media when considering the influence of media on morality. Overall, the findings demonstrate that, in addition to the media content, the recipients' engagement is decisive for the extent of the influence. Therefore, the findings highlight the importance of narrative processing when examining the impact of media on morality. This means that in addition to the influence of media content on moral intuitions, the engagement of recipients in terms of narrative presence, and emotional engagement is crucial to the extent of this influence. Related moral intuitions will be more strongly activated within recipients that are strongly involved in terms of narrative presence, and emotional

engagement than of those who were not strongly involved. Thereby, the key role of emotional engagement in this case might be explained through the phenomenon that those things that were connected to specific emotions stay more easily in memory and, furthermore, were more likely accessed in moral situations. Consequently, if a similar situation occurs, individuals might more likely access the memories they gained through media exposure, which influences their moral decisions.

8.4.3 The Interaction of Parasocial Interaction Processing and Empathy

Research paper III demonstrated that exposure to history on social media can influence the recipients' ability of empathy. These findings can be explained by theoretical considerations suggesting that recipients' empathy is continuously influenced by their engagement with the environment, including social experiences (see Eisenberg & Strayer, 1987). Research paper III extends these assumptions to media engagement. In more detail, the study showed that the recipients' ability of empathy is continuously affected through the individuals' engagement with a historical figure on social media. Moreover, the long-term analysis indicated that the recipients' ability of cognitive empathy (perspective-taking) increased over time when they engaged with a historical figure on social media. This may be explained since such media representations offer recipients insights into the perspectives of the past, expand their horizon and, therefore, help them to take other perspectives in the future. Furthermore, this study also revealed positive relations between the affective and cognitive processing of the (para)social interaction with a historical figure and recipients' empathy. This means that empathy may on the one hand promote the followers' affective responses like experiencing empathy or emotional contagion and cognitive processing like linking the historical figure's actions to their own memories (see Schramm & Hartmann, 2019). On the other hand, these affective and cognitive processing may support their ability of empathy as users gain new mediated (social) experiences. Again, the theoretical assumptions regarding face-to-face interactions can be applied: Recipients made mediated experiences, which impacted their ability of empathy (see Eisenberg & Strayer, 1987). In conclusion, the present

findings illustrate that the recipients' ability of empathy can be affected through the engagement with a historical figure online. Besides the general experience of (para)social interaction online which may offer followers' new experiences and perspectives, this application may foster the recipients' empathy in a novel way as it offers insights into the past. In conclusion, the dissertation provided first empirical findings to the influence of the engagement with a historical figure online, and its influence of their ability of perspective taking (cognitive empathy). Furthermore, the findings indicate that those recipients' who have a higher ability of empathy engaged more strongly with the historical media content which, consequently, support the effects of these media on the recipients' morality (research paper III).

8.4.4 The Interplay of Presence, Empathy and Rational Moral Deliberation

In line with that, research paper III demonstrated that the parasocial interaction processing of a historical figure was positively related to Kohlberg's (1958) stage six: the moral orientation towards universal ethical principles. This relation was, further, as mentioned in the previous chapter, mediated by cognitive empathy. In his rationalist perspective on morality, Kohlberg (1976) defined moral orientation as the ability to understand and integrate different points of views. He distinguished between six stages of moral orientation in which moral judgments differ in so far as they were made based on different moral principles. Kohlberg (1958) assigned a kind of "gold standard" to stage six, which describes the orientation towards universal ethical principles. The scholar allocated a central role to empathy, especially perspective taking as a cognitive component of empathy. He argues that perspective taking supports the ability to integrate more different points of views when making moral judgments (Kohlberg, 1976). Consequently, research paper III demonstrated this relation of cognitive empathy and moral orientation. Further, the study could show that the recipients' moral orientation was affected by the experience of parasocial interaction (PSI): the illusion of a face-to-face interaction with a historical figure on social media (see Horton & Wohl, 1956). This experience may have offered recipients new perspectives and, furthermore, showed the moral

actions and values of historical figures who are associated with highly moral standards (Dunbach, & Newborn, 2017). Consequently, these findings can, on the one hand, be explained through Kohlberg's (1958) assumptions on moral development: the engagement with the environment, which offers different perspectives on moral issues. This theoretical consideration can also be applied to the findings of other studies which highlight a relation between recipients' engagement during media exposure, empathy, and moral orientation (research paper II). On the other hand, the Social Cognitive Theory of Moral Thought and Action (Bandura, 1991) could be applied to this special context of application: the presentation of a historical figure on Instagram. Followers of the Instagram account may have taken the historical figure as a role model. This affect might have been further reinforced as the account has offered a platform for identification by addressing different topics like feminism and political action (Berg et al., 2023). As this hit the zeitgeist (Hespers, 2022; SWR, 2023), recipients may have strongly identified with the presentation of the historical figure accompanied by parasocial interaction processing, and, consequently, adopt the presented moral values/actions. In conclusion, the dissertation delivers first empirical evidence to the influence on historical presentations online, and its influence on the recipients' rational moral deliberation processes when making moral judgments. Furthermore, the studies show that besides the influence of the moral content, the recipients' engagement in (historical) moral media decides how big this effect is. All in all, the findings highlight that the individual's morality is continuously affected through their engagement in (historical) media.

8.4.5 Empathic Responses and its' Influence on Morality

Beyond the relation between empathy and moral orientation, research paper V highlighted the role of empathic responses by showing that they activate moral intuitions and promote moral behavioral intentions. Research paper V focused on the Anne Frank House. Consequently, the study showed that those recipients, who felt more present within the Anne Frank House, supported by technological immersive characteristics (research paper V) reported to feel more empathy towards Anne Frank and her story afterwards. Also, in the

memorial site Anne Frank House in Amsterdam (Netherlands), the atmosphere of the Frank family's hiding place is perceived to support the recipients' emotional engagement including empathy towards Anne Frank, and her family (see Savenije & de Bruijn, 2017). This may explain that the experience of being located within the virtual version of the Anne Frank House has supported empathy towards Anne Frank. Furthermore, these findings are in line with previous studies who showed that VR technology promotes empathic responses (e.g., Riner et al., 2022; Barbot & Kaufmann, 2020), which is mediated by the experience of presence (e.g., Shin et al., 2018; La Peña et al., 2010). Furthermore, the study showed that recipients who reported to be empathic towards the related historical figure (Anne Frank) also indicated moral behavioral intentions (e.g., "I would help others in need."). These findings suggest that the engagement in moral media content can support the recipients' willingness to be a moral person.

Moreover, empathic responses turned out to activate related moral intuitions (research paper V). Recipients who experienced empathy with Anne Frank reported afterwards that the foundations harm/care and fairness/reciprocity were more important for them. These findings contribute to the assumption that also moral intuition processes empathy plays a significant role (Buselle & Bilandczic, 2011). All in all, the aforementioned findings illustrate the interplay of technological characteristics, the recipients' engagement in the mediated historical environment/content, empathic feelings, and moral intuitions. Technological characteristics can support the recipients' engagement in historical media (e.g., spatial presence) which, in turn, supports affective empathic responses that are related to related moral intuitions. These findings highlight the interplay of media characteristics and recipients' engagement, which can promote the influence of media on morality. Moreover, the findings underline the interplay of different emotionally driven mechanisms: empathic responses and moral intuitions. Therefore, the findings suggest that moral intuitions are more likely prompted when emotional reactions occur.

8.4.6 Moral Behavioral Intention vs. Moral Behavior

Besides insights into the impact of mediated historical experiences on the recipients' morality, the dissertation further illustrated influences of technologies on the recipients' moral behavior. Research paper V showed that participants more likely donated when using the Anne Frank House VR application compared to those who read a graphic novel that included the same text and picture material. Consequently, direct effects of technological immersion on moral behavior were found. Also, previous investigations indicate a higher tendency on prosocial behavioral tendencies which are connected to morality when comparing the exposure to VR applications to other media applications (i.e., altruism; helping behavior; e.g., Herrera et al., 2018; Mado et al., 2021; Schutte & Stilinović, 2017; Bykov, 2017; Breves, 2020). However, within research paper V it could not be shown that the recipients' engagement with the mediated historical environment influences moral behavior, here, rather the technology itself was the determining factor. Therefore, other factors might have played a role as well. First of all, donation behavior was not related to other constructs of morality (e.g., moral behavioral tendencies). Therefore, it stands to question whether donation behavior is indeed an adequate measure for moral behavior, but it also highlights the gap between attitudes, behavioral tendencies, and actual behavior (e.g., Fishbein & Ajzen, 1975). This gap was not only shown in research paper V, which revealed a gap between moral behavioral tendencies, and moral behavioral intention, but also in research paper II no relation between moral orientation, and moral behavioral tendencies were found. Here, empathy was the determinant factor that was related to moral behavioral tendencies (research paper II). Therefore, one could speculate that rather perspective taking, which is forced by VR applications enabling users to take other perspectives, are more decisive for moral behavior, and moral behavioral tendencies than the actual moral attitudes. Moreover, the findings highlight the important role of perspective taking as a cognitive component of empathy for moral behavior (see Kohlberg, 1958).

9 **Theoretical Implications:** How Historical Media Affects Morality – Presentation of an Overarching Model

The seven research papers included in the cumulus of this thesis aimed to answer two overarching research questions: (1) How do media and user characteristics affect mediated historical experiences, and (2) how do mediated historical experiences influence the relation of media on morality? Besides the immediate results introduced in the previous section, the results of the studies also provide several theoretical contributions, which allow the derivation of an overarching model presenting the influence of historical media on morality in consideration of the media characteristics.

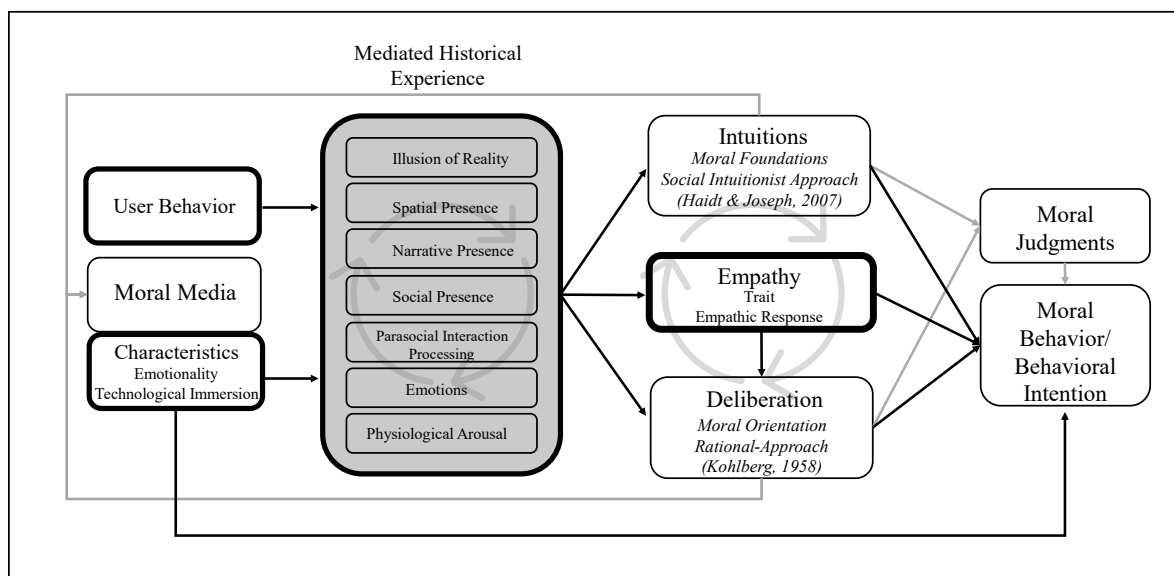
Taken together, the empirical investigations suggest that besides the media content, the recipients' experiences while media exposure mediate the influence of media on the recipients' morality. Previous theoretical considerations, and empirical investigations mainly assumed that the presentation of (im)moral behavior in media influences the recipient's morality (e.g., Tamborini, 2012). For instance, the Model of Intuitive Morality and Exemplars (MIME; Tamborini, 2012) suggested short-term effects on the presentation of moral intuitions in media on the salience of related intuitions. Moreover, empirical investigations indicated that the recipients' exposure to moral dilemmas in media supports their rational moral deliberation processes (e.g., Wright et al., 2020). In conclusion, theoretical considerations, and previous investigations suggested that moral content in historical media can influence the recipient's morality: moral intuitions and rational moral deliberation (moral orientation; for an overview of the different approaches on morality see Chapter 1.1). This was the starting point of this thesis.

Building on this, it was asked whether in addition to the moral media content the recipients' engagement in media during media reception, promoted the influence of media on morality. In this regard, the dissertation provided empirical evidence to the theoretical assumptions that media engagement mediated the influence of moral (historical) media on the recipients' morality. Furthermore, the dissertation showed that different commonly used

media characteristics (e.g., emotionality; technological immersion) and user characteristics influenced the recipients' engagement. Therefore, a theoretical model is introduced that illustrates the influence of media, and user characteristics on the recipients' engagement and, in turn, the influence of those on morality. As mentioned beforehand, the dissertation took two well-known perspectives on morality into account: the rationalist (see Kohlberg, 1958), and intuitive perspective (Haidt, 2001). This approach is, to the best of the author's knowledge, one of the first approaches investigating the influence of media on morality that takes both perspectives into account. In the following the derived model will be explained (see Figure 5). The model represents the relations investigated within this dissertation (black paths) and, further, expands it through theoretical considerations regarding the investigated morality approaches (grey paths).

Figure 5

Illustration of the Overarching Model



Note. Black graphs represent positive relationships empirically examined in this dissertation. Circular arrows represent empirically examined relationships between constructs. Gray graphs represent theoretical considerations not investigated within this dissertation.

First, the model illustrates that the media characteristics: emotionality and technological immersion, as well as user behavior influence the recipients' engagement. In this special context of application, the recipients' engagement is defined as mediated historical

experiences. Mediated historical experiences include (1) spatial presence, (2) narrative presence, (3) social presence including parasocial interaction processing, (4) illusion of reality (5) emotions, and (6) physiological arousal. The investigations indicated different dynamics of the aforementioned dimensions of mediated historical experiences (see Chapter 8.1), which suggest that the listed processes influence each other. For example, narrative presence, spatial presence, and emotions have been shown to be positively related (research article I, IV). Based on these findings it is suggested that while media exposure affective, and cognitive processes occur that influence each other. Therefore, the model presents this interplay based on the presentation of a circuit within mediated historical experiences.

Furthermore, the media characteristic technological immersion has proven to promote the experience of spatial presence, and narrative presence (see Chapter 8.2.1). Likewise, content's emotionality turned out to be a factor that supported the recipients' emotional engagement in moral (historical) media (see Chapter 8.2.2). Therefore, the model illustrates that media characteristics influence the recipients' media engagement. Here, technological immersion, and content's emotionality are listed as the dissertation's studies could show positive effects of both. Additionally, user characteristics (see Chapter 8.3.2), and behavior (see Chapter 8.3.1) have been shown to promote mediated historical experiences. As an example, in research article VI it was found that users' actual interaction on social media positively affected parasocial interaction processing of a historical figure. Furthermore, research article II found a positive relation between users' prior knowledge about the historical topic, and their actual physiological engagement. Therefore, the model further proposes that user characteristics like the users' interaction behavior on social media promotes their engagement in (historical) media and, consequently, shape mediated historical experiences.

Building on this, the model illustrates that mediated historical experiences mediate the influence of media on morality, and empathy. Here, especially narrative engagement was proven to play a key role (see Chapter 8.4.2). But also, empathic responses, parasocial interaction processing, and emotions promoted morality, and empathy in different ways (see

Chapter 8.4.3, 8.4.4, 8.4.5). The investigations highlighted that media exposure, and accompanied engaging processes differently impacted these moral processes. Whereby moral intuitions were mainly primed when emotional responses to media occurred (e.g., research papers IV, V), rational moral deliberation was affected when recipients processed the content more cognitively or the media application offered opportunities for perspective-taking (research papers II, III). Furthermore, research article III illustrated a relation between moral intuitions and rational moral reasoning processes. This strengthens the assumptions of Haidt (2001), who proposed in the two-process model of morality that moral emotions can influence the rational reasoning process. Furthermore, it highlights that both processes of moral thinking can coexist and may come together in moral judgment-processes. This relation was not investigated empirically within this dissertation. However, an interplay of moral intuitions and moral orientation has been demonstrated (research paper V). Beyond that, the model illustrates that moral behavior, and moral behavioral intention is influenced by empathy, moral intuitions, and moral orientation, but also that technological immersive characteristics can directly influence this behavioral component of morality (see Chapter 8.4.6). All these relations were derived from the dissertation's studies and have been addressed in detail in the previous chapters.

Lastly, the MIME suggested that morality is not only influenced through media exposure but also guides media selection behavior (Tamborini, 2012): it is rather an interplay of media exposure, human cognition and consequently, behavior (Slater, 2007). Therefore, it can be assumed that recipients will, for example, be more likely to turn to media content that goes hand in hand with their own values (Tamborini, 2012; Festinger, 1957). Transferring this to the context of application: The recipients' moral values will subsequently impact their decision, which historical media applications to engage with. Therefore, two further paths were included in the model that demonstrate that recipients' moral intuitions, and moral orientation influence media selection.

Taken together, the dissertation was able to give first insights into the influence of related mechanisms promoted by media, and user characteristics when considering the influence of media on morality by taking historical media into account. Most importantly, the model extends previous theoretical considerations as proposed in the MIME regarding the influence of media (content) on morality by highlighting the role of the recipients' engagement during media exposure. Moreover, the model brings the different coexisting approaches on morality together by considering the resulting differences in the influences of media of morality (see Chapter 1.2). The model highlights that moral intuitions as well as rational moral deliberation (moral orientation) can be affected simultaneously through media exposure. In this regard, the dissertation's studies could highlight that moral intuitions are more likely affected when affective, emotional responses occur (emotional responses, physiological arousal, empathic responses), and recipients focus on the media's narrative (narrative engagement). Furthermore, the empirical studies illustrate that rational moral deliberation as proposed by Kohlberg (1958; see Chapter 1.1) is influenced when recipients processed the (historical) content more cognitively, and the media application offered opportunities for perspective-taking. These effects are further promoted by the recipients' ability to empathize. In conclusion, the dissertation could show that mediated (historical) experiences can promote rational moral deliberation, and the ability to empathize. These findings extend cognitive developmental assumptions about moral and empathy development (Eisenberg & Strayer, 1987; Kohlberg, 1958) to the media context by showing that not only real-life experiences promote moral orientation and empathy, but also mediated experiences characterized by affective and cognitive processing of media content.

Thus, the model can not only show how historical media affect moral orientation, moral intuitions, and empathy, but also serve as a starting point for investigating the influence of media, media engagement, media and user characteristics on recipients' morality in other application contexts. Furthermore, the model suggests that media, which includes media characteristics that promote the recipients' engagement in (historical) media, like

technological immersion, will have a greater influence of moral intuitions, and rational moral deliberation compared to traditional media that is characterized by weaker engagement potential (e.g., texts).

10 Practical Implications

The dissertation's studies deliver several practical implications for historical media, especially in respect to the perspective of history education researchers. First, the studies highlight that emotional presentation in historical media necessarily leads to emotional responses, especially when personal involvement is high (research papers I, II, V). These are important findings in regard to the assumptions of history education researchers, who see such emotional presentation with doubts in regard to the prohibition of emotional overwhelming (e.g., Lewers, 2022, Bunnenberg, 2018, 2020). The studies show that emotional responses occur whereby they are not that strong as assumed. However, emotional engagement turned out to promote the influence of media on the recipient's morality. In this regard emotional presentation would be desirable so that recipients can process the historical events more strongly on a moral basis (see Chapter 8.4.5). However, with respect to the perspective of history education researchers the recipients' emotional engagement should be kept in reasonable moderation (e.g., Bunnenberg, 2018; Lewers, 2022). In this regard, further information about the historical media application have been found to decrease the recipients' engagement and, further, increase the cognitive reflection (research papers I, IV). Therefore, providing recipients further material in terms of information after media exposure may be a starting point to ensure that recipients were not emotionally overwhelmed. Similarly, sharing with others could be used to reflect on what was seen, and reduce the recipients' emotional involvement, as well as to discuss the moral content. In line with this, moral dilemma discussions have been found to support moral development (see Blatt & Kohlberg, 1975). Such offers after historical media exposure might be further of high importance, when looking at potential abuse of emotional historical presentations. For instance, when considering propaganda media, the present findings could also imply that emotional presentation may be

able to convey undesirable moral values, as recipients may less likely question the content when being strongly engaged, which can be further promoted by personal predispositions.

In addition, the present findings provide important empirical evidence for the ongoing debate about the ethical issues of such media applications. The studies indicate that recipients reported to feel empathy with the historical figure, and may have got the impression that they could feel with the historical figure (research article III, VII). However, from the perspective of history didactics, this is not possible (e.g., Bunnenberg, 2020). Therefore, it stands to reason whether such media should be designed to create the impression that they offer possibilities of perspective taking and empathy. Therefore, recipients should be made aware of this. This can, for instance, be made via additional information or promoting “historical media literacy”. Here, a starting point could be cognitive learning strategies introduced by Nachtigall and colleagues (2022), who suggested that cognitive learning strategies helped recipients of historical 360°-VR to draw more reflective conclusions.

Lastly, the dissertation delivers two more implications for future research. First, the studies offer a starting point to measure historical consciousness empirically (research paper IV, VII). So far historical consciousness has not been investigated empirically. The present studies offer a first way to access different faces of historical consciousness, based on a questionnaire in different contexts of application: VR and social media.

Furthermore, moral orientation has so far mainly be measured qualitatively based on interviews proposed by Kohlberg (1958), and only a few complex, extensive questionnaires consisting of the description of several social situations, related moral decisions, and the ranking of different moral positions, existed (Defining-Issue-Test, Rest, 1975). In this regard, the dissertation offers a new questionnaire assessing moral orientation according to Kohlberg (1958). This questionnaire consists of one to four moral dilemmas and accompanied items presenting relevant moral arguments regarding the moral stages proposed by Kohlberg (1958; for a detailed overview see research paper II in Chapter VI). Consequently, the questionnaire

offers a promising approach to assess moral orientation quantitatively that was already tested in several empirical studies (research paper II, III, IV).

11 Limitations and Future Directions

Although limitations for each of the studies have already been discussed in the respective research articles included in the cumulus; so this section addresses general limitations.

First, the generalizability of the findings is limited in certain ways: in some studies, the sample was not representative as a convenience sample was used (research paper III, V, IV; VII). As a result, participants have been rather female and well-educated. This imbalance might have biased the results. For instance, research indicates that women generally tend to engage more empathically (e.g., Eisenberg & Lennon, 1983). Moreover, education may have biased the results so far as well educated (people) may more likely process media content cognitively compared less educated people (e.g., Li et al., 2013). Furthermore, almost all studies, except for the study of research paper V, investigated the influence of historical media on the recipients' morality by taking a German sample into account. As already proposed in Chapter 8.2.2 the recipients' (biographical) involvement in the presented topic may play a detrimental role for the recipients' engagement (see Green, 2010). As research suggests that especially German citizens tend to feel guilty and therefore engage emotionally in such historical presentations (e.g., Brauer, 2016), further research is needed to investigate the influence of such media for other populations. Research paper V was a first step. However, especially studies that compare cultures in this context are needed. In conclusion, investigating the influence of cultural influences might be of high interest, as especially when dealing with history cultures differ in their emotional involvement as well as the "learned, stereotypical" emotions (see Brauer, 2016).

A further limitation results from the methodological approaches employed in the four studies. The studies mainly investigated short-term effects on the recipients' morality. Here, long-term analyses that examine the influence of media exposure on the recipients'

morality over time are needed to test for potential long-term effects, as proposed by Tamborini (2012). Furthermore, when interpreting the findings regarding the promotion of moral development and empathy from a cognitive development perspective (see Eisenberg & Strayer 1987; Kohlberg, 1958), it is argued that such media applications offer new perspectives on the past and, consequently, broadens the recipients' horizon. However, the influence of an increase in knowledge and other perspectives has not been investigated empirically. Therefore, still the question arises, which impact the recipients' actual knowledge about the historical topic has. Here, future research should be done to investigate this relationship. Furthermore, affective and cognitive processes were mainly investigated through self-reports after media exposure, which could have consumed the actual processes (e.g., Schwind et al., 2019), to get more detailed insights in the actual affective, and cognitive processes during media exposure other methodological approaches like measuring brain activity (see Baumgartner et al., 2008), or a combination of psychophysical and qualitative methods (see Slater et al., 2022) could be promising approaches.

Furthermore, the dissertation took only VR and social media into account. As the studies indicate the influence of media characteristics on the recipients' empathy other historical media applications should be considered (e.g., augmented reality, historical video games). The same can be applied to the influence of media characteristics on mediated historical experiences. Research paper I already indicates that the experience of social presence plays a part in immersive historical environments, as recipients reported that they have been within a historical virtual environment with other presented characters. In more detail within research paper I, the recipients' reported, for instance, that there have been prison guards in the virtual Stasi prison in the GDR who have forced them to, for instance, walk. However, researchers argue that the type of presentation of mediated figures might be more influential for the experience of social presence than technological characteristics (e.g., Hartmann & Schramm, 2008). However, within this dissertation it was not investigated how technological immersion aspects affect the experience of social presence. Therefore, further

research is necessary to investigate the impacts of technological immersion on social presence within the context of historical media applications.

In addition, there are several personal characteristics that may influence mediated historical experiences. For instance, Green & Brock (2000) highlight that the recipients' imagination is decisive for narrative engagement (i.e., narrative presence). Therefore, future research should take the influence of further personal characteristics into account. Here also general characteristics like sensitivity may be of high interest (e.g., Reynolds & Miller, 2015).

12 Conclusion

The overall goal of the dissertation was to examine the influence of historical media on morality. Thereby, the dissertation considered the influence of media, user characteristics, and the role of recipients' media engagement in this context. The dissertation illustrates that different media, and user characteristics promote the recipients' engagement in historical media and, consequently, form their mediated historical experiences including different affective and cognitive processes during media exposure: (1) spatial presence, (2) narrative presence, (3) social presence, and parasocial interaction processing, (4) illusion of reality, (5) emotions, (6) physiological arousal. By taking the influence of these processes on moral intuitions, and rational moral deliberation into account, the dissertation could show that moral intuitions were mainly affected when conscious and unconscious emotional responses occur, whereby rational moral deliberation, and the recipients' ability to empathize were affected when they engaged on a cognitive level and the media application offered opportunities for perspective taking.

To incorporate these findings, a model was introduced, which presents how historical media influence recipients' morality and empathy. On the one hand, the model demonstrates the influence of media characteristics, and user behavior on the mediated historical experiences. Second, the model illustrates the influence of various processes of mediated historical experiences on rational moral deliberation, moral intuitions, and empathy. Moreover, the dissertation found that moral judgments are made through an interplay of empathy,

intuition, and rational deliberation. In conclusion, the thesis shows that mediated historical experiences shape the influence of media on morality. Furthermore, the findings suggest that media can simultaneously influence rational and intuitive processes of morality.

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VI Research Papers

Research Paper I

Lewers, E. & Frentzel-Beyme, L. (2023). And what comes after time travel? An Empirical

Analysis of «Emerging» from History-Related Virtual Reality.

Medienpädagogik(AR/VR-Part2), 402-429.

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Themenheft Nr. 51:

Immersives Lehren und Lernen mit Augmented und Virtual Reality – Teil 2.

Herausgegeben von Miriam Mulders, Josef Buchner, Andreas Dengel und Raphael Zender

Und was kommt nach der Zeitreise?

Eine empirische Untersuchung des «Auftauchens» aus geschichtsbezogener Virtual Reality

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Zusammenfassung

Viele Virtual Reality-Anwendungen (VR), die sich historischen Themen widmen, eint ein Ziel: Zeitreisen wirklich werden lassen. Über die Technologie soll es den Rezipierenden möglich gemacht werden, in Simulationen vergangener Zeiten und Orte einzutauchen und diese zu erleben. Aber was passiert nach diesem «Zeitreiseerlebnis»? Da auf das vermeintliche «Eintauchen» in die Vergangenheit ein «Auftauchen» in der Gegenwart folgt, wird in diesem Beitrag die Frage untersucht, wie das «Auftauchen» aus einer virtuellen Umgebung didaktisch begleitet werden kann. Basierend auf medienpsychologischer und geschichtsdidaktischer Forschung wurden Materialien für die Begleitung des «Auftauchens» aus der VR entwickelt und in einer Laborstudie (N=70) eingesetzt. Genutzt wurde ein 2x2 Between-Subjects-Design, in dessen Rahmen die Auswirkungen der Materialien und des emotionalen Inhalts der VR auf Präsenzerleben, Emotionen und Geschichtsbewusstsein qualitativ untersucht wurden. Die Ergebnisse zeigen, dass die didaktische Begleitung des «Auftauchens» durch die Rezeption weniger emotionalisierender Inhalte und Materialien positive Effekte auf die Äusserungen von Geschichtsbewusstsein hat.

And What Comes after Time Travel? An Empirical Analysis of «Emerging» from History-Related Virtual Reality

Abstract

Many virtual reality applications (VR) dedicated to historical topics share one goal: making time travel real. The VR-technology is meant to give users the possibility to immerse themselves into past times and places and experience them. But what happens after this «time travel experience»? Since the supposed «immersion» in the past is followed by an «emergence» in the present, this paper examines the question of how the «emergence» from a virtual environment can be supported didactically. Based on research

in media psychology and history didactics, we developed material for accompanying the «emergence» from VR and applied it in a laboratory study (N=70). A 2x2 between-subjects design was used to examine qualitatively the effects of the material as well as the emotional content of the VR on presence, emotions and historical consciousness. Results showed that the didactic support of «emergence» through a reception of less emotionalizing content and additional material has positive impacts on expressions of historical consciousness.

1. Zeitreisemaschine Virtual Reality?

Sie sind in einem Vernehmungsraum. Einer von zwei Beamten spricht Sie eindringlich an: «Jetzt passen Sie mal auf, Sie arbeiten nicht gegen uns. Wir finden Sie – egal wo, [...]. Auch im Westen – Autounfälle gibt es überall, nicht wahr?» Er grinst hämisch und wirft dem anderen Beamten einen selbstgefälligen Blick zu, während er mit einer Zigarette in seiner Hand spielt. Dann schaut er Sie wieder an: «Sie meinen, das sei eine Drohung?» Er trifft näher an Sie heran, sein Gesicht ist direkt vor Ihrem.«Natürlich», sagt er entschieden, «was denn sonst?» Sie werden zurück in Ihre Zelle geführt. Sie hören jemanden mehrmals laut und gequält stöhnen, dann die Stimme eines Wärters: «Durchgedreht», sagt dieser gleichgültig. Sie nehmen die VR-Brille ab.

Diese Szene könnte genauso in Ihrem Haushalt ablaufen. Das frei zugängliche 360°-Video «Was wollten Sie in Berlin?!» bietet die Möglichkeit, mit einfachen technischen Mitteln – wie einem mobilen Endgerät und/oder einem Cardboard – die Rolle eines Häftlings in der Haftanstalt der Staatssicherheit Berlin-Hohenschönhausen in den 1980er-Jahren einzunehmen. In der Ego-Perspektive sollen die Rezipierenden nach Angaben der Produzierenden erfahren können, «was es bedeutet, im Stasi-Knast auf Gefängniswärter, Vernehmer und Zellennachbarn zu treffen. Was es bedeutet, niemandem trauen zu können und ausgeliefert zu sein.» (IntoVR & Video 2017).

Diese und andere geschichtsbezogene VR-Anwendungen (z. B. Anne Frank House VR, Projekt History 360°) sollen den Rezipient:innen ermöglichen, in die Vergangenheit und sogar in die Gefühlswelt von Personen einzutauchen (Allison 2008, 344; Bunnenberg 2020, 47). Mit technischen und inhaltlichen Mitteln soll ein Gefühl der Anwesenheit in der medienvermittelten Umgebung (hier beschrieben als Präsenzerleben) erzielt werden. Die Rezipient:innen können jedoch nicht nachempfinden, wie sich Häftlinge in den 1980er-Jahren gefühlt haben, da ihre Wahrnehmung als Personen des 21. Jahrhunderts an ihre Gegenwart gebunden ist. VR bietet lediglich eine Rekonstruktion und Interpretation der Ereignisse an, die sich «zwischen Fakt und Fiktion» bewegt und eine emotionalisierende Wirkung auf die Rezipierenden haben soll (Bunnenberg 2021b, 26). In diesem Beitrag liegt der Fokus auf den

Rezipierenden und ihrer Verarbeitung der Inhalte: Inwiefern verspüren diese eine Präsenz in der virtuellen Umgebung und reagieren auf die emotionalen Inhalte? Was passiert, wenn die Rezipierenden die VR-Brille absetzen und aus der virtuellen Umgebung auftauchen? Was bleibt vom Erlebnis und wie kann das «Auftauchen» didaktisch begleitet werden, um ihnen eine kritische Reflexion des Gesehenen zu ermöglichen?

An diesem Punkt setzt der Beitrag an. In der Geschichtsdidaktik werden diese erlebnisorientierten Zugänge zu(r) Geschichte häufig mit Zurückhaltung betrachtet. Es wird davon ausgegangen, dass audiovisuelle, interaktive und emotionalisierende Medien wie VR die kritische Haltung der Rezipierenden herausfordern und die Bildung eigener Deutungen erschweren (Oswald 2012, 128). Damit deutet sich ein Spannungsverhältnis zwischen dem vermeintlichen «Eintauchen» in die Vergangenheit durch VR und der Herausbildung eines kritischen Geschichtsbewusstseins an. Dies ist jedoch eine theoretische Annahme der Forschung, da die Rezeption von geschichtsbezogener VR bisher eine «Black Box» ist, der sich immer mehr angenähert wird.

Um der Annahme der Forschung empirisch auf den Grund zu gehen, wird im vorliegenden Beitrag daher in interdisziplinärer Zusammenarbeit von Medienpsychologie und Geschichtsdidaktik in einer Laborstudie untersucht, wie das «Auftauchen» aus geschichtsbezogener VR am Beispiel der Anwendung «Was wollten Sie in Berlin?!» didaktisch begleitet werden kann. Hierbei werden die Effekte auf Präsenzerleben, Geschichtsbewusstsein und Emotionen qualitativ untersucht. Dabei ist die übergeordnete Forschungsfrage, inwiefern die didaktische Begleitung des «Auftauchens», die auf die Dekonstruktion der VR zielt, einen Einfluss auf Präsenzerleben, Geschichtsbewusstsein und Emotionen hat.

2. Theorie

2.1 *Virtual Reality und Immersion*

Gemäss gängigen Definitionen gilt jede «computergenerierte realistische Welt» als «Virtual Reality» (VR) (Pan und Hamilton 2018, 396f.). Darunter fallen sowohl 360°-Videos als auch Anwendungen, die mit Head-Mounted-Displays (HMD) und Controllern genutzt werden. Demnach kann auch das 360°-Video «Was wollten Sie in Berlin?!» als VR bezeichnet werden. Diese Einordnung wird in der Literatur jedoch allgemein diskutiert (Fadde und Zaichkowsky 2018; Kittel et al. 2020; Panchuk et al. 2018). So werden 360°-Videos teilweise auch als «immersive Videos» bezeichnet, da sie nicht die Interaktion in der virtuellen Welt ermöglichen, aber wie VR-Technologie immersive Eigenschaften aufweisen, die das «Eintauchen» des Publikums in eine virtuelle Umgebung fördern (Frentzel-Beyme und Krämer 2022a; Zender et al. 2022, 27).

Innerhalb der Forschung gibt es keinen Konsens in der Definition des Begriffs Immersion (Agrawal et al. 2020, 404). Diese wird einerseits als Eigenschaft einer Technologie betrachtet (Slater 2003), woran in diesem Beitrag angeschlossen wird. Andererseits wird Immersion als ein psychologischer Zustand betrachtet, der dadurch gekennzeichnet ist, dass sich Nutzende als Teil der virtuellen Umgebung wahrnehmen (hier bezeichnet als Präsenzerleben; Agrawal et al. 2020, 405).

2.1.1 Immersion als technologische Eigenschaft

Wird Immersion zur Beschreibung der Eigenschaften einer Technologie genutzt, so kann deren Immersionsgrad anhand bestimmter Merkmale bestimmt werden: Das Ausmass des sensorischen Inputs (z. B. Sound), die Umgebungsqualität (z. B. 360°-Ansicht), der Reichtum an Bildmerkmalen (z. B. dynamische Darstellung von Schatten) oder die Anpassung natürlicher Bewegungen an die virtuelle Schnittstelle (propriozeptive Anpassung, z. B. Gehen; Slater und Wilbur 1997, 607). Basierend auf der 360°-Sicht und der propriozeptiven Anpassung (natürliches Umschauen durch die Kopfbewegungen) gelten auch geschichtsbezogene 360°-Videos als immersiv. Technologien sollten jedoch nicht binär in immersiv oder nicht immersiv eingestuft, sondern anhand ihres Immersionsgrades beschrieben werden (Steuer 1992, 74). Technologien, die über eine Vielfalt an Ein- und Ausgabekanälen (z. B. visuell, haptisch) und Interaktionsmöglichkeiten (z. B. HMDs; iVR) verfügen, können als hoch immersiv und 360°-Formate, die über einen 2D Bildschirm abgerufen werden, als weniger immersiv beschrieben werden (Slater 2003; Slater 2018; Mulders, Buchner, und Kerres 2020, 208).

Die VR-Anwendung «Was wollten Sie in Berlin?!» kann also im Hinblick auf die technologischen Eigenschaften als weniger immersiv klassifiziert werden, da sie zwar visuelle und auditive Reize sendet, aber wenig interaktiv ist. Das Video kann ohne oder mit HMD rezipiert werden, wobei sich bei letzterem der Immersionsgrad erhöht, da die physische Umgebung der Nutzenden ausgeblendet und das Sichtfeld allein von der virtuellen Umgebung bestimmt wird.

2.1.2 «Eintauchen» in immersive Medien

Tauchen Rezipierende in immersive Anwendungen ein, lenken sie ihre Aufmerksamkeit auf die virtuelle Umgebung und nehmen diese als realer und einnehmender wahr als ihre tatsächliche physische Umgebung (Slater und Wilbur 1997, 608). Der Begriff Präsenzerleben (presence) nähert sich diesem Phänomen an und beschreibt das subjektive Empfinden von Rezipierenden, in einer virtuellen Umgebung anwesend zu sein: «the sense of being there» (Slater und Wilbur 1997, 604). Lombard und Ditton (1997) schlagen darüber hinaus vor, zwischen dem Gefühl der physischen Anwesenheit (physisches Präsenzerleben) und dem Gefühl des Zusammenseins und der Interaktion mit anderen (medienvermittelten) Personen im virtuellen Raum

(soziales Präsenzerleben) zu differenzieren. Empirische Untersuchungen zeigen, dass das Präsenzerleben unter anderem von den immersiven technologischen Eigenschaften einer Anwendung abhängt (Cummings und Bailenson 2016, 3): Je immersiver eine Technologie, desto stärker das Präsenzerleben der Rezipierenden. Auch erste empirische Untersuchungen zu geschichtsbezogenen VR-Anwendungen zeigen diesen Zusammenhang: Rezipierende, die ein geschichtsbezogenes 360°-Video sahen, berichteten ein höheres Präsenzerleben als jene, die den gleichen Inhalt im Standard-Video-Format rezipierten (Frentzel-Beyme und Krämer 2022a).

Für das Erleben einer medienvermittelten Umgebung sind jedoch nicht nur die technischen Rahmenbedingungen relevant, auch der Inhalt spielt eine grosse Rolle (Kerres et al. 2022, 315). Das Vorhandensein einer Storyline kann z. B. das Gefühl des Eintauchens in eine Erzählung fördern, das angelehnt an das Konzept Transportation durch den Begriff «narratives Präsenzerleben» beschrieben werden kann (Kinnebrock und Bilanzic 2006, 2; Green und Brock 2000).

Auch die «Dimensionen des Erlebens in (nicht-)medienvermittelten Umwelten» (Kerres et al. 2022, 321) nähern sich unterschiedlichen Arten des Präsenzerlebens an, die die Bedeutung dessen bei der Rezeption von geschichtsbezogenen VR-Anwendungen unterstreicht. In diesem Beitrag wird daher insbesondere das Präsenzerleben untersucht, da die subjektive Verarbeitung der Inhalte geschichtsbezogener VR im Hinblick auf die Lehr-/Lernkontexte von grosser Bedeutung ist.

Geschichtsbezogene VR-Anwendungen zeichnen sich darüber hinaus häufig durch emotionalisierende Inhalte aus, die die Möglichkeit zum «Nacherleben» der Vergangenheit unterstützen und so die «Distanz zwischen der Gegenwart als natürlicher Realität und einer imaginierten Vergangenheit als virtueller Realität» überbrücken sollen (Bunnenberg 2021a, 175).

Empirische Untersuchungen zeigen, dass emotionale Medieninhalte eine emotionale Reaktion bei den Rezipienten hervorrufen (Riva et al. 2007, 54). So fanden Riva et al. (2007) heraus, dass die angsteinflössende Darstellung eines Parks bei den Rezipierenden Angst auslöste, während eine entspannende Darstellung des Parks Entspannung hervorrief. Darüber hinaus berichteten Teilnehmende unter den zuvor genannten emotionalen VR-Bedingungen ein höheres Präsenzerleben als unter neutralen Bedingungen. Auch bei geschichtsbezogener VR zeigt sich ein starker Zusammenhang zwischen dem Präsenzerleben und der emotionalen Eingebundenheit der Rezipierenden (Frentzel-Beyme und Krämer 2022a). Dies legt nahe, dass Präsenzerleben mit einer emotionalen Reaktion und einer affektiven, weniger kritischen und argumentbasierten Verarbeitung der Medieninhalte einhergehen kann (Green und Brock 2002, 320).

Es ist daher davon auszugehen, dass auch geschichtsbezogene VR-Anwendungen zu starken emotionalen Reaktionen und einer weniger kritischen Verarbeitung seitens der Rezipierenden führen können.

2.2 *Immersive Medien als Herausforderung für Geschichtsbewusstsein?*

Aufgrund der Auswirkungen von Präsenzerleben auf die Emotionen des Publikums sowie die potenziell geringere kritische Verarbeitung der Inhalte werden immersive Medien in der geschichtsdidaktischen Forschung mit Zurückhaltung betrachtet (Bunnenberg 2020, 47).

Emotionen spielen beim (historischen) Lernen eine wichtige Rolle und sind zugleich eine Herausforderung, da sie Lernprozesse sowohl anstossen als auch behindern können (Brauer 2019, 277). Lernen mit/über Emotionen kann dann gelingen, wenn kein Einfühlen in historische Akteur:innen gefordert, sondern Distanz gewahrt wird, um eine emotionale Überwältigung zu verhindern (ebd.). Werde jedoch ein Einfühlen in die Vergangenheit verlangt, wie es viele VR-Anwendungen erzielen wollen, könne die emotionalisierende Wirkung den Akt der Distanzierung erschweren (Brauer 2019, 279). Zwar ist Emotionalität ein Bestandteil von Geschichtsbewusstsein, da die Wahrnehmung und Verarbeitung von Geschichte untrennbar mit Gefühlen verbunden ist (Pandel 2017, 149), doch zählt zu einem reflektierten Geschichtsbewusstsein, dass die durch ein Medium erzeugten Gefühle vom Individuum erkannt werden.

Da mit Präsenzerleben ausserdem die unkritische Übernahme der in der VR präsentierten Deutungen einhergehen kann (Green und Brock 2002, 323), werden immersive Medien als Herausforderung für die Bildung eigener Vorstellungen (Imaginationen) verstanden. Durch VR werde es den Rezipierenden immer schwerer gemacht, «sich von diesen vorfabrizierten Bildern zu lösen, um eigene Vorstellungen zu bilden» (Oswalt 2012, 128).

Ziel historischen Lernens ist jedoch die Ausbildung eines reflektierten Geschichtsbewusstseins: Rezipierende historischer Darstellungen sollen sich darüber bewusst sein, dass es sich bei Geschichte immer nur um mögliche Interpretationen der Vergangenheit handelt, die entsprechend kritisch betrachtet werden müssen. Der Umstand, dass die Vergangenheit nicht mehr zugänglich ist und nur durch Geschichte als mediale Konstruktion vermittelt werden kann, wird von den Darstellungen jedoch häufig nicht transparent gemacht. Für die Förderung einer kritischen Betrachtung der Inhalte ist es notwendig, dass die Nutzenden sich der Charakteristika des Mediums und seiner Einflüsse auf ihre Vorstellungsbilder und Emotionen bewusst sind (ebd.).

Die geforderte (emotionale) Distanzierung scheint jedoch der medialen Logik von VR zu widersprechen. Mit der Technologie werden «digitale historische Raumbilder» geschaffen, mit denen Geschichte «mehrdimensional, multisensorisch und realitätsnah erfahrbar» gemacht werden soll (Knoch 2021, 100). Es soll der «Eindruck einer haptischen oder sensorischen Unmittelbarkeit erzeugt werden, um ein Präsenzerleben im virtuellen Raum zu erzielen» (ebd., 91). Ziel ist es, dass das Gezeigte als «wirklich» angenommen wird, wobei jedoch der Konstruktionscharakter von Geschichte verschleiert wird (Bunnenberg 2020, 47). So kann der Eindruck entstehen, dass die Vergangenheit tatsächlich erfahrbar sei, was jedoch nicht der Fall ist.

Es deutet sich also ein wahrgenommenes Spannungsfeld zwischen dem durch immersive Medien erzeugten Präsenzerleben und den dadurch hervorgerufenen Emotionen auf der einen und Geschichtsbewusstsein auf der anderen Seite an. Daher soll durch die hier vorgestellte Studie untersucht werden, wie sich Präsenzerleben bzw. Emotionen und Geschichtsbewusstsein zueinander verhalten – schliesst das eine das andere aus? Kann mit VR Geschichtsbewusstsein angeregt werden?

Auch Befunde lernpsychologischer Forschung bieten Grund zur Skepsis, inwiefern immersive Medien Lernen ermöglichen. Es wird u. a. in der bildungstechnologischen Forschung und auch der Bildungspolitik häufig davon ausgegangen, dass durch Immersion und Präsenzerleben höhere Lernleistungen erzielt werden können (Przybylka 2022, 332). Kerres et al. halten der Annahme aus lernpsychologischer Sicht und auf Basis empirischer Ergebnisse entgegen, dass immersive Medien nicht zwangsweise zu besserem Lernerfolg führen. So kann eine VR-Umgebung gegenteilig «als ablenkend und kognitiv überlastend empfunden» werden (Kerres et al. 2022, 322). Es ist also danach zu fragen, wie immersive Medien gestaltet werden können, um Lernen zu ermöglichen (Kerres et al. 2022, 323f.).

3. Begleitung des «Auftauchens»

Bisher liegen wenige didaktische Konzepte zur Einbettung von VR in Lernsettings vor. Auch mangelt es an empirischen Untersuchungen (Buchner und Aretz 2020, 197; Zender et al. 2022, 28). In den letzten Jahren findet sich jedoch eine wachsende Anzahl lerntheoretischer und pragmatischer Forschungen zu VR, die sich um eine «(fach-)didaktisch sinnvolle Einbettung» bemühen (Przybylka 2022, 334).

Für die vorliegende Studie wurden auf Basis geschichtsdidaktischer Forschung Materialien für die didaktische Begleitung entwickelt. Fokussiert wird dabei die Phase direkt nach der Rezeption der VR, die hier als «Auftauchen» bezeichnet wird. Eine Vorstellung der Materialien erfolgt in Kapitel 4, die zugrundeliegenden Kriterien für die Gestaltung werden im Folgenden erläutert.

Ziel der Begleitung ist die Förderung von Geschichtsbewusstsein und damit der kritische und reflektierte Umgang mit Geschichtsdarstellungen. In Anlehnung an Schönemann wird darunter eine mentale Struktur verstanden, die sich in Auseinandersetzung mit Geschichtskultur (z. B. in Form von Denkmälern, historischen Spielfilmen) verändert (Schönemann 2011, 57). Pandel versteht Geschichtsbewusstsein weiterhin als eine aus sieben aufeinander bezogenen (Bewusstseins-)Dimensionen zusammengesetzte Struktur (Pandel 2017, 137; Abb. 1). Diese Dimensionen vereinen die Fähigkeiten zur Analyse und Beurteilung von Darstellungen von Vergangenheit (Pandel 2017, 233).

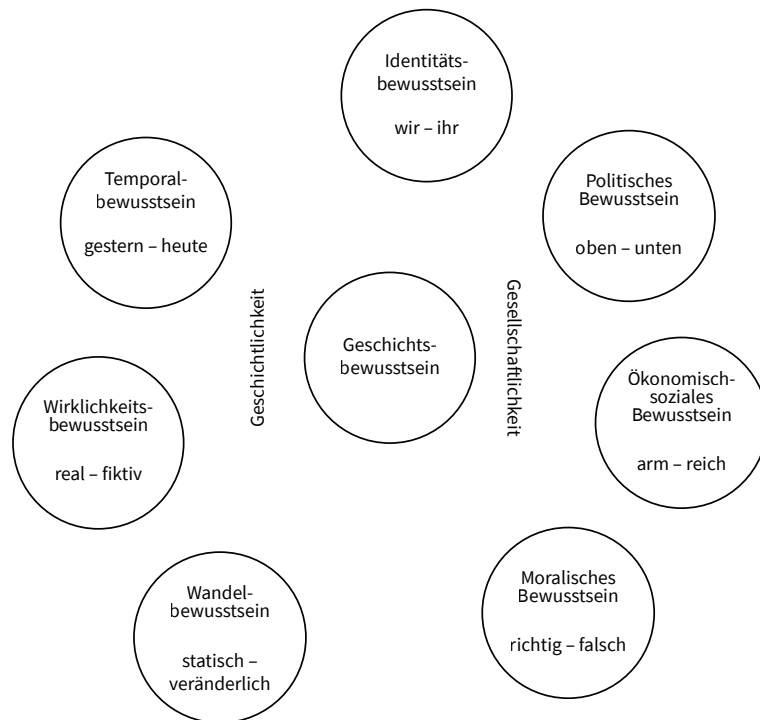


Abb. 1: Dimensionen des Geschichtsbewusstseins, übernommen aus: Pandel 2017, 137.

Geschichtsbewusstsein meint ausserdem, dass Individuen sich ihrer Wahrnehmungen und Einstellungen bewusst sind. Reflexivität gilt somit als eine wesentliche Eigenschaft (Schönemann 2012, 104).

Aufgrund der komplexen Struktur sollten in didaktischen Kontexten nur einzelne Dimensionen fokussiert werden. An dieser Stelle werden das *Temporal-* und das *Wirklichkeitsbewusstsein* adressiert, da diese für eine kritische Auseinandersetzung mit VR als grundlegend erachtet werden. *Temporalbewusstsein* wird als die Fähigkeit gefasst, zwischen den «Zeitmodi Vergangenheit, Gegenwart und Zukunft» zu unterscheiden (Pandel 2017, 138). Mit *Wirklichkeitsbewusstsein* ist die Fähigkeit gemeint, «eine Grenze zwischen realen und fiktiven Ereignissen und Personen ziehen zu können» (Pandel 2017, 140). Das bedeutet, dass unterschiedliche Gattungen (z. B. Romane, Filme) im Hinblick auf ihre «Faktizitätsniveaus» (Kontinuum von real bis fiktiv) untersucht werden können (Pandel 2017, 140). In Bezug auf die Auseinandersetzung mit geschichtsbezogener VR heisst das, dass die Anwendungen als konstruierte und damit teilweise fiktive Produkte der Gegenwart verstanden werden, anhand derer Aspekte der Vergangenheit veranschaulicht werden, es sich also um Darstellungen *aus* der Gegenwart *für* die Gegenwart handelt. Empirisch ist diese mentale Struktur schwierig messbar, weswegen viele Studien der geschichtsdidaktischen Forschung sich auf bereits stärker operationalisierte Kompetenzen fokussieren (z. B. Kompetenzen des FUER-Modells, Trautwein et al. 2017), wobei auch dabei die empirische

Messung als herausfordernd gilt (Körper 2019). In diesem Beitrag wird sich daher – orientiert an Pandels (2017) Dimensionen von Geschichtsbewusstsein – einer *Quantifizierung von Geschichtsbewusstsein basierend auf einer qualitativen Analyse* annähert.

Die Begleitung des «Aufauchens» soll eine Dekonstruktion des Mediums und Inhalts sowie das Verständnis für die verschiedenen Zeitebenen anregen. Die Auseinandersetzung

«muss deutlich werden lassen, dass es sich bei diesen geschichtskulturellen Angeboten um Konstruktionen vergangener Lebenswelten und Räume handelt, die nur eine Annäherung an das Vergangene ermöglichen, aber kein Erleben derselben.» (Bunnenberg 2020, 53).

Daneben soll eine Auseinandersetzung mit der eigenen Wahrnehmung und Perspektive angeregt werden: Was habe ich aus der VR mitgenommen? Was habe ich empfunden? Es ist wichtig, das Medium und seine Wirkungsweise kritisch zu hinterfragen, um sich von den vorgegebenen Deutungen lösen und eigene Interpretationen entwickeln zu können (Buchner und Mulders 2020, 13; Lewers 2022, 13).

Weitere Kriterien für die Auswahl und Gestaltung der Materialien bilden *Multiperspektivität* und *Kontroversität*. Angebote der Geschichtskultur präsentieren den Rezipierenden häufig einseitige und vereinfachende Darstellungen, die der Komplexität von Vergangenheit und Geschichte nicht gerecht werden (können). Auch die VR-Anwendung «Was wollten Sie in Berlin?!» bietet den Nutzenden nur *eine* Perspektive an – die der Opfer. Daher ist es wichtig, die Nutzenden auf diesen Umstand hinzuweisen sowie darauf, dass die Darstellung allein aus diesem Grund eine begrenzte Aussagekraft besitzt. Eine Möglichkeit wäre es, im Rahmen der Materialien weitere zeitgenössische Perspektiven anzubieten, um die unterschiedlichen Wahrnehmungen der Zeit deutlich zu machen (*Multiperspektivität*; Lücke 2012, 283). Es können aber auch weitere Meinungen von gegenwärtig Forschenden zum selben Sachverhalt eingebunden und der Vergleich angeregt werden (*Kontroversität*; Lücke 2012, 285). Mit diesen Mitteln können die Einsichten ermöglicht werden, dass die Darstellung nur eine Perspektive abbildet und dass die Deutung durch die eigene Person zudem ein individueller Akt ist. Zudem wird es dadurch möglich, verschiedene Perspektiven in einen historischen Kontext einzuordnen (ebd.). Kontextualisierung gilt daher ebenfalls als wichtiges Gestaltungskriterium für die didaktische Einbettung. Die VR und ihre Inhalte sollten nicht kontextlos vermittelt, sondern in den grösseren (historischen) Zusammenhang eingebettet werden (Brauer und Zündorf 2019, 383f.).

In diesem Beitrag soll daher das «Aufauchens» durch ein Dekonstruktionsangebot begleitet werden, das die kritische Betrachtung des Mediums und die Identifikation der eigenen Eindrücke anregen sowie multiperspektivische Zugänge und Kontextualisierung anbietet, um *Temporal-* und *Wirklichkeitsbewusstsein* zu adressieren.

Darüber hinaus wird der Ansatz verfolgt, die Emotionalität des Videos zu verringern, um eine Distanzierung zum Gegenstand und die Entwicklung von Geschichtsbewusstsein zu ermöglichen.

Aufbauend auf den theoretischen Ausführungen zum Spannungsfeld zwischen Präsenzerleben und Emotionen auf der einen und Geschichtsbewusstsein auf der anderen Seite sowie auf den Überlegungen zur Begleitung des «Auftauchens» werden in diesem Beitrag folgende Forschungsfragen untersucht:

1. Wie wirkt geschichtsbezogene VR auf die Rezipierenden? Inwiefern lassen sich Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen feststellen? (F1)
2. Welchen Einfluss haben die Begleitung des «Auftauchens» und die Emotionalität des Videos auf Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen? (F2)
3. Wie verhalten sich Geschichtsbewusstsein, Präsenzerleben und Emotionen zueinander? (F3)

4. Methode

4.1 Design

Zur Untersuchung der Forschungsfragen wurde eine Laborstudie¹ im 2 (Emotionalität) x 2 (Dekonstruktionsangebot)-Between-Subjects-Design durchgeführt. Die Studie umfasste vier Experimentalgruppen (Tabelle 1).²

	Emotionaler Teil	Weniger Emotionaler Teil
Dekonstruktionsangebot	VG 1 (n=17)	VG 3 (n=18)
Kein Dekonstruktionsangebot	VG 2 (n=18)	VG 4 (n=17)

Tab. 1: Experimentalgruppen VG1, VG2, VG3 und VG4.

1 Der vorliegende Beitrag beschreibt eine separate Teilfragestellung innerhalb einer Laborstudie. Weitere Fragestellungen, die quantitativ innerhalb der Laborstudie untersucht wurden, werden getrennt betrachtet und können in der Pre-Registrierung (https://osf.io/utpbn/?view_only=3eda6116a6e54d55beca4a0252f4a88a) oder einem separaten wissenschaftlichen Artikel (Frentzel-Beyme und Krämer 2022b) eingesehen werden.

2 Das Design der Studie wurde von der Ethikkommission der Universität Duisburg-Essen geprüft. <https://www.uni-due.de/iw/inko/de/ethikkommission/>

4.2 Manipulationen

4.2.1 Emotionen

In der Studie wurde die VR-Anwendung «Was wollten Sie in Berlin?» eingesetzt, die mit einer VR-Brille geschaut wurde (Bild 1). Von der geschichtsdidaktischen Forschung wurde die Anwendung stark kritisiert, der aktuelle Gedenkstättenleiter hat sich ausserdem von der Darstellung distanziert (van Laak 2021; Bunnenberg 2021b; Brauer und Zündorf 2019). Kritisiert wurde vor allem der emotionalisierende Zugang und die Erweckung des Eindrucks, die Zuschauenden könnten durch das Video die Emotionen der damaligen Häftlinge nacherleben. Trotz der Kritik bietet die Darstellung die Möglichkeit zu untersuchen, wie sich emotionalisierende VR auf die Nutzenden auswirkt.



Abb. 2: VR Brille. Cardboard + mobiles Endgerät (360°-Video im Cardboard-Modus).

Um die Emotionalität des Inhalts zu variieren, wurden zwei verschiedene Ausschnitte der Anwendung verwendet. Basierend auf einer Vorstudie ($N=58$) wurde ein Teil der Anwendung als emotional ($M=7.8$; $SD=1.2$) und ein anderer als weniger emotional ($M=6.7$; $SD=2.3$) klassifiziert, da die statistischen Analysen ergaben, dass sich die beiden Teile hinsichtlich ihrer Emotionalität signifikant unterschieden ($t(56)=2,03$; $p=.048$; $d=.524$). Inhalt und Umfang beider Teile sind in Tabelle 2 zu finden. Obwohl sich die einzelnen Szenen inhaltlich zum Teil unterscheiden, ähnelt sich der Kerninhalt der beiden Ausschnitte. Die Teile beinhalten ähnliche Szenen (z. B. Verhör) und spielen beide im Stasi-Gefängnis Berlin Hohenschönhausen.

	Szene	Inhalt
Weniger emotionaler Teil (0:00 bis 2:11 Minuten)		
	1	Begrüßung durch drei Gefängniswärter vor dem Gefängnis Berlin Hohenschönhausen
	2	Übergabe der Haftkleidung, Leibesvisitation
	3	Verhör durch zwei Beamte
	4	Aufnahme des Erkennungsfotos durch zwei weitere Beamte
	5	Unterbringung in der Gefängniszelle
Emotionaler Teil (2:12 bis 4:26 Minuten)		
	1	Verhör durch zwei Beamte, wobei einer der beiden Beamten auf die Person zugeht, sie anschreit und Zigarettenrauch ins Gesicht pustet
	2	Unterbringung in der Gefängniszelle und Zusammentreffen mit dem Zellennachbarn, der versucht die Person zur Zusammenarbeit mit der Stasi zu überreden

Tab. 2: Inhalte des weniger emotionalen und des emotionalen Teils der VR-Anwendung.

4.2.2 Dekonstruktionsangebot

Das Dekonstruktionsangebot (im Folgenden: DA) bestand aus Nachrichtenartikeln, die den Teilnehmenden nach der Nutzung der VR-Anwendung zur Verfügung gestellt wurden. Der Nachrichtenartikel in der Dekonstruktionsbedingung befasst sich mit der VR-Anwendung der Gedenkstätte Berlin Hohenschönhausen und orientiert sich an den in Kapitel 3 vorgestellten geschichtsdidaktischen Kriterien (Dekonstruktion des Mediums, Identifikation der eigenen Eindrücke, Kontroversität, Kontextualisierung) (548 Wörter). Der Nachrichtenartikel, der nicht als Angebot zur Dekonstruktion verstanden werden kann, befasst sich mit Virtual Reality-Technologien im Allgemeinen und skizziert Anwendungsbereiche (550 Wörter). Die vollständigen Artikel können in OSF eingesehen werden (s. Fn. 4).

4.3 Vorgehensweise

Innerhalb der Laborstudie wurden die Teilnehmenden gebeten, verschiedene Fragebögen zu beantworten sowie einen Ausschnitt der VR-Anwendung anzuschauen und einen Nachrichtenartikel zu lesen. Zum Schluss wurden die Teilnehmenden gebeten, eine offene Frage zum «Erleben» der VR-Anwendung schriftlich zu beantworten, welche die Grundlage der qualitativen Analyse bildet: «Sie haben eben die VR Anwendung <Was wollten Sie in Berlin?> genutzt. Beschreiben Sie bitte, was Sie erlebt haben.» Abbildung 3 gibt einen detaillierten Überblick über Ablauf und Fragebögen der Studie (Dauer: ca. 20 Minuten).



Abb. 3: Überblick über den Ablauf der Studie. * Grundlage der qualitativen Analyse.

4.4 Stichprobe

Insgesamt nahmen 99 Personen (Alter: $M=22.5$, $SD=5.3$; 74 Frauen, 24 Männer und 1 diverse Person) an der Laborstudie teil. Die Rekrutierung der Teilnehmenden war sehr breit ausgerichtet, um möglichst viele Personen zu adressieren: Sie richtete sich an Studierende (z. B. in Vorlesungen), aber auch Personen ausserhalb des universitären Kontextes (z. B. über Anzeigen auf Ebay Kleinanzeigen). Da die Beantwortung der offenen Frage, welche die Grundlage der qualitativen Analyse bildet, freiwillig war, wurde diese von nicht allen Teilnehmenden beantwortet. Die Stichprobe der qualitativen Analyse umfasst daher 70 Teilnehmende im Alter von 17 bis 54 Jahren ($M=23.0$, $SD=5.9$; 53 Frauen, 16 Männer, 1 keine Angabe), die hauptsächlich Studierende waren (91.4%). Diese gaben an, das Abitur (84.3 %) , einen Hochschulabschluss (12.9%) oder Realschulabschluss (2.9%) erworben zu haben.

5. Ergebnisse

5.1 Vorgehen bei der Auswertung

Die Antworten auf die offene Frage wurden mittels der inhaltlich strukturierenden Inhaltsanalyse orientiert an Kuckartz ausgewertet (Kuckartz und Rädiker 2022, 132ff.). Durch induktive und deduktive Kategorienbildung erarbeiteten drei Kodierende ein Kategoriensystem. Darauf basierend wurde das gesamte Material durch eine Kodierende kodiert. Ein zweiter Kodierender kodierte etwa 25% (n=18) der Antworten der Teilnehmenden (moderate Intercoder-Reliabilität: Cohens Kappa $\kappa = .41$). Das Kategoriensystem bildet drei Hauptkategorien ab: *Geschichtsbewusstsein*, *Präsenzerleben* und *Emotionen*. In Abbildung 4 werden die Haupt- und Subkategorien sowie Beispiele für codierte Textsegmente dargestellt.

Die Kategorie *Geschichtsbewusstsein* und die darin enthaltenen Subkategorien wurden in Anlehnung an Pandels Dimensionen von Geschichtsbewusstsein (2017) entwickelt und dabei *Temporal-*, *Wirklichkeitsbewusstsein* sowie *moralisches Bewusstsein* fokussiert. Diese wurden auch durch das DA adressiert (Kapitel 3). Unter *moralisches Bewusstsein* fielen Äusserungen der Rezipierenden, durch welche die gezeigten Handlungen bewertet werden (Pandel 2017, 148). Die Äusserungen zeichnen sich häufig durch Emotionalität aus und lassen sich z. B. als «Gefühle der Verpflichtung» (Scham, Schuld, Mitgefühl) und «Gefühle der Aversion» (Ekel, Hochmut, und Hass) fassen (Pandel 2017, 149).

Die Kategorie *Präsenzerleben* wurde in Anlehnung an medienpsychologische Forschung erstellt und umfasst die Subkategorien räumliche, soziale und *narrative Präsenz*, wie sie in Kapitel 2 des Beitrags ausgeführt wurden.

Die Kategorie *Emotionen* wurde in Anlehnung an allgemeine affektive Emotionen (Breyer und Bluemke 2016) erstellt. Als Subkategorien wurden hier *affektive negative Emotionen* (z. B. schuldig, ängstlich) und *affektive positive Emotionen* (z. B. interessiert, aufmerksam) codiert (Breyer und Bluemke 2016, 2f.). Die Kategorie grenzt sich von der Kategorie *moralisches Bewusstsein* ab, da es hier um die direkte Äusserung eigener Empfindungen wie z. B. Angst geht.

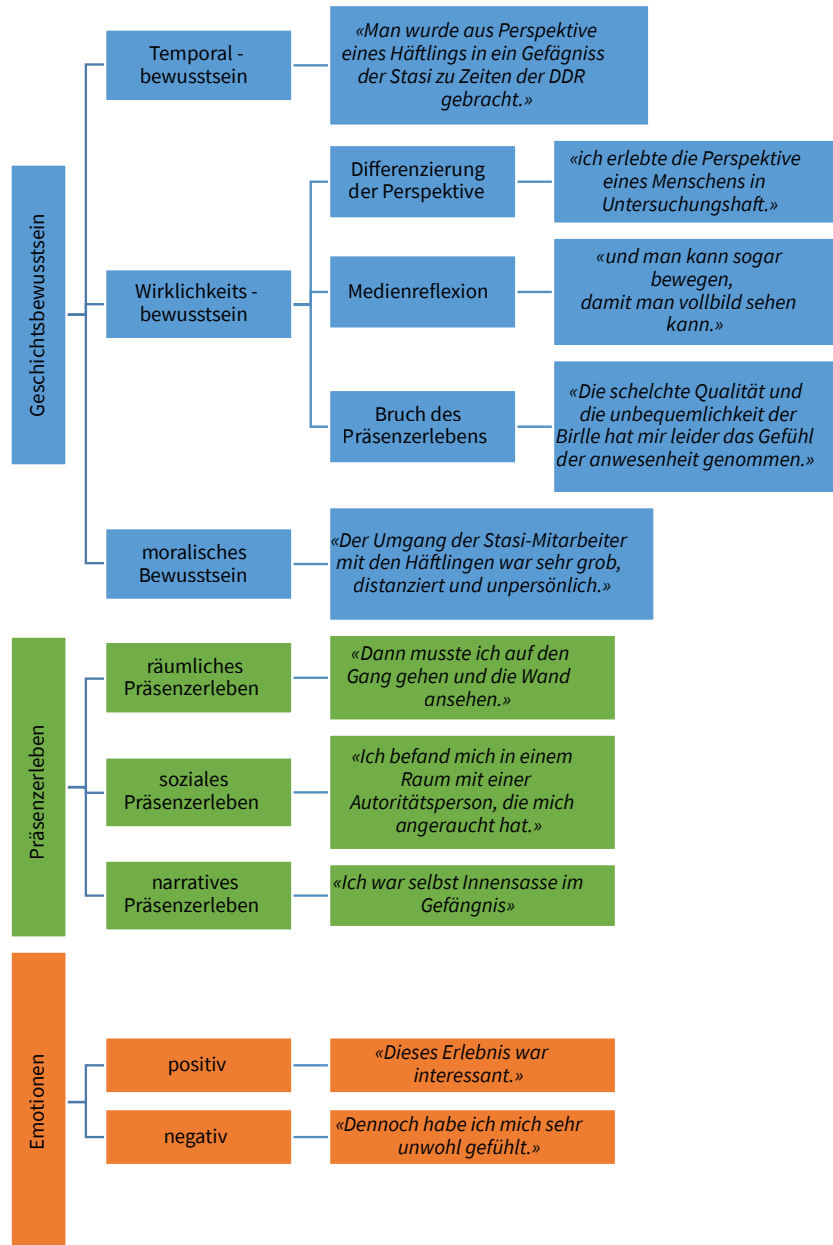


Abb. 4: Kategoriensystem mit Ankerbeispielen.

5.2 Auswertung der Codehäufigkeiten

Nach der kategoriengeleiteten Codierung wurden die Codehäufigkeiten berechnet. Die folgenden Angaben bilden ab, wie häufig der jeweilige Code in den Dokumenten mindestens einmal vergeben wurde. Darüber hinaus wurden die Häufigkeiten der einzelnen Kategorien und ihrer Subkategorien pro Versuchsgruppe betrachtet.

Die Darstellung der Ergebnisse erfolgt deskriptiv entlang der Forschungsfragen. Die Interpretation der Daten erfolgt in Kapitel 6.

5.2.1 Wie wirkt geschichtsbezogene VR auf die Rezipierenden? Inwiefern lassen sich Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen feststellen? (F1)

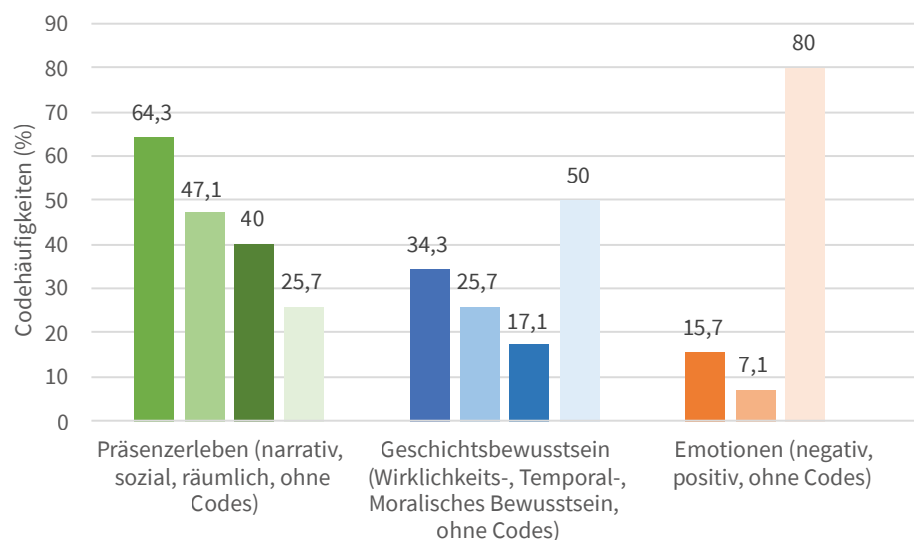


Abb. 5: Codehäufigkeiten der Unterkategorien im gesamten Material.

In Abbildung 5 zeigt sich, dass bei einer Mehrheit der Rezipient:innen mindestens eine Art von *Präsenzerleben* codiert wurde. In lediglich 25,7% der Antworten wurde kein Präsenzerleben festgestellt. Allgemein überwog das wahrgenommene *narrative Präsenzerleben* der Befragten (64,3%), gefolgt vom *sozialen* (41,1%) und *räumlichen Präsenzerleben* (40%). Hinsichtlich des *Geschichtsbewusstseins* enthielten insgesamt 52,2% der Antworten eine Aussage zu mindestens einer Dimension von *Geschichtsbewusstsein*, wobei das *Wirklichkeitsbewusstsein* dominant auftrat (34,3%). *Emotionen* wurden nur in 20% der Antworten codiert. Dabei wurden bei 15,7% der Antworten explizit *negative* («Ich habe aus Angst nichts gesagt.») und 7,1% *positive Emotionen* codiert («Dieses Erlebnis war interessant.»).

Die Ergebnisse legen die Wahrnehmung von *Präsenzerleben* sowie vereinzelt *Emotionen* als Reaktion auf die VR nahe. Darüber hinaus geben sie Hinweise auf Dimensionen von *Geschichtsbewusstsein* bei den Befragten.

5.2.2 Welchen Einfluss haben das Dekonstruktionsangebot (DA) und die Emotionalität des Videos auf Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen? (F2)

Um den Einflüssen des DA sowie der Emotionalität des Videos nachzugehen, erfolgte eine Untersuchung der Äusserungen der Teilnehmenden entlang der Kategorien im Hinblick auf die unterschiedlichen Versuchsgruppen (im Folgenden: VG) (Abb. 6). Zur Untersuchung der Forschungsfrage wurde hier keine Unterscheidung zwischen den Subkategorien in den Blick genommen, sondern ermittelt, in wie vielen Antworten der Teilnehmenden mindestens eine der Unterkategorien angesprochen wurde.

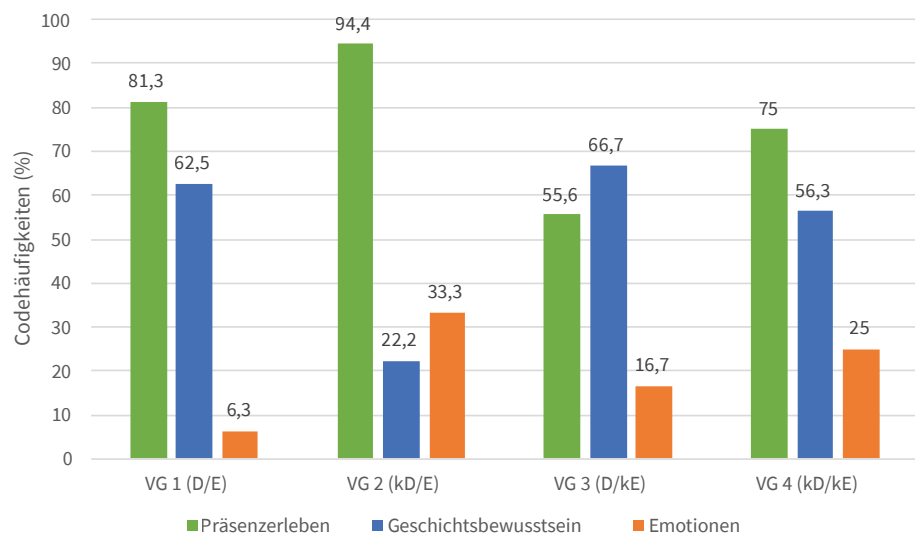


Abb. 6: Codehäufigkeiten der Hauptkategorien nach VG.

Dekonstruktionsangebot und emotionaler Inhalt

In VG1 erhielten die Probanden nach der Rezeption der VR das DA und sahen die Szenen des Videos, die als emotional klassifiziert wurden (E). 81,3% ihrer Antworten wiesen eine Art von *Präsenzerleben* auf, wobei *soziales* und *räumliches Präsenzerleben* dominierten und in jeweils 68,8% der Antworten codiert wurden. Dimensionen von *Geschichtsbewusstsein* wurden in insgesamt 62,5% der Antworten gefunden, wobei insbesondere die Kategorie *Wirklichkeitsbewusstsein* in 43,8% der Antworten festgestellt wurde (Beispiel für *Reflexion des Mediums*: «sich hineinversetzen kann man nicht mit Sachtexte lesen gleichsetzen»). *Emotionen* wurden in 6,3% der Antworten codiert, wobei allein *negative Emotionen* geäußert wurden. Nur 6,3% der Antworten wiesen keine Art von Codierung auf.

Anhand der Antwort einer befragten Person lassen sich die Ergebnisse der Auswertung verdeutlichen:

«Ich habe erlebt, wie sich ein Gefangener gefühlt hat zu DDR Zeiten. Dadurch, dass ich das Gefühl hatte ich werde angesprochen bzw. angeschrien, kann ich mich mehr in die Zeit damals hineinsetzen. Allgemein die Wahrnehmung der Umgebung war sehr realistisch und bewirkte ebenfalls ein Gefühl von Gegenwart.»

Die Passagen «ich habe erlebt» und «kann mich mehr in die Zeit hineinsetzen» deuten auf *narratives Präsenzerleben* hin, da sie verdeutlichen, dass diese Person sich als Teil der dargestellten Szene wahrgenommen hat. Durch die Nennung «zu DDR Zeiten» wurde eine zeitliche Verortung vorgenommen, welche auf ein vorhandenes *Temporalbewusstsein* hindeutet. Zudem wird das «Gefühl von Gegenwart» auf die realistische Darstellung zurückgeführt, welches eine *Reflexion des Mediums* darstellt. Insgesamt verdeutlicht das Beispiel das gleichzeitige Vorhandensein von *Präsenzerleben* und *Geschichtsbewusstsein*.

Fehlendes Dekonstruktionsangebot und emotionaler Inhalt

Auch in VG2 sahen die Probanden die als emotional bewerteten Szenen, erhielten jedoch kein DA. Innerhalb dieser VG berichteten fast alle Teilnehmenden eine Art von *Präsenzerleben* (94,4%), wobei *soziale* und *narrative Präsenz* am häufigsten codiert wurden (je 66,7%). Im Vergleich zu den anderen VG zeigt sich innerhalb dieser Gruppe deutlich, dass ein vergleichsweise hohes *Präsenzerleben* festgestellt wurde. Auch *Emotionen* wurden in VG2 am häufigsten codiert (33,3%). Eine Person äusserte *Emotionen* wie folgt: «Ich wurde von einem Mann verachtet und erniedrigt. Es wurde auf mich eingeschrien und mir Anweisungen gegeben, ohne das ich mich dagegen wahren konnte.» Diese Antwort zeigt deutlich *Emotionen*, die Passage «Ich wurde von einem Mann verachtet» sowohl *soziales* als auch *narratives Präsenzerleben*. *Geschichtsbewusstsein* wurde hingegen weniger häufig geäußert und nur in 22,2% der Antworten verortet.

Dekonstruktionsangebot und weniger emotionaler Inhalt

Bei den Befragten, die das DA erhielten und die weniger emotionalen Szenen des Videos sahen, wurde im Vergleich zu den anderen VG deutlich häufiger eine Art von *Geschichtsbewusstsein* (66,7%) codiert. Insbesondere die Unterkategorie *Wirklichkeitsbewusstsein* kristallisierte sich als dominant heraus (44,4%, «In dem Video hat man erleben können, wie vermutlich Verhaftungen, Verhöre, etc. in einem Stasi-Gefängnis zu Zeiten der DDR abgelaufen sind.»). *Präsenzerleben* wurde in 55,6% der

Antworten festgestellt, wobei das *narrative Präsenzerleben* mit Abstand am meisten adressiert wurde (55,6%). *Emotionen* liessen sich in 16,7% der Antworten finden, wobei *positive Emotionen* (16,7%) gegenüber *negativen Emotionen* (5,6%) überwogen.

Das Zitat «Eine Führung durch das vorherige Gefängnis des Ministeriums für Staatsangelegenheiten. Dort wurde probiert zu simulieren, wie Personen zu der damaligen Zeit behandelt wurden sind in solchen Anstalten.» zeigt exemplarisch eine distanzierte Haltung. Hier werden eine zeitliche Verortung vorgenommen («das vorherige Gefängnis») und der Konstruktionscharakter der Darstellung angesprochen («probiert zu simulieren»), weshalb *Wirklichkeitsbewusstsein* und *Temporalbewusstsein* codiert wurden.

Fehlendes Dekonstruktionsangebot und weniger emotionaler Inhalt

Bei Befragten, die weder das DA erhielten noch die emotionalen Szenen sahen, wurde insbesondere *Präsenzerleben* (75%) festgestellt. Das *narrative Präsenzerleben* wurde dabei am häufigsten codiert (61,1%, «Ich habe mich wie ein politischer Gefangener gefühlt»). Dimensionen von *Geschichtsbewusstsein* wurden in 56,3% der Antworten gefunden, wobei alle Unterkategorien (*Temporal-*, *Wirklichkeits-*, *moralisches Bewusstsein*) Werte zwischen 22% und 28% aufweisen. Es wurden keine *positiven Emotionen*, dafür in 25% der Texte *negative Emotionen* codiert («Dennoch habe ich mich sehr unwohl gefühlt.»). 11,1% der Texte sind ohne Codierungen.

Am folgenden Beispiel wird die Parallelität von *geschichtsbewussten* Äusserungen und *emotionalen* Reaktionen deutlich:

«Das sieht wie genau in der Situation der Vergangenheit aus. Ich habe danach auch ein bisschen Angst und Ärger. Aber ich glaube die sind nur Schauspieler:innen, nicht die echten Personen in DDR.»

Es wurden hierbei *negative Emotionen* codiert («Angst und Ärger»), dennoch zeigt sich eine gewisse *Reflexion des Mediums*.

Zusammenführung

Die Kategorie *Präsenzerleben* dominiert in jeder Versuchsgruppe. Die höchsten Werte für *Präsenzerleben* wurden festgestellt, wenn die emotionalen Szenen des Videos gezeigt wurden (VG1, VG2). Dabei weisen *narratives* und *soziales Präsenzerleben* jeweils ähnliche Häufigkeiten auf (VG1: 68,8%; VG2: 66,7%). Der niedrigste Wert findet sich in VG3, der keine emotionalen Szenen zeigt und das DA eingesetzt wurde. Es deutet sich ein Zusammenhang von *Präsenzerleben* und emotionalen Inhalten der VR an, insbesondere da die Werte für *soziales Präsenzerleben* in VG1 und VG2

deutlich höher sind als in VG3 (22,2%) und VG4 (27,8%), bei denen keine emotionalen Szenen gezeigt wurden. Auswirkungen des DA auf *Präsenzerleben* bilden die Ergebnisse nicht ab.

Da die Werte für *Geschichtsbewusstsein* in den Versuchsgruppen, die ein DA erhielten (VG1, VG3), am höchsten sind, legen die Ergebnisse nahe, dass das DA einen positiven Einfluss auf Äusserungen von *Geschichtsbewusstsein* hat. So wurde in VG3 häufiger *Geschichtsbewusstsein* (66,7%) als *Präsenzerleben* (55,6%) festgestellt. Ebenso wirkt sich die geringere Emotionalität des Videos positiv auf *Geschichtsbewusstsein* aus (VG4), während die höhere Emotionalität negative Auswirkungen hat. So beträgt der Wert für *Geschichtsbewusstsein* in VG2 nur 22,2%.

Die Untersuchung nach Versuchsgruppen legt nahe, dass das DA einen Einfluss auf die Äusserung von *Emotionen* sowie *Geschichtsbewusstsein* hat. Die Emotionalität des Videos wirkt sich auf *Präsenzerleben* aus. Ein deutlicher Effekt der Emotionalität des Videos auf *Geschichtsbewusstsein* und *Emotionen* zeigt sich nicht.

5.2.3 Wie verhalten sich *Geschichtsbewusstsein*, *Präsenzerleben* und *Emotionen* zueinander? (F3)

Abbildung 5 gibt zudem Auskunft darüber, wie sich die Hauptkategorien zueinander verhalten. Die Daten der unterschiedlichen VG zeigen, dass ein hoher Wert für *Präsenzerleben* nicht in jedem Fall mit einem niedrigen Wert für *Geschichtsbewusstsein* einhergeht. Sind die Werte für *Präsenzerleben* in VG1 (81,3%) und VG4 (75%) recht hoch, sind es ebenso die Werte für *Geschichtsbewusstsein* (VG1 = 62,5%, VG4 = 56,3%). In VG2 findet sich der höchste ermittelte Wert für *Präsenzerleben* neben dem niedrigsten für *Geschichtsbewusstsein*. Dieser Effekt wird auf die Emotionalität des Inhalts und das Fehlen des DA zurückgeführt. Das DA und die geringere Emotionalität des Videos führen in VG3 zum höchsten Wert von *Geschichtsbewusstsein* und dem niedrigsten Wert von *Präsenzerleben*.

Bezüglich des Zusammenhangs von *Geschichtsbewusstsein* und *Emotionen* zeigt Abbildung 5, dass hohe Werte für *Geschichtsbewusstsein* mit niedrigeren Werten für *Emotionen* einhergehen (VG1, 2 und 4). Die Werte sind jedoch wenig aussagekräftig, da in 80% der Texte keine *Emotionen* codiert wurden und die Aussage damit auf einer geringen Fallzahl basiert. Ein Zusammenhang von *Präsenzerleben* und *Emotionen* lässt sich anhand der Werte nicht feststellen.

Weiterführende Korrelationsanalysen³ zeigten darüber hinaus, dass Äusserungen von *Präsenzerleben* und *Emotionen* ($\phi = .189, p = .114$), *Emotionen* und *Geschichtsbewusstsein* ($\phi = -.107, p = .370$), *Geschichtsbewusstsein* und *Präsenzerleben* ($\phi = .173, p = .147$) nicht signifikant miteinander in Verbindung stehen.

3 Korrelationen wurden mittels Phi-Koeffizienten untersucht begründet in den dichotomen Charakteristika der Variablen. Zur Analyse wurde die Statistik-Software IBM SPSS (Version 29.0) verwendet. Werte zur Signifikanz sind als Annäherung zu verstehen.

6. Diskussion

6.1 Interpretation der Ergebnisse

6.1.1 Wie wirkt geschichtsbezogene VR auf die Rezipierenden? Inwiefern lassen sich Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen feststellen? (F1)

Die Ergebnisse der Auswertung zeigen im Einklang mit quantitativer Forschung (z. B. Frentzel-Beyme und Krämer 2022a), dass das *Präsenzerleben* ein Schlüsselement bei der Rezeption geschichtsbezogener immersiver Anwendungen ist. Die Rezipierenden der VR berichteten mehrheitlich, dass sie sich als Teil der dargestellten Geschichte wahrnahmen (*narrative Präsenz*), ein Gefühl der Anwesenheit anderer Personen in der medierten Welt hatten (*soziale Präsenz*) oder sich sogar in der virtuellen Welt verorteten (*räumliche Präsenz*). Vor allem das Eintauchen in die dargestellte Geschichte (*narratives Präsenzerleben*) wurde dabei von Teilnehmenden berichtet. Während in der (quantitativen) Forschung meist *räumliches Präsenzerleben* als zentrales Element für das Gefühl der Anwesenheit in einer medial vermittelten Umgebung verstanden wird (Slater und Wilbur 1997, 604), stellen sich innerhalb der vorliegenden Untersuchung insbesondere das *narrative* und *soziale Präsenzerleben* als bedeutsam für das Erleben der Rezipierenden heraus. *Räumliches Präsenzerleben* wurde am wenigsten berichtet. Dies könnte in einem Mangel an Interaktionsmöglichkeiten und dem geringen Immersionsgrad der untersuchten VR-Anwendung begründet sein, da insbesondere *räumliches Präsenzerleben* durch den Grad der technologischen Immersion bestimmt wird (Frentzel-Beyme und Krämer 2022a).

Die geringe Häufigkeit von berichteten *Emotionen* seitens der Rezipierenden, unabhängig davon, ob die emotionalen Szenen rezipiert wurden oder nicht, ist überraschend, geht aber einher mit den quantitativen Ergebnissen der Untersuchung und vorherigen Untersuchungen, welche das vorliegende 360°-Video adressieren (Frentzel-Beyme und Krämer 2022b). Auch dort zeigte sich kein Einfluss der Emotionalität des Inhalts der VR-Anwendung auf die Emotionen der Rezipierenden, unabhängig davon, ob die Anwendung über einen Media Player oder ein Cardboard rezipiert wurde. Darüber hinaus wurde auch in dem uns vorliegenden Material die mit Emotionalität verbundene Kategorie *moralisches Bewusstsein* nur selten angesprochen. Damit unterscheiden sich die Ergebnisse von den Untersuchungen von z. B. Riva und Kollegen 2007 oder Green und Brock 2002, die nahelegen, dass ein enger Zusammenhang zwischen emotionalen Medieninhalten, Immersion und emotionalen Reaktionen besteht. Die Ergebnisse deuten daher nicht auf eine emotionale Überforderung als Reaktion auf emotionalisierte geschichtsbezogene VR hin, wie es in der geschichtsdidaktischen Forschung befürchtet wurde (Bunnenberg 2021).

6.1.2 *Welchen Einfluss haben das Dekonstruktionsangebot und die Emotionalität des Videos auf Dimensionen von Geschichtsbewusstsein, Präsenzerleben und Emotionen? (F2)*

Die Ergebnisse zeigen sichtbare Auswirkungen des DA sowie der Emotionalität des Videos auf das *Präsenzerleben* und *Geschichtsbewusstsein* der Befragten. Erhielten Teilnehmende ein DA und sahen eine geschichtsbezogene VR-Anwendung mit geringerer Emotionalität, zeigt sich eine deutliche Verschiebung der Häufigkeit zwischen *Geschichtsbewusstsein* und *Präsenzerleben* zugunsten des *Geschichtsbewusstseins*. Aussagen, welche eine Art von *Geschichtsbewusstsein* darstellen, wurden innerhalb dieser Versuchsgruppen am häufigsten gefunden. Diese Ergebnisse stützen die Annahme, dass eine geschichtsdidaktische Begleitung des «Auftauchens» in Form der Bereitstellung weiterer Informationen zum rezipierten Inhalt einen positiven Einfluss auf das *Geschichtsbewusstsein* der Rezipierenden hat. Es ist demnach möglich, über die Beschäftigung mit VR *Geschichtsbewusstsein* anzuregen, solange die Darstellung nicht für sich stehen gelassen, sondern didaktisch begleitet wird, wie es von der geschichtsdidaktischen Forschung vorgeschlagen wird (Bunnenberg 2021b, 51).

Darüber hinaus zeigte sich ein Zusammenhang von *Präsenzerleben* und emotionalen Inhalten der VR, da die Werte für *Präsenzerleben* in den Versuchsgruppen, welche die emotionalisierenden Inhalte rezipierten (VG1 und VG2), deutlich höher waren als bei jenen Rezipierenden, die die weniger emotionalisierenden Inhalte konsumierten. Diese Ergebnisse gehen einher mit bisherigen Forschungsergebnissen (Riva et al. 2007; Frentzel-Beyme und Krämer, 2022a).

6.1.3 *Wie verhalten sich Geschichtsbewusstsein, Präsenzerleben und Emotionen zueinander? (F3)*

Durch die Ergebnisse deuten sich v. a. zwei Zusammenhänge an: Wurde ein hoher Wert für *Geschichtsbewusstsein* ermittelt, ging dies mit einem niedrigen Wert für *Emotionen* einher, ebenso wurden bei einem hohen Aufkommen von *Geschichtsbewusstsein* geringere Werte für *Präsenzerleben* gemessen. Ein Zusammenhang zwischen hohem *Präsenzerleben* und geringem *Geschichtsbewusstsein* deutet sich jedoch, wie auch in quantitativen Untersuchungen (Frentzel-Beyme und Krämer, 2022a), nicht an. Dadurch kann die Befürchtung der fachdidaktischen Forschung, dass ein hohes *Präsenzerleben* die Ausbildung von *Geschichtsbewusstsein* verhin-dere (z. B. Oswald 2012), etwas entschärft werden.

6.2 Limitationen der Studie

Zunächst ist anzumerken, dass nicht alle Antworten die durchschnittlichen Ergebnisse der Versuchsgruppe abbilden. So gab es auch in VG3 Texte, in denen, trotz Konfrontation mit einem weniger emotionalen Inhalt und dem DA, kein

Geschichtsbewusstsein codiert wurde und es fanden sich stark *emotionale* Äusserungen in VG4, obwohl in dieser Gruppe kein besonders emotionaler Inhalt rezipiert wurde. Generell erwies sich die Codierung von *Geschichtsbewusstsein* als schwierig. So liess sich durch die Codierung nicht die Gleichzeitigkeit von «geschichtsbewussten» und «geschichtsunbewussten» Äusserungen innerhalb eines Textes abbilden: Auch wenn einige Passagen in einer Antwort auf *Temporal-* und *Wirklichkeitsbewusstsein* hindeuten mögen, kann es sein, dass diese Person die VR-Anwendung trotzdem als Abbild der Vergangenheit versteht. Die Äusserungen allein können daher nicht als Beleg für ein umfängliches *Geschichtsbewusstsein* verstanden werden, sondern als Aspekte der unterschiedlichen Dimensionen von *Geschichtsbewusstsein*, die nur partiell und unterschiedlich ausgeprägt bei den Testpersonen gezeigt werden konnten. Für weitere Untersuchungen wäre eine Graduierung interessant, um die Niveauunterschiede greifen zu können. Zudem wurden allein die Häufigkeiten berechnet, es erfolgte keine vertiefte qualitative Analyse der einzelnen Textantworten. Auch aufgrund der niedrigen Fallzahlen ($N = 70$) und der mangelnden Repräsentativität der Stichprobe muss die Studie als Annäherung verstanden werden.

7. Praktische Implikationen und Ausblick

Die Untersuchung zeigt, dass Dekonstruktionsangebote, die nach geschichtsdidaktischen Kriterien gestaltet sind, das «Auftauchen» aus geschichtsbezogener VR wirkungsvoll begleiten können. Das gestaltete DA wirkte sich positiv auf die Häufigkeit der Äusserungen von Geschichtsbewusstsein im Sinne Pandels aus. Rezipierende, die ein DA bekamen, war es insbesondere häufiger möglich, eine bewusste Unterscheidung zwischen Realität und virtueller Realität herzustellen («ich habe das Gefühl, da ich quai da war, b wohl das stimmt nicht.», *Wirklichkeitsbewusstsein*). Für die didaktische Einbettung von VR in informellen Lernkontexten bedeutet dies, dass die Verfügbarkeit weiterer Informationen sich positiv auf eine reflektierte Haltung der Nutzenden auswirken kann. Diese könnte im digitalen Raum über weiterführende Links z. B. zu Nachrichtenartikeln realisiert werden.

Es zeigte sich jedoch auch, dass eine Begleitung dieser Art nicht ausreichend ist, sollte das Ziel die umfassende Ausprägung von Geschichtsbewusstsein sein, das sich zwar in Ansätze erkennen liess, die aber als eingeschränkt zu verstehen sind (s. 6.2).

Andere Möglichkeiten, das «Auftauchen» im Hinblick auf die Ausbildung von Geschichtsbewusstsein zu unterstützen, sollten in weiteren Untersuchungen erprobt werden – zum Beispiel der Austausch mit anderen über das Gesehene. Dieser Austausch im Rahmen historischer Lernprozesse gilt als besonders relevant, da «Geschichte [...] nicht nur als selbstreferentielle Konstruktion [entsteht], sie ist immer auch Auseinandersetzung mit den Co-Konstruktionen anderer.» (Deile 2020, 228).

Neben dem «Auftauchen» könnte in weiteren Studien ausserdem bereits das «Eintauchen» didaktisch begleitet werden. So könnten Erwartungen an die Erfahrung formuliert und einer emotionalen Überforderung vorgebeugt werden, wie es z. B. auch vor Gedenkstättenführungen gemacht wird (Haug 2015).

Dennoch führte die eingesetzte VR-Anwendung, die v. a. aufgrund der zu starken Emotionalisierung ihrer Inhalte kritisiert wurde (Bunnenberg 2021b; Brauer und Zündorf 2019), nicht zu so starken emotionalen Reaktionen wie angenommen. Die Ergebnisse zeigen, dass Präsenzerleben und das Empfinden von (negativen) Emotionen Äusserungen von Geschichtsbewusstsein nicht unterdrücken. Obwohl Präsenzerleben häufiger geäussert wurde, wenn die VR emotionalisierende Inhalte zeigte, führte das Empfinden von Präsenzerleben nicht zwangsläufig dazu, dass die Ausbildung von Geschichtsbewusstsein verhindert wurde.

Da jedoch insbesondere dann negative Emotionen geäussert wurden, nachdem Teilnehmende den emotionalen Ausschnitt der VR konsumierten und nicht beim «Auftauchen» begleitet wurden, sollte der Einsatz weniger emotionaler Inhalte im Lehr/Lernkontext angestrebt werden, um eine emotionale Überwältigung zu verhindern und eine kritische, bewusste Verarbeitung der Inhalte zu fördern.

Zusammenfassend erwies sich eine Begleitung des «Auftauchens» aus geschichtsbezogener VR anhand von Nachrichtenartikeln, die nach geschichtsdidaktischen Kriterien erstellt wurden, als wirkungsvoll für die Unterstützung der Ausbildung von Geschichtsbewusstsein im informellen Kontext. Entgegen der bisherigen (v. a. theoretischen) Forschungsdiskussion konnte hier empirisch gezeigt werden, dass das Eintauchen in geschichtsbezogene VR (Präsenzerleben) eine reflektierte Wahrnehmung der Inhalte (Geschichtsbewusstsein) nicht ausschliesst.

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Research Paper II

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Back to the Past—An Experimental Investigation of the Effects of Immersive Historical Environments on Empathy and Morality

Abstract

Immersive environments are known for fostering empathy via their technological properties that offer users the opportunity to get immersed in a virtual environment and take other perspectives. As empathy and perspective-taking are considered to be the basis of moral development, the present study examines the potential of historical immersive media applications for the individual's moral development according to Kohlberg's stage model (1958). An integrative approach was used to examine the role of technological immersion as well as the recipients' immersion (presence, transportation) in eliciting empathy and promoting moral development and behavior. Therefore, an online experiment with one factorial between-subject design was conducted in which participants ($N = 289$) were exposed to historical media that differed only in their extent of technological immersion; participants either read a text, or watched a video, or a 360° video. In line with previous research, results showed that technological immersion positively affects presence, while transportation was not influenced by technological aspects. Furthermore, results revealed positive effects of transportation and presence on empathy which, in turn, was positively related to moral orientation and behavior. The study indicates that immersive historical environments can promote empathy and morality due to their immersive characteristics.

I Introduction

Increasingly, memorial places and museums make use of immersive historical environments, like virtual reality (VR), to make the past more tangible and vivid. Immersive historical environments are seen as a contemporary approach to illustrating the past, offering recipients previously impossible experiences (Beale & Reilly, 2017; Bell & Folger, 1995; Schofield et al., 2018). For instance, the memorial site Berlin Hohenschönhausen (Germany) offers visitors, through its 360° experience, the possibility to get an impression of what it was like to be a prisoner in the state security service (Stasi) prison of the German Democratic Republic (GDR) in the 1980s. It is important to emphasize

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that these applications cannot fully reflect the past or even create real experiences (Knoch, 2021; Nakamura, 2020). They are still a selected and effortfully produced representation of the past.

Historical immersive environments support the recipients' immersion into the historical content by creating an illusion of reality with the aid of technological characteristics (e.g., panoramic view; Fonseca & Kraus, 2016; Hofer, 2013; Slater & Wilbur, 1997). The richness of input and output channels (e.g., visual, sound, haptic) and interaction opportunities describe the degree of *technological immersion* of technologies (Herrera, Bailenson, Weisz, Ogle, & Zaki, 2018; Slater, 2003, 2018; Slater & Willbur, 1997). In this sense, 360° videos, which offer a panoramic view, are considered to be immersive but differ in their richness of technological immersion from other technologies that offer more input and output channels or interaction opportunities (e.g., Head-Mounted Display, HMD).

Immersive technologies promote the recipients' immersion in the virtual environment accompanied by a shift of attention to the mediated environment (Agrawal, Simon, Bech, Bæntsen, & Forchhammer, 2020). This phenomenon can be described by the term *presence*: "the sense of being there" (Slater & Willbur, 1997, p. 604). When dealing with narrative media a similar construct, *transportation*, describes the recipients' immersion into narration accompanied by the attentional focus on the narration (Green & Brock, 2000). As historical immersive environments are often characterized by their immersive and narrative characteristics (e.g., being a prisoner in the GDR) the current investigation focuses on the recipients' immersion in terms of presence and transportation.

Previous research indicated that immersion in immersive environments (VR) offers recipients the opportunity to understand other perspectives more deeply (De la Peña et al., 2010) and promotes empathy (Bal & Veltkamp, 2013; Shin, 2018). Especially, immersive environments that enable users to take another perspective are considered to help to empathize with others (e.g., how it feels to be homeless; Herrera et al., 2018). Therefore, VR is discussed as the "ultimate empathy machine" (Barreda-Ángeles, Aleix-Guillaume, & Pereda-

Baños, 2020, p. 683; for a critical discussion see Nakamura, 2020).

Taking other perspectives is, according to Kohlberg's moral stage model (1958), assumed to be essential for the individuals' moral development. Learning from the past and teaching individuals moral values is mentioned as an important aim of the historical and democratic education to ensure peaceful coexistence within the society (Brauer & Lücke, 2013; Haidt & Joseph, 2007; Kohlberg, 1971; Pizarro & Solovey, 2002). Therefore, getting the opportunity of taking another perspective in the past might be a useful way to support the individuals' moral orientation, as empathizing with others as an emotional component of perspective-taking is related to higher stages of moral orientation (Eisenberg, Cumberland, Guthrie, Murphy, & Shepard, 2005; Kohlberg, 1958).

In the light of this, the present study aims to investigate based on the immersive historical 360° experience of the German Stasi prison Berlin Hohenschönhausen whether historical immersive environments support the moral development according to Kohlberg's (1958) stage model. We assume that immersive historical environments will be more effective in fostering empathy in recipients than traditional historical media (text, video). Therefore, the study will examine the role of technological immersion in this context, as well as the role of the recipients' immersion (presence, transportation) in eliciting empathy and promoting moral development and moral behavior.

2 Theoretical Framework

2.1 Immersive Historical Environments

In recent years, immersive environments are becoming more and more present, even in history education (Zhang, 2019). History museums use immersive environments to illustrate past events and offer visitors experiences they were not able to get otherwise (Beale & Reilly, 2017). For instance, the Anne Frank House (Netherlands) offers a VR application in which individuals can inspect the family's hiding place

in the Second World War by using an HMD. But also, 360° videos are used to illustrate the past, more deeply involve recipients, and make history more interesting (Dondi, Lombardi, Rocca, Malagodi, & Licchelli, 2018). For instance, *History 360*¹ produced by German Public Broadcasters aims to bring historical contexts, developments, and events to life through 360° video productions.

According to frequent definitions, any “high-end user interface that involves real-time simulation and interaction through multiple sensorial channels” (Burdea & Coiffet, 2003, p. 3) or computer-generated realistic world (Pan & Hamilton, 2018; Zheng, Chan, & Gibson, 1998) is considered as a type of VR. In this sense, historical 360° videos (e.g., *History 360*) up to HMD applications (e.g., Anne Frank House) are VR applications (Fonseca & Kraus, 2016; Slater, 2018). VR is known for its immersive characteristics that offer users the opportunity to immerse in a computer-generated environment (Bell & Folger, 1995). Nevertheless, the term immersion is frequently used in different ways throughout literature. On the one hand, it describes a psychological state characterized by perceiving oneself to be part of, located in, and interacting with a virtual environment (Agrawal et al., 2020). On the other hand, it is seen as an objective characteristic of a technology (Slater & Wilbur, 1997).

2.2 Immersion as Technological Property

Whether technology can be described as immersive can be assessed based on specific characteristics. These are the extent of sensory input a device offers (e.g., sound or haptic), *surroundingness* (panoramic displays, e.g., 360° view), the richness of image features (*vividness*, e.g., dynamic illustration of shadows), or the matching of perceptual means with the virtual interface (*proprioceptive matching*; e.g., walking; Slater & Wilbur, 1997). Based on the surroundingness (panoramic view) and the proprioceptive matching (naturally looking around by moving the head or using the keyboard or

mouse) historical 360° videos can be classified as immersive. In line with this, technology is not classified binarily into immersive or non-immersive applications but rather described based on the extent of immersion (Slater & Wilbur, 1997). Following this, technologies that are characterized by a diversity of input and output channels (e.g., visual, sound, haptic) and interaction opportunities like HMD are considered to be highly immersive whereby 360° videos are less immersive but more immersive than standard videos (Bell & Folger, 1995; Slater, 2003, 2018). In the following, we will describe this type of immersion classified by objective technological characteristics *technological immersion*.

2.3 Human Reactions to Immersive Media: Presence and Transportation

When immersion refers to human reactions to media, it can be described by the term presence (Agrawal et al., 2020; Fonseca & Kraus, 2016; Slater, 2003). Same as immersion, presence is a vague term and can, on the one hand, refer to the subjective impression that a mediated experience is not mediated (Lombard & Ditton, 1997), summarized as the “*sense of being there*” (Slater & Willbur, 1997, p. 604). On the other hand, it can describe technological characteristics (Steuer 1992). In the following, we will use the term *presence* to explain the subjective experience of recipients to be part of and located in a mediated environment. It is assumed that individuals who experience presence perceive the virtual environment as more engaging and real than the actual physical environment (Slater & Wilbur, 1997). Recipients become fully immersed in the mediated environment, shifting their attentional focus on the virtual environment and turning out everything that is happening around them (Agrawal et al., 2020). As consequence, the mediated environment is perceived as a place visited.

Previous research showed that presence depends, among other things, on the extent of technological immersion (Breves, 2020; Fonseca & Kraus, 2016; Lee, Kim, & Kim, 2017; Troeger & Tümler, 2020). For instance, Troeger and Tümler (2020) showed a greater extent of presence for VR games compared to desktop

¹<https://history360.zdf.de/>

games and Lee et al. (2017) demonstrated in an experiment that presence increases if users can naturally move in a virtual environment with the aid of a walking simulator (proprioceptive matching). However, individual characteristics also affect the experience of presence (e.g., interest, motivation, personality; Hofer, 2013)

Furthermore, when dealing with immersive media, like video games or movies, there is mostly some kind of narration (Balakrishnan & Sundar, 2011). Some virtual media products tell a story (e.g., how trees are cut down; Ahn, Bailenson, & Park, 2014) and put the user into a specific role (e.g., homeless person; Herrera et al., 2018). This even occurs in historical immersive media applications which often include narration (e.g., being a prisoner in the GDR; Bunnenberg, 2020). Therefore, it is important to investigate the effects of narration when focusing on historical immersive environments. A term that describes to what extent a reader or viewer gets lost in the narrative plot is called *transportation* (Green & Brock, 2000, 2002) and is partly also described as cognitive and emotional immersion in a fictional world (Hofer, 2013).

In summary, both presence and transportation describe a subjective experience of users of being immersed in media. Literature highlights that presence and transportation should be treated separately as presence mainly describes location and interaction aspects of mediated environments, whereby transportation mainly refers to getting immersed into a story plot and depends on content factors (Green & Brock, 2000, 2002; Hofer, 2013; Nowak, 2001; Pressgrove & Bowman, 2021; Wissmath, Weibel, & Groner, 2009). Therefore, we will focus on the effects of presence and transportation, when examining the effects of immersive historical environments on empathy and moral development.

As previous research indicated that technological immersion affects the subjective experience of users to be part of and located in the computer-mediated environment (Breves, 2020; Fonseca & Kraus, 2016; Lee et al., 2017, Troeger & Tümler, 2020), we assume that when dealing with immersive historical media the richness of technological immersion positively affects presence. Although previous research indicated that technologi-

cal immersion does not have an impact on transportation (Pressgrove & Bowman, 2021), for instance, no differences in transportation between text and movies were found (Green, Kass, Carrey, Herzig, Feeney, & Sabini, 2008), we assume that higher technological immersion of historical immersive media also enhances transportation as it offers more insights into the story and in turn enhances the narrative engagement (e.g., what is happening behind; Sukalla, Bilandzic, Bolls, & Busselle, 2016). We expect that the slight technological immersion aspects of the immersive historical 360° experiences (panoramic view) involve recipients more deeply in the narration, as they get the opportunity to influence their direction of view in the immersive historical environment. At the same time recipients were not overwhelmed by a high number of technological functions which distract from the story itself (for instance, when using HMD). In sum, we assume positive effects of technological immersion on presence, as well as transportation.

H1: Technological immersion affects [a] presence and [b] transportation positively.

2.4 Immersive Media as the “Ultimate Empathy Machine”

Research indicates that presence offers “a platform for the experience of empathy” (Schutte & Stiljnović, 2017, p. 709), as it leads to a deeper understanding of other perspectives (De la Peña et al., 2010). For instance, Fonseca and Kraus (2016) experimentally showed higher levels of empathy in the VR condition which are accompanied by a greater extent of presence compared with the video condition. Moreover, research indicates that especially presence leads to the creation of empathy (Barreda-Ángeles et al., 2020). Herrera et al. (2018) found that individuals who were put into the perspective of a homeless person in VR showed higher levels of empathy regarding homeless people than before. While participants of the VR condition did not report higher empathic feelings compared to the traditional media condition, the authors pointed out stronger positive long-term effects on empathy in the VR

condition. Likewise, Barreda-Ángeles et al. (2020) showed in an experiment that the immersive presentation of journalistic stories increased empathy when they instructed participants to view various 360° videos dealing with different topics (e.g., refugees, the textile industry in Bangladesh) and measured empathy afterward. Also, Bal and Veltkamp (2013) report an increase in both empathy and presence when being transported into a fictional story and Johnson (2012) found that being transported into a story is positively related to affective empathy. These findings indicate that empathy as “the ability to recognize what other people are thinking and feeling, and the ability to engage with other people in a social manner” (Stueber, 2013, p. 1) can be supported with the aid of immersive media. Therefore, VR is frequently discussed as “the ultimate empathy machine” (Barreda-Ángeles et al., 2020, p. 683). However, the effects of VR on empathy were mixed and mainly shown for affective empathy, not cognitive empathy (Martingano, Herrera, & Konrath, 2021). Moreover, whether VR is an appropriate tool to educate recipients’ empathic skills is much debated (Lara & Rueda, 2021; Nakamura, 2020; Ramirez, Elliott, & Milam, 2021). It is criticized that such VR applications aim to create the impression of being someone else, which will indeed never be possible (Nakamura, 2020). For instance, being a prisoner in the GDR in VR will never show what it was exactly like to be a prisoner in the GDR. Therefore, it is important to emphasize that those VR applications rather enable recipients to be in someone else’s shoes (e.g., prisoner) which is always affected by the recipients’ perspective, experiences, and imagination skills (Lara & Rueda, 2021).

Nevertheless, presence and transportation are closely connected to an individual’s empathy (Bal and Veltkamp, 2013; Fonseca & Kraus, 2016). Therefore, we assume that presence and transportation affect empathy positively. Previous research mainly focused on context-related empathy (e.g., empathy toward the homeless; Herrera et al., 2018). Based on the findings of Mado, Herrera, Nowak, and Bailenson (2021) which indicated the effects of VR experiences on non-context specific empathy, we will investigate whether the sub-

jective experience of being in the immersive historical environment affects the recipients’ empathy in general.

H2: [a] Presence and [b] transportation affect empathy positively.

2.5 Empathy and Moral Development

Kohlberg (1958) assigned an important and central role to empathy in his theory of moral development. Building on the assumption that humans are intrinsically motivated to explore their environment, he assumed that empathy and perspective-taking build the basis of moral development (Althof, 1996; Kohlberg, 1958). According to Kohlberg’s theory (1958), a moral judgment can be reached only by a process of reasoning and reflection (Kohlberg & Kramer, 1969), which includes empathy as an emotional component of perspective-taking (Althof, 1996). For instance, when a child tries to decide whether it is right or wrong to steal a toy from another child, it is important to empathize with the other child and find out how he or she would feel about it and derive that it is not the right thing to do. Also, Eisenberg et al. (2005) argued that empathizing with others goes along with higher levels of moral orientation, the “use of a person’s moral voice, specifically, an ethic of care or an ethic of justice, or both” (Liddell & Davis, 1996, p. 485).

In general, Kohlberg (1958) assumed that the individual’s moral development proceeds in six successive stages, whereby each stage describes another state of moral orientation, and two successive stages represent one level of moral orientation: pre-conventional, conventional, and post-conventional (see Figure 1). Each of the six stages, in turn, represents the individual’s ability to understand and integrate diverse points of the individual’s moral orientation (Kohlberg, 1976). The pre-conventional level (stages 1 to 2) is characterized by the orientation toward close relatives (Kohlberg, 1976). In stage one, individuals orientate toward punishment and obedience: actions that are forbidden and are met with punishment are wrong.

In stage two, individuals tend to aim for rewards and act according to rules such as “you scratch my back,

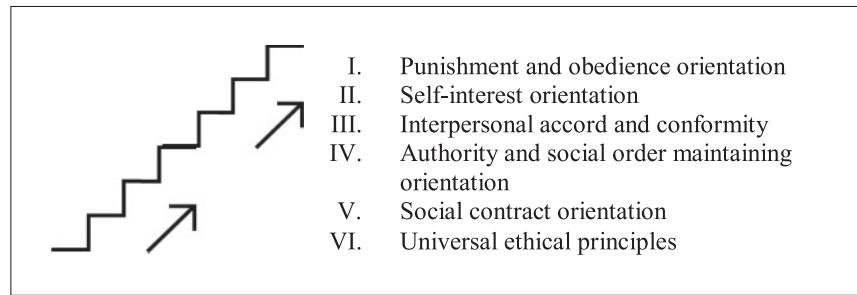


Figure 1. Self-created illustration of the moral stages according to Kohlberg (1958).

I'll scratch yours." On the conventional level (stage 3 to 4) individuals orientate themselves toward a larger group (e.g., family, friends, society, state). In stage three, everything that is considered as desirable by their environment (e.g., family, friends) is considered as good. Therefore, stage three is also named "good boy/girl orientation" (Kohlberg, 1976). In stage four, individuals orient toward loyalty and order. When the post-conventional level is reached, individuals focus on a wider circle. The moral orientation on the post-conventional level leads from the orientation toward justice and social contracts in stage five to the orientation to universal ethical principles (e.g., equality of human beings) in stage six. Kohlberg (1958) assumed the moral development to always proceed in a successive order following the six stages.

In summary, the moral orientation according to Kohlberg's theory of moral development (1958) can be distinguished based on these six stages of moral orientation. Moreover, it is assumed that perspective-taking and empathy build the basis of moral development. As immersive historical environments offer users the opportunity to get an impression of how it feels to be someone in the past, they may expand their horizons and form their moral orientation.

Moreover, previous research showed that different types of media can affect the recipients' morality (video games, movies, series; Eden, Tamborini, Grizzard, Lewis, Weber, & Prabhu, 2014; Grizzard, Shaw, Dolan, Anderson, Hahn, & Prabhu, 2017; Grohmann, Holl, & Melzer, 2021; Hodge, Taylor, & McAlaney, 2019; Holl & Melzer, 2021). Referring to the social-intuitionist perspective of morality (moral foundations; Haidt &

Joseph, 2007), Tamborini (2012) describes in the *Model of Intuitive Morality and Exemplars* (MIME) that media consumption can affect the salience of related moral foundations. For instance, watching a movie that deals with loyalty might promote the salience of the foundation loyalty by recipients. Along with this, Eden et al. (2014) showed that the consumption of a series over eight weeks affects the salience of the recipients' related moral foundations.

However, as we focus on a rationalist view of the morality of Kohlberg (1958), we assume that the new perspective on the past that immersive historical virtual environments offer promotes the recipients' moral development. Moreover, it is assumed that moral development can be reached by processing stories that deal with moral conflicts which promotes the recipients' empathy (Kohlberg, 1976; Upright, 2002; Wismaliya, Hakam, & Agustin, 2018). Therefore, we assume that empathy, triggered by immersive historical environments, promotes moral development according to higher stages of moral orientation.

H3: Empathy affects moral orientation positively.

Despite the well-known attitude-behavior gap (Fishbein & Ajzen, 1975; Hardy, 2006), research has demonstrated a relationship between moral orientation and moral behavioral intention (Althof, 1996; Lu, Zou, Chen, & Long, 2020; Shields, Funk, & Bredemeier, 2018). Therefore, we assume a relationship between moral orientation and moral behavioral intention.

H4: Moral orientation affects moral behavioral intention.

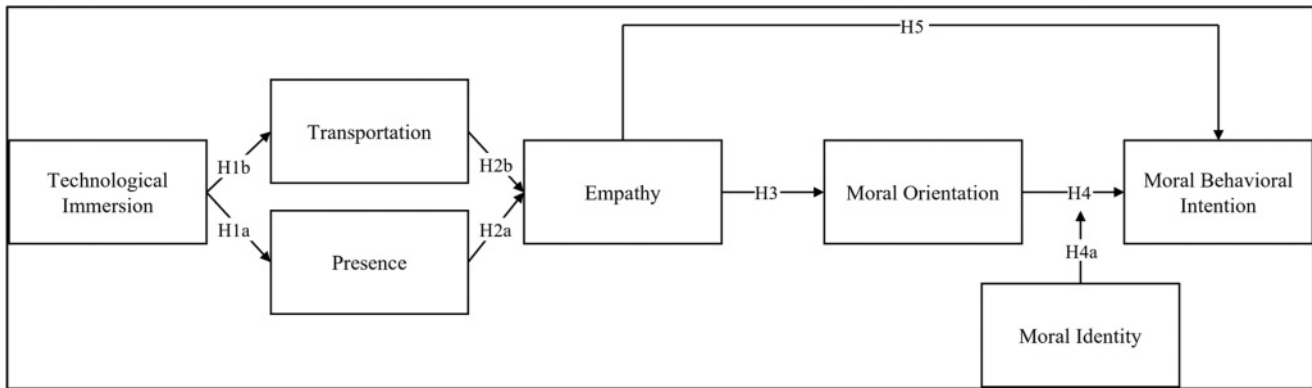


Figure 2. Illustration of the derived integrative model including hypotheses one to five (H1–H5).

Furthermore, when focusing on moral behavior, moral identity, as an individual's importance to be a moral person (Hardy & Carlo, 2011), is considered as a kind of moral motivator. It is assumed that someone who shows a high extent of moral identity will more likely act morally. It is argued that moral identity could be the best predictor of moral actions (Damon & Hart, 1992). Therefore, we assume that moral identity influences the relation between moral orientation and moral behavior positively.

H4a: The effect of moral orientation on moral behavioral intention is moderated by moral identity.

Additionally, research indicates that empathically aroused people tend to help others in need, as empathy supports altruistic motives (Stocks, Lishner, & Decker, 2009) and prosocial behavior (Eisenberg & Miller, 1987). Even in the context of immersive media applications, previous studies showed that immersive environments that elicit empathy led to prosocial, as well as pro-environmental behavior (Ahn et al., 2014; Breves, 2020; Bujić, Salminen, Macey, & Hamari, 2020; Fonseca & Kraus, 2016; Herrera et al., 2018; Li & Kyung Kim, 2021; Ma, 2020; Pressgrove & Bowman, 2021). As relations between prosocial behavior and moral behavior can be assumed (Ding et al., 2018), we argue that empathy promotes moral behavioral intention directly.

H5: Empathy affects moral behavioral intention positively.

2.6 Research Model

The relationships hypothesized in H1–H5 will be integrated into a model (see Figure 2) that investigates whether immersive historical environments can promote moral development according to Kohlberg's theory (1958) by giving users the possibility to take another perspective in an immersive historical environment. In more detail, it will be examined whether the immersive characteristics support the experience to be part of the historical computer-mediated environment and narration. Moreover, the effects on the recipients' empathy and moral development will be examined.

2.6.1 Emotional Impact on Subjective Experienced Immersion. Literature highlights that the effect of media on the recipients' morality relies on the consumed media content (Tamborini, 2012). As historical immersive media applications often deal with atrocities of the past, it is important to focus on the evoked (negative) emotions. Previous research showed that transported individuals are emotionally involved in the story plot and a positive relation between the emotional impact and presence (Barbot & Kaufman, 2020; Gorini et al., 2011). Also, Green and Brock (2000) argued that emotional involvement is one part of transportation. It was shown that a higher experienced presence leads to an increase in viewers' emotions, whereby becoming emotionally involved promotes becoming present in the computer-generated environment, as well. This highlights that

both presence and emotions influence each other (Riva et al., 2007). Therefore, emotions are considered an important factor that affects the subjective experience of individuals to be in a computer-mediated, narrative environment. Accordingly, it is important to examine the effects of evoked emotions on the subjective experience of historical immersive media. Based on the before-mentioned findings, we assume that individuals who become transported or present in historical immersive environments are getting more emotionally involved and that being emotionally involved in historical immersive environments enhances feeling present and becoming transported. Thus, we postulate that presence, as well as transportation, as human reactions to immersive historical environments, are affected by the emotional impact and vice versa.

H6: There is a positive relationship between emotional impact and [a] presence and [b] transportation.

3 Method

To test the derived hypotheses and research questions, we conducted an online experiment. We used a between-subject design with three experimental conditions representing the independent variable of the investigation. Consequently, we employed three different media types that differ only in their degree of technological immersion: text, video, and 360° video. The study design was approved by the local ethics committee and was preregistered on OSF² in advance of data collection.

3.1 Stimulus Material

The historical content of the stimulus material: text, video, and 360° video (UV), was the same throughout all conditions, to ensure that the examined effects only depend on technological immersion aspects. The content contained the perspective of a prisoner in the 1980s in the state security service (Stasi) prison Hohenschönhausen in Berlin, in the German Demo-

cratic Republic (GDR; see the footage on YouTube, 2017³). The story includes seven scenes. It starts with the welcoming by three prison guards in front of the prison, followed by a first interrogation by two officials. After that, the prisoner gets adhesive clothing in the third scene. Then the person is photographed by two other officials in the fourth scene. In the fifth scene, the prisoner is brought to a cell before the person is interrogated the second time in the sixth scene. In the last scene, the prisoner is back in the cell and hears the screams of other prisoners. This three-minute-long 360° video production of the Berlin-Hohenschönhausen memorial and IntoVR 360 GmbH served as a template for all stimuli and the original version was used for the 360° video condition. For the second condition, we converted the same video into a standard two-dimensional video format. The stimulus material of both conditions is illustrated in Figure 3. The picture top left shows the standard video view in which recipients were able to see only one perspective throughout the whole video. The other three pictures show additional views of the 360° video condition. By using the mouse or keyboard, recipients of the 360° video can reach a 360° view and get a complete overview of the whole scenario (for instance, what happens behind them).

For the third condition, we first put the content of the seven scenes of the video down in writing, including the conversations and descriptions of the protagonist's actions. Furthermore, we added an image to each of the seven scenes to present the atmosphere of the scenes (see OSF²). Consequently, all conditions showed the same story plot. In the 360° video condition, the only addition was the possibility to look around and have an insight into the whole scene/environment by using the mouse or keyboard, which did not deliver any relevant additional information for understanding the story plot. We decided to let the participants watch the 360° video through a video player (instead of asking them to create VR glasses themselves by using cardboard and their smartphones at home) to ensure that all participants in the 360° video condition watched the 360° under the same conditions.

²<https://osf.io/a7uhm>; all mentions in this article to visit Open Science Framework (OSF) are at this address.

³<https://www.youtube.com/watch?v=IXldN4obTys>



Figure 3. Stimulus material: Standard video view of the prison area (top left) and additional views of the 360° video (fifth scene).

Reading the story or watching the videos took about three minutes.

3.2 Measures

3.2.1 Presence. Presence was assessed by the Spatial Presence Experience Scale (SPES) of Hartmann et al. (2015), consisting of eight items reflecting two dimensions of spatial presence: user's self-location (e.g., "I felt like I was actually in the environment of the presentation"; $\alpha = .93$; $M = 2.5$, $SD = 1.0$) and perceived possible actions (e.g., "I had the impression that I could be active in the environment of the presentation"; $\alpha = .84$; $M = 3.0$, $SD = 1.2$). Answers were given on a 5-point Likert Scale (1 = *I strongly disagree* to 5 = *I strongly agree*; $M = 2.8$, $SD = 1.0$).

3.2.2 Transportation. Transportation was measured by the eleven general items of the Transportation Scale by Green and Brock (2000) and adjusted to the media

types (e.g., "While I was watching the video [reading the text], I could easily picture the events in it taking place"; "I could picture myself in the scene of the events described in the video [text]"; $M = 2.8$, $SD = 0.6$). Participants indicated their agreement with the statements on a 5-point Likert Scale, ranging from 1 = *not at all* to 5 = *very much*. We excluded one item ("While I was reading the narrative [watching the video], activity going on in the room around me was on my mind") to increase internal consistency ($\alpha = .70$) and ended up in an acceptable Cronbach's alpha of .76.

3.2.3 Empathy. Empathy was assessed by the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011). The questionnaire consists of 31 items, displaying two factors: affective and cognitive empathy. Affective empathy contains the subscales: emotion contagion (4 items, e.g., "I am happy when I am with a cheerful group and sad when the others are glum"; $\alpha = .75$), peripheral responsiveness (4 items; e.g., "I usually stay emotionally

detached when watching a film”; $\alpha = .40$) and proximal responsiveness (4 items; e.g., “I often get emotionally involved with my friends’ problems”; $\alpha = .64$). The factor cognitive empathy comprises the two subscales: perspective taking (10 items; e.g., “I can easily work out what another person might want to talk about”; $\alpha = .90$) and online simulation (7 items; e.g., “People I am with have a strong influence on my mood”; $\alpha = .80$). Answers were given on a 5-point Likert scale (1 = *I strongly disagree* to 5 = *I strongly agree*; $M = 3.4$, $SD = 0.5$). Based on low internal consistency ($\alpha = .40$) we excluded the subscale peripheral responsiveness from our analyses.

3.2.4 Moral Orientation. We self-developed a questionnaire that measures the moral orientation according to Kohlberg’s theory of moral development (1958). The questionnaire consists of four dilemmas dealing with situations in which the protagonists must decide whether they protect their family or help others oriented toward the Moral Judgment Interview (Colby et al., 1983) and the Defining Issue Test (Rest, 1975; e.g., protect persecuted vs. protect family). The dilemmas in full length can be found on OSF.⁴ After reading each dilemma, participants indicated their agreement with the arguments on how the protagonist should decide on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*). The arguments were developed based on moral orientation according to Kohlberg (1958). An explanatory factor analysis revealed three factors represented in 70 items that display all moral stages of Kohlberg’s theory of moral development (1958). The first factor represents the pre-conventional and conventional level (26 items; e.g., “X should not help Y because he would endear himself to the government”; $\alpha = .96$). The second factor is the social contract orientation of the post-conventional level (13 items; e.g., “X should help Y because it always right to help your family”; $\alpha = .93$). The third factor is the orientation toward universal ethical principles of the post-conventional level (31 items; e.g., “X should help Y because it shows solidarity and tolerance”; $\alpha = .95$). Moreover, we analyzed, as already pre-registered, relations of homophobia and

antipathy towards academics on the moral orientation questionnaire, as the dilemmas deal with the persecution of gay people and academics. All analyses can be found on OSF.⁴ As moral orientation is assumed to be directive according to Kohlberg (1958), we calculated a net score describing the level of moral orientation to ensure that a higher score indicates a higher level of moral orientation. Therefore, we first computed the arithmetic mean of the post-conventional level (factors 2 and 3) and pre-conventional and conventional level oriented toward Lind (1978). After that, we subtracted the mean of the pre-conventional and conventional levels from the mean of the post-conventional level.

3.2.5 Moral Behavioral Intention. The moral behavioral intention was assessed based on eight vignettes based on Sommer et al. (2010). Each vignette describes a moral everyday life dilemma (e.g., “At a department store you discover your dream clothes. On the way to the cash register, you remember a report on child labor that you have recently seen on TV. The brand name of the clothes you want to buy was mentioned there, too. What would you do?”). Participants answered their behavioral tendency on a 7-point Likert Scale (e.g., 1 = *buy the clothes* to 7 = *do not buy the clothes*; $M = 4.9$, $SD = 1.0$). The internal consistency was low ($\alpha = .57$).

3.2.6 Moral Identity. Moral Identity was measured based on the Moral Identity Questionnaire of Aquino and Reed (2002). In this questionnaire, a list of nine personal characteristics was presented to the participants first (“caring, compassionate, fair, friendly, generous, helpful, hardworking, honest, and kind”). They were instructed to imagine a person who has these characteristics and how that person would feel, think, and act. After that, they rated ten items on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*; e.g. “It would make me feel good to be a person who has these characteristics”; “Being someone who has these characteristics is an important part of who I am”; $M = 4.9$, $SD = 0.8$) when they had a clear image of this person in mind. According to the internal consistency, we removed one item of the subscale internalization ($\alpha = .57$) and ended up therefore with five items of the subscale

⁴<https://osf.io/a7uhm>

symbolization ($\alpha = .75$) and four items of the subscale internalization ($\alpha = .65$).

3.2.7 Emotional Impact. The emotional impact was assessed by the German version of the Positive and Negative Affect Schedule (PANAS; Breyer & Bluemke, 2016). A list of 20 feelings and perceptions, ten positive ($\alpha = .84$) and ten negative ($\alpha = .89$), were presented to the participants and they were instructed to read every word and mark the intensity of how they currently feel on a 5-point Likert Scale (1 = *not at all* to 5 = *extremely*; e.g., “active,” “angry,” “nervous”; $M = 50.7$, $SD = 11.7$).

3.2.8 Manipulation Check. To analyze the perception of the experimental manipulation (text, video, 360° video) and to check whether the participants watched the video or read the text attentively, we asked the participants to briefly summarize the video they saw or the text they read in two to three sentences.

Furthermore, we asked the participants about their prior knowledge of GDR (e.g., “Have you ever visited a museum or memorial that deals with the GDR?”) and when they watched the 360° video, if they used the 360° function of the video and if they had already seen a 360° video in the past.

3.3 Procedure

At the beginning of the online study, participants answered questions regarding their sociodemographic information. Afterward, a soundcheck was administered to assure that their audio output was turned on and at an appropriate volume. They were then asked to read a text, watch a video, or 360° video in which they were put into the role of a prisoner in the state security service prison Hohenschönhausen in Berlin, Germany in the 1980s. Participants who were assigned to the 360° video condition received a brief introduction to the functionality and usability of 360° videos before watching the video.

After watching the video or reading the text, participants were asked to answer a questionnaire regarding their emotions and then asked to briefly summarize the content of the video/text. Afterward, they were asked to answer the questionnaires regarding presence, trans-

portation, moral orientation, empathy, moral identity, moral behavioral attention, and several (open) questions. It took on average 45 minutes ($SD = 11.7$) to complete the questionnaire.

3.4 Sample

In total, 303 participants, recruited via an online panel (respondi.com) and different online platforms (e.g., surveycircle.de, facebook.de) to create a sample that is as heterogeneous as possible, completed the online study. Respondents recruited via the online panel were paid a small number of Euros for their participation (~10 Euro per hour). To ensure reliable data, we first removed participants who had particularly short processing times from the dataset (< 30 min), which ended up in a data set containing 293 participants. Afterward, especially as the participation took a lot of time, we conducted a long string analysis (Landers, 2020), based on the answers given to a questionnaire (MFQ) consisting of 15 items. Those three participants who ticked the same answer option to all items were removed from the data set. Therefore, the final data set contains 289 participants (173 women) aged between 18 and 69 ($M = 41.5$, $SD = 15.4$). Most of them had a university degree (39.8%), university entrance qualification (22.8%), or secondary school certificate (21.1%).

Almost all participants in the 360° video condition indicated that they had used the 360°-function (95.5%), and approximately half of them stated that they watched a 360° video before (56.8%). Furthermore, 40 participants reported that they had lived in the German Democratic Republic (GDR), and about one-third indicated that they know someone, family or friends, who had lived in the GDR. All in all, participants indicated in total a moderate knowledge about the GDR ($max. = 100$, $min. = 1$, $M = 51.1$, $SD = 26.5$).

4 Results

4.1 Preliminary Analysis

Firstly, a MANCOVA (using SPSS 27) was calculated to check whether presence and transportation

Table 1. Results of the MANCOVA Examining the Differences in Transportation and Presence Between the Experimental Groups

	text ($n = 102$)	video ($n = 99$)	360° video ($n = 88$)	$F(2, 283)$	p	η^2
	$M (SD)$	$M (SD)$	$M (SD)$			
Presence (PA)	9.2 (3.7)	9.2 (4.1)	12.1 (3.8)	25.4	<.001	.152
Presence (SL)	11.6 (4.6)	11.7 (4.6)	13.0 (4.14)	7.87	<.001	.053
Transportation	31.3 (6.1)	30.6 (6.4)	31.2 (6.4)	1.19	.307	.008

Table 2. Results of the Pairwise Bonferroni Correction Examining Differences in Presence Between the Experimental Groups

AV			p
Presence SL	Text	Video	.512
	Text	360° Video	<.001
	Video	360° Video	.027
Presence PA	Text	Video	.743
	Text	360° Video	<.001
	Video	360° Video	<.001

differ depending on technological immersion. We added emotional impact, gender, and age as covariates in the calculation as effects of both on immersion can be assumed (see OSF⁵). As shown in Table 1, the subscales presence self-location (SL), $F(2,283) = 7.87$, $p < .001$, and presence possible action (PA), $F(2,283) = 25.4$, $p < .001$, were significantly different between the experimental conditions, while there were no differences in transportation, $F(2,283) = 1.19$, $p = .307$.

Furthermore, the analysis revealed mixed effects of the covariates on the relation between technological immersion and presence and technological immersion and transportation (for detailed results see OSF⁵).

Additionally, pairwise comparisons with Bonferroni correction were employed to examine differences in detail (see Table 2). The analysis showed differences in presence self-location and presence possible action between the text and 360° video condition ($p < .001$) and the video and 360° video condition (SL), $p = .027$; PA:

$p < .001$, showing higher values of both in the 360° video condition. However, there were no differences in presence between text and video (Table 2).

4.2 Main Analyses

The integrative model including hypotheses one to five (H1–5) was tested using structural equation modeling with observed variables using maximum likelihood estimation (using R version 4.0.3). We added the experimental groups as an ordinaly scaled variable to the model representing the construct technological immersion (1 = text, 2 = video, and 3 = 360° video). The original derived integrative model showed a strong correlation between the two constructs transportation and presence, $r = .66$, $p < .001$, that suggests closeness to multicollinearity ($r > .80$; Shrestha, 2020). Though the verification of well-known statistical multicollinearity indices did not show any conspicuous values (Daoud, 2017; Mansfield & Helms, 1982; Shrestha, 2020), the relation between technological immersion and transportation in the model was suspicious. Contrary to the results of the preliminary analysis, which showed no differences in transportation between the experimental groups (technological immersion), the original pre-registered path model revealed a negative significant relationship between technological immersion and transportation, $\beta = -.15$, $p < .001$. As also literature highlights a relation between the two constructs, transportation and presence (Nowak, 2001), it was decided to calculate two separated models, each containing either transportation or presence, to prevent high error rates (Grewal et al., 2004). Furthermore, one adaption was made according to modification indices:

⁵<https://osf.io/a7uhtm>

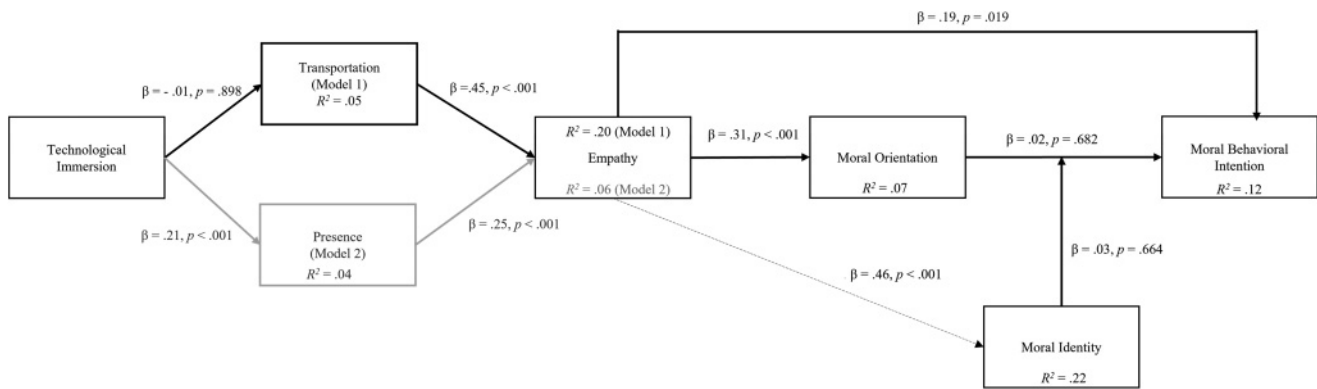


Figure 4. Illustration of the paths of the two calculated models in summary.

Note: Grey lines represent the additional paths of the model, including presence instead of transportation. The dashed line displays the additionally added path based on the model indices.

a path from empathy to moral identity was included (see Figure 4).

The model containing transportation, provided a good fit according to frequently used fit indices: $\chi^2(14) = 8.02, p = .843, \chi^2/df = 1.3, CFI = 1.00, TLI = 1.01, RMSEA = .00$ (90% CI from .00 to .03), $SRMR = .036$ (Hu & Bentler, 2010). Also, the model including presence provided a good model fit: $\chi^2(14) = 16.91, p = .204, \chi^2/df = 1.4, CFI = 0.96, TLI = 0.94, RMSEA = .03$ (90% CI from .00 to .06), $SRMR = .038$ (Hu & Bentler, 2010). Both models are illustrated in Figure 4, as only the first two paths from technological immersion to presence/transportation and from presence/transportation to empathy differ between the models.

Concerning hypotheses one, which assumed a positive effect of technological immersion on presence ($H1a$) and transportation ($H1b$), the models revealed that technological immersion positively affects presence, $\beta = .21, p < .001$, and does not significantly affect transportation, $\beta = -.01, p = .898$. Thus, $H1a$ was accepted, while $H1b$ had to be rejected. Regarding hypotheses two, results showed that presence ($H2a$), $\beta = .25, p < .001$, as well as transportation ($H2b$), $\beta = .45, p < .001$, positively affect empathy.

Consequently, the data supported hypothesis two, which assumed a positive effect of presence ($H2a$) and transportation ($H2b$) on empathy. Moreover, hypothesis

three ($H3$) is supported by the empirical model as there is a significant relationship between empathy and moral orientation, $\beta = .31, p < .001$.

Focusing on hypothesis four ($H4$), the analysis revealed no significant associations between moral orientation and moral behavioral intention, $\beta = -.06, p = .207$, and consequently no moderation of moral identity on this ($H4a$), $\beta = .03, p = .629$, as the interaction term did not show a significant effect. Thus, $H4$ and $H4a$ are not supported by the data. Though, the model's positive connection between empathy and moral behavioral intention, $\beta = .21, p = .005$, supports hypothesis five ($H5$).

Additionally, the added paths that were not part of the hypotheses revealed a positive association between empathy and moral identity, $\beta = .46, p < .001$. The explained variance of each construct can be found in Figure 4.

Furthermore, hypothesis ($H6$) that assumed that emotional involvement and presence ($H6a$) and transportation ($H6b$) depend on each other was tested. To analyze the relationship of the constructs, we conducted a separate correlation analysis. The analyses showed a significant moderate correlation between emotional involvement and presence, $r = .45, p < .001$, and a strong correlation between emotional involvement and transportation, $r = .55, p < .001$. Therefore, data support hypotheses $H6a$ and $H6b$.

5 Discussion

The current study investigated whether immersive historical environments support the recipients' empathy and morality, in terms of moral orientation and moral behavioral intention. Moreover, it was examined whether the recipients' immersion in an immersive historical environment has a positive impact on an individual's empathy and morality compared to conventional historical representations (texts, videos). Consequently, we assumed that feeling present and becoming transported in an immersive historical computer-mediated environment enhances empathy and therefore supports moral development.

5.1 Effects of Technological Immersion on Presence and Transportation

Firstly, results showed that even subtle technological immersion aspects promote presence. These findings indicate that presence, the feeling of being part of and having the opportunity to act in a virtual environment (Hartmann et al., 2015), increases with the extent of technological immersion (360° view, interaction). Previous research mostly compared media that varied widely in their degree of technological immersion (e.g., Head Mounted Displays vs. Text; Fonseca & Kraus, 2016; Herrera et al., 2018; Lee et al., 2017). Compared to these investigations, the current study could highlight that even small technological immersion aspects, the 360° view and the possibility to actively look around in the immersive historical environment by using the mouse or keyboard, enhanced presence compared to video and text. According to Slater and Wilbur (1997), different technological properties are essential characteristics of immersive media: the extent of sensory input, surroundingness, vividness, and proprioceptive matching. As the present study could show higher presence values in the 360° video condition which offered surroundingness (360° view) and interactivity (look around in the 360° video by using the mouse or keyboard), it is not possible to fathom which technological property is the decisive factor for the experience of presence. However, findings indicate that surroundingness and inter-

activity might be important factors for the experience of presence. Consequently, even slightly immersive media, like 360° videos, can involve people more deeply in historical content compared with standard videos and texts.

In addition, results showed that technological immersion does not affect transportation, the feeling of diving into the narration (Green & Brock, 2000), as we found almost similar transportation values throughout all experimental groups (360° video, video, text). This is in line with previous findings (Green et al., 2008; Pressgrove & Bowman, 2021). Nevertheless, as transportation values were almost similar across all experimental conditions, we can assume on a speculative level that transportation can occur in regular videos as well as 360° videos, which goes along with the assumption that transportation is not limited to textual narration (Green & Sestir, 2017).

Moreover, our results highlight a strong relation between presence and transportation. As presence is defined as "the sense of being there" (Lombard & Ditton, 1997), and transportation is considered as diving into narration (Green & Brock, 2000) the relation seems plausible in the first place and both constructs are partly also used synonymously (Nowak, 2001). Otherwise, literature highlights that presence and transportation are different constructs (Hofer, 2013; Nowak, 2001; Wissmath, Weibel, & Groner, 2009). Phillips and McQuarrie (2010) argued that presence is primarily considered as the reaction to visual elements, whereas narrative transportation is mainly grounded in the story plot. As mentioned beforehand, our results support those assumptions as well, as we found that presence depends on technological immersion while transportation is not affected by technological immersion. Based on these findings, we can speculate that technological immersion does not affect the possibility of deeply diving into a story and may distract from the story itself (Balakrishnan & Sundar, 2011), as we only manipulated the extent of technological immersion throughout the experimental groups (text, video, 360° video) and maintained the same story plot. Anyway, it is surprising that even though presence and transportation are highly related to each other, one of them depends on technological properties whereby

the other is not affected by technological properties. This indicates that even though both constructs were often used synonymously (Agrawal et al., 2020; Nowak, 2001), presence might be a unique phenomenon of immersive media, whereby transportation might be a phenomenon of narrative media.

5.2 Effects of Presence and Transportation on Empathy

Moreover, we could show that both presence and transportation promote non-context-specific empathy. These are essential findings as previous research on the relation between immersion and empathy focused primarily on empathy regarding context-specific topics (e.g., environmental protection, attitudes toward homeless; Ahn et al., 2014; Breves, 2020; Herrera et al., 2018; Shin, 2018). Furthermore, we were able to extend the effect of transportation on empathy to immersive media (360° videos), as previous research primarily focused on textual narration (Bal & Veltkamp, 2013). These findings suggest that immersive media can be an effective means of increasing individuals' general empathy. Additionally, our results highlight that transportation affects empathy stronger than presence, which indicates that narration might be an important factor in the elicitation of empathy through media.

5.3 Empathy and Moral Orientation

Most importantly, building on these findings, we investigated based on experimental data that a relation between empathy and moral orientation exists (Kohlberg, 1958). We were able to demonstrate that a greater extent of empathy is associated with higher levels of moral orientation, according to Kohlberg's (1958) moral stages. This confirms the assumption that supporting empathy is an important aspect of moral development and expands it through the findings that it can be supported through immersive historical environments.

Nevertheless, our findings highlight that moral thinking does not automatically predict moral behavioral intention, as results showed no relation between moral

orientation and moral behavioral intention. This confirms the "moral-action gap" that was also found in previous research (Aquino & Reed, 2002; Hardy, 2006).

However, we could reveal a relationship between empathy and moral behavioral intention. We disclosed that empathic people tend to behave more likely morally in daily-life situations. This strengthens the assumption of a relationship between empathy and morality (Eisenberg et al., 2005; Kohlberg, 1958). Furthermore, it highlights the importance of empathy when focusing on morality. Based on our findings, we can conclude that immersive historical environments can support moral orientation as well as moral behavioral intention through promoting empathy. Furthermore, we assign a key role to empathy in the context of moral development, as both moral orientation and moral behavioral orientation are positively affected by empathy. Based on this, we can assume that supporting empathy through immersive historical environments might be an effective and useful way to support an individual's moral orientation and moral behavior.

Additionally, against our expectations, we could not show that moral identity affects the relation of moral orientation to moral behavioral intention. However, data revealed a relation between empathy and moral identity. In more detail, findings indicate that empathy influences moral identity positively. These findings go along with the assumptions of Hardy and Carlo (2011), who assume that empathy, guilt, and shame build the base of moral identity. Additionally, these findings highlight the key role of empathy when focusing on moral orientation and moral behavior.

5.4 Emotional Impacts on Presence and Transportation

Furthermore, our results support the assumption that immersion goes along with emotions (Green & Brock, 2000; Wirth, Hofer, & Schramm, 2012), as we found moderately positive relations between emotional involvement and transportation and presence. This is in line with previous research that highlighted that emotional involvement affects presence (Wirth et al., 2012). Moreover, based on our findings we can suppose that

the content's emotionality of immersive historical environments plays a significant role when evoking presence. We showed that experiencing presence is accompanied by emotional involvement in the mediated environment. The findings highlight that especially producers of immersive historical applications should be aware of the extent of emotions the application's content elicits as it could lead to emotional overload which has to be prevented to ensure the cognitive reflection of the viewed content (Bunnenberg, 2020). For instance, this applies to immersive historical applications that are dealing with terrible events of the past, which are always emotional (e.g., Berlin Hohenschönhausen, Anne Frank House; Rosenwein, 2001). Furthermore, it gives rise to the question of which role the content's emotionality of immersive media plays when focusing on the creation of presence and transportation and, along with this, the promotion of empathy. In the light of the present study, we can assume that emotional immersive media content might be effective when trying to elicit empathy with the aid of immersive media, as we found that presence and transportation are positively related to empathy.

5.5 Limitations and Further Research

It is always important to consider the study's limitations when interpreting its findings. First, the generalizability of the findings is limited as the sample is not representative, because it contains a high number of female and highly educated individuals. Moreover, participants answered all questionnaires in the same order. Therefore, it is important to keep in mind that due to a long time of participation (~45 minutes) fatigue could have affected the answer behavior. Additionally, we have to note that we could not quite ensure that participants watched or read the stimulus material attentively, as we made use of an online experiment. Also, implications to virtual reality applications have to be taken with care, as we investigated only the effects of less immersive media (360° videos). It might be useful to examine those effects in the context of more immersive technologies like head-mounted displays. Furthermore, the study gives rise to the question of which role narration and the content's emotionality play when focusing on empathy-

eliciting media. As the current study focused on only one content that can be seen as moderate narrative and emotional, we recommend exploring differences in presence, transportation, and empathy, depending on the extent of narration and emotionality of the presented immersive historical media content. Moreover, when focusing on the relation of presence and transportation on empathy, research indicates that next to context-specific factors, personality factors are essential aspects. For instance, the *need for affect*, the extent individuals seek emotional situations, is named an important factor when focusing on the creation of empathy (Green & Sestir, 2017; Shin, 2018). Therefore, it might be interesting to examine interpersonal differences in transportation, presence, and empathy in this context, as well. Lastly, effects regarding moral behavioral intention have to be taken with care, as such kinds of measurements that deal with prosocial behavior intentions go along with a particularly high social desirability (Fernandes & Randall, 1992). In this case, using implicit measures might be interesting for further research.

6 Conclusion

In summary, our findings support the assumption that immersive historical environments (e.g., 360° videos) can promote empathy and therefore support moral development. Firstly, our results showed that even subtle technological immersion aspects promote presence, the subjective experience of users to be in a computer-mediated environment, whereby it does not affect transportation, the immersion in narration. Based on this, we found that presence and transportation play a significant role when eliciting empathy with the aid of immersive historical environments. Additionally, we found that transportation has a stronger effect on an individual's empathy than presence, which implicates an important role of narration in empathy-eliciting immersive historical environments. Furthermore, we demonstrated that empathy promotes moral orientation and further highlighted the key role of empathy when focusing on moral development through immersive media. Based on our findings, we can

conclude that supporting empathy through historical immersive media might be an effective and useful way to support individuals' moral orientation and moral behavior.

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**Time Travels on Instagram: A Longitudinal Investigation of Parasocial Interaction with
a Historical Person and the Impact on Followers' Morality**

Abstract

Increasingly, reenacted representations of historical figures were brought on social media to make the past more tangible for young people. Here, producers employ a first-person perspective which is known for fostering the experience of parasocial interaction (PSI). Following the assumption that social interactions promote the development of empathy and moral orientation, we ask whether continuous PSI with a historical person on Instagram affects the followers' empathy and moral orientation as it offers unique insights into the past. We conducted a longitudinal investigation with two measurement time points ($N_{t1} = 239$; $N_{t2} = 89$) asking followers of a German historical Instagram account (@ichbinsophiescholl) about their interaction with the historical figure on Instagram, empathy, and moral orientation. In line with the assumption, results showed that the followers' actual interaction (e.g., liking, commenting) with the historical figure was positively related to the experience of PSI. Furthermore, we found positive relationships between PSI and empathy, as well as moral orientation. The long-term analysis indicated that following a historical figure over time can affect the followers' empathy when frequently interacting.

Time Travels on Instagram: A Longitudinal Investigation of Parasocial Interaction with a Historical Person and the Impact on Followers' Morality

The representation of historical figures on social media enables users to be contemporary witnesses in a novel manner (Henig & Ebbrecht-Hartmann, 2022). For instance, in Germany, a public broadcaster brought recently a historical figure on Instagram aiming to offer unique “emotional, radically subjective” insights into the past (SWR, 2021). The Instagram account reports retrospectively the life of Sophie Scholl, a resistance fighter during World War II: from the start of her studies in Munich to her arrest and execution on February 22nd, 1942, for her resistance against the Nazi Regime.

This and other historical Instagram accounts use the presentation from a first-person perspective (e.g., in stories, and posts) in which the protagonist addresses the recipients verbally and nonverbally. These types of representation are known for supporting the illusion of face-to-face interaction (*parasocial interaction (PSI)*; e.g., Hartmann & Goldhoorn, 2011; Horton & Wohl, 1956). Consequently, watching an Instagram story of a historical figure (e.g., *Sophie Scholl*¹) on Instagram might be experienced as social interaction with a historical figure comparable to other social interactions with, for instance, neighbors or friends (e.g.; Kyewski et al., 2018; Horton & Wohl, 1956). This kind of parasocial interaction might be a novel way of PSI, as followers can interact with a figure of the past whose life has already passed: followers become witnesses of the past (Henig & Ebbrecht-Hartmann, 2022).

Researchers have suggested that social interactions and exposure to the environment influence individuals' ability to empathize with others (e.g., perspective-taking) and their moral orientation (e.g., Althof, 1996; Eisenberg & Strayer, 1990; Kohlberg, 1958, 1976;

¹ By speaking of *Sophie Scholl* here, we are referring to the fictional portrayal of Sophie Scholl on the Instagram account @ichbinsophiescholl.

Piaget, 1965) by providing new insights into the perspectives and feelings of others. Perspective-taking is considered to be essential for empathy and moral judgments (e.g., Hoffmann, 1982; Kohlberg, 1958). Consequently, social interactions, either face-to-face or computer-mediated, might affect the individuals' ability to empathize with others (Grondin et al., 2019; Vossen & Valkenburg, 2016), and, in turn, their moral orientation. Here, social interactions with historical figures might affect the recipients' empathy and moral orientation especially, as they provide unique, vivid perspectives on the past that recipients could hardly experience otherwise. Although other perspectives on morality exist (e.g., social intuitionist approach, Haidt, 2001), this investigation focuses on the rationalist perspective on morality that assumed that a moral judgment is reached through a process of methodological thinking and empathy including perspective-taking, and (continuously) affected by the confrontation with the environment (Kohlberg, 1958). Here, research on media applications offering perspectives on the past (e.g., VR) already found that the recipients' moral orientation (Kohlberg, 1958) can be affected by the recipients' engagement in historical content (e.g., Frentzel-Beyme & Krämer, 2022).

Therefore, the present longitudinal investigation aims to examine the impact of PSI with a historical figure on the recipients' moral orientation from a rationalist perspective (see Kohlberg, 1958) by asking followers of the German historical Instagram account @ichbinsophiescholl.

Theoretical Framework

Parasocial Interaction with a Historical Figure

In the last century, researchers observed that recipients of mass media perceived media persona (e.g., TV performers) as conversational partners (Horton & Wohl, 1956) (1956). Horton & Wohl (1956) stated that this phenomenon was grounded in the experience of

parasocial interaction (PSI) describing the illusion of: “a simulacrum of conversational give and take” (p. 215) with a media persona. It is assumed that PSIs are comparable to face-to-face interaction and occur during media perception. Subsequent research showed that especially the direct address by a media person that creates the impression that they were personally and privately talking to the audience supports the experience of PSI (e.g., Dibble et al., 2016; Hartmann & Goldhoorn, 2011). For example, recipients experienced more PSI when TV performers directly talked into the camera and simulated eye contact with their audience (Hartmann & Goldhoorn, 2011). When taking a look at social media accounts representing historical figures (e.g., *ichbinsophiescholl*; *eva.stories*; *annefrankhouse_offical*) it can be observed that these accounts also employ such types of representations by using the platforms’ technological properties (e.g., in Instagram stories). On the Instagram account *@ichbinsopehischoll*, *Sophie Scholl* is talking directly into the camera (nonverbal address) in her Stories and verbally addresses her audience in the caption of posts by, for instance, asking: “How was your first day at university?” (Mai, 2021, *@ichbinsophiescholl*). Consequently, the experience of PSI with *Sophie Scholl* might be supported.

PSI includes cognitive, affective, and behavioral responses of recipients (*parasocial interaction processing*; e.g., Schramm & Hartmann, 2019). Taking the Instagram account *@ichbinsophiescholl* as an example, cognitive responses would include the followers trying to get a comprehension of the situation and the acts of *Sophie Scholl*, linking *Sophie Scholl*’s statements/actions to one’s memories, evaluating *Sophie Scholl* or establishing a relationship between *Sophie Scholl* and the self. Affective responses would be for instance empathy or emotion release: When *Sophie Scholl* was sad, followers felt sad, as well.

PSI with a historical figure might be a novel form of PSI, as the presentations are partly fictitious and recipients might already know the story of the historical figure, as well as that the figure is already dead. Therefore, the question arises whether PSI with a historical

figure on Instagram is comparable to PSI with, for instance, influencers on Instagram. Nevertheless, previous research already showed that PSI with fictitious characters does occur (e.g., characters of television shows; e.g., Kyewski et al., 2018).

PSI and Social Media Interaction

Compared to face-to-face interactions PSIs are in the original definition “one-sided, non-dialectical and controlled by the performer” (Horton & Wohl, 1956, p. 215) since they were initially observed in conventional mass media like television. However, thanks to technological development, social media applications occurred that differ in their technological properties from conventional mass media as they offer a range of interaction opportunities (e.g., liking, commenting, and private messages). Therefore, it is intensely discussed whether the concept of PSI can be transferred to social media (e.g., Gleich, 2022). Researchers argue that these computer-mediated interactions are not one-sided in the same way as watching a newscaster or actor/actress and are rather reciprocal. Nevertheless, also on social media interactions are still unequally distributed, mostly controlled by the performer, and not every follower frequently interacts with media persona on social media (e.g., influencers, celebrities; Kocak et al., 2020). However, to highlight the differences between PSI on social media and the originally one-sided PSI in mass media (Horton & Wohl, 1956), we will refer to PSI on social media as *one-and-a-half-sided PSI* in the following (Kowert & Daniel, 2021). Previous research that focused on the impact of these interaction opportunities on the experience of PSI showed that the users’ interaction, like commenting, and liking, supported the experience of PSI on social media (YouTube, Facebook; Kyewski et al., 2018; Rihl & Wegener, 2019). Consequently, followers who frequently interact with a historical figure (*Sophie Scholl*), might experience PSI to a greater extent. Therefore, the following hypothesis was proposed:

H1: The followers' actual interaction with the presentation of the historical figure on Instagram supports parasocial interaction processing (affective and cognitive).

(Para)Social Interaction and Morality

The experience of PSI with a historical figure on Instagram might expand the followers' horizons as it offers opportunities for perspective-taking and includes the cognitive and affective processing of the seen. For instance, someone experiencing PSI with a historical figure might connect the seen content to their memories (i.e., cognitive PSI processing; Schramm & Hartmann, 2019). Based on the assumption that humans are intrinsically motivated to explore their environment, researchers assume that empathy including perspective-taking builds the basis of moral judgments (Kohlberg, 1958). For example, when deciding whether it is right or wrong to take in persecuted people, it is important to take the perspective of the persecuted people to find out how they feel about it and understand them.

Empathy

Here, empathy defined as “the ability to recognize what other people are thinking and feeling” (Stueber, 2013, p. 1), plays a crucial role. Empathy includes an affective and a cognitive dimension (Reniers et al., 2011). Cognitive empathy describes the ability of perspective taking, the cognitive process of putting oneself in another person's shoes and viewing the situation from the other person's point of view. Affective empathy describes affective reactions to other persons, for instance, emotion contagion describes the automatic mirroring of another's feelings (e.g., being sad because the other person is sad). Researchers assume that getting impressions of other perspectives and feelings of others in social interactions supports the general ability to empathize with others, as individuals get an impression of the emotions, situations, and thoughts of others (e.g., Eisenberg & Strayer, 1990). In line with this, it is assumed that the ability to empathize with others develops via

continuous confrontation with their environment, especially in social (synchronous) interactions (e.g., Eisenberg & Strayer, 1990; Levy & Feldman, 2019).

As PSI with a media persona can be experienced as actual social interactions with this (fictitious) persona, we assume that PSI with a historical figure on Instagram might foster the ability to empathize with others (e.g., Eisenberg & Strayer, 1990; Horton & Wohl, 1956). Nevertheless, it should be mentioned that previous research has already shown that the individual's empathy also positively affects the experience of PSI with media persona (Scherer et al., 2022). Especially emotional contagion as an affective component of empathy is perceived to promote the development of PSI. Therefore, the relationship between PSI and empathy might be rather reciprocal than causal. However, as the German Instagram account of Sophie Scholl gives insights into the past that followers were not able to experience otherwise, followers can make unique experiences and extend their horizons which, in turn, might promote their ability to empathize with others. Moreover, investigations already showed a positive relationship between social media usage and empathic concern (e.g., Alloway et al., 2014; Collins, 2014). Especially, interacting with others on social media platforms (e.g., chatting) was found to be positively related to empathic expressions (Ivcevic & Ambady, 2013). Therefore, we assume that PSI and interactivity with a historical person on Instagram positively predict empathic expressions towards the historical person in a cognitive and affective manner.

H2: The [a] PSI processing (affective and cognitive) and [b] actual interaction with the historical figure on Instagram affects empathy (cognitive and affective) positively.

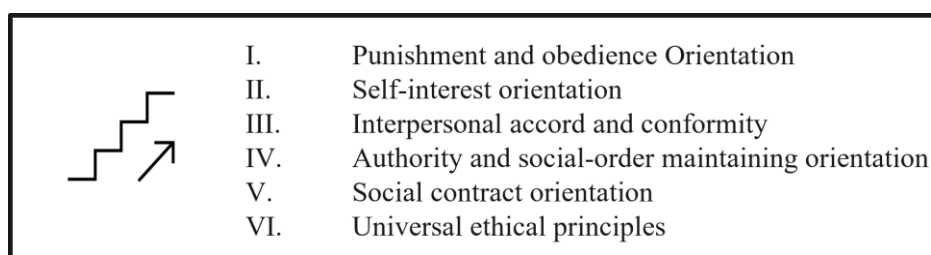
Moral Orientation

Besides empathy, learning from others is perceived to impact the individuals' moral development (e.g., Bandura, 1991). Referring to the *Social Cognitive Theory* (Bandura, 1986) it is assumed that the individuals' knowledge is derived by observing others. This also applies

to moral reasoning (Bandura, 1991). According to rationalist approaches to moral development, moral judgments are reached by a process of rational thinking and perspective-taking (Stets, 2016). The most famous approach is Kohlberg's moral stage model (1958) describing the individual's moral orientation as "*the ability to understand and integrate diverse points of view*" (Kohlberg, 1976). According to the theory, moral development proceeds in six successive steps, each representing a state of moral orientation leading from the pre-conventional (stages 1-2) and conventional (stages 3-4) to the post-conventional level (stages 5-6; figure 1). The pre-conventional level is characterized by the orientation towards close relatives (Kohlberg, 1976). The conventional level individuals orientate toward a larger group (e.g., family, friends, society, state). When the post-conventional level is reached, individuals focus on a wider circle (e.g., population). The moral orientation on the post-conventional level leads from the orientation toward justice and social contracts on stage five to the orientation to universal ethical principles (e.g., equality of human beings) on stage six. A detailed illustration of the stages according to Kohlberg (1958) is displayed in Figure 1.

Figure 1

Self-created illustration of Kohlberg's (1958) Stage Model



Sophie Scholl as a German resistance fighter against the national socialists during World War II is perceived as a highly moral person (e.g., Dumbach, 2017). Scholars argue that the moral orientation of Sophie Scholl can be assigned to Kohlberg's stage six: the orientation toward universal ethical principles (Simon, 2019). Therefore, following the *Social Cognitive Theory of Moral Thought and Action* (Bandura, 1991) and getting insights into

Sophie Scholl's life via following her on Instagram might affect the followers' moral orientation positively towards stage six as followers may adapt their moral orientation.

Previous research addressing the impact of media on the recipients' morality primarily investigated the impacts of different media on the recipients' morality (*moral foundations*; e.g., Eden et al., 2014; Tamborini, 2012), as well as the tense relationship between protagonist's immoral behavior and the recipients' evaluation (e.g., Bonus et al., 2021) including the impact of (parasocial) interaction (e.g., Jennings et al., 2022). However, such investigations mainly investigated such relationships by taking the social-intuitionist perspective on morality into account: the *moral foundations* proposed by Haidt and Joseph (2007) and referred to the *Model of Intuitive Morality and Exemplification* (MIME, Tamborini, 2012). The MIME suggests that the presentation of moral exemplars (e.g., helping behavior) in media increases the salience of related domains (e.g., care) in memory, which, in turn, can influence the individual's moral reasoning. However, these findings indicate that media can affect the recipients' moral values and, moreover, that recipients process and evaluate the (moral) actions of media characters (e.g., Zillmann, 2002). Building on this, we propose the following hypothesis was proposed.

H3: [a] actual interaction with the historical Instagram account and [b] PSI processing (affective & cognitive) affect the recipients' moral orientation.

As empathy is perceived as a prerequisite of moral judgments (e.g., Kohlberg, 1976; Frentzel-Beyme & Krämer, 2022), we also propose that:

H4: Empathy (cognitive and affective) affects moral orientation positively.

Long-term Perspective

Following the assumption that the individuals' empathy continuously develops via social interactions (e.g., Eisenberg & Strayer, 1990), we assume that the followers' cognitive and affective empathy is positively affected by following a historical figure on Instagram over

a longer period of time, as they get unique insights into emotions, perspectives, and situations of the historical figure. Moreover, researchers could already show that social media usage affects the recipients' ability to empathize (e.g., Grondin et al., 2019; Vossen & Valkenburg, 2016). For instance, Vossen and Valkenburg (2016) showed that adolescents' ability to empathize increases through social media usage by assessing over a period of time. Therefore, the following hypothesis is proposed:

H5: The followers' empathy increases over time.

According to Kohlberg's (1958) moral stage model the individuals' moral orientation develops over time due to their engagement with the environment. Instagram users that were frequently exposed to the content and perspective of an Instagram account of a historical over a long period might gain more impressions which, in turn, affect their moral orientation. Therefore, we assume that following the German Instagram account of *Sophie Scholl* over a period of time positively affects the followers' moral orientation according to Kohlberg's (1958) moral stage model.

H6: The followers' moral orientation increases over time.

Method

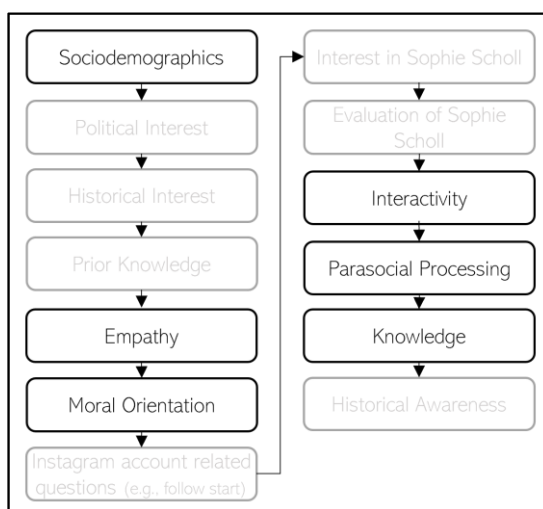
To test the derived hypotheses and research question, we conducted a longitudinal online survey with two measurement time points: roughly five weeks after the Instagram accounts' release (9th July 2021 to 9th September 2021; *t1*) and at the end of the Instagram accounts' runtime (21st January 2022 to 28th February 2022; *t2*). Filling in each of the online surveys took on average about 15 minutes.

Open Science

The study design was approved by the local ethics committee. The study was preregistered on OSF² in advance of data collection. At this point, we would like to note that we have slightly adjusted the wording of the hypotheses but have not changed the assumptions. Furthermore, within the online survey, we further investigated the impacts of PSI with the historical figure (@ichbinsophiescholl) on Instagram on different aspects of history education (e.g., historical awareness, knowledge, interest) which we will not focus on in this paper.

Figure 2

Order of the Questionnaires within the Online-Survey



All questionnaires and their order within the online survey can be found in Figure 2 giving an overview of all constructs assessed and the order within the online survey. Further information can be found on OSF³.

² https://osf.io/ta26f/?view_only=8c3c479b03cb469a95e4e5954351f97f

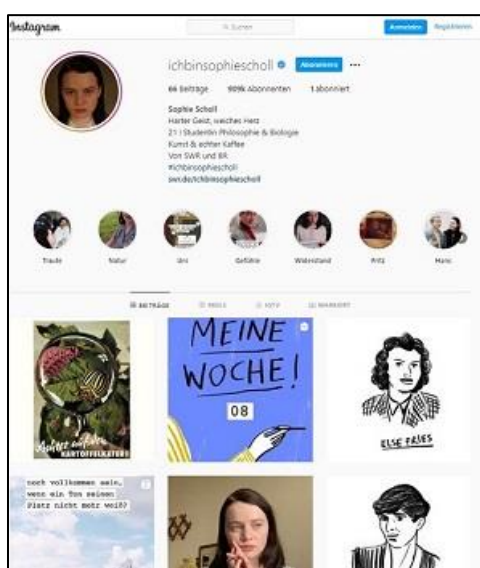
³ https://osf.io/ta26f/?view_only=8c3c479b03cb469a95e4e5954351f97f

Historical Instagram Account

The channel @ichbinsophiescholl (see Figure 3), presenting the 21-year-old Sophie Scholl played by a German actress (Luna Wedler), gives followers insights into the last ten months of Sophie Scholl's life. Sophie Scholl (* May 9, 1921, † February 22, 1943) was a German resistance fighter against National Socialism.

Figure 3

Screenshot of the Instagram Account *ichbinsophiescholl*



Because of her involvement in a resistance group (*White Rose*), she and her brother Hans Scholl were sentenced to death by Nazi judges and executed on the same day. On the Instagram account, Sophie Scholl uses all tools Instagram offers (e.g., Stories, Posts, Reels), time-shifted into the Nazi dictatorship. The channel aims to provide intimate insights into Sophie Scholl's everyday life and uses (partly) original historical material to tell the story of her path to exemplary civil courage in the resistance. For example, viewers follow the surprise party that Sophie's brother Hans organizes for her 21st birthday, or they suffer the doubts Sophie has about her love affair with her boyfriend Fritz, who is serving as an officer in the

Russian campaign. The basis is the letters and notes Sophie Scholl wrote from the end of 1937 until her execution.

Measures

All items were answered on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*). All questionnaires of the online study can be found on OSF (Authors, 2023).

Empathy

Empathy was measured based on two subscales of the *Adolescent Measure of Empathy and Sympathy* (AMES; Vossen et al., 2015). The subscale cognitive empathy (e.g., “I can often understand how people are feeling even before they tell me.”; $M_{t1} = 4.7$, $SD_{t1} = 1.0$, $\alpha_{t1} = .88$; $M_{t2} = 4.6$, $SD_{t2} = 0.9$, $\alpha_{t2} = .91$) and affective empathy (e.g., “When my friend is sad, I become sad too”.; $M_{t1} = 3.4$, $SD_{t1} = 1.1$, $\alpha_{t1} = .83$; $M_{t2} = 3.4$, $SD_{t2} = 1.1$, $\alpha_{t2} = .84$) were each represented by four items.

Moral Orientation towards Universal Ethical Principles

Moral Orientation was measured based on a questionnaire measuring moral orientation according to Kohlberg’s Theory of Moral Development (1958; for more information see OSF⁴). After reading a moral dilemma about a family mother (Antonia) in a totalitarian state who is asked for help by a persecuted homosexual couple, the participants rated four statements representing the different stages of Kohlberg’s stage model (e.g., “Antonia should help the homosexual couple because it shows solidarity and tolerance.”; $\alpha_{t1} = .95$; $M_{t1} = 3.0$, $SD_{t1} = 0.8$; $M_{t2} = 4.9$, $SD_{t2} = 0.7$).

⁴https://osf.io/t7s3q/?view_only=a1fb0feaad964bc3b810ce2560cb44b8

Parasocial Interaction Processing

Parasocial interaction processing was measured with six subscales of the *Parasocial Interaction Process Scale* each represented by eight items (Schramm & Hartmann, 2019). Cognitive PSI processing was assessed via the subscales: comprehension of the situation and the acts of Persona (e.g., “I made an effort to comprehend the reactions of ichbinsophiescholl⁵.”; $\alpha = .80$), linking Persona’s statements/actions to one’s memories (e.g., “I repeatedly pondered whether I know people who resemble ichbinsophiescholl.”; $\alpha = .76$), evaluation of Persona and his/her actions (e.g., “I have formed an opinion about ichbinsophiescholl.”; $\alpha = .84$), establishment of a relationship between Persona and the self (e.g., “I did not compare myself to ichbinsophiescholl.” (R); $\alpha = .89$). Affective PSI processing was measured by the subscales: emotion release (“ichbinsophiescholl’s feelings were sometimes contagious.”; $\alpha = .89$) and empathy (e.g., “I always felt compassion for ichbinsophiescholl.”⁶; $\alpha = .86$).

Self-Reported Interaction

Self-reported Interaction was assessed based on an adapted version of the interactivity scale by Rihl & Wegener (2019). The ten items were adjusted to cover the possible forms of interaction on Instagram (e.g., “I reacted to the stories of ichbinsophiescholl.”; $M_{t1} = 2.9$, $SD_{t1} = 0.9$, $\alpha_{t1} = .78$; $M_{t2} = 2.9$, $SD_{t2} = 1.0$, $\alpha_{t2} = .80$).

⁵ It was decided to include *ichbinsophiescholl* instead of *Sophie Scholl* into the items to emphasize that we are referring to the presentation of Sophie Scholl on Instagram (like an “Instagram username”). Nevertheless, we are aware of the fact, that this might have fostered the recipients’ reflective processes and will discuss this within the limitations of the study.

Samples

Participants were recruited via Instagram. Followers of the @ichbinsophiescholl-Instagram-Account⁶ were directly addressed by the researchers. The participants took part in a raffle and could win a certain amount of money when taking part in both surveys (50€ four times). Through an internal exchange with the producers about the follower community (e.g., age, gender), we could classify the samples of both measurement time points as a representative, as mainly women and (young) adults (25 – 35 years) followed the Instagram account.

At the first measurement time point, 239 people including 179 women, 23 men, and five people who did not identify with any gender filled in the online survey. The participants of the convenience sample were aged between 18 and 68 years ($M = 31.3$, $SD = 11.3$). They had a university entrance qualification (32.6 %), a university degree (43.5 %), or a secondary school certificate (16.7%), and were either students (29.7%) or employees (43.1%).

Participants that filled in both questionnaires were aged between 18 and 62 years ($M = 33.7$, $SD = 12.7$). The sample consists of 89 people including 68 women, 17 men, one person who did not identify with any gender, and three people who did not indicate their gender. They had a university entrance qualification (30.3 %), a university degree (42.7 %), or a secondary school certificate (17.9%), and were either students (31.5%) or employees (48%).

Results

Effects of Interactivity and Parasocial Interaction on Empathy and Moral Orientation

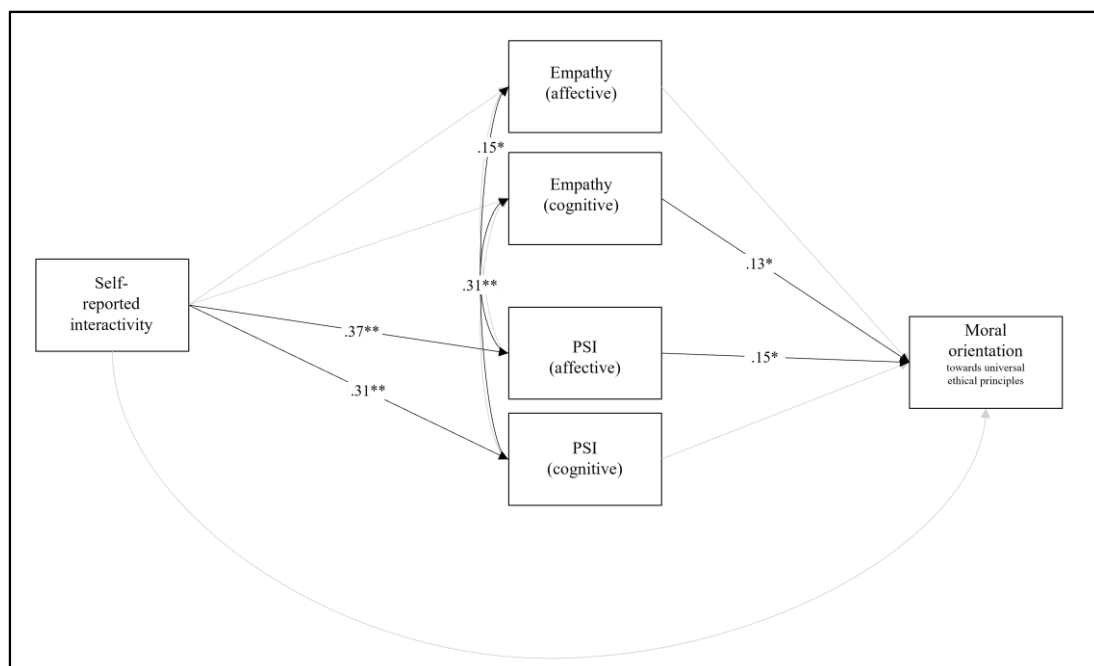
To examine the relations assumed in hypothesis one and four (*H1* and *H4*), assuming that parasocial interaction with a historical figure on Instagram and self-reported interaction

⁶ <https://www.instagram.com/ichbinsophiescholl/>

are related to followers' empathy (cognitive and affective, *H2*) and moral orientation (*H3*), we calculated a path model using structural equation modelling (using RStudio Version 4.2.0; see Figure 4). Moreover, we were able to test the relations between empathy and moral orientation assumed in *H4* within the model and self-reported interaction and PSI as assumed in *H1*. We decided to calculate a path model instead of multiple regressions to control for measurement errors, enabling us to gain more reliable estimations of the beta coefficients (Bollen, 1989). Due to the model construct (zero degrees of freedom), the model fit cannot be interpreted and is therefore not provided here.

Figure 4

Overview of the Calculated Path Model to Investigate Hypotheses one to four (*H1-H4*)



The model showed that self-reported interactivity and affective PSI ($\beta = .37, p < .001$), as well as cognitive PSI ($\beta = .31, p < .001$) were positively related. Therefore, hypothesis one (*H1*) was accepted.

Hypothesis 2 (*H2a*) assumed a positive relation between PSI processing (affective and cognitive) and empathy (cognitive and affective). The model revealed a positive significant relation between affective PSI processing and cognitive empathy ($\beta = .31, p < .001$), as well

as cognitive PSI and affective empathy ($\beta = .15, p = .025$). Nevertheless, no significant relationship between affective PSI processing and affective empathy ($\beta = .11, p = .093$) and cognitive PSI and cognitive empathy could be found ($\beta = .13, p = .083$). Therefore, hypothesis 2 (*H2a*) had to be partly rejected.

Moreover, hypothesis 2 (*H2b*) assumed a positive relationship between the followers' self-reported interaction with the historical Instagram account and empathy (cognitive and affective). However, the model revealed no direct relations between self-reported interactivity and affective empathy ($\beta = -.11, p = .101$), as well as cognitive empathy ($\beta = -.05, p = .405$). Therefore, hypothesis *H2b* was rejected.

Hypothesis 3 (*H3b*) presumed a positive relationship between PSI processing (affective and cognitive) and the followers' moral orientation towards universal ethical principles. The model revealed a positive significant relationship between affective PSI and moral orientation ($\beta = .15, p = .046$), but no significant relationship between cognitive PSI and moral orientation, $\beta = .08, p = .228$. Therefore, hypothesis *H3b* was accepted for cognitive empathy but rejected for affective empathy.

Moreover, hypothesis *H3b* was rejected, as the model did not show a significant relationship between the followers' self-reported interactivity and the moral orientation towards universal ethical principles ($\beta = -.13, p = .054$).

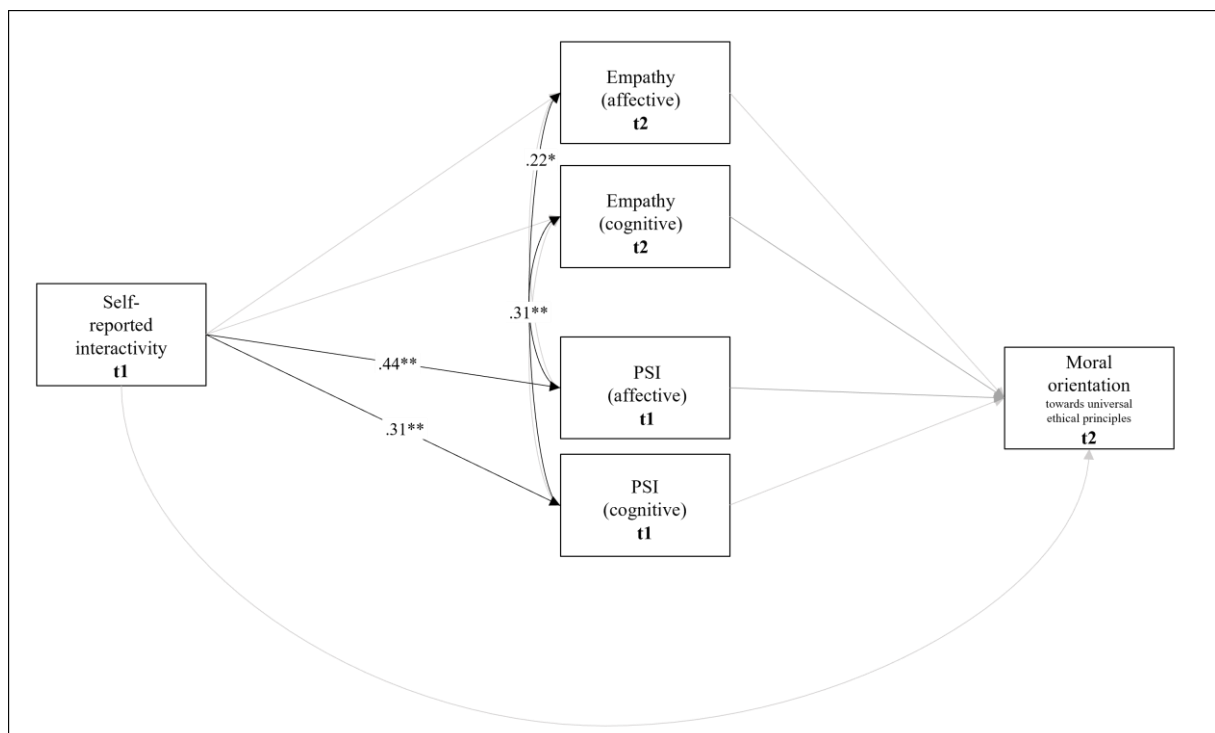
Hypothesis *H4* assumed a positive relationship between the followers' empathy (cognitive and affective) and the moral orientation towards universal ethical principles. The analysis showed a positive relationship between cognitive empathy and moral orientation ($\beta = .13, p = .046$), but no significant relation between affective empathy and moral orientation. $\beta = .03, p = .677$. Therefore, also hypothesis *H4* was accepted for cognitive empathy but rejected for affective empathy.

Further Analysis: Simulating Causality over Time

To simulate causality as assumed in hypothesis 1 and 4, we calculated the same model over time. Consequently, we added PSI and self-reported interactivity from measurement time point one into the model and empathy and moral orientation from measurement time point two into the model (see Figure 4). As we could only use data sets from participants who answered the survey at both measurement time points, we calculated this model only with 89 data sets.

Figure 5

Overview of the Path Model of the Further Analysis Aiming to Simulate a Causality over Time.



The analysis mainly strengthens our findings by showing positive significant relationships between affective PSI_{t1} and cognitive $empathy_{t2}$ ($\beta = .306, p = .002$), as well as cognitive PSI_{t1} and affective $empathy_{t2}$ ($\beta = .224, p < .224$). However, we did not find any

significant relationship between empathy, PSI, and moral orientation toward universal ethical principles. Results of the whole analysis can be found on OSF (Authors, 2023).

Long-term Effects on Empathy and Moral Orientation

To examine the long-term effects of following a historical figure on Instagram on empathy (*H5*) and moral orientation (*H6*) we conducted a repeated measure ANCOVA using IBM SPSS Statistics version 27. We added PSI and self-reported interaction as covariates into the analysis. We put the subdimension of cognitive and affective empathy and the moral orientation towards universal principles as dependent variables into the analysis.

The analysis ($F(3, 80) = 1.26, p = .295$) did not show any statistically significant difference between the measurement points in cognitive empathy ($F(1, 82) = 3.73, p = .057$), affective empathy ($F(1, 82) = 0.19, p = .683$) or the moral orientation towards universal principles ($F(1, 82) = 0.28, p = .600$).

Nevertheless, the analysis revealed interaction effects of time and $PSI_{\text{cognitive}}$ on $empathy_{\text{cognitive}}$ ($F(1, 82) = 4.17, p = .044, \eta^2 = .048$) and time and self-reported interaction on $empathy_{\text{cognitive}}$ ($F(1, 82) = 12.11, p = < .001, \eta^2 = .129$).

However, as we did not find any main effects of time on empathy and moral orientation, the hypotheses two (*H5*) and four (*H6*) were rejected.

Discussion

The present investigation aimed to examine whether PSI with a historical figure that enable followers the unique experience of the past affects their empathy and moral orientation. We suggested that experiencing PSI with a historical person on Instagram positively affects the followers' empathy and moral orientation, as social interactions are considered to promote the development of empathy and moral orientation. The strength of this study compared to previous research is that it focuses on real followers of an actual historical

German social media account of a historical figure (@ichbinsophiescholl), from both a cross-sectional and longitudinal perspective. Therefore, it contributes to the understanding of the psychological mechanism of PSI with a historical figure on Instagram, gives insights into the mechanism of reciprocity on PSI, and investigates the effects of PSI on empathy and moral orientation in the social media context.

Social Media Interaction and Parasocial Interaction

In line with previous research (e.g., Kyewski et al., 2018; Rihl & Wegener, 2019), we found that the extent of interaction with a historical figure (@ichbinsophiescholl) on Instagram positively affects the experience of PSI: The more interaction options used on Instagram (e.g., commenting, private messaging, liking) the greater the experience of PSI with the historical figure was. Although the relation between these variables have been found beforehand (e.g., Kyewski et al., 2018), the current investigations could expand the theoretical assumptions to the application context of interacting with a (reenacted) historical figure on Instagram. Previous investigations mainly focused on fictitious (e.g., characters of television shows) or non-fictitious figures (e.g., celebrities, influencer) and other social media platforms (e.g., YouTube; Facebook; e.g., Rihl & Wegener, 2019). In this context, the partially fictional portrayal of a historical figure on Instagram is a special case, since the life of historical figures has already passed, and followers might know how the life story continues. The present findings indicate that followers still interact with historical figures on Instagram, even if they know that their life has already passed. Moreover, the findings show that this interaction supports PSI. In more detail, we could show that actual interaction was positively associated with affective (e.g., emotion contagion), as well as cognitive process (e.g., evaluation of the persona and her action) which strengthens the assumptions of Hartmann and Schramm (2008).

Thus, the present findings raise the question of whether the forms of representation of the media figures (e.g., direct verbal and bodily address) are more decisive for the experience of PSI than the media figure itself or the content depicted.

Effects of Parasocial Interactions on Empathy

In line with the assumptions, the study showed a connection between PSI and empathy relate. Meaning that people who experienced PSI with the historical figure scored also higher on empathy. Moreover, by simulating a causality over time, the study's results indicate that this relation might be rather bidirectional. Meaning that not only do empathic people experience a higher sense of PSI as proposed by Scherer et al. (2022) but also PSI affects the recipients' general ability of empathy. We could show that those followers who experienced a higher sense of PSI on the first measurement time point had a higher level of empathy at the second measurement time point. Here, the content of the Instagram account might have played a crucial role. As the Instagram account showed the life of a historical figure, it gave insights into the past which were hardly to experience otherwise. The historical Instagram account allowed recipients to actually experience the past, which is not possible to the same extent as reading a book or watching a movie (e.g., Frentzel-Beyme & Krämer, 2022). Eisenberg and Strayer (1990) proposed that individuals' empathy is continuously affected by confrontation with the environment. As the account offered this unique impression, it might have affected the recipients' ability to empathize to a greater extent.

Moreover, another investigations showed that PSI with a historical figure supported the recipients' awareness of reality (Frentzel-Beyme et al., 2022). The researchers could show that followers who experienced PSI with the historical figure took the presented content more at face value. This impression of reality might have supported the recipients' processing, as well. Consequently, it can be concluded also that computer-mediated experiences within the

past affect the recipients' empathy. Meaning that recipients, for instance, gain a higher ability for perspective-taking.

However, the present findings showed that affective PSI was related to cognitive empathy, and cognitive PSI was related to affective empathy. These findings are noteworthy as affective processing (e.g., empathy with *Sophie Scholl*) was related to the cognitive component of empathy (e.g., perspective taking) and cognitive processing (e.g., linking *Sophie Scholl's* action to one's own) was related to the affective component of empathy (e.g., emotional contagion). These findings seem unintuitive at first glance. However, the findings indicate an interplay of affective and cognitive mechanisms, and, moreover, highlight the impact of empathy (trait) on the experience of PSI. This relation was also found beforehand. For instance, researchers found that affective empathy facilitates PSI (Cummings et al., 2014), whereby others illustrated that cognitive empathy (perspective taking) supports PSI. Nevertheless, future research should examine this interplay in more detail. Here qualitative research might give more detailed insights into the followers' processing.

Impacts on the Followers' Moral Orientation

Also, by examining the impact of PSI on morality, affective processes turned out to play an important role. We found that affective PSI (e.g., feeling empathy with *Sophie Scholl*) was positively related to the moral orientation towards universal ethical principles. These findings showed at first, that PSI with a historical figure affects the recipients' moral orientation and strengthens Kohlberg's (1958) assumptions that the recipients' moral orientation is continuously affected by the individual's confrontation with the environment. Moreover, the findings underline that media consumption affects the recipients' moral values. However, the findings also highlight that besides cognitive processes (cognitive empathy) affective processes (e.g., empathy) affect moral judgments. These findings indicate that moral judgments might be rather reached through an interplay of affective and cognitive processes

than through rationalist considerations also proposed by Haidt (2001). Haidt (2001) suggested that moral judgments are reached through moral intuitions (gut feelings), as well as processes of deliberation. In line with that, the present findings might illustrate that both, affective and cognitive processes influence moral judgments. Moreover, the findings indicate that media consumption might be more likely able to affect such affective processes (emotional contagion; empathy) than cognitive processes which, in turn, affect the recipients' moral orientation. Nevertheless, we have to mention that these effects were relatively small.

Against expectations, we did not find that the followers' actual interaction (e.g., liking, commenting) with the historical figure on Instagram affected the followers' moral orientation. This effect was mediated via PSI. These findings highlight that not only the confrontation with the environment or media applications (Tamborini, 2012), rather the processing of the seen is decisive for the impact on the individual's moral orientation. Consequently, the experience and processing of media content seem to be more relevant for the impacts on the recipients' morality rather than the confrontation with the content itself.

Long-term Effects on Empathy and Morality

The important role of the recipients' processing was also highlighted by the findings regarding the long-term effects on empathy and morality. Against the findings of Vossen and Valkenburg (2016), we could not show that social media supports the recipients' empathy. Moreover, the investigation did not show that the followers' moral orientation develops through following a historical figure on Instagram over time. However, these findings highlight that not only the media usage itself but rather the extent of interaction is decisive for the impact on morality. These findings give more detailed insights into the mechanism of social media on empathy and morality and suggest that the PSI with a historical person can affect the followers' morality and empathy. However, as researchers stated that moral values also influence which content individuals expose themselves to (Tamborini, 2012), we have to

mention that this might have affected the current findings. It might be reasonable that especially those individuals who have a moral orientation towards universal ethical principles participated in both studies because they felt more responsibility for participating in both studies. Moreover, as it is assumed that the recipients' moral orientation influences media selection behavior (Tamborini, 2012), one could speculate whether individuals who have been of high moral standards (referring to stage six of Kohlberg's stage model; 1958) might be more likely to engage with such an Instagram account which might have led to the current findings as we did not find an increase in moral orientation.

Limitations and Further Research

It is always important to consider the study's limitations when interpreting its findings. First, the generalizability of the findings is limited as the sample is not representative of the population, as it contains a high number of female and highly educated individuals. As followers of the German Instagram account of *Sophie Scholl* (@ichbinsophiescholl) were mainly young adults and women, we can only make assumptions about that. This limits the generalizability of the results when focusing on other historical Instagram accounts (e.g., @annefrankhouse_offical) that have mainly followers of other ages or sex. Moreover, the first measurement time point of the study was roughly six weeks after the publishing of the Instagram account. This might have affected the findings of the study, as followers might already have formed a PSR with the historical figure that might not have changed that much over time. Furthermore, due to the small sample size long-term effects might have not been detected, as the current sample size can only detect medium to large effects (see Frentzel-Beyme and colleagues (2023) for the a-priori power analysis). Additionally, we have to mention that we partly used cross-sectional data. Therefore, we cannot make any assumptions about the causal implications between PSI and empathy. Furthermore, the longitudinal perspective on empathy and moral orientation depending on the followers' actual interactivity

with the historical figure on Instagram can just be seen as an approximation. Moreover, we assessed PSI with the historical figure on Instagram by including *ichbinsophiescholl* instead of *Sophie Scholl* in the items. This might have affected the recipients' reflection processes including the awareness of the fictionality of the account.

Conclusion

The present investigation examined in a field survey the PSI with a historical figure on social media and its effects on the followers' empathy and moral orientation. We found that the followers' actual interactivity with a historical person on Instagram promotes their experience of PSI. Building on this, we find that PSI with the historical figure is related to the followers' empathy which, in turn, can affect the followers' moral orientation. Moreover, we found long-term effects on empathy when followers frequently interacted with the historical person on Instagram over time. These findings highlight that individuals' moral orientation and empathy are continuously affected by media exposure and underline the impact of the recipients' actual engagement and processing of the media content (PSI). The study's findings suggest that PSI with a historical person affects followers' empathy and moral orientation by offering them unique perspectives on the past.

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Research Paper IV





Frentzel-Beyme, L. & Krämer, N.C. (2023). Historical Time Machines – Experimentally Investigating Potentials and Impacts of Immersion in Historical VR on History Education and Morality. *Technology, Mind & Behavior*, 4(1).
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MULTI-STUDY PAPER

Historical Time Machines: Experimentally Investigating Potentials and Impacts of Immersion in Historical VR on History Education and Morality

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Virtual reality (VR) is known for its immersive characteristics that enable users the experience of *presence* in virtual environments. However, the experience of presence in emotionally charged historical VR is controversially discussed as it might decrease the critical, cognitive reflection of the historical content and lead to strong emotional reactions. Therefore, we examined the effects of the VR content's emotionality on presence and emotional response. Following the *transportation-imagery model* and the *model of intuitive morality and exemplars*, we investigated the effects of presence and emotional response on the recipients' enjoyment, historical interest, beliefs, awareness, and moral reasoning. Moreover, we tested whether additional information after watching historical VR can support the critical reflection of the historical content. Taking different modalities into account, we conducted two experiments following a 2 (emotionality of the content) × 2 (reception of additional information)-between-subjects design in which participants were exposed to historical VR via a media player (Experiment 1, $N = 493$) or VR glasses (Experiment 2, $N = 99$). In line with the assumptions, the recipients' experience of presence and emotional response supported historical interest, enjoyment, and affected moral reasoning. Moreover, findings indicated that additional material promotes the critical reflection of historical VR.

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More and more frequently, historical virtual reality (VR) applications like *Inside Auschwitz*¹ are freely accessible on online video platforms (e.g., YouTube VR) and can be consumed anywhere at anytime (e.g., living rooms). These applications aim to offer users unique, vivid, emotional insights into the past to promote the enjoyment of and interest in historical topics (e.g., the former Auschwitz–Birkenau concentration camp; Bunnenberg, 2020).

However, such applications are viewed critically by history didactics and whether historical VR is an adequate educational tool is intensely discussed (e.g., Bunnenberg, 2020). The technological (*technological immersion*; e.g., 360° view) and narrative characteristics of VR are known for promoting the recipients' "sense of being there" (Slater & Wilbur, 1997, p. 604) described by the term *presence*: recipients' experience to be part of a (virtual) environment (e.g., Slater, 2003). In line with the *transportation-imagery model*, it is assumed that especially the recipients' experience of narrative presence, the immersion into narration, in historical VR leads to strong emotional reactions and a less critical reflection of the historical content (c.f. transportation, Green & Brock, 2002). Moreover, these

¹ <https://youtu.be/QwC5d75iTcA>

effects might be promoted by the contents' emotionality of historical VR, as previous research indicates that VR experiences lead to matching emotional responses (e.g., Riva et al., 2007).

In this context, history didactics emphasize the importance of *historical awareness*, describing the ability to analyze and evaluate representations of the past, to ensure an appropriate engagement with representations of the past in media (e.g., VR; Pandel, 1987, 2017). Historical awareness is defined as a multidimensional trait that changes through exposure to history and includes, among others, the awareness of the time (past, present), reality, and morality. It is argued that historical VR might affect historical awareness by blurring the boundaries between the (virtual) past and the present and promoting the attentional focus on the historical virtual environment (e.g., Bunnenberg, 2020; Lewers & Frentzel-Beyme, 2022). For instance, the awareness of reality might be reduced by the experience of presence in historical VR. On the other hand, the awareness of morality might be promoted as the *model of intuitive morality and exemplars* suggests that media content affects the moral reasoning of recipients (Tamborini, 2012). To the best of the authors' knowledge, it has not been investigated empirically until now whether the experience of presence in historical VR indeed affects the recipients' (historical) awareness. Nor has been scrutinized whether and how the critical processing of the historical content can be fostered.

In light of this, the present investigation will examine whether the recipients' experience of presence and emotional response are affected by the contents' emotionality of historical VR. Building on this, the effects of presence and emotional response to historical VR on learning objectives (e.g., historical awareness, interest, beliefs), moral reasoning, as well as enjoyment will be investigated. Moreover, it will be examined how the critical processing of the presented historical content in informal learning environments (e.g., online video platforms) can be assured by offering recipients additional information after consuming historical VR. As freely accessible historical VR on the internet can be received via different technologies (media player and VR glasses), we will conduct two studies taking both technologies into account.

Theoretical Framework

The Experience of Presence in Historical VR

Historical VR applications aim to make time travels real (e.g., Bunnenberg, 2020; Lewers, 2022; Yildirim et al., 2018). These applications use the emotionality of past events, narration, and the unique immersive characteristics of VR to foster the recipient's involvement, emotional engagement, and attention (e.g., Agrawal et al., 2020; Bunnenberg, 2020; Lewers, 2022): Historical VR applications aim to immerse recipients in a historical virtual environment.

The applications' narration can promote "feelings of participation, embodiment, or disembodied observation in a story world" (*narrative presence*; Rowe et al., 2007; p. 127) which can also be described by the term *transportation*, the recipients' experience of temporarily leaving the reality behind and becoming fully immersed in the narration (Green & Brock, 2000a). The experience of narrative presence inevitably includes an emotional response, attentional focus, and concentration on the story's events (Green & Sestir, 2017).

Moreover, the technological characteristics of VR applications (e.g., panoramic views, interaction opportunities; Frentzel-Beyme & Krämer, 2022; Slater, 2003, 2018) are known for promoting a similar

phenomenon describing the recipients' feeling of being part of a virtual environment: spatial presence—"the sense of being there" (e.g., Slater & Wilbur, 1997, p. 604). In this sense, previous research showed that exposure to historical VR in form of a 360° video leads to more spatial presence compared to receiving the same content in standard video format (Frentzel-Beyme & Krämer, 2022). Recipients experiencing presence perceive the mediated environment as more engaging, involving, and real than the actual surrounding environment, as they shift their attention to the mediated (historical) environment (Slater & Wilbur, 1997). To summarize, both: spatial presence and narrative presence (transportation) describe the recipients' experience of being immersed in (virtual) environments accompanied by the attentional focus on the mediated environment (Agrawal et al., 2020).

Therefore, we will refer in the following to narrative and spatial presence when describing the phenomena of being immersed in historical VR. Here, narrative presence describes the recipients' immersion into narration, whereby spatial presence describes the recipients' experience of being actually located within the virtual environment and mainly refers to location and interaction criteria. According to previous research, the experience of spatial presence is promoted by the technological characteristics of VR. On the other hand, narrative presence is grounded in the narration of VR. Considering the characteristics of historical VR applications: narration and technological immersion (panoramic view and interaction opportunities; Bunnenberg, 2020; Frentzel-Beyme & Krämer, 2022), the present investigation will focus on the effects of narrative as well as spatial presence when examining the recipients' experience of presence in historical VR.

Emotionality of Historical VR

It is assumed that the experience of presence in any kind of emotional media content necessarily evokes (matching) emotional reactions (e.g., Green & Sestir, 2017; Kim et al., 2019; Riva et al., 2007; Visch et al., 2010). Previous research showed that the recipients' experience of presence in historical VR is strongly connected to emotional reactions (e.g., Frentzel-Beyme & Krämer, 2022). Also, Riva et al. (2007) showed in an experiment that an anxious VR (anxious park) produced anxiety within the recipients, whereby relaxing VR-(relaxing park) evoked relaxation.

As historical VR applications are usually emotionally charged because of the past event's emotionality that producers use to catch the recipients' attention and more deeply involve them in the presented content (e.g., being a prisoner in the German Democratic Republic [GDR]; Bunnenberg, 2020; Rosenwein, 2002), strong emotional reactions to historical VR could be triggered. Therefore, we suppose that the content's emotionality of historical VR positively promotes the recipients' experience of presence (narrative and spatial presence) and emotional response.

Hypothesis 1: The content's emotionality of historical VR applications affects the recipients' [a] experience of presence and [b] emotional response positively.

Historical From a History Didactics Perspective

Enjoyment of Historical VR

Especially the immersive characteristics and emotionality of historical VR applications are intended to catch the recipients' attention

and make history tangible and entertaining (e.g., Bunnenberg, 2020; Lewers, 2022; Yildirim et al., 2018). Indeed, previous research already indicated that the recipients' experience of presence can promote the enjoyment of the presented topics (Green et al., 2004; Sylaiou et al., 2010). Even for the learning context, Sylaiou et al. (2010) found that individuals who experienced presence within a virtual museum reported higher feelings of being entertained. These findings suggest that recipients' experience of presence in historical VR could promote the recipients' enjoyment. As we assume that the recipients' immersion goes hand in hand with the recipients' emotional response (e.g., Green & Brock, 2002), we expect that the recipients' experience of presence and emotional response lead to the recipients' enjoyment of historical VR applications.

Hypothesis 2: The recipients' [a] experience of presence in and [b] emotional response to historical VR affects recipients' media enjoyment positively.

Support of Historical Interest

Besides the entertainment factor, historical VR applications are intended to support the interest in historical topics and convey historical knowledge (e.g., Yildirim et al., 2018). However, it has not been investigated empirically whether the recipients' experience of presence as a unique characteristic of historical VR fulfills these aims. Previous research showed that VR applications support content-related interests by showing an increase in participants' interests in science after using an immersive VR laboratory simulation (Makransky et al., 2020). However, the impact of the recipients' experience of presence and emotional response to historical VR is still not examined in detail. Based on the first investigations, we assume that the recipients' experience of presence and emotional response to historical VR supports the recipients' interest in context-related topics (e.g., GDR).

Hypothesis 3: The recipients' [a] experience of presence in and [b] emotional response to historical VR increase historical interest.

Impacts on the Recipients' Moral Reasoning

Moreover, promoting the awareness of morality, describing the awareness of whether something is right or wrong, is one aim of history education and is strongly connected to the development of morality (Brauer & Lücke, 2013; Pandel, 1987). Since historical VR offers the opportunity to experience the past and gain unique impressions, the recipients' morality may be influenced. Moreover, previous research indicated that media usage affects the recipients' moral values (video games, movies, series; e.g., Eden et al., 2014; Grizzard et al., 2017; Grohmann et al., 2021; Holl & Melzer, 2021). Also, in his *model of intuitive morality and exemplars* (MIME) Tamborini (2012) suggested that media content can influence the temporary and persisting salience of moral values. The model is grounded on the *exemplification theory* (Zillmann, 2002) and the *moral foundations theory* (MFT; Haidt & Joseph, 2004). The MIME suggests that the presentation of moral exemplars (e.g., helping behavior) in media increases the salience of related domains (e.g., care) in memory, which can in turn influence the individual's moral reasoning (Tamborini, 2012). As the MIME addresses the MFT, it

refers to the social-intuitionist perspective of the individual's moral judgment (Haidt, 2001). According to the MFT, a moral judgment is mainly reached intuitively and emotionally based on five innate, modular moral foundations: care, fairness, loyalty, authority, and sanctity (Haidt & Joseph, 2004). Thereby, care includes cherishing and protecting others; fairness describes the value of rendering justice according to shared rules; loyalty depicts the value of standing with individual groups, including family and nation; authority describes the value of legitimation of authorities and traditions, and sanctity refers to religious notions of striving to live in an elevated, more noble way. The MIME suggests that exposure to highly moral or immoral events in media that match these specific moral domains will activate intuitions related to the moral domains (Tamborini, 2012). Previous research showed that the consumption of moral content can prime the reasoning about related moral values by asking participants to expose themselves to moral media content (serial drama) over 8 weeks (Eden et al., 2014).

As previous research showed a stronger influence on the recipients' beliefs supported by the recipients' experience of presence in the virtual environment (e.g., Bujić et al., 2020), we assume that the experience of presence in historical VR promotes the effect of media on content-related moral foundations. Moreover, we expect that the experience of presence and emotional response to historical VR support the illusion of unique "real" experiences and the attentional focus on the presented content which, in turn, promotes the effects of the media content on the content-related moral foundations.

Hypothesis 4: The recipients' [a] experience of presence in and [b] emotional response to historical VR applications positively affects the recipients' salience of moral foundations.

Contrary to the social-intuitionist perspective of the individual's moral judgment of Haidt and Joseph (2004), the rationalist approach of Kohlberg (1958) suggests that a moral judgment is reached more rationally by a process of methodological thinking based on perspective-taking and empathy. In his stage model, Kohlberg (1958) assumes that the individual's moral orientation develops in six successive steps, leading from the orientation toward punishment and obedience on Stage 1 to the orientation toward universal ethical principles on Stage 6 (Kohlberg, 1958). The moral orientation develops based on an everlasting process of perspective-taking and empathy which implies that the opportunity to take another perspective can support the individual's moral development (Walker, 1980). As historical VR applications often offer recipients the opportunity to take a unique perspective of the past (e.g., being a prisoner in the GDR), previous research indicated that perspective-taking through historical VR can support the individual's moral development which is supported by the recipients' immersion into the historical virtual environment (Frentzel-Beyme & Krämer, 2022). Therefore, we assume that immersion and emotional involvement in historical VR support the illusion of "real" experiences, which, in turn, affects the recipients' moral development according to Kohlberg (1958).

Hypothesis 5: The recipients' [a] experience of presence in and [b] emotional response to historical VR applications affect the recipients' moral orientation.

Historical VR as Educational Tool

However, the experience of presence and emotional response to historical VR is controversially discussed by history didactics (e.g., Bunnenberg, 2020; Lewers, 2022). They criticize that the recipients' affective responses might decrease the critical, cognitive reflection of the historical content which is one aim of history education. In line with this, Parong and Mayer (2021) recently showed that viewing a history lesson in VR supports emotional processing which distracts from the cognitive processing of the information given in the VR history lesson and leads to lower learning outcomes. Also, the *transportation-imagery model* of Green and Brock (2002) suggests less critical processing of the presented information, when being transported in narration (i.e., narrative presence). In an experiment, the researchers asked participants to read a story that dealt with a rampage in a mall and was either classified as fictional or nonfictional. Afterward, they had to indicate their agreement with story-related attitudes. The experiment's results showed more story-consistent beliefs when participants were highly transported into the story which was not influenced by the fictionality of the story. Moreover, analyses point out that the resulting persuasiveness of narratives is supported by the extent of evoked emotions.

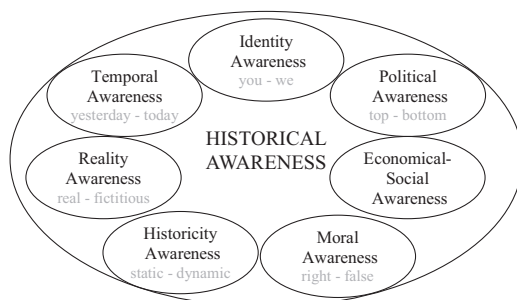
Therefore, we assume that the experience of presence and emotional response to historical VR promote less critical processing of the presented content expressed in the recipients' story-consistent beliefs.

Hypothesis 6: The recipients' [a] experience of presence and [b] emotional response to historical VR applications lead to story-consistent beliefs of the presented historical content.

Moreover, history didactics emphasize historical awareness as the main ability that enables the critical, cognitive processing of computer-mediated historical information (Völkel, 2013). Historical awareness is a multidimensional concept that describes the ability to analyze and evaluate the representations of the past (see Figure 1; Pandel, 1987; Seixas, 2017).

As historical VR aims to blur the boundaries between the (virtual) past and present (physical environment; e.g., Green & Brock, 2000a; Slater & Wilbur, 1997), historical awareness in terms of the awareness of the time (present, past) and reality might be challenged. We assume that the recipients' experience of presence and emotional response to historical VR decreases historical awareness, as the experience of presence in the historical virtual environment

Figure 1
Dimensions of Historical Awareness According to Pandel (2017)



creates the impression that the historical content is more real and true than the actual surrounding environment.

Hypothesis 7: The recipients' [a] experience of presence in and [b] emotional response to historical VR applications negatively affect historical awareness.

Critical Processing of Historical VR. Since VR applications aim to educate recipients about the past, we ask from a history education perspective how an adequate critical, cognitive reflection of the historical (virtual) content can be assured (e.g., Bunnenberg, 2020). History education in general aims to promote the consideration of past events from different perspectives (Brauer, 2013). Therefore, when dealing with atrocities of the past it is desirable to not only focus on the fates of the affected but also to look at the circumstances of the perpetrators at any time. Media that only shows one perspective on the past that many historical VR applications do (e.g., being a prisoner in the GDR) is perceived to be inappropriate and insufficient (Bunnenberg, 2020). As additional information has been proven to support the critical, cognitive reflection and a multiperspective view on past events (e.g., Kansteiner, 2009; Schwarz, 2014), we will investigate whether additional information after receiving historical VR might be able to decrease story-consistent beliefs and the emotional response and thereby might prevent the loss of historical awareness to mitigate the effects of the experience of presence and emotional response as explained beforehand.

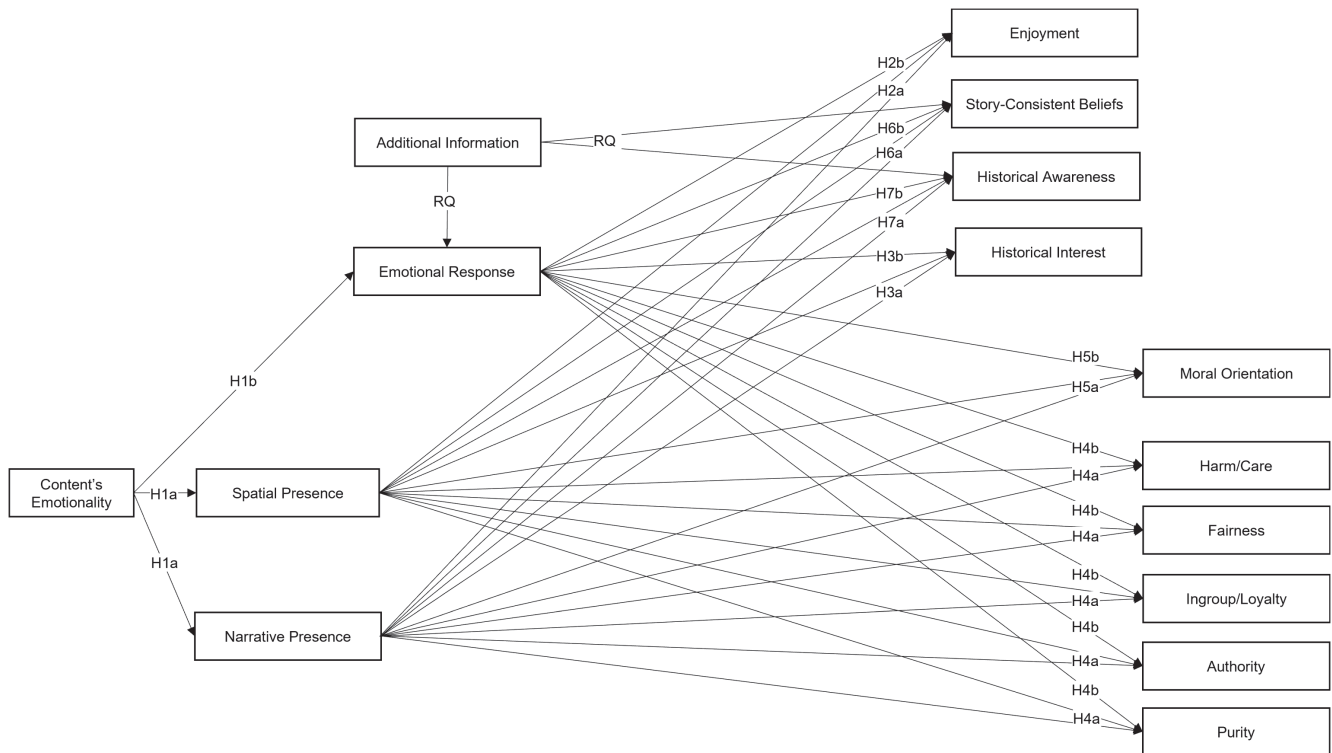
Research Question: Can additional information after consuming historical VR applications prevent [a] emotional overload [b] adoption of story-consistent beliefs and [c] the loss of historical awareness?

Research Model

The present investigation aims to examine how historical VR applications were processed. Therefore, we ask whether the contents' emotionality of historical VR promotes the recipients' experience of presence (spatial and narrative presence), as well as the emotional response (Hypothesis 1). Building on this, we ask whether this attentional and emotional focus on the historical virtual environment (Agrawal et al., 2020) supports the recipients' enjoyment of historical VR, as well as the historical interest, morality, and story-consistent beliefs (H2–H6). Moreover, we assume that the experience of presence in a historical virtual environment decreases historical awareness, as the boundaries between the virtual past and reality get blurred (H7). Additionally, we ask whether additional information after consuming historical VR can promote adequate processing of the historical virtual content and, therefore, promote historical awareness and decrease story-consistent beliefs and emotional responses research question (RQ). The hypotheses and research questions suggest the following integrative model (Figure 2).

Moreover, as freely accessible historical VR applications can be consumed via different technologies: the online platform's media player or VR glasses; we ask whether the recipients' experience of presence and emotional response depend on the used technology. Previous research showed that immersive technological characteristics (e.g., panoramic view, interaction opportunity; Slater & Wilbur, 1997) promote the recipients' experience of presence (e.g., Frentzel-Beyme & Krämer, 2021). Therefore, we assume

Figure 2
Integrative Research Model Including the Relations Assumed in the Hypotheses (1–7) and the Research Question



Note. RQ = research question.

that wearing VR glasses significantly increases the recipients' immersion compared to watching the historical VR application via the platforms' media player.

Hypothesis 8: The technological immersion of the medium positively affects the recipients' experience of presence.

Method

Design

To examine the hypotheses and research question, we used a 2 (content's emotionality) × 2 (additional information)—between-subjects design. We conducted two studies following the same design to take the different technologies of historical VR (360° videos) into account (media player vs. VR glasses). In the online study ($N = 493$; media player [MP]) participants watched the historical VR through the video platform's media player. In the laboratory study ($N = 99$; VR glasses) participants used the integrated cardboard modus and watched the same historical VR with VR glasses created by a cardboard holder and a smartphone (see Figure 3). Watching the historical VR through the platform's media player offers the opportunity to get a 360° view of the virtual environment by using the mouse or keyboard, using VR glasses offers the opportunity to naturally look around by moving the head.

Each of the studies contained four experimental groups: Emotional content and additional information (MP: $n = 131$, VR: $n = 26$); emotional content and no additional information (MP: $n = 119$,

VR: $n = 25$); less emotional content and additional information (MP: $n = 133$, VR: $n = 25$); less emotional content and no additional information (MP: $n = 110$, VR: $n = 23$).

The study design was approved by the local ethics committee and was preregistered on open science framework (OSF) in advance of data collection (data and material can be found on OSF as well; Frentzel-Beyme & Krämer, 2021).

Independent Variables

Content's Emotionality

To manipulate the content's emotionality of the historical VR, we used two different parts of the 360° video of the memorial site Berlin Hohenschönhausen (Germany).² The 360° video deals with the perspective of a prisoner in the former state security service (Stasi) prison in the GDR in the 1980s.

The GDR was a socialist state from 1949 to 1990 in the nowadays eastern part of Germany. We used two parts of 2 min of the 360° video, that were evaluated in a pretest ($N = 58$) as emotional ($M = 7.8$, $SD = 1.2$) and less emotional ($M = 6.7$, $SD = 2.3$) on a 10-point Likert-scale, $t(56) = 2.03$, $p = .048$, $d = .524$. Although the emotionality values of both parts were relatively high and differed not that much, it was decided to use these parts because of the statistically significant difference and the effect size (medium effect; Cohen, 1992). The content of both parts is described in Table 1.

² <https://youtu.be/ZKP54B0yu3M>

Figure 3
Overviews of the Technologies Used in the Experiments

A



B



Note. (A) 360° video displayed in the online platform's media player. Screenshot reproduced from IntoVR.com with permission. Copyright by IntoVR.com. (B) Cardboard holder including cardboard holder displaying the 360° video in the integrated cardboard modus.

A content analysis based on Holl and Melzer (2021) identified the moral foundations triggered by the different scenes of the historical VR (Table 1).

Furthermore, based on a previous study dealing with the same content, we could evaluate that most of the recipients (ca. 70%) perceived the content as morally relevant and stated that they got the impression that the video is addressing different moral topics (e.g., fairness; OSF³). Although the content of the different parts differed to some extent, the main content can be classified as equal as it includes similar scenes (e.g., interrogation; Table 1), triggers similar moral foundations, and takes place in the same location (former GDR prison).

Additional Information

As additional information news articles were given to the recipients after watching the 360° video. The news articles were created in interdisciplinary cooperation with history didacts. The news article for the "additional information" condition dealt with the used 360° application of the memorial site Berlin Hohenschönhausen (Germany) and includes fixed historical-didactic criteria: multiperspectivity, controversy, plurality, historical reference, deconstruction, media reflection, location-/perspectivity-boundedness (548 words). Detailed information on the criterion can be found on OSF (Frentzel-Beyme & Krämer, 2021). The news article for the "no-additional-information" condition dealt with VR in general and outlines application areas of VR (550 words). Both articles were uploaded in the OSF project in the originally used German version (Frentzel-Beyme & Krämer, 2021).

Measures

Emotional response was measured by a modified version of the Differential Affect Scale (M-DAS; Renaud & Unz, 2006). We used 11 of the originally 16 subjective sensitivities fitting to the object

of study, each represented by three adjectives/nouns (Table 2). Participants indicated how much they experienced the subjective sensitivities on a 6-point Likert scale, ranging from 1 = *not at all* to 6 = *very much* (MP: $M = 3.0$, $SD = 0.8$; VR: $M = 3.2$, $SD = 0.7$).

Enjoyment was measured based on Reinecke et al. (2011). We used five adapted items (e.g., "The video was interesting."). Answers were given on a 6-point Likert scale, ranging from 1 = *not at all* to 6 = *very much* (MP: $M = 3.4$, $SD = 1.3$, $\alpha = .84$; VR: $M = 4.7$, $SD = 0.9$).

Historical awareness was measured with a self-developed questionnaire consisting of fourteen items building on Pandel's (1987) model of historical awareness. The results of the exploratory analysis revealed four dimensions of historical awareness: the awareness of the past (e.g., "In the past, there were prisoners in the prison of the Ministry of State Security in Berlin-Hohenschönhausen."; four items; $\alpha = .86$), the awareness of the present (e.g., "Prisoners are treated in prisons in Berlin today as shown in the video." [R]; four items; $\alpha = .46$) the awareness of reality (e.g., "The video shows the events in the prison of the Ministry of State Security in Berlin-Hohenschönhausen as they happened."; three items; $\alpha = .84$), the awareness of changes (e.g., "The events in the prison of the Ministry of State Security Berlin Hohenschönhausen are unchangeable."; three items; $\alpha = .79$). Items were answered on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*; MP: $M = 4.0$, $SD = 0.4$; VR: $M = 5.2$, $SD = 0.7$). All items and the results of the explanatory factor analysis can be found on OSF (Frentzel-Beyme & Krämer, 2021).

Historical interest was measured in two ways: General and topic-specific interest. General history interest was assessed based on an adapted version of the Short Scale of Political Interest (Otto and Bacherle, 2011). To measure general historical interest, we used a modified version consisting of five items (e.g., "For me history is an exciting topic."). To measure topic-specific history interest, we

³ <https://doi.org/10.17605/OSF.IO/T7S3Q>

Table 1

Overview of the Content of Each Scene and Triggered Moral Foundations (MFs) of the Different Parts of the 360° Video of the Memorial Site Berlin Hohenschönhausen (Germany)

Scene	Triggered MFs
Less emotional part (0:00–2:11 min)	
1. Welcoming of three prison guards in front of the prison Berlin Hohenschönhausen	Ingroup/loyalty, authority/respect
2. Handing over of prison clothes, body search	Ingroup/loyalty, authority/respect, harm/care
3. Interrogation by two officers	Authority/respect, harm/care
4. Taking off the identification photo by two other officers	Authority/respect, harm/care
5. Placement in the prison cell	
Emotional part (2:12–4:26 min)	
1. Interrogation by two officers, with one of the officers walking up to the person, yelling at him or her, and blowing cigarette smoke in the person's face	Purity/sanctity, authority/respect, harm/care, fairness/reciprocity
2. Placement in the prison cell and encounter with cell neighbor who tries to persuade the person to cooperate with the Stasi	Harm/care, fairness/reciprocity

adapted the items to the topic (GDR; e.g., “For me, the GDR is an exciting topic.”) and furthermore used a modified version of the dimension “exploration intention” of the Situational Interest Scale of Cheng et al. (1999; e.g., “I want to analyze the GDR to have a grasp on it.”). All items were answered on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*, MP: $M = 3.5$, $SD = 1.5$, $\alpha = .97$; VR: $M = 3.9$, $SD = 1.1$).

Moral foundations were assessed based on the Moral Foundations Questionnaire (MFQ; Graham et al., 2011), which assessed based on 30 items the five moral foundations: harm/care (MP: $M = 5.0$, $SD = 0.8$, $\alpha = .68$; VR: $M = 4.9$, $SD = 0.7$), fairness/reciprocity (MP: $M = 5.0$, $SD = 0.7$, $\alpha = .61$; VR: $M = 5.1$, $SD = 0.96$), in-group/loyalty (MP: $M = 3.6$, $SD = 0.8$, $\alpha = .57$; VR: $M = 3.3$, $SD = 0.7$), authority/respect (MP: $M = 3.6$, $SD = 0.9$; VR: $M = 3.5$, $SD = 0.9$), purity/sanctity (MP: $M = 3.4$, $SD = 1.0$, $\alpha = .68$; VR: $M = 3.0$, $SD = 0.8$) each represented by six items. Answers were given on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*).

Moral orientation was measured using a questionnaire that assessed moral orientation according to Kohlberg's theory of moral development (1958; Frenzel-Beyme & Krämer, 2022). After reading a moral dilemma about a family mother (Antonia) in a totalitarian state who is asked for help by a persecuted homosexual couple, the participants rated 10 statements referring to the six stages of moral orientation according to Kohlberg (1958). The questionnaire includes three factors: Factor 1 represents Stages 1–4 (e.g., “Antonia should not help them because their friends and acquaintances might not approve that.”; $\alpha = .75$). Factor 2 represents Stage 5: social contract orientation (e.g., “Antonia should not help them because it is always right to protect the family.”; $\alpha = .81$). Factor 3 represents Stage 6: orientation toward universal principles (e.g., “Antonia should help them because it would be selfless.”; $\alpha = .81$). Answers were given on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*, MP: $M = 2.56$, $SD = 1.4$; VR: $M = 2.8$, $SD = 1.0$).

Spatial presence was assessed by the Spatial Presence Experience Scale of Hartmann et al. (2015) consisting of eight items reflecting two dimensions of presence: users' self-location ($\alpha = .94$) and possible actions ($\alpha = .88$). Answers were given on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*; e.g., “I felt like I was actually there in the environment of the presentation”; MP: $M = 3.3$, $SD = 1.4$; VR: $M = 3.6$, $SD = 1.0$).

Story-consistent beliefs were measured based on Green and Brock (2000a). Participants indicated their agreement to six items that

represented assumptions conveyed in the historical VR application (e.g., “The employees of the Ministry of State Security have threatened prisoners”) on a 6-point Likert scale (1 = *I strongly disagree* to 6 = *I strongly agree*, MP: $M = 4.9$, $SD = 0.6$, $\alpha = .53$; VR: $M = 5.0$, $SD = 0.6$). All items can be found on OSF.

Narrative presence was assessed by the Transportation Scale of Green and Brock (2000b). We used 10 of the 11 general items of the scale and adjusted them to the given context (e.g., “While I was watching the 360° video, I could easily picture the events in it taking place”). Participants indicated their agreement with the statements on a 6-point Likert scale, ranging from 1 = *I strongly disagree* to 6 = *I strongly agree* (MP: $M = 3.7$, $SD = 0.8$, $\alpha = .68$; VR: $M = 4.0$, $SD = 0.7$).

Further Measurements

To get insights into the recipients' prior knowledge of the GDR, we asked them how they would estimate their prior knowledge of the GDR on a 10-point Likert scale (1 = *very low* to 10 = *very high*). Furthermore, we asked them whether they had ever visited a museum or memorial site that deals with the GDR and if they know someone who lived in the GDR. Additionally, we assessed the participants' perceived relevance to the topic by two items: “How important/relevant do you consider this topic?” on a 6-point Likert scale from 1 = *not at all* to 6 = *extremely* based on Carpenter's (2019) questionnaire assessing ego involvement.

Manipulation Checks

To check whether the participants watched the historical VR application attentively, we asked them to indicate what did not happen in the VR application and gave them two options to choose from: interrogation or a visit from relatives. Consequently, they had to select the second option. Furthermore, we asked the participant of the online study if they used the 360° function of the video.

Procedure

The whole procedure and order of the questionnaires are displayed in Figure 4. While participants were asked to watch the historical VR application (360° video) or read the news article it was ensured that they did not skip it by forwarding them only after an amount of time to the next page of the questionnaire (e.g., 2 min). It took on average about 15 min to participate in the online experiment.

Table 2
Descriptive Statistics and Internal Validity of the Emotions of the M-DAS

Emotion	Media player						VR glasses					
	<i>M</i>		<i>SD</i>		α		<i>M</i>		<i>SD</i>		α	
	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2
Pleasure	1.5	1.4	1.0	1.0	.96	.97	2.3	2.1	1.2	1.2	.91	.92
Happiness	1.4	1.4	0.8	0.9	.89	.95	2.2	1.9	1.1	1.0	.93	.91
Fascination	3.1	3.2	1.4	1.4	.83	.86	3.8	3.8	1.2	1.3	.84	.85
Arousal	3.7	3.8	1.3	1.4	.82	.86	3.8	3.8	1.2	1.2	.86	.87
Interest	4.5	4.3	1.2	1.3	.92	.94	4.8	4.6	0.8	0.9	.83	.83
Surprise	2.8	2.8	1.3	1.3	.84	.83	3.5	3.5	1.2	1.2	.84	.83
Sorrow	3.0	2.7	1.3	1.4	.82	.88	2.9	2.8	1.2	1.2	.80	.87
Anger	3.5	3.3	1.5	1.6	.91	.93	2.8	2.8	1.4	1.5	.89	.91
Disgust	3.7	3.4	1.6	1.8	.91	.95	3.2	3.0	1.5	1.5	.92	.93
Contempt	3.1	2.8	1.3	1.4	.75	.80	3.1	2.9	1.5	1.3	.79	.82
Fear	3.1	2.8	1.5	1.6	.87	.92	2.8	2.7	1.3	1.3	.85	.85

Note. M-DAS = modified version of the Differential Affect Scale; VR = virtual reality.

Samples

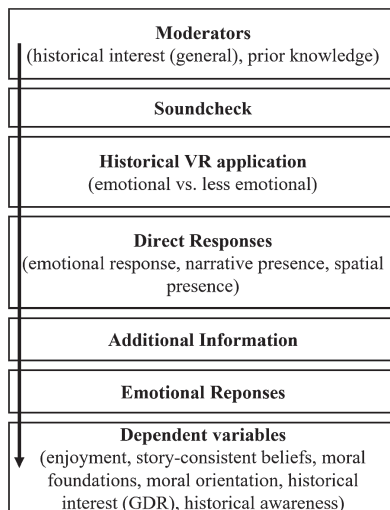
Online Experiment

In the online experiment, 522 participants were recruited via different channels: an Online-Access-Panel (respondi.com), advertisements on social media, and other online platforms (e.g., <https://surveycircle.com>) to syncretize a sample that is as representative and heterogeneous as possible. Respondents recruited via the online panel were paid appr. 10 Euros for their participation.

To ensure a reliable data set, we excluded participants that did not pass the soundcheck (one data set), tick the right answer option of the control items (two data sets), and pass the manipulation check (26 data sets; no noticeable differences between the groups). Furthermore, we conducted a long string analysis based on the answers given to 21 successive items and did not identify any additional inattentive participants through this procedure (Landers, 2020).

Figure 4

The Procedure of the Experiments



Note. GDR = German Democratic Republic; VR = virtual reality.

After excluding the data sets according to the previously mentioned criteria, it ended up in a data set containing 493 participants including 256 women and 236 men aged between 18 and 75 years ($M = 45.9$, $SD = 16.2$). Most of the participants had a university degree (34%), a university entrance qualification (30%), or a secondary school certificate (27%) and were employees (55%), or students (19%). Furthermore, participants indicated a moderate general interest in history ($M = 4.1$, $SD = 1.4$), and a moderate prior-knowledge ($M = 5.3$, $SD = 2.4$), perceived relevance ($M = 4.4$, $SD = 1.3$), and importance ($M = 4.4$, $SD = 1.4$) to the historical topic (GDR). Moreover, some stated that they lived in the GDR (15%) or know someone who lived in the GDR (36%).

Laboratory Study

In the laboratory study, 99 people including 74 women, 24 men, and one person who did not identify with any gender participated. The participants of the convenience sample were aged between 17 and 54 years ($M = 22.5$, $SD = 5.3$). They had a university entrance qualification (85%), a university degree (13%), or a secondary school certificate (2%), and were either students (91%) or employees. Participants indicated a moderate general interest in history ($M = 3.5$, $SD = 1.2$), and prior knowledge ($M = 4.7$, $SD = 1.9$), perceived relevance ($M = 4.2$, $SD = 1.3$), and importance ($M = 4.4$, $SD = 1.2$) to the historical topic (GDR). Moreover, some stated to know someone who lived in the GDR (22%), whereby no one in this sample lived in the GDR.

Results

Impacts of Technology on the Recipients' Immersion

To test whether the recipients' experience of presence differed depending on the extent of technological immersion (VR glasses vs. MP) as Hypothesis 8 (H8) assumed, we conducted an analysis of variance. To investigate differences in spatial presence in more detail, we examined the differences in subdimension of spatial presence: self-location and possible action. Therefore presence self-location, possible action, and narrative presence were included as dependent variables in the analysis. As the sample sizes were very different

(MP: $N = 493$; VR: $N = 99$), and the Levene test of variance homogeneity revealed that the variances between the two groups differed significantly,⁴ we used a more robust test method: Welch tests (Ruxton, 2006).

Regarding the differences in presence self-location between the media player and VR condition, the analysis revealed a significant higher presence self-location values in the VR condition ($M = 4.0$, $SD = 1.1$) compared to the media player condition with small effect sizes ($M = 3.4$, $SD = 1.5$), $F(1, 590) = 11.46$, $p = .001$, $\eta^2 = .019$, (Cohen, 1988; Lakens, 2013). Concerning spatial presence possible action, the analysis showed no significant differences between the media player and VR condition, $F(1, 590) = 0.37$, $p = .542$.

When taking a look at the differences in narrative presence between the media player and VR glasses condition, the analysis showed significant higher narrative presence values in the VR glasses condition ($M = 4.0$, $SD = 0.7$) and media player condition with small effect sizes ($M = 3.7$, $SD = 0.8$), $F(1, 590) = 2.04$, $p = .042$, $\eta^2 = .014$, (Cohen, 1988; Lakens, 2013). Therefore, Hypothesis 8 was accepted for spatial presence self-location and narrative presence.

Integrative Model

To test the relations assumed in the Hypotheses (H1–H7) and research question we used structural equation modeling analysis with observed variables using maximum likelihood estimation. We calculated separate analyses for both data sets as the preliminary analysis shows that the recipients' immersion differed depending on the used technology (VR vs. MP; using R Version 4.0.3; Figure 5). The experimental groups (content's emotionality and additional information) were included as dichotomous variables in the path model.

The originally hypothesized model revealed a poor model fit according to frequently used fit indices: $\chi^2(23) = 67.05$, $p < .001$, $\chi^2/df = 1.01$, comparative fit index = 0.86, Tucker–Lewis index = 0.37, root-mean-square error of approximation = .14 (90% CI from .10 to .18), standardized root-mean-square residual = .09 (Hu & Bentler, 1999). Therefore, according to modification indices and the theoretical assumption that presence and emotional responses are necessarily related (e.g., Green & Brock, 2002), we added two paths from narrative and spatial presence to emotional response (Figure 5).

After the adjustments have been made, the model provided an acceptable fit according to frequently used fit indices: online study (media player): $\chi^2(20) = 31.82$, $p = .045$, $\chi^2/df = 1.2$, comparative fit index = 1.00, Tucker–Lewis index = 0.97, root-mean-square error of approximation = .04 (90% CI from .01 to .06), standardized root-mean-square residual = .02; laboratory study (VR glasses): $\chi^2(20) = 17.28$, $p = .30$, $\chi^2/df = 0.9$, comparative fit index = 1.00, Tucker–Lewis index = 1.04, root-mean-square error of approximation = .00 (90% CI from .01 to .07), standardized root-mean-square residual = .04 (Hu & Bentler, 1999).

The calculated path models can be found in Figure 5 including the explained variance of each construct. Bivariate correlations between all included constructs can be found in Table 3.

Effects of the VR Content's Emotionality

Hypothesis 1 (H1) assumed a higher recipients' experience of presence (H1a) and emotional response (H1b) when watching the

emotional part of the historical VR. Independently of the type of technology, the analyses revealed that the content's emotionality does not affect spatial presence (MP: $\beta = .00$, $p = .937$; VR: $\beta = .13$, $p = .180$), narrative presence (MP: $\beta = .00$, $p = .950$; VR: $\beta = .02$, $p = .848$) and emotional response (MP: $\beta = .00$, $p = .914$; VR: $\beta = -.04$, $p = .579$). Therefore, Hypothesis 1 (H1) was rejected.

Effects on Media Enjoyment

Concerning Hypothesis 2 (H2) which assumed positive effects of the recipients' experience of presence (H2a) and emotional response (H2b) on media enjoyment, the analyses revealed positive relationships between spatial presence (MP: $\beta = .31$, $p < .001$; VR: $\beta = .20$, $p = .018$) and media enjoyment for both conditions. When taking a look at the relationship between narrative presence and media enjoyment, we found that in the media player condition narrative presence was positively related to media enjoyment (MP: $\beta = .29$, $p < .001$), whereby in the VR glasses condition we could not find any relationship between narrative presence and media enjoyment (VR: $\beta = .26$, $p = .075$). Moreover, there was no significant relationship between emotional response and media enjoyment when watching the historical VR in the media player ($\beta = -.03$, $p = .636$), whereby the analysis showed a positive relationship between emotional response and media enjoyment when using VR glasses ($\beta = .25$, $p = .002$). Therefore, Hypothesis 2a was accepted regarding spatial presence and partly accepted for narrative presence, as we only found a relationship in the media player condition. Moreover, Hypothesis 2b was only accepted in the study using VR glasses.

Effects on Historical Interest

Concerning Hypothesis 3 (H3) which assumed a positive effect of the recipients' experience of presence (H3a) and emotional response (H3b) on historical interest, the analysis showed for both technologies a strong positive effect of narrative presence on historical interest (MP: $\beta = .31$, $p < .001$; VR: $\beta = .46$, $p < .001$). However, no effect of spatial presence on historical interest was found for both technologies (MP: $\beta = .02$, $p = .701$; VR: $\beta = -.08$, $p = .573$).

Therefore, Hypothesis 3a was only accepted for narrative presence.

Moreover, the analyses revealed different effects of emotional response on historical interest (MP: $\beta = .14$, $p = .009$; VR: $\beta = -.04$, $p = .755$). Consequently, Hypothesis 3b was only accepted in the media player condition, which revealed a positive effect of emotional response on historical interest.

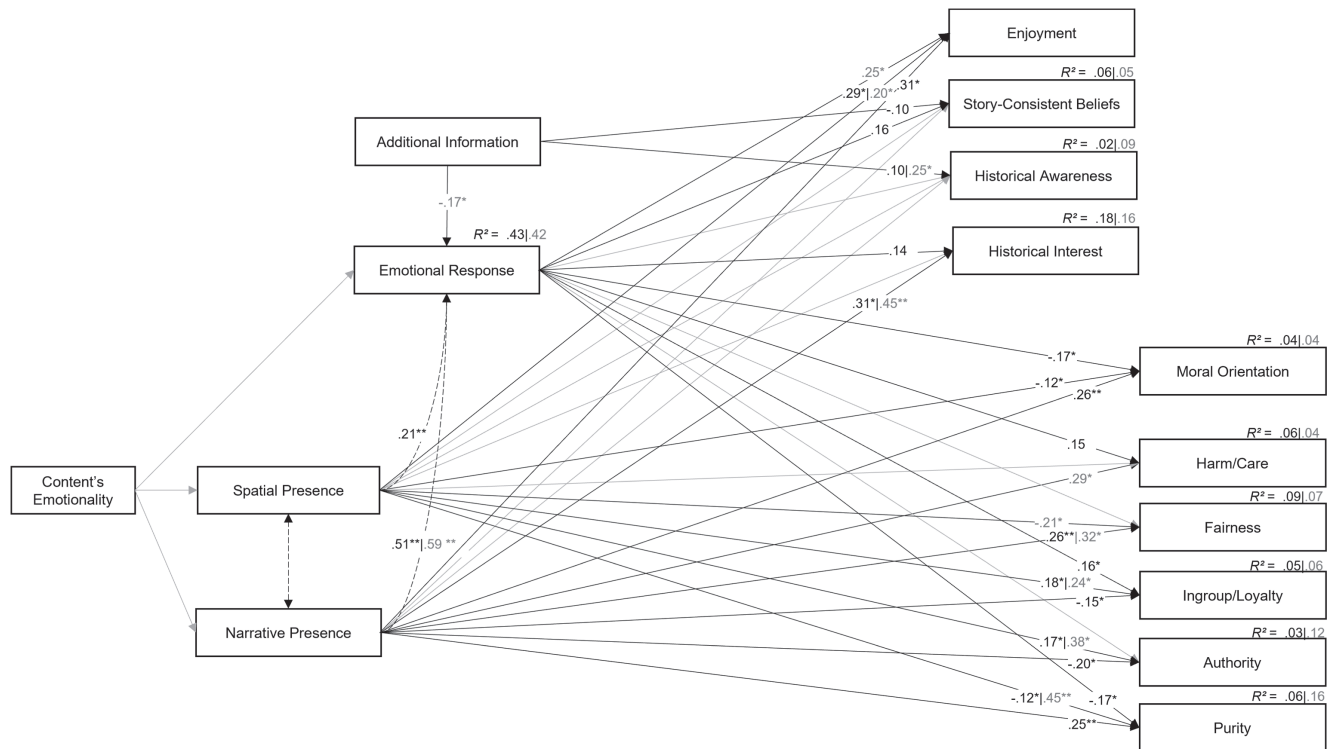
Effects on the Recipients' Morality

Hypothesis 4 (H4) assumed positive effects of the recipients' experience of presence (H4a) and emotional response (H4b) on the salience of the moral foundations. The analysis revealed different relationships for both technologies of the recipients' experience of presence and emotional response on the different moral foundations.

When taking a look at those who watched the historical VR via the platform's media player, regarding narrative presence the analysis showed mixed effects on the moral foundations: fairness ($\beta = .26$,

⁴ spatial presence possible action: $F(1, 590) = 5.53$, $p = .019$ spatial presence self location: $F(1, 590) = 13.74$, $p < .001$ narrative presence: $F(1, 590) = 4.70$, $p = .031$

Figure 5
Integrative Model Examining the Relations Assumed in Hypotheses 2–7 and the Research Question



Note. Beta values (β) are shown in black digits for the video condition and gray digits for the VR glasses condition. Gray lines represent nonsignificant paths and dashed paths added paths based on the modification indices. VR = virtual reality.

* $p < .05$. ** $p < .001$.

$p < .001$), in-group/loyalty ($\beta = -.15$, $p = .021$), authority ($\beta = -.20$, $p = .001$), purity ($\beta = -.25$, $p < .001$) and no effect on the foundation harm/care ($\beta = .10$, $p = .108$). Regarding spatial presence, the media player condition showed positive effects on the moral foundations: in-group/loyalty ($\beta = .18$, $p = .002$), authority ($\beta = .17$, $p = .004$), purity ($\beta = .19$, $p = .001$), while no effects on the foundations: harm/care ($\beta = .02$, $p = .644$) and fairness ($\beta = -.06$, $p = .244$) emerged. Taking the recipients' emotional response into account, the media player group showed mixed effects on the moral foundations: harm/care ($\beta = .15$, $p = .017$), in-group/loyalty ($\beta = .16$, $p = .009$), purity ($\beta = -.17$, $p = .001$) and no effects on the moral foundations: fairness ($\beta = .10$, $p = .114$) and authority ($\beta = .11$, $p = .076$). Summarizing the results obtained in the study which employed the media player, H4 was only partly accepted, as the analyses only revealed effects of spatial and narrative presence on fairness, loyalty, authority, purity (H4a), and the emotional response affected harm, loyalty, purity (H4b) but not all five moral foundations.

When watching the historical VR via VR glasses, the analysis showed regarding narrative presence mixed effects on the moral foundations: harm/care ($\beta = .26$, $p = .035$), fairness ($\beta = .32$, $p = .007$) and no effects on the foundation in-group/loyalty ($\beta = .056$, $p = .650$), authority ($\beta = -.10$, $p = .436$) and purity ($\beta = -.20$, $p = .081$). Also, regarding spatial presence the analysis showed mixed effects on the moral foundations: fairness ($\beta = -.21$, $p = .045$), in-group/loyalty ($\beta = .24$, $p = .030$), authority ($\beta = .38$, $p = .001$), purity ($\beta = .45$,

$p < .001$) and no effect on the foundation harm/care ($\beta = -.11$, $p = .307$). Moreover, regarding the recipients' emotional response, the analysis showed no effects on the moral foundations: harm/care ($\beta = -.14$, $p = .218$), fairness ($\beta = -.14$, $p = .259$), in-group/loyalty ($\beta = -.18$, $p = .119$), purity ($\beta = -.04$, $p = .769$), and authority ($\beta = .01$, $p = .963$).

Therefore, H4b was partly accepted as the analysis showed mixed effects of narrative and spatial presence on harm, fairness, loyalty, authority, and purity when using VR glasses. However, H4b was rejected as the analysis showed no effects of emotional response on the moral foundations when watching the historical VR via VR glasses.

Concerning the effects of the recipients' experience of presence (H5a) and emotional response (H5b) on the moral orientation as Hypothesis 5 (H5) assumed, the analysis revealed for the media player condition a positive effect of narrative presence ($\beta = .26$, $p < .001$) and negative effects of spatial presence ($\beta = -.12$, $p = .039$) and emotional response ($\beta = -.17$, $p = .004$) on the recipients' moral orientation. When watching the historical VR via VR glasses the analysis showed no effects of narrative presence ($\beta = .05$, $p = .707$), spatial presence ($\beta = -.20$, $p = .1332$) and emotional response ($\beta = .15$, $p = .251$) on the recipients' moral orientation.

Therefore, H5 was rejected for the VR condition. Still, H5a was partly accepted as the analysis showed a positive effect of narrative presence on moral orientation.

Table 3
Bivariate Correlation Between All Constructs Included in the Integrative Model

Construct	Narrative presence	Spatial presence	Emotional response (+)	Emotional response (-)	Enjoyment	Story-consistent beliefs	Historical awareness	History interest	Moral foundations
Spatial presence	.555**/.480**								
Emotional response (+)	.194**/.556**	.199**/.358*							
Emotional response (-)	.087/.444**	.041/.163	.067/.240*						
Enjoyment	.442**/.530*	.485**/.406*	.081/.581**	.011/.231*					
Story-consistent beliefs	.170**/.134	.175**/-.084	.063/.061	-.059/.137	.129**/.160				
Historical awareness	.183**/-.237*	.042/-.171	-.018/-.180	-.027/-.077	.115**/.003	.294**/.029			
History interest	.410**/.393**	.262**/.129	.078/.232*	.039/.130	.407**/.217*	.091**/.117	.188**/-.028		
Moral foundations	.115**/.126	.203**/-.270**	.118**/-.075	.095**/.038	.088/.037	.176**/.093	.092**/-.038	.156**/.267**	
Moral orientation	.091**/.048	-.053/-.125	.017/-.046	-.150**/.205*	.082/.061	.179**/.294**	.313**/.263**	-.004/.032	.000/-.094

Note. The first values represent the correlations in the online study using the media player. Values after the slash represent the correlation of the laboratory experiment using VR glasses. VR = virtual reality.
* $p < .05$. ** $p < .001$.

Processing of Historical VR

Addressing Hypothesis 6 (H6) which assumed a positive effect of the recipients’ experience of presence (H6a) and emotional response (H6b) on story-consistent beliefs, the analysis showed a positive relationship between emotional response and story-consistent beliefs ($\beta = .15, p = .006$) and no relationship between spatial presence ($\beta = .09, p = .116$) nor narrative presence and story-consistent beliefs ($\beta = .03, p = .656$) when watching historical VR via the media player. When focusing on those who watched the historical VR via VR glasses the analysis did not show any effects of emotional response ($\beta = .08, p = .558$), spatial presence ($\beta = -.19, p = .086$), and narrative presence ($\beta = .18, p = .180$) on story-consistent beliefs. Therefore, Hypothesis H5a was rejected and H5b was only accepted for the media player condition.

Moreover, the analysis showed for both technologies no effects of spatial presence (MP: $\beta = -.02, p = .745$; VR: $\beta = -.10, p = .440$), narrative presence (MP: $\beta = .02, p = .687$; VR: $\beta = -.21, p = .103$) and emotional response (MP: $\beta = -.07, p = .180$; VR: $\beta = .17, p = .199$) on historical awareness. Therefore, Hypothesis 7 (H7) was rejected.

Effects of Additional Information

Following the research question, which asked whether additional information after watching the historical VR decreases the recipients’ emotional response, story-consistent beliefs and increases the historical awareness, the model revealed different depending on the technology (360° MP vs. VR glasses) the additional on the emotional response (MP: $\beta = .01, p = .714$; VR: $\beta = -.17, p = .029$) and story-consistent beliefs (MP: $\beta = -.10, p = .017$; VR: $\beta = -.03, p = .748$) and a positive effect of additional information on historical awareness (MP: $\beta = .10, p = .018$; VR: $\beta = .25, p = .002$).

Discussion

In two studies we investigated the effects of the recipients’ experience of presence in historical VR by taking different technologies into account to cover the various possibilities of reception (VR glasses vs. media player). First, we investigated whether the recipients’ experience of presence (narrative, spatial) and emotional response are affected by the content’s emotionality of historical VR. Building on this, the effects of presence and emotional response on learning objectives (knowledge, historical awareness, interest), as well as enjoyment and morality were examined. Additionally, from a historical education perspective, the investigations gave first empirical insights into the recipients’ processing of historical VR applications and offer practical implications to ensure the critical processing of the presented historical content.

Effects of Content’s Emotionality

Against expectations, the study’s findings showed that the content’s emotionality does not support the recipients’ engagement (presence and emotional response) in historical VR. Participants who received the part of the historical VR that was evaluated as more emotional did not report feeling more present or emotionally aroused afterward. However, these findings could be explained by the general high extent of contents’ emotionality of historical VR applications as they mainly address atrocities of the past (e.g., Second World War,

GDR; Bunnenberg, 2020; Rosenwein, 2002). Previous studies mainly compared applications that were perceived as neutral with emotional ones or different kinds of emotional content (e.g., relaxing vs. anxious; Riva et al., 2007). Moreover, the conducted prestudy already indicated that both parts of the historical VR were perceived as emotional. Therefore, the question arises whether the extent of contents' emotionality or whether emotions were addressed or not is decisive for the effects on the recipients' experience of presence or emotional response. However, the findings showed that the recipients' reported in general more negative feelings like anger or disgust more often than positive feelings like happiness. These findings highlight the relationship between the media content and "matching" emotions (e.g., Riva et al., 2007).

Potentials of Historical VR for History Education

The investigation showed several impacts of the recipients' experience of presence in and emotional response to historical VR concerning aspects of history education.

Impacts on Historical Interest and Enjoyment

The recipients' experience of presence and emotional response turned out to increase the recipients' enjoyment and historical interest which are, in turn, promoted by the typical narrative and immersive characteristics of historical VR. These findings are in line with previous research which mentioned that narrative and spatial presence are important indicators for the enjoyment of different media applications (movies, texts; Bilandzic & Busselle, 2011; Green et al., 2004) and topic-related interest (Yildirim et al., 2018). Nevertheless, the current findings could expand these relations to historical VR. Moreover, as the investigations showed that wearing VR glasses instead of watching a 360° video via the website's media player leads to a more experienced spatial and narrative presence, receiving historical VR via VR glasses might promote historical interest and enjoyment more strongly. These are important findings in the ongoing debate about the usefulness of historical VR (e.g., Bunnenberg, 2020), as we could strengthen the argument that such applications can support an interest in historical topics empirically.

The positive relationships between spatial presence and enjoyment as well as narrative presence and historical interest were found for both technologies (VR glasses and media player), whereby emotional responses were only positively linked to enjoyment in the VR glasses condition and narrative presence only positively related to enjoyment in the media player condition. These are interesting findings as previous research indicated that the recipients' emotional response might have been stronger when wearing VR glasses compared to receiving the same historical VR applications via the media player (e.g., Frentzel-Beyme & Krämer, 2022). Therefore, the findings lead us to assume that this relationship might be moderated by the immersive technological characteristics of VR.

Impacts of Historical VR on Moral Reasoning

Moreover, the investigation provided different findings regarding the impacts of the recipients' experience of presence and emotional response to historical VR on moral reasoning by considering two

perspectives on morality: the social-intuitionist (MFT; Haidt & Joseph, 2004) and the rational perspective (Kohlberg, 1958).

First, the investigation showed different findings concerning the effects of the recipients' experience of presence and emotional response to historical VR on the salience of the five moral foundations (Haidt & Joseph, 2004). In the first place, the findings indicate that the MIME might be transferrable to (historical) VR (Tamborini, 2012), as we found effects of presence and emotional response to historical VR on different moral foundations. Moreover, the studies' results emphasize that besides the media content the engagement (narrative and spatial presence) in the content characterized by the attentional focus on the virtual (historical) environment supports the impact of media on the salience of content-related moral foundations. Indeed, the study could not show the effects of the recipients' experience of presence and emotional response on each foundation. However, the results revealed the effects of the recipients' engagement (presence and emotional response) on content-related foundations (e.g., authority/reciprocity, fairness/cheating). For instance, the study showed positive effects of presence and emotional response on the foundation fairness for both technologies examined in the studies. Recipients who were strongly emotionally touched and experienced presence in the historical VR perceived fairness to be more important when deciding whether something is right or wrong afterward. This highlights the impact of the recipients' engagement in media content when focusing on the impacts on the recipients' moral reasoning.

Moreover, the current investigation revealed different findings concerning the effects of spatial, narrative presence, and emotional response to historical VR on the individual's moral orientation according to Kohlberg (1958). When watching the historical VR via the online platform's media player, presence turned out to promote moral orientation which is in line with previous findings indicating a positive indirect effect of narrative presence in historical VR on the individual's moral orientation (Frentzel-Beyme & Krämer, 2022). It was found that becoming transported into historical media supports the individual's empathy and in turn leads to an increase in moral orientation according to Kohlberg (1958). However, effects on moral orientation could not be found when recipients wore VR glasses. Based on the findings of previous research one could speculate whether the additional technological properties might have shifted the recipients' attentional focus from the content itself to the general exploration of the historical virtual content, as "technologies do not inherently draw audiences any closer to story content" (Pressgrove & Bowman, 2021; p. 9). Nevertheless, the findings are surprising as wearing VR glasses instead of watching the historical VR via a media player might have promoted the impression of perspective-taking which is considered to promote the recipients' moral orientation (e.g., Frentzel-Beyme & Krämer, 2022).

However, the present findings indicate that the experience of spatial presence in historical VR decreases the rational moral reasoning suggested by Kohlberg (1958), whereby effects on the affective, intuitive moral reasoning (MFT) were found. These findings highlight the differences between the two approaches to moral reasoning.

Critical Processing of Historical VR

Moreover, against the assumptions of the *transportation-imagery model* (Green & Brock, 2002), we did not find any relationship

between the recipients' experience of presence and story-consistent beliefs. However, indirect positive effects of the recipients' experience of presence mediated by the recipients' emotional response could be found when receiving the historical VR via the media player. Thus, recipients who were emotionally touched by historical VR tend to take the content of the application more at face value. These findings move the focus to the persuasiveness character of VR more to the elicitation of emotions than the recipients' experience of presence. However, the findings showed that the recipients' emotional response is also promoted by the recipients' experience of presence in historical VR. Consequently, one could speculate whether less emotionally charged historical VR would have effects on story-consistent beliefs at all.

Moreover, as the investigation did not show any effects on story-consistent beliefs when wearing VR glasses the assumption of the transportation-imagery model (Green & Brock, 2002) could be questioned. Against the expectations of history didactics assuming that the experience of presence and emotional involvement in historical VR decreases historical awareness (e.g., awareness of fictionality of historical VR), we can speculate, based on the present findings, whether the type of reception via VR glasses might promote historical awareness to some (minor) extent. Instead of receiving historical VR on an online video platform where also nonfictional videos can be found, the conscious putting on of VR glasses might have forced the reflection of the historical VR content and separated it from reality.

Additionally, against expectations, the results revealed no effects of presence and emotional response on historical awareness. This indicates that recipients of historical VR are still aware of the mediated experience and have still the awareness of reality and the past, even if they get highly immersed in the historical VR. Nevertheless, these findings give a contribution to the discussion of history didactics regarding the usefulness of historical VR as an educational tool (Bunnenberg, 2020).

Impacts of Additional Information

Moreover, the studies' results indicated that additional context-related information, can enhance historical awareness and reduce story-consistent beliefs. These are essential findings in light of the ongoing debate on the deployment of historical VR as a history education tool (e.g., Bunnenberg, 2020). The findings showed that recipients who read further information about the specific historical VR application did process the historical content more critically by not accepting all conveyed information as inevitably true. Consequently, providing an opportunity to further inform oneself could be an appropriate approach to support the critical, cognitive reflection of the content of historical VR. Especially, when individuals consume historical VR randomly on the internet, offering additional information through additional links could be an appropriate way from a historical didactics' perspective (e.g., Bunnenberg, 2020).

Experience of Presence and Emotional Responses to Historical VR

Moreover, the investigation highlights the connection between the recipients' experience of presence in virtual (historical) environments and the arousal of emotion triggered through the content and atmosphere of the (historical) VR. This connection was already

found in previous research that examined the relationship between the experience of presence, transportation, and the arousal of emotions transported through the virtual environment (e.g., Frentzel-Beyme & Krämer, 2022; Kim et al., 2019; Visch et al., 2010). Recipients who became immersed in the virtual historical environment in terms of feeling located in the environment (spatial presence) and immersed in the narration of the historical virtual environment (narrative presence) reported more often specific emotions triggered by the virtual environment. For instance, recipients reported experiencing emotions like anger, fear, disgust, and sorrow more often than pleasure and happiness. It can be assumed that these emotions were especially triggered by the virtual historical environment in which recipients perceived themselves as prisoners in the GDR in the 1970s and were blamed by state officials. Therefore, the present study highlights this strong relationship between narrative, spatial presence, and "matching" negative emotions, which is especially of high interest when focusing on historical VR applications which often deal with atrocities of the past (e.g., Bunnenberg, 2020). Consequently, the evocation of (negative) emotions promoted by the immersive characteristics of VR should not be left unnoticed, as especially those applications could promote negative associated feelings within recipients like disgust and anger. Moreover, from a theoretical perspective, the investigations underline the connection between the experience of presence and the elicitation of content-related emotions.

Technological Characteristics Supporting Immersion in Historical VR

Furthermore, the findings showed that recipients reported higher narrative presence when using VR glasses instead of the platforms' media player. These findings are contrary to previous research which found no relationship between technological immersion and transportation (e.g., Frentzel-Beyme & Krämer, 2022; Pressgrove & Bowman, 2021). However, these investigations mainly compared media that differed in technological immersion to a greater extent (360° video vs. video; Frentzel-Beyme & Krämer, 2022). Therefore, one could speculate whether wearing VR glasses supports the attentional focus on the historical VR by physically blocking the surrounding environment and though, promoting narrative presence. Moreover, technological immersion improvements that do not distract from the content of the virtual environment by offering too many interaction opportunities (like Head Mounted Displays) might promote the recipients' experience of narrative presence while too strong technological immersion improvements do not affect the recipients' experience of presence (e.g., Frentzel-Beyme & Krämer, 2022).

Furthermore, the investigation replicated findings of previous research by founding differences in the experienced spatial presence between those who watched the historical 360° via the website's media player and VR glasses (e.g., Frentzel-Beyme & Krämer, 2022). These findings highlight the relationship between technological characteristics and spatial presence. Moreover, in line with the theoretical assumptions, we found higher reported values for the spatial presence subdimension self-location when watching the historical VR via VR glasses (e.g., Slater & Wilbur, 1997). However, we found no higher values for the subdimension "possible action" since none of the technologies offered more interaction opportunities. Nevertheless, the study highlights that even slight technological changes in terms of using VR glasses instead of using

the online video platforms' media player support the recipients' experience of being actually located in the historical virtual environment.

Limitations and Further Research

The generalizability of the findings is limited as the samples were not representative, as they contain a high number of female and highly educated individuals. Moreover, we have to note that we could not ensure that participants watched or read the stimulus material attentively in the online experiment and did not control for prior experiences with VR technology which can affect the recipients' experience of presence (Sagnier et al., 2019). Furthermore, we have to mention that the content's emotionality did not differ that much to answer whether the content's emotionality compared to nonemotionality leads to different impacts. Also, the content itself was not equal between the experimental groups and differed a bit. Of course, the ideal would have been to compare VR applications that dealt with the same content and only differed in their extent of emotionality. Future research should focus on that. Moreover, we have to mention that we used a cross-sectional study. Consequently, we cannot make any assumptions about causal implications despite the manipulations. In the end, we would like to emphasize that especially the examined relations for the VR glasses condition should be viewed by caution as the sample was quite small (Kline, 2016). However, the consistency of the data and results between both studies underpin the present results and analysis methods. Nevertheless, further research examining the relations in a greater sample using VR glasses would be preferable.

Practical Implications

From a history didactic perspective, the study's results showed that additional information designed according to history didactic criteria can effectively accompany the critical reflection of historical VR. Additional information turned out to support historical awareness (e.g., reality awareness). The studies' results indicate that recipients who received additional information about the specific historical VR application were more often able to make a conscious distinction between reality and virtual. Furthermore, additional information turned out to decrease the recipients' emotional response. Especially in the light of the ongoing discussion about the emotionality of historical VR, as history didactics fear that those applications could lead to an emotional overload within recipients (e.g., Bunnenberg, 2021), these findings highlight that additional information could reduce these concerns. When looking at the didactic embedding of historical VR in informal learning contexts (e.g., on video platforms on the internet) this means that the availability of further information can have a positive effect on the reflective attitude of the users. This could be realized in the digital space via further links to content-related news articles or in classrooms via news articles that are handed to students.

Conclusion

The present investigation shows that historical VR in informal learning environments could be an effective and useful way to support the individual's historical education, including morality.

We demonstrated that especially the experience of presence in historical VR accompanied by an emotional response supports the enjoyment of historical VR, interest in historical topics, and the salience of content-related moral foundations. Moreover, the study's findings give rise to the question of whether the experience of presence in historical VR is indeed problematic in the way history didactics assumed, as the findings did not indicate that presence leads to less critical processing of the historical content by reducing historical awareness or promoting story-consistent-beliefs. On top of that, we found that additional information after consuming historical VR might be a promising approach to ensure the critical, cognitive reflection of the presented historical content.

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Research Paper V

Frentzel-Beyme, L., IJsselsteijn, W., Krämer, N.C. (2023). The Past has Touched me -
Investigating the Effects of Historical VR on the Recipients' Morality Considering
Physiological Reactions. Manuscript submitted for publication.

The Past has Touched me – Investigating the Impact of Historical VR on the Recipients’ Morality Considering Physiological Reactions.

Abstract

Previous research found that the recipients’ self-reported experience of presence in historical virtual environments promotes recipients’ empathy and morality based on self-reported measures. However, the experience of presence is known to be linked to automatic, unconscious reactions (e.g., physiological arousal). Therefore, the present study aims to examine whether the consciousness experience of presence or rather affective physiological arousal supports empathic responses and activates moral concepts. To examine this, a laboratory experiment was conducted ($N = 96$) in which the participants’ physiological arousal was assessed while they were either exposed to VR or a graphic novel that included the same information and picture material (Anne Frank House). In line with the assumptions, we found higher recipients’ experience of presence in the historical environment when they used VR. Moreover, the results showed that presence was positively connected to empathy towards Anne Frank which, in turn, activates moral concepts and moral behavioral tendencies. Moreover, physiological arousal turned out to activate moral concepts. Furthermore, recipients in the VR group showed significantly more willingness to engage in moral behavior (i.e., donating).

Keywords: Virtual Reality, Physiological Measures, Morality, Presence, History

The Past has Touched me – Investigating the Impact of Historical VR on the Recipients’ Morality Considering Physiological Reactions.

Increasingly, new media formats such as graphic novels, social media, augmented reality, and virtual reality (VR) are being used to make history more tangible and spark interest. Here, especially VR is considered to be effective as it enables the recipients’ immersion in historical virtual environments (Sweeney et al., 2018). In history education, learning from the past is seen as essential to prevent atrocities of the past (e.g., the Holocaust) from happening again (Eckmann, 2015). Therefore, history education includes factual learning about the past, as well as education about moral issues and values (e.g., Silfver, 2022). In line with this, historical museums frequently aim to trigger empathy with the victims of the past, as empathy is assumed to be a prerequisite for morality and moral behavior (Brauer, 2016).

Through the nature of VR technology, historical VR applications offer recipients the opportunity to actually experience the past besides delivering knowledge (Bunnenberg, 2018). Here, previous investigations found that especially the recipients’ experiences within VR can support empathic responses and prosocial behavioral tendencies (i.e., altruism; e.g., Mado et al., 2021; Schutte & Stilinović, 2017) which are connected to morality (Bykov, 2017). Moreover, focusing on historical VR, first empirical investigations indicate that feeling present within the perspective a historical figure can promote empathy and morality (Frentzel-Beyme & Krämer, 2022, 2023). Taken together, empirical research indicates that VR can influence the recipients’ morality and prosocial behavioral tendencies.

However, previous research mainly focused on conscious processes by assessing the recipients’ experience of immersion or empathic responses with the help of questionnaires after the VR experience. Particularly in the context of history, researchers argue that emotional responses are superficial, and individuals rather learn how to feel about the

atrocities of the past (Brauer, 2016). Consequently, users may report to be empathetic to victims of past atrocities even if they don't. This raises the question of whether it is the actual media effects (e.g., empathic responses, presence) that determine the effects on morality and prosocial behavior, or the "superficial, stereotypical" emotional responses. On the other hand, presence in virtual environments and empathy might be strongly linked to unconscious, automatic processes: physiological arousal (IJsselsteijn et al., 2000). Therefore, the present investigation aims to investigate whether historical VR support immersion, empathic responses and activate moral concepts in recipients by also taking physiological reactions into account. To examine this, we use the *Anne Frank House VR* application, produced by the Museum *Anne Frank House*, allowing users to immerse themselves in the Anne Frank family's hiding place in World War II. To investigate the mechanism of the recipients' experience of historical VR in comparison to the perception of the same content in text form, this pre-registered laboratory experiment assesses recipients' physiological responses. Based on this, we will illustrate which role the recipients' (automatic) physiological reactions to immersive historical media play when focusing on the effects on the recipients' morality and moral behavior.

Theoretical Framework

Historical Virtual Reality and Morality

Within the last few years, virtual reality (VR) has become part of the daily life of many individuals. Also, history museums more frequently use VR to immerse visitors into the past or even make "time travels" in living rooms possible. For instance, the Berlin Hohenschönhausen Memorial (Germany) offers a 360°-VR application¹ that puts users in the shoes of a prisoner in the German Democratic Republic in the 1970s: The user follows the process of being admitted to the prison, being interrogated, and talking to cellmates.

¹ <https://youtu.be/ZKP54B0yu3M>

Such applications offer novel insights into the past as users can experience the past in a never-before manner and are, therefore, increasingly used as a new means of teaching history (Bunnenberg, 2018). One aim of history education is to gain knowledge about the past which is perceived as essential to prevent atrocities of the past from happening again (holocaust education; Eckmann, 2015). It is argued that especially knowledge about the past enables users to imagine the circumstances of citizens of the past, present, and future and supports their ability to take other perspectives and make moral judgments. Therefore, history education includes the education about moral values besides the actual transfer of knowledge about the past (Silfver, 2022): Individuals should learn about and from the past.

Compared to usual teaching tools, like texts, historical VR offers not only the possibility to transfer factual knowledge, but also to experience the past (Bunnenberg, 2018). When it comes to impact on the recipients' morality, the recipients' experience historical VR might play a crucial role as being moved by special events is perceived to be strongly connected to recipients' moral values (Frentzel-Beyme & Krämer, 2022; 2023). Previous investigations using VR showed that being moved by, for example, the fate of millions of refugees is strongly connected to empathy and prosocial behavioral tendencies (e.g., helping behavior; Breves, 2020). Moreover, a first investigation on historical VR indicates a relationship between the recipients' immersion in historical VR and their moral orientation (Frentzel-Beyme & Krämer, 2022).

Technological Immersion and Presence

Within research on VR, the term *immersion* is frequently used. On the one hand, immersion is used to describe the technological properties of media (Slater, 2003). Some researchers stated that technological properties, like the extent of sensorial in- and output channels, determine the extent of *technological immersion* of media applications (Slater & Wilbur, 1997). For instance, desktop VR in which users can discover a 3D virtual

environment by using the mouse or keyboard are considered to be less technologically immersive than head-mounted display (HMD) applications in which users can explore a virtual environment by naturally walking through it (Lee et al., 2017). Following these assumptions, we classify the Anne Frank House VR application as more immersive than other freely accessible historical VR applications which are mainly 360° videos on well-known online video platforms (e.g., YouTube), as the Anne Frank House VR offers recipients besides a panoramic view also the opportunity to explore the family's hiding place by using the controller and pointing to specific artifacts (e.g., Anne's diary).

Besides using the term immersion to describe the technical characteristics of media, immersion is used to describe the recipients' psychological state while being exposed to media (Agrawal et al., 2020). Here, the term immersion describes the user's experience of currently leaving the actual physical environment behind and shifting attention to the virtual environment. The term *presence* describes a similar phenomenon defined as the "sense of being there" (Slater & Wilbur, 1997, p. 5). Due to the ambiguity of these terms, we clarify here that we will use the term *technological immersion* to describe the technical characteristics of media and *presence* to describe the recipients' immersion in the historical environment.

Previous research showed that technological immersion positively affects presence (e.g., Frentzel-Beyme & Krämer, 2022). For example, when investigating historical media in which recipients were put in the perspective of a prisoner in the German Democratic Republic in the 1970s, researchers could show that recipients reported higher presence when receiving a 360° video compared to receiving the same content in standard video format or as a picture story (Frentzel-Beyme & Krämer, 2022). Also, Lee and colleagues (2017) found that presence increases if users can naturally move in a virtual environment. Consequently, historical VR might lead to more experience of presence compared to watching the same

content in a media format that is characterized by less technological immersion (e.g., movie, graphic novel). Therefore, the following hypothesis was proposed:

H1: Using the Historical VR Application of the Anne Frank House will lead to more experience of presence compared to using a graphic novel.

Presence and Empathy

Presence is known for promoting empathy and, therefore, offer a platform to understand other perspectives more deeply including the emotions and perspectives of others (Barreda-Ángeles et al., 2020). Here, empathy is defined as “the ability to recognize what other people are thinking and feeling” (Stueber, 2013).

In various investigations, researchers examined the effects of VR on the recipients’ empathy (e.g., Barbot & Kaufman, 2020; Herrera et al., 2018). Taking into account that VR can offer new perspectives and put the user into someone else’s shoes, VR has been referred to as the “ultimate empathy machine” (Barbot & Kaufman, 2020). Herrera and colleagues (2018) showed that being homeless in VR is connected to empathy toward homeless people. Even though participants in the VR group were not necessarily more empathic towards homeless people compared to those who read a text, the researchers demonstrated stronger long-term effects for the VR group. However, researchers stated that VR does not seem to be more effective at increasing empathy than less immersive technologies such as books. Instead, the recipients’ engagement might play a crucial role here. For instance, researchers found that the influence of VR on empathy was mediated by presence (Barreda-Ángeles et al., 2020). Also, Shin (2018) found a relationship between presence and empathy which could be corroborated by a previous investigation on historical VR applications (Frentzel-Beyme & Krämer, 2022). The researchers found that presence within a historical virtual environment was positively related to empathy. Consequently, it can be assumed that especially the experience of presence within VR offering new perspectives supports empathy

towards such focus groups, as perspective-taking and imagining other's experiences is perceived to enhance empathic concern towards others. Therefore, we assume that using Anne Frank House VR will lead to more empathy toward Anne Frank compared to using less immersive media (e.g., graphic novel). Moreover, we assume that the experience of presence is positively related to empathy toward Anne Frank.

H2: Using the Historical VR Application of the Anne Frank House will lead to more experience of empathy towards Anne Frank compared to using a graphic novel.

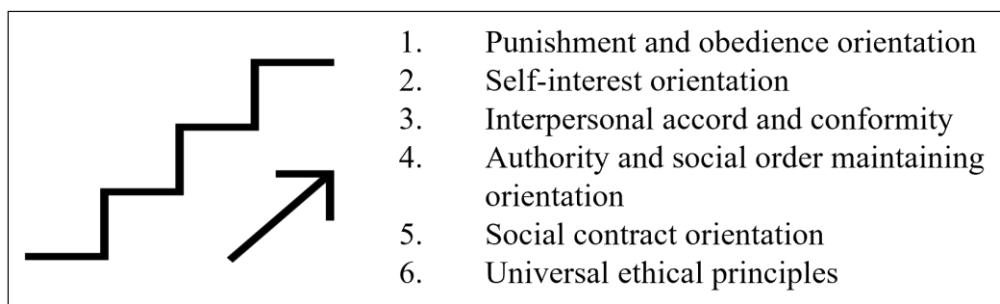
H3: The experience of presence within the historical environment is positively related to empathy toward Anne Frank.

Impact on the Recipients' Morality

According to rationalist approaches, empathy is perceived to be essential for moral judgments (Kohlberg, 1958). It is assumed that a moral judgment is being achieved rationally based on a process of methodological thinking including perspective-taking (cognitive empathy). Here, the most famous approach is Kohlberg's (1958) stage model of moral development assuming that morality develops in six successive steps leading from the orientation towards punishment and obedience (stage one) to the orientation towards universal ethical principles (Kohlberg, 1976; see Figure 1).

Figure 1

Illustration of the Moral Stages According to Kohlberg (1958)



More recent research on morality questions this rationalist perspective by assuming that morality more intuitive (Haidt, 2001). The *Moral Foundations Theory* (Haidt & Joseph, 2007) proposed that morality is formed of five innate foundations that are culturally independent: care, fairness, authority, loyalty, and sanctity. Taking this perspective on morality into account, many studies already investigated the impact of media exposure on the recipients' moral foundations (e.g., Eden et al., 2014). In the *Model of Intuitive Morality and Exemplification*, Tamborini (2012) assumes that exposure to moral examples (e.g., helping behavior) in media affects the salience of related foundations (e.g., care). In line with this, Eden and colleagues (2014) found that exposure to a soap opera over eight weeks affected the salience of related foundations. A first investigation in the context of historical VR found similar effects (Frentzel-Beyme & Krämer, 2023). More specifically, it was found that the experience of presence from the perspective of a prisoner in the German Democratic Republic in the 1970s influenced the salience of related moral foundations (e.g., fairness). These findings indicate that the recipients' engagement with the (historical) content which is supported by technological immersion (ref. *HI*) affects the impact of media on related moral foundations.

Therefore, we propose the following hypothesis:

H4: [a] Presence and [b] empathy towards Anne Frank are positively related to content-related moral foundations.

Moreover, taking the rationalist approach to morality into account, researchers found that the experience of presence within a historical virtual environment and empathy supported the recipients' moral orientation toward universal ethical principles (Frentzel-Beyme & Krämer, 2022, 2023). Moreover, we propose that the salience of related moral foundations affects the recipients' rationalist moral orientation as it reached based on a process of

methodological thinking which may be affected by intuitions (Feinberg et al., 2012; Haidt, 2001). Therefore, the following hypothesis is proposed:

H5: [a] Presence, [b] empathy towards Anne Frank, and [c] content-related moral foundations are positively related to the moral orientation towards universal ethical principles.

Investigations showed that VR can support prosocial behavioral tendencies which are perceived to be connected to moral behavior (e.g., Breves, 2020; Mado et al., 2021). Findings of Breves (2020) indicate a positive relationship between VR and helping behavior. Also, Herrera and Bailenson (2021) found a positive impact of VR on prosocial behavioral tendencies. Moreover, their findings highlight the impact of presence and empathy on this relationship. Therefore, we assume a positive relationship between presence within the virtual historical environment and moral behavioral tendencies, as well as moral behavior (e.g., helping others). Moreover, in line with the assumption that attitudes impact behavioral tendencies, as well as actual behavior (e.g., Fishbein & Ajzen, 1975) we assume that moral orientation affects moral behavioral tendencies and moral behavior. Therefore, the following hypotheses were proposed:

H6: [a] Presence, [b] empathy towards Anne Frank, and [c] moral orientation towards universal ethical principles are positively related to moral behavioral intention.

H7: [a] Presence, [b] empathy towards Anne Frank [c] moral orientation towards universal ethical principle, and [d] moral behavioral intention are positively related to moral behavior.

The Role of Physiological Arousal

So far, most studies that examined the impact of presence and empathy on prosocial behavioral tendencies and morality used self-reported measures (e.g., Frentzel-Beyme & Krämer, 2022; 2023) and assessed, therefore, the conscious processes of recipients. This

means that recipients were asked about their experience of presence after using the VR application or the comparable media. Here, different problems may occur. First, two people may have largely similar experiences and classify them as different (IJsselsteijn et al., 2000). Second, the participants' response behavior may be triggered by the technological properties of media. Consequently, answers to questionnaires may rather measure the user's perception of system properties than actual presence. Moreover, as the experience is assessed after the actual immersion, the answers may be more influenced by the perception towards the end of the VR. Consequently, *breaks in presence*, describing moments during a VR exposure in which recipients become aware of their surrounding physical environment (Garau et al., 2008), might be over- or under-interpreted. As a result, self-reported measures of presence may be biased by different circumstances. Therefore, researchers suggest alternative, more objective measures to assess presence: physiological arousal (e.g., IJsselsteijn et al., 2000; Souza et al., 2022). Here, the human's central component of emotional experiences is of particular interest: the sympathetic nervous system controlling physiological responses that essentially readies the body for a fight or flight response (Christopoulos et al., 2019). Especially the spontaneous fluctuation of skin conductance (SC) is considered a sensitive and specific indicator of emotional states (Boucsein, 1999). Previous investigations could show that the recipients' experience of presence is connected to such physiological arousal (e.g., Schmidt et al., 2020).

Therefore, the following hypotheses have been proposed:

H8: Using the Historical VR Application of the Anne Frank House positively affects physiological reactivity compared to using a graphic novel.

Furthermore, self-report measures are mostly used to assess empathy (e.g., Frentzel-Beyme & Krämer, 2022; Herrera et al., 2018). However, especially in the context of history, researchers argue that people rather learned how they should feel about the past (Brauer,

2016). For example, individuals may have learned to report empathy toward the victims of the Holocaust. As a result, the response patterns of empathy questionnaires might also be biased, and there are no valid measures to assess recipients' empathic responses. Furthermore, empathic feelings do not only consist of the consciousness processes but also go along with physiological arousal (e.g., Deuter et al., 2018; Keltner & Gross, 1999). However, it is still unclear whether empathic feelings are attributed when physiological arousal is recognized or an appraisal of the current situation and, furthermore, whether these unconscious and conscious processes run consecutively or in parallel (Arnold, 1960; Deuter et al., 2018). Therefore, the question arises whether consciousness processes in terms of presence and self-reported empathic responses promote the beforementioned influences on morality or whether unconsciousness affective processes like physiological arousal are decisive. Therefore, the following hypothesis is proposed:

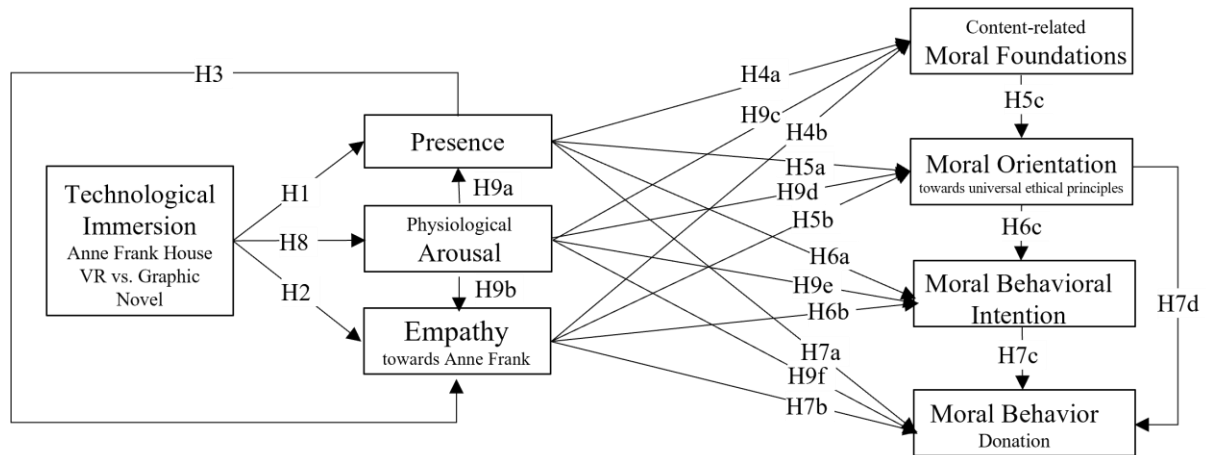
H9: Physiological reactivity is related to [a] presence, [b] empathy towards Anne Frank, [c] content-related moral foundations, [d] moral orientation towards universal ethical principles, [e] moral behavioral intention, and [f] moral behavior.

Research Model

Based on the hypotheses, we derived a research model which is displayed in Figure 2, to investigate the impacts of technological immersion on morality by taking the recipients' engagement (presence, physiological arousal, empathy) into account.

Figure 2

Overview of the derived Research Model.



Method

To investigate the research model, we conducted a laboratory experiment with a one-factorial between-subjects design: presentation of the historical content (VR vs. graphic novel). The study was preregistered in advance of data collection on OSF² and approved by the local's ethic commission.

Sample

The original data set consisted of 104 participants. Due to technical problems while using the VR application or the physiological measurement, we had to eliminate eight participants. Therefore, the final data set consisted of 96 participants aged between 18 and 77 years ($M = 27.6$; $SD = 14.4$). The majority identified themselves as female (55), 38 identified as male, and 3 persons as non-binary (gender diverse). The distribution of gender and age within the experimental groups was close to equal (see Table 1).

Regarding highest educational attainment, most participants 34.4 % had university entrance-level qualifications or 37.5 % had a university degree. Moreover, most of the participants were students (68.8%) or employees (14.6%).

² https://osf.io/wx2v8/?view_only=c531226342364f628dfe5bfbfa2627d8

Table 1

Distribution of Gender and Age between the Experimental Groups.

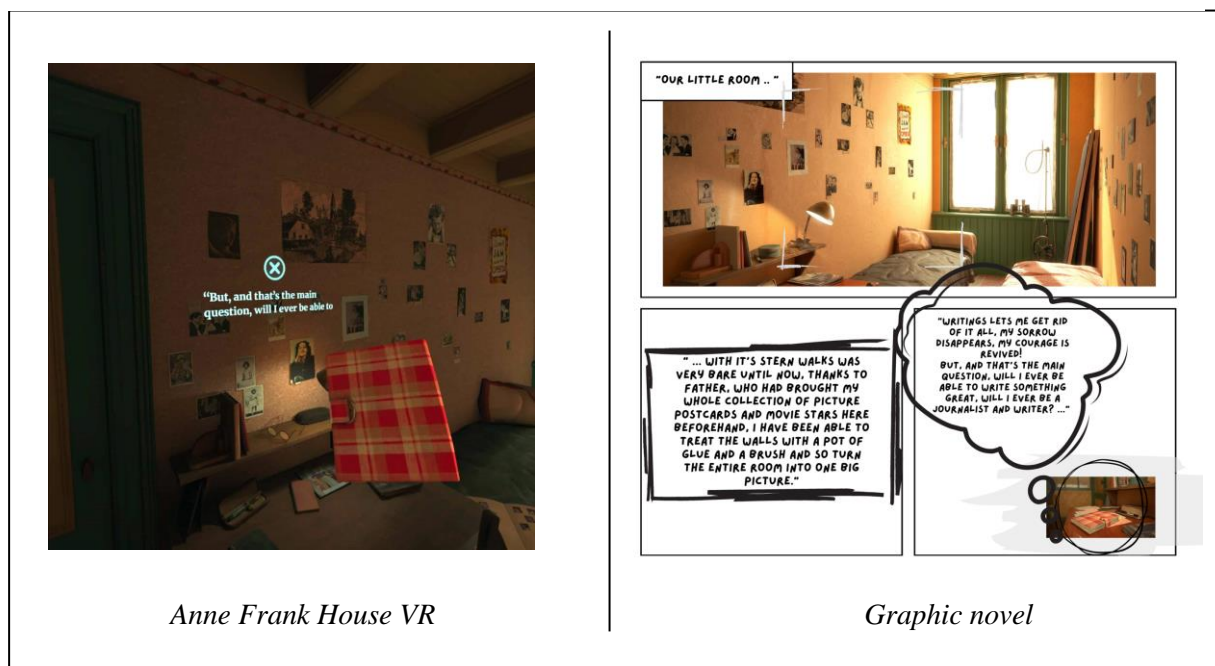
	VR (<i>n</i> = 48)	Graphic Novel (<i>n</i> = 48)
<i>Gender</i>		
Female	26	29
Male	20	18
Gender-diverse	2	1
<i>Age</i>	18 -70 years <i>M</i> = 26.6, <i>SD</i> = 13.2	18 – 77 years <i>M</i> = 28.6, <i>SD</i> = 15.6

Independent Variable: Technological Immersion

The stimulus material was the Anne Frank House VR and a graphic novel (Figure 3). The content (text and visuals) of both media was identical. To realize this, we used the VR application as the base and created the graphic novel ourselves. Within the stimulus material, information was first given about the history of Anne Frank and her family and the current political situation in Germany and Europe during World War II was given (e.g., the coming

Figure 3

Overview of the Stimulus Material



Anne Frank House VR

Graphic novel

to power of Adolf Hitler). It then briefly introduces all the people who lived in the secret annex. Then, the rooms of the back house were shown accompanied by Anne Frank's diary entries (e.g., "It's terrible being sick in here, whenever I had to cough, I would crawl down deep, deep, deeper under the blankets and try to quieten my throat as gently as possible. [...]").

Measures

Unless mentioned otherwise, items were answered on a 6-point Likert-Scale ranging from 1 = *I strongly disagree* to 6 = *I strongly agree*. For replicability reasons, all questionnaires including items can be found on OSF³.

Presence was assessed based on the Spatial Presence Experience Scale of Hartmann and colleagues (2015) consisting of eight items reflecting two dimensions of spatial presence: user's self-location (e.g., "I felt like I was actually there in the environment of the presentation."; $M = 3.7$, $SD = 1.5$, $\alpha = .954$) and perceived possible actions (e.g., "The objects in the presentation gave me the feeling that I could do things with them."; $M = 3.1$, $SD = 1.4$, $\alpha = .934$; Overall-Score: $M = 3.4$, $SD = 1.4$, $\alpha = .961$).

Empathy towards Anne Frank was assessed based on seven adjusted items of the empathy subscale of the PSI Process Scale (Schramm & Hartmann, 2019; e.g., "I felt compassion for Anne Frank."; $M = 4.6$, $SD = 0.7$, $\alpha = .666$).

Content-related moral foundations were assessed based on the Moral Foundations Questionnaire (Graham et al., 2011). We used the two moral foundations: harm/care ($M = 5.0$, $SD = 0.6$, $\alpha = .537$; "Compassion for those who are suffering is the most crucial virtue.") and fairness/cheating ($M = 5.0$, $SD = 0.5$, $\alpha = .530$; e.g., "It is more important to be a team player than to express oneself.") to assess content-related moral foundations. Each foundation was measured based on 6 items.

³ https://osf.io/wa8be/?view_only=ba9954ab8ba04e67b606ead162cb4582


Moral orientation towards universal ethical principles was measured based on an adjusted version of the moral orientation questionnaire (Frentzel-Beyme & Krämer, 2022) assessing the moral orientation according to Kohlberg's (1958) moral stage model (e.g., "Human rights should always be respected."; $M = 5.1$, $SD = 0.4$, $\alpha = .667$)

Moral behavioral intention was measured based on 16 self-developed items that represented different moral behavior and varied in tie strength (e.g., "Tax money should be used to support refugees."; "I would financially support members of my family."; $M = 4.7$, $SD = 0.6$, $\alpha = .826$).

Moral behavior was measured by asking participants to indicate the amount of money (0% to 100% of their participation fee) they would like to donate to the Anne Frank Fond. (we have divided the value by 100 to adjust it to the other values: $M = 4.2$, $SD = 3.7$). This procedure was adapted from previous research by Backer and Hudders (2015). The whole instruction can be found in Figure 4.

Figure 4

Illustration of the Moral Behavior Measure within the Questionnaire.



**ANNE
FRANK
FONDS**
BASEL

Through her diary, Anne Frank has become a symbolic figure for the victims of racism, anti-semitism and fascism worldwide. In 1963, Otto Frank, the sole survivor of the Frank family, founded the *Anne Frank Fond*. The foundation is committed to the worldwide dissemination and exploitation of the diary of Anne Frank. Income from the granting of rights and licenses is used for **charitable and educational purposes worldwide**.

In particular, projects in the following areas are supported:

- Education against racism, anti-Semitism, discrimination, prejudice and violence.
- Strengthening human rights, especially women's and children's rights
- Education of children and young people
- Dialog between cultures, ethnic groups and religions
- Promotion of peace
- Refugee aid
- Holocaust survivors

If you would like to support the foundation, you can now donate any portion of your trial fee (7,50€).

If you take the course credits, please still indicate what portion you would like to donate (assuming you would receive 7.50€ for participation).

Please indicate the amount you would like to donate

0% (0€)
100% (7.50€)

Physiological arousal was assessed as skin conductance response (SCR) which refers to changes in sweat gland activity that are reflective of the intensity of emotional arousal. We used a Mobi physiology-recording device with dry electrodes with Velcro straps on the fingertips for skin conductance measurement, sampling at 512 Hz. Physiological features were measured during the first part of the study in which participants answered some questionnaires (baseline) and during media exposure. Electrodermal activity (EDA) was down-sampled to 8 Hz and filtered with a 0.5 Hz low-pass Butterworth filter. From the filtered EDA signal, the mean skin conductance level (SCL) was calculated for each experiment part (140 seconds baseline, 400 seconds exposure). Consequently, physiological reactivity was calculated by subtracting the baseline arousal from the exposure arousal, i.e., $reactivity_{(VR/graphic\ novel)} = arousal_{(VR/graphic\ novel)} - arousal_{(baseline)}$. Matlab was used for the preprocessing of physiological data (*simpleEDA*, Schleicher, 2023; *ledalab*, Benedek & Kaernbach, 2010).

Control Variables

We measured *prior VR experience* ($M_{VR} = 3.8$, $SD_{VR} = 2.3$), (*prior-*) *knowledge* ($M = 5.5$, $SD = 2.0$), *interest in Anne Frank* ($M = 7.1$, $SD = 1.8$), *general interest in history* ($M = 7.1$, $SD = 2.1$) as control variables. Each was assessed based on one item, answers were given on a 10-point Likert Scale (see OSF). Moreover, we asked if participants have read Anne Frank's Diary (yes (17.6%); no (52%); partially (30.4%)) and whether they have visited the Anne Frank House/Museum in Amsterdam: yes (29.4%), no (70.6%).

Empathy (trait)⁴ was measured based on the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers et al., 2011) consisting of 31 items and two factors: affective ($M = 4.3$, $SD = 0.7$, $\alpha = .754$; e.g., "I am happy when I am with a cheerful group and sad when the

others are glum.”) and cognitive empathy ($M = 4.5$, $SD = 0.4$, $\alpha = .737$; e.g., “I can easily work out what another person might want to talk about.””).

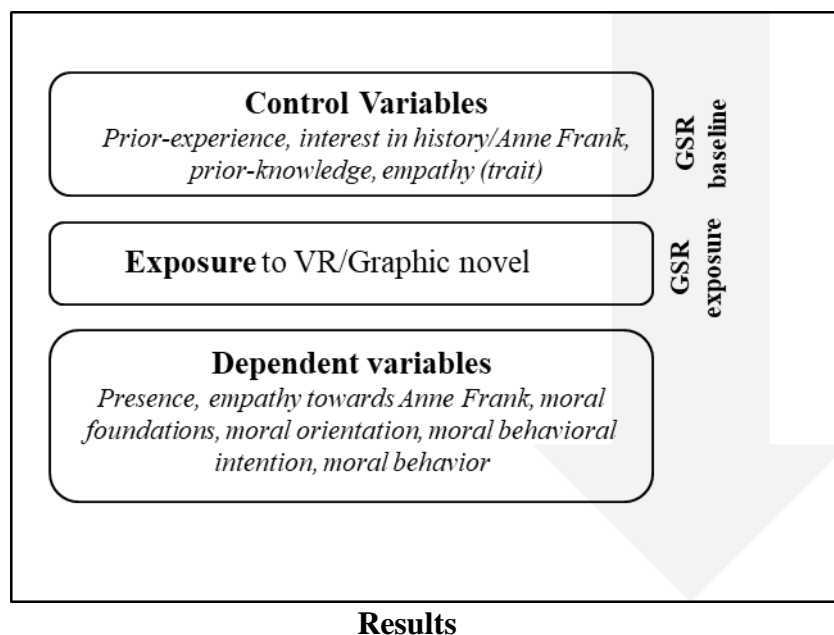
Procedure

In the first part of the study, participants were asked to answer different questionnaires on a computer while being already connected to the GSR (for baseline; for an overview see Figure 5).

Then participants were either asked to read the Graphic Novel or use the Anne Frank House VR (with an Oculus Go) for roughly 15 minutes while being connected to the GSR. After that participants were disconnected from the GSR and asked to answer different questionnaires. The whole procedure of the laboratory experiment took about 40 - 45 minutes. Participants got 7.50€ for participation (plus 2€ travel fee, if they were no member of the university) or student credits within their study program.

Figure 5

Illustration of the Procedure of the Laboratory Experiment..



First, we calculated bivariate correlations of all dependent measures and control variables (see Table 2).

Main Analysis

To test the proposed model including *H1 – H9*, a path model was calculated using RStudio (Version 4.2.0; Figure 6). According to the customary fit indices, the model fit was good: $\chi^2(3) = 3.73$, $p = .292$, $\chi^2/df = 1.24$, CFI = 0.99, TLI = 0.94, RMSEA = .05 (90% CI from .05 to .13), SRMR = .02 (Hu & Bentler, 1999). This analysis did not control for the effects of control variables.

Regarding the first hypothesis, stating higher values of presence (*H1*) the model revealed a strong positive significant relationship between using the VR application and the experience of presence ($\beta = .72$, $p < .001$). Consequently, the first hypothesis (*H1*) was accepted.

Hypothesis two (*H2*) assumed higher empathy towards Anne Frank when using the Anne Frank House VR application. However, the model did not show a significant relationship between using the Anne Frank House VR and empathy towards Anne Frank ($\beta = -.13$, $p = .322$). Consequently, *H2* was rejected.

The third hypothesis, proposing a positive effect of presence on empathy towards Anne Frank (*H3*) was accepted, as the model revealed a significant positive relationship between presence and empathy towards Anne Frank, $\beta = .341$, $p = .015$.

By investigating the relationships between presence (*H4a*), empathy towards Anne Frank (*H4b*), and content-related moral foundations, the model partly confirmed the hypotheses, in so far, as the results showed positive significant relationships between empathy towards Anne Frank ($\beta = .31$, $p = .003$; *H4b*) and content-related moral foundations. However, no significant relationship between presence and content-related moral foundations was found ($\beta = -.09$, $p = .387$). Therefore, hypothesis *H4a* was rejected and hypothesis *H4b* was accepted.

Table 2*Bivariate Correlations of the Constructs used in the Main Analysis*

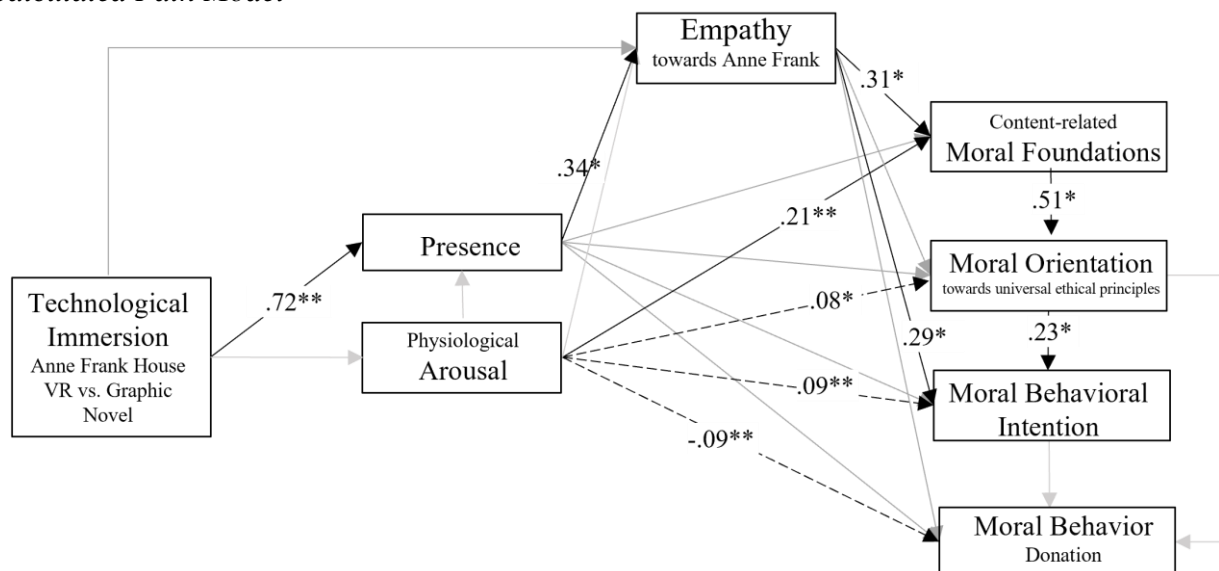
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Presence	-											
(2) Physiological arousal	-.08	-										
(3) Empathy Anne Frank	.22*	-.06	-									
(4) Moral behavioral intention	-.11	.13	.20*	-								
(5) Moral orientation	-.01	.18	.14	.40**	-							
(6) Content-related moral foundations	-.05	.20	.28**	.38**	.53**	-						
(7) Moral behavior	.08	-.11	-.004	.06	.02	.17	-					
(8) Cognitive empathy (trait)	.04	.12	.31**	.21*	.18	.34**	.18	-				
(9) Affective empathy (trait)	.04	.05	.23*	.25*	.26**	.39**	.29**	.56**	-			
(10) Age	-.01	.21*	-.10	-.14	.19	.23*	.17	.06	-.14	-		
(11) Prior VR-experience	-.01	.27**	-.05	.05	.02	.02	-.11	.01	.003	-.10	-	
(12) Knowledge about Anne Frank	.07	.23*	.07	.04	.02	.10	-.07	.11	.28**	.19	.08	-

Moreover, the model revealed positive relationships between content-related moral foundations ($\beta = .51, p < .001; H5c$) and moral orientation as proposed by $H5c$. However, we found no significant relationship between moral orientation and empathy towards Anne Frank ($\beta = .02, p = .786; H5b$), as well as presence ($\beta = .23, p = .069; H5a$). Therefore, hypotheses $H5a$ and $H5b$ were rejected, whereby hypothesis $H5c$ was accepted.

Taking the relationships between presence ($H6a$), empathy towards Anne Frank ($H6b$), moral orientation ($H6c$), and moral behavioral intention into account, the model partly confirmed the hypotheses. We found a positive significant relationship between empathy towards Anne Frank and moral behavioral intention ($\beta = .23, p = .024; H6b$), as well as between moral orientation and moral behavioral intention ($\beta = .23, p = .014; H6c$). Therefore, hypotheses $H6b$, and $H6c$ were accepted. However, we rejected hypothesis $H6a$, as the model did not show a significant relationship between presence and moral behavioral intention ($\beta = -.13, p = .195$).

Figure 6

Calculated Path Model



Note. $** p < .001$; $* p < .05$; Grey paths display non-significant paths; Dashed lines represent significant paths that were rejected due to small beta values (Lakens, 2022).

Hypothesis 7 (*H7*) was rejected, as we found no significant relationship between presence (*H7a*; $\beta = .12, p = .217$), empathy towards Anne Frank (*H7b*; $\beta = -.06, p = .580$), moral orientation (*H7c*; $\beta = -.12, p = .303$), moral behavioral intention (*H7d*; $\beta = .10, p = .398$) and moral behavior.

Hypothesis eight (*H8*) assumed higher physiological reactivity for the VR group compared to those who received the historical content as a graphic novel. However, the model did not reveal a significant difference in physiological reactivity depending on the historical media ($\beta = -.09, p = .355$). Therefore, hypothesis eight (*H8*) was rejected.

Taking the impacts of physiological arousal on morality into account (*H9*), hypothesis *H9c* was accepted, as the model revealed a significant positive relationship between physiological reactivity and content-related moral foundations ($\beta = .21, p < .001$). Although the model revealed significant relationships between physiological reactivity and moral orientation ($\beta = .08, p = .002$; *H9d*), physiological reactivity and moral behavioral intention ($\beta = .10, p < .001, H9e$), as well as physiological reactivity and moral behavior (*H9f*; $\beta = -.09, p = .002$), we rejected the hypothesis as the effects sizes were smaller than the smallest effect size of interest (see a-priori power analysis; Lakens, 2022). Moreover, no significant relationships between presence and physiological reactivity (*H9a*; $\beta = -.018, p = .378$), as well as empathy and physiological reactivity were found (*H9b*; *H9a*; $\beta = -.042, p = .347$). Therefore, hypotheses *H9a* and *H9b* were rejected.

Further Analysis

To examine differences in the dependent variables depending on the used technologies by controlling for control variables, we calculated additionally a MANCOVA. We added the following variables as dependent variables into the analysis: presence, physiological reactivity (SCL), empathy towards Anne Frank, content-related moral foundations, moral orientation towards universal ethical principles, moral behavioral

tendency, and moral behavior. The following constructs were added as covariates (control variables) into the analysis: age, affective empathy (trait), cognitive empathy (trait), prior VR experience, (prior-) knowledge about Anne Frank (including if they have read the Anne Frank Diary or not), interest in Anne Frank. There was no homogeneity of covariances, as assessed by Box's test ($p = .054$; Mertler et al., 2021). We used Pillai's trace to report and interpret the results based on the data's distribution (Ateş et al., 2019).

A one-way MANCOVA showed a statistically significant difference between the VR and graphic novel group on the combined dependent variables, $F(7, 81) = 15.11, p < .001$, partial $\eta^2 = .563$, Pillai's trace = .563. Moreover, we found significant results for the covariate prior-knowledge_{diary}, $F(7, 81) = 2.96, p = .043$, partial $\eta^2 = .160$, Pillai's trace = .160.

Post-hoc univariate ANOVAs were conducted for every dependent variable. Results showed a statistically significant difference between the groups for moral behavior, $F(1, 87) = 4.46, p = .038$ ($M_{VR} = 5.2, SD_{VR} = 3.9; M_{\text{graphic novel}} = 3.5; SD_{\text{graphic novel}} = 3.9$), partial $\eta^2 = .049$ and presence, $F(1, 87) = 98.98, p < .001$, partial $\eta^2 = .53$ ($M_{VR} = 4.4, SD_{VR} = 0.9; M_{\text{graphic novel}} = 2.3; SD_{\text{graphic novel}} = 1.1$), but not for physiological reactivity (SCL), $F(1, 87) = 0.98, p = .326$, content-related moral foundations, $F(1, 87) = 0.04, p = .848$, moral behavioral intention, $F(1, 87) = 1.45, p = .229$, empathy towards Anne Frank, $F(1, 87) = 2.01, p = .160$, and moral orientation ($F(1, 87) = 0.19, p = .668$).

Consequently, the analysis showed that participants in the VR group experienced more presence within the content of representation. Moreover, they were more willing to donate to the Anne Frank Foundation (moral behavior). More detailed results of the one-factorial MANCOVA can be found on OSF⁵.

⁵ https://osf.io/wa8be/?view_only=ba9954ab8ba04e67b606ead162cb4582

Discussion

The present investigation aimed to examine the mechanisms of immersion in historical content on the recipients' empathic responses and morality by taking physiological responses into account. To examine this, we exposed recipients to the *Anne Frank House VR* application in which they could immerse themselves in the Anne Frank family's hiding place in World War II or a graphic novel including the same content while assessing the recipients' physiological arousal (skin conductance). Based on this, we can illustrate which role the recipients' involvement in immersive historical media plays in the impacts on the recipients' morality and moral behavior.

The Role of Technological Immersion

Presence

In line with previous research, we found that recipients who were exposed to the *Anne Frank House VR* application reported a stronger experience of presence within the historical environment compared to those who read the historical content in a graphic novel. These findings replicate previous findings (e.g., Frentzel-Beyme & Krämer, 2022). Still, these findings add to the ongoing research on the impact of technological immersion on the presence, as the study systematically compared media applications that only differed in their technological characteristics. Both, the VR application and graphic novel, included the same text, as well as visual material. This approach gives detailed insights into the mechanism of technological properties on the recipients' experience of presence within mediated historical environments. While earlier research also employed this kind of systematic comparison, the present study contributes to the state of the art since it included yet other forms of media in comparison to prior studies: Specifically, a graphic novel was included that has become a more and more popular as a narrative form of representation. For instance, in the US the graphic novel *MAUS* is used in history classes in school (Clark, 2013).

Physiological Arousal

Although recipients reported a stronger experience of presence there was no significant difference in actual physiological arousal depending on the used media. These findings are contrary to previous research (e.g., Schmidt et al., 2020). However, the findings strengthen the arguments of researchers that self-reported presence might rather measure expectations towards VR technology (i.e., “Anne Frank VR made me travel into the past”). Therefore, one could speculate whether the participants' expectations of the “time travel” through VR might have influenced their answer behavior. Moreover, we did not find a correlation between physiological arousal and presence. Still, physiological arousal proved to be correlated with other measures: prior experience with and knowledge of Anne Frank and her story. Therefore, one could speculate that physiological arousal is supported by an interplay of media exposure and memories rather than purely technical properties (emotional memories; e.g., Kensinger, 2009). This may be reasonable, especially since many of the participants reported to have connections to the Holocaust story in their family or friends. Consequently, in this particular application context, the question arises as to whether the involvement of the users has a greater impact on their physiological responses than the technological features.

Moral behavior

The further analysis showed that recipients of the VR group were more likely to donate to the related organization. These findings are in line with previous research investigating the relationship between VR and content-related prosocial/-environmental behavior (e.g., Nelson et al., 2019). However, as already mentioned empirical findings in this area are mixed (Kandaurova & Lee, 2019). Most researchers demonstrate effects on prosocial behavioral tendencies but not on actual behavior. Surprisingly, donation behavior in this study was not significantly related to any moral reasoning. Moreover, in line with previous

research, we did not find a relation between moral behavior and moral behavioral intention (Frentzel-Beyme & Krämer, 2022). This means that those who indicated to be more willing to help others were not necessarily more willing to donate also for the Anne Frank Foundation. These findings give rise to the question of whether donation behavior is an adequate measure to assess moral behavior. Based on the present findings, one could speculate whether participants more likely donated because they valued the VR application itself and wanted to honor the production of the application. This might be a possible reason for the observed donation tendency apart from actual moral motives. Therefore, future research should think about alternative measures for moral behavior.

Empathy

Against expectations, we did not find stronger empathic responses for the VR group. These findings strengthen the assumptions of Diemer et al. (2015) who stated that presence is more reaction to technological characteristics, whereby emotional reactions, like empathy, are grounded in the media content. Researchers argue that same as within non-mediated real-life situations, some situations lead to emotional responses and empathy, whereas others do not (Slater, 2004). As we kept the content equal between the experimental groups, it cannot be excluded that the content itself is decisive for eliciting empathic responses. In line with this, also Barbot and Kaufman (2020) found that the technical characteristics of VR do not necessarily lead to more empathy compared to usual media (e.g., text). Based on their findings, the researchers stated that the recipients' involvement in the virtual environment might be crucial when focusing on the impacts of VR on the recipients' empathy. Also, the present investigation showed that presence positively affected the recipients' empathy: Recipients who reported higher presence values showed stronger empathy towards Anne Frank. The findings highlight that not the technology itself is decisive for the experience of empathy, rather it is the recipients' experience of presence which enables them to engage

with other perspectives. Taking the definition of presence into account the recipients' attentional shift to the historical (virtual) environment might play a crucial role in the recipients' empathic responses.

Impact on Morality

Empathy turned out to play an important role when then taking the impact of VR on morality into account. Contrary to our assumptions and previous investigations (e.g., Frentzel-Beyme & Krämer, 2022; 2023), we did not find direct effects of presence on content-related moral foundations, moral orientation, moral behavioral tendencies, as well as moral behavior. It was rather the recipients' empathy towards Anne Frank that positively affected content-related moral foundations, moral orientation, and moral behavioral tendencies.

Moral Foundations

The study showed that empathy towards Anne Frank and physiological arousal were positively related to the salience of content-related moral foundations (harm, fairness). Contrary to previous investigations (Frentzel-Beyme & Krämer, 2023), we found no direct effect of presence on related moral foundations. This effect was rather mediated through empathy toward Anne Frank. These findings highlight the relationship between physiological responses and moral foundations. Therefore, the findings underline the intuitive, less rationalist perspective on morality that the moral foundation theory represents (Haidt & Joseph, 2007). These findings highlight that the recipients' affective responses while media exposure influence the recipients' moral values.

Moral Orientation

However, against expectations, previous investigations (Frentzel-Beyme & Krämer, 2022), and assumptions of Kohlberg (1958) we found no relationship between empathy towards Anne Frank and moral orientation, as well as moral behavior. Based on the meta-

analysis of Martingano and colleagues. (2021) who stated that VR rather affects affective empathy compared to cognitive empathy the present results could be explained. Kohlberg (1958) stated that especially perspective-taking as a cognitive component of empathy is important to reach moral judgments. As VR mainly addresses affective empathic responses within responses there might not be an impact on the moral orientation according to Kohlberg's definition (1958). As we found that empathy and physiological reactivity were not related to moral orientation, the findings underline the rational nature of Kohlberg's rationalist approach to morality (1958).

Nevertheless, the study revealed a connection between content-related moral foundations and moral orientation which underlines the relation between moral intuitions and moral rational deliberation processes. The findings suggest that moral intuitions influence rationalist moral judgments. These findings are of particular interest, as they show that even though media applications might more likely be able to support the salience of such intuitive moral concepts also rationalist moral judgments might be indirectly affected after the media exposure. Moreover, it highlights the interplay of affective and cognitive processes when making moral judgments.

Moral Behavioral Tendencies and Moral Behavior

Furthermore, empathy towards Anne Frank turned out to promote moral behavioral intentions. These findings are in line with previous results demonstrating the impact of empathy on moral behavioral tendencies (Frentzel-Beyme & Krämer, 2022). However, compared to previous research we investigated the impact of situational empathy (empathy towards Anne Frank) on non-context-specific behavioral tendencies (general helping behavior). Therefore, the present findings indicate that VR is not only able to support content-related prosocial behavioral tendencies (Mado et al., 2021) but also to generally affect moral behavioral tendencies. Nevertheless, as already mentioned we could not find an

influence of empathy on actual moral behavior, as well as a relation between moral behavioral intention and moral behavior. These findings highlight the difference between moral behavioral tendencies and behavior. As already proposed by many researchers (e.g., Fishbein & Ajzen, 1975) behavioral tendencies do not necessarily lead to actual behavior as behavior is also influenced by other factors (e.g., living conditions). As we assessed moral behavior through donation behavior we have to mention here, that there might have been other factors that have influenced the participants' decision to donate (e.g., their financial situation). As already mentioned, future research should think about other measures to assess moral behavior. Based on these and the arguments, findings regarding moral behavior should not be over-interpreted.

Limitations and Further Research

It is always important to consider the study's limitations when interpreting its findings. First, the generalizability of the findings is limited as the sample was not representative, as it contained a high number of highly educated individuals. Moreover, we wanted to mention here that the power of the current study is relatively low (80%, Lakens, 2022). Furthermore, we mainly used a cross-sectional study when examining the impact of presence and empathy on morality. Consequently, we cannot make any assumptions about causal implications except for the effects of the manipulations. Here, long-term investigations that ask participants to either use a historical VR application or read a text multiple times while assessing the recipients' physiological arousal over a longer period (e.g., 8 weeks, see Eden et al., 2014) and assess moral values before and afterwards might give more detailed insights into the causality and mechanism of media on the recipients' morality.

Additionally, we asked participants first to answer regarding their moral orientation and after that indicate their moral behavioral tendencies, as well as moral behavior. This might have influenced the recipients' answer behavior regarding moral behavior/behavioral

tendencies, as answering the questions and thinking about their moral orientation might have made their moral orientation more conscious. Participants might have aimed to reduce cognitive dissonance by adjusting their behavior to their before-indicated attitudes (“I indicated I care about others; therefore, I should also help others.”; Festinger, 1957). As already discussed above, future research should think about alternative ways to measure moral behavior.

Conclusion

The purpose of the present study was to explore the role of presence, physiological arousal, and empathic responses to immersive historical media in terms of its effects on morality and moral behavior. In line with previous research, we found that technological immersion affects the recipients’ experience of presence which, in turn, supports empathic responses to the historical content. Moreover, we could show that those empathic responses to historical media and physiological arousal promote the salience of content-related moral foundations, as well as moral behavioral tendencies. Furthermore, we demonstrated that individuals that used a VR application showed more likely moral behavior (donation). Taken together, the investigations showed that historical immersive media applications influence the recipients’ morality. Thereby, the recipients' experience in terms of empathic responses and physiological arousal were found to play a crucial role. All in all, the investigation contributes to the research on the impact of media application on the recipients’ morality by giving first insights into the mechanism of conscious (presence, empathy) and unconscious processes (physiological arousal).

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Research Paper VI

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#Histogram: Investigating Emotions in Historical Representations on Instagram

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Abstract

In the last years many projects addressing historical topics were launched on social media. Among educating about the past, the aim of such formats is to create subjective, emotional insights into the past. However, making use of emotions in historical learning contexts is broadly debated within the community of history didactics. It is assumed that emotionally charged presentations overwhelm individuals emotionally and reduce their ability to distance themselves from the presentation. However, whether such presentations indeed make use of emotional presentations remains unclear. Therefore, this investigation aimed to examine the amount and extend of emotionality within historical representations on Instagram. We conducted a qualitative content analysis on the nonverbally expressed emotions in historical social media posts, to see if emotions are used and recognizable in such posts at all. We found that in almost all posts in which people are shown emotions were displayed. Building on these findings, we exploratory investigated in a quantitative online experiment ($N = 170$) whether the presentation of emotions in social media posts of a historical figure could lead related emotions. The results showed that Instagram posts showing negative emotions via nonverbal cues more likely lead to the report of negative emotions than positive and vice versa. Consequently, the study's findings contribute first empirical evidence to the ongoing debate of history didactics about the usage of emotions in historical social media learning settings and their potential to influence the followers' emotional states.

Keywords: Emotions, History Education, Social Media, Nonverbal Behavior

#Histogram: Investigating Emotions in Historical Representations on Instagram

There is an ongoing debate within media and the community of history didactics about presentations of historical events and figures on social media projects aiming (e.g., Berg et al., 2023; Burkhardt, 2022; Hespers, 2022). Nevertheless, increasingly, historical projects were launched on social media aiming to bring the past into the life of young adults (e.g., @annefrankhouseofficial, @evastories, @ichbinsophiescholl). Through emotional and partly fictional presentations of historical persons (e.g., the resistance fighter Sophie Scholl in World War II, @ichbinsophiescholl) or past events (e.g., the families hiding of the Frank family in World War II, @annefrankhouseofficial) producers aim to build emotional, profoundly subjective historical representations (SWR, 2021).

The representation of the historical content by using partly fictional elements (e.g., developing additional characters to make the story more interesting), the usage of only one perspective and emotions to educate individuals about the past is viewed very critical among history didactics (e.g., Bunnenberg, 2018). On the one hand, it is argued that emotions can support learning processes as long as emotional distancing between recipients and historical representation is possible (Brauer & Zündorf, 2019). On the other hand, history didacts fear that such emotionally charged presentation may overwhelm the recipients' and the capacity to detach themselves from the depiction and distinguish between fact and fiction may be lowered, which is considered to be essential for learning processes (Oswalt, 2012).

Same was discusses as in 2021 the German Instagram account @ichbinsophiescholl was launched aiming to educate young people about the past (SWR, 2021; Hespers, 2022). The account addresses the life of the German resistance fighter Sophie Scholl in World War II by telling the last ten month of Sophie Scholl's life from the start of her studies in Munich (May 1942) to her arrest and execution on February 22nd, 1942, for her resistance against the

Nazi-Regime. Also here, the producers emphasize that the aim of the Instagram account is to give profoundly subjective insights into the past (SWR, 2021).

From a media psychological perspective, previous research indicated that on social media platforms people are confronted and infected with emotion of others even though they are not directly interacting (Kramer et al., 2014). As an explanation researchers often refer to the concept of emotional contagion which describes an “automatic and unconscious process” (Choi & Kim, 2020, p. 866) defined as "the tendency to automatically imitate and synchronize expressions, voices, postures, and movements with those of another person and, consequently, to become emotionally close" (Hatfield et al., 1992, pp. 153-154). These expressions, postures, and movements, which can be considered nonverbal behavior (Argyle, 2013), could express certain emotions, which in turn can lead to emotion contagion. Therefore, watching a post of a historical figure in which the person shows nonverbal behavior indicating that they are sad (e.g., tears dropping down, mouth corner down) might lead to sad feelings within followers of such historical social media accounts.

To contribute empirical evidence to the beforementioned debate of emotional presentation in historical presentations on social media, the present investigation aims to analyze qualitatively the presentation and usage of emotions in historical social media presentation. Thereby, we use the example of the German Instagram account @ichbinsophiescholl and conduct the analysis based on the nonverbal cues of the historical figure. To the best of the authors' knowledge, until now there does not exist any comparable analyzing schema to examine emotional expression within visuals on social media (Renner, 2019). Building on this analysis it will further exploratively, empirically investigated whether those emotional representations in historical social media posts evoke matching emotions within the followers, as the production, as well as reception of emotions within historical learning context is so far largely unexplored (Gundermann et al., 2021; Stelmach, 2022).

Theoretical Framework

Emotions in History on Social Media

Meanwhile throughout the social media landscape many projects addressing historical topics can be found (e.g., @ichbinsophiescholl; @eva.stores; @annefrankhouseofficial on Instagram). Those projects have in common that they approach the concept of living history: "an attempt by people to simulate life in another time" (Anderson, 1982, p. 291). This can also be observed in historical social media representations like the German Instagram account @ichbinsophiescholl. The Instagram shows the perspective of a German resistance fighter in World War II fighting against the Nazi-Regime, which is generally known as an emotionally charged topic, especially in (German) remembrance culture (Bothe & Sperling, 2013, p. 202). On the Instagram account, the producers used fictional elements to involve followers (Stelmach, 2022) more deeply, as they add fictional characters to Sophie Scholl's life. Moreover, the producers emphasized that they aimed to create "emotional, radically subjective insights" into the life of Sophie Scholl to educate people about the past and make history more interesting especially for young people (SWR, 2021).

However, the usage of emotions in history education is highly discussed within the community of history didactics (e.g., Bunnenberg, 2018; Lewers, 2022; Lewers & Frentzel-Beyme, 2022). History didactics fear that such emotional representations may overwhelm learners (e.g., Bunnenberg, 2018) and decrease the learner's ability to distance themselves from the representation and to be able to separate fact from fiction which is considered to be essential for learning processes (Oswalt, 2012). Furthermore, they highlight that emotions are always connected to the experience of history (Gundermann et al. 2021, p. 45). Foremost in audio-visual and interactive media, emotions are used to stimulate emotional reactions of the recipients and to connect the present and past (e.g., sadness, interest; Brauer 2013, p. 77). In line with this, investigations indicate that representations of the past atrocities (e.g.,

Holocaust) can trigger sadness and guilt, also promoted by culturally learned dealing behavior (Bothe & Sperling, 2013, p. 213). Furthermore, taking other media into account a study of Frentzel-Beyme & Krämer (2022) showed that the reception of historical content in VR is strongly connected to the experience of emotions. Moreover, Parong and Mayer (2021) showed that historical emotional, entertainment media lead to affective rather than cognitive processing as it distracts from historical content itself. These findings support the assumptions of history didactics that emotional historical representations lead to emotional reactions within recipients and decrease the learning output.

When focusing on social media in general, previous studies demonstrate that social media images are characterized by emotionality causing a wider spectrum of emotional reactions in people (Pittman & Reich, 2016). Researchers argue that social media offers individuals' new opportunities for emotion regulation (Zaki & Williams, 2013), such as socially communicating their emotions with others through a post or a caption (Hidalgo et al., 2015). In line with that, studies have shown that individuals share their emotions on social media, but there are different kinds of emotion shared on different social media platforms (Vermeulen et al., 2018). On snapchat, facebook statuses and Instagram, the users share mostly positive emotions (Hidalgo et al., 2015). Whereas on twitter and messenger, negative emotions are shared. It is noticeable that on the platforms where mainly photos are posted (e.g., Instagram), mainly positive emotions are shared. Consistent with these findings Waterloo and colleagues (2018) found that users of Instagram show positive emotions (e.g., happiness, enjoyment) a lot more than on the other social media platforms.

Emotional Expressions

However, throughout the literature there is no consistent definition of emotions (e.g.,

Kleinginna & Kleinginna, 1981, Mulligan & Scherer, 2012). What many definitions have in common that emotions are complex phenomena that are accompanied by a change in various components: physiological reactions (e.g., increase in heart rate, sweating), behavioral (e.g., mimicry), and experience components (e.g., feelings; Kleinginna & Kleinginna, 1981). In the last century, researchers defined six basic emotions: enjoyment, surprise, anger, sadness, fear, and disgust; which could be observed cross-culturally (Ekman et al., 1969; Ekman & Friesen, 1971; 1986). However, recent perspectives offer a new perspective on emotions. According to new studies, at least 14 other emotions are added to the six basic emotions, which are indicated by multimodal and dynamic expressive behavior patterns (e.g., Keltner et al., 2019). Current findings have outlined the more highly complex steps, that are required to recognize emotions.

When taking the six basic emotions into account, Ekman and Friesen (1986) stated that those can be displayed by universal facial expressions regardless of culture, age, gender, or origin. This implies that besides verbal communication, individuals make use of nonverbal communication to communicate how they are feeling and interpret the feelings of others. Nonverbal communication includes, among others, mimicry (facial expressions), gaze behavior (and pupil dilation), gestures and other body movements (Argyle, 2013). Drawing the line back to the definition of emotions one can see that also here emotions include behavioral components (e.g., nonverbal communication; Kleinginna & Kleinginna, 1981). For one thing individuals permanently use consciously or unconsciously nonverbal communication, for another thing they permanently interpret the nonverbal communication of others (Ekman & Friesen, 1986). In addition, researchers have shown that an individual's communication consists of more nonverbal communication (e.g., mimicry) than verbal communication. Nonverbal communication is also deliberately used by actors to portray emotions. This is probably the same in historical social media accounts, that as well uses

actors for the content. Taking the German Instagram @ichbinsophiescholl as an example, the actress displaying Sophie Scholl, might be use specific nonverbal behavior to display content-related emotions (e.g., Sophie Scholl is feeling happy because of she had a great time with her friends.). Previous research indicates that these emotions portrayed on the screen can even affect viewers' emotions (Masters et al., 1986). Masters and colleagues (1986) and Sullivan and Masters (1988) have conducted numerous studies and have found that nonverbal behavior such as facial displays seen on television can affect viewers' emotions and impressions.

Research Question

Therefore, on the one hand, producers of historical social media projects might use nonverbal behavior to convey emotions within social media representation (e.g., posts; e.g., Brauer, 2013). On the other hand, followers of historical Instagram accounts might observe the emotions in representations of historical figures (e.g., Sophie Scholl). Until now the usage of emotions in historical media representation has been widely discussed and criticized by history didactics (e.g., Bunnenberg et al., 2021; Stelmach, 2022). However, whether such projects make indeed use of emotional representations and to what extent has not been investigated empirically (Stelmach, 2022). Moreover, to the best of the authors' knowledge, until now there does not exist any comparable analyzing schema to examine emotional expression via nonverbal behavior within visuals on social media. Therefore, we ask to what extent historical social media projects (e.g., @ichbinsophiescholl) use nonverbal behavior to convey emotions within the historical media representation.

RQ1: To what extent do the social media posts of the Instagram account

@ichbinsophiescholl use emotions in their presentation?

RQ2: Which emotions are addressed through the nonverbal behavior of the protagonist of the historical Instagram account?

Method

Qualitative Analysis

To answer the research questions, we conducted a qualitative analysis of the images within the posts of the German Instagram account @ichbinsophiescholl1 to analyze the amount and extend of displayed emotions within this historical Instagram account. We orientated the whole procedure of the qualitative analysis towards well-known frameworks of qualitative analyses (e.g., Mayring, 2015). First, we determined the material. The Instagram account includes 270 posts from whom we chose those that display persons from a front perspective. We decided to choose those photos, as we aimed to analyze facial expressions displaying emotional expressions. Consequently, we chose 116 images (~ 43%) that displayed people from the front-perspective. Most of them displayed Sophie Scholl herself (~ 85%). Some show pictures of herself, on others she is together with others (family, friends). A few photos showed people close to *Sophie Scholl* (e.g., brother, father, friends). Posts that were not included into the qualitative analysis show for instance propaganda posters of the Nazi-Regime in World War II, drawings, or landscapes.

We chose a deductive approach for the analysis and developed a coding system analyzing the displayed nonverbal behavior (facial expressions). Therefore, we orientated towards the Facial Action Coding System (Ekman & Friesen, 1978; Ekman et al., 2002) which was developed to recognize and classify emotional facial expressions. Ekman and Friesen (1978) specified specific movements of the facial muscles which they named Action Units that combinations were assigned to the basic emotions (e.g., enjoyment, fear). Based on their coding systems we developed an own coding system investigating the basic emotions: enjoyment, sadness, fear, and anger; based on facial movements of the displayed persons in posts. Table 1 gives an overview of the coding systems. The coding of the whole material was performed by one coder. Roughly 25% of the material (25 posts) were coded by a second

person leading to a moderate intercoder reliability ($\kappa = .61$; McHugh, 2012). In the following, we will explain the classification regarding each emotion based on examples showing the front of *Sophie Scholl*.

Table 1

Facial Movements Assigned to the Basic Emotion

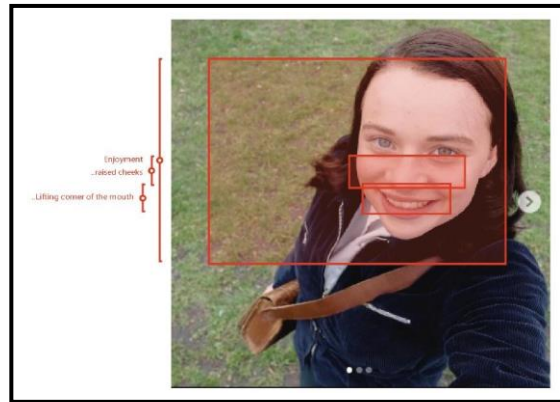
Basic Emotions		Facial Movements
Enjoyment	E1	Raised Cheeks
	E2	Lifting corner of the mouth
	E3	Squinting of the eyes
Sadness	S1	Lifting the inner eyebrow
	S2	Contraction of the eyebrow
	S3	Pulling down the corners of the mouth
Fear	F1	Lifting the inner eyebrow
	F2	Raised eyebrows
	F3	Pulling the eyebrows together
	F4	Lifting the upper eyelid
	F5	Tightening of the lips
	F6	Dropping the jaw
Anger	A1	Pulling the eyebrows together
	A2	Lifting the upper eyelid
	A3	Tightening of the eyelids
	A4	Lips pressed together

Enjoyment

In the Instagram post (see Figure 1), Sophie Scholl, portrayed by the actress Luna Wedler, is displayed from a selfie-perspective. The corners of her mouth are raised (E2) and her mouth is open enough to reveal her teeth. This also raises her cheeks (E1) and her eyes appear slightly squinted (E3). Consequently, the photo was assigned to the basic emotion enjoyment.

Figure 1

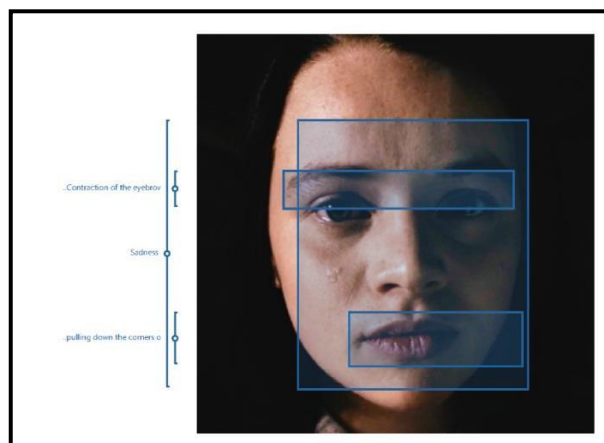
Example Post of the Instagram account @ichbinsophiescholl for enjoyment

**Sadness**

In this photo a close-up of Sophie Scholl is shown in the form of a selfie in front of a completely black background (see Figure 2). The first feature that immediately stands out is both the tear under her right eye and her glassy and moist eyes. Her eyebrows are slightly drawn together (S2), which is why there is a slight vertical crease between them as a result. The lips are distorted horizontally, and her eyelids are slightly lowered. Furthermore, one can see a tear running down her cheek which is throughout society also perceived as an indicator for sadness (but not part of our coding-schema). However, this post was assigned to the emotion sadness.

Figure 2

Example Post of the Instagram account @ichbinsophiescholl for sadness

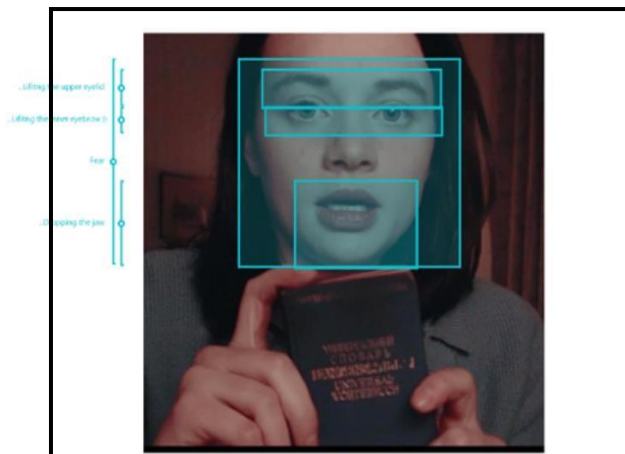


Fear

In this Instagram post (see Figure 3), Sophie Scholl is holding a Russian dictionary with both hands. Her eyes are widened, which is created by lifting the upper eyelid (F4). Her chin drops down, opening her mouth and revealing her lower row of teeth. The corners of her mouth are vertical, neither up nor down, revealing a slight tightening of the lips (F5). Further, both her inner and outer eyebrows are raised (F2). Consequently, this photo is assigned to the basic emotion fear.

Figure 3

Example Post of the Instagram account @ichbinsophiescholl for fear



Anger

This post (see Figure 4) shows Sophie standing in her apartment in Munich. She is leaning on the dresser next to her with her left arm, the other arm hanging loosely down. Through the window, a play of light can be seen on her face. Her eyelids are tense (A3), which is especially noticeable on the left side of her face. The eyebrows are drawn together (A1), resulting in wrinkles in the middle. The lips are pressed together (A4). Her posture is confident, tense, and noticeably straight. Consequently, this post was assigned to the emotion anger.

Figure 4

Example Post of the Instagram account @ichbinsophiescholl for Anger

**Results Qualitative Analysis**

Based on the qualitative analysis the 116 posts were distributed among the four emotions as follows: 44.8% could be assigned to enjoyment; 15.5% to sadness; 13.8 % to fear and 14.7% to anger. The other posts could not be clearly assigned to any emotions based on the expressed facial movements (11.2%). Table 2 gives an overview about the coded codes. Within the qualitative analysis codes indicating positive emotions (enjoyment) were coded the most. Whereby lifting corners of the mouth was displayed the most (48.2%). Taking a look at the facial expressions indicating negative connotated emotions (fear, anger, sadness) also facial movements of the mouth were coded the most. Pulling down the corners of the mouth indicating sadness were coded in 26 posts (18.4%), whereby lips pressed together was coded in 23 posts indicating anger (16.3%). These findings show that actors use especially movements of the mouth to display specific emotions. Similar can be observed within the movements of the eyebrows. Pulling the eyebrow together (12.0%) and lifting the inner eyebrow (9.9%) was also often coded within the qualitative analysis. This indicates that also movements of the eyebrow were used to display emotions, here in particular negative emotions (fear, anger, sadness). All in all, the qualitative analysis indicate that facial

movements were used consciously to display specific emotions within produced, constructed Instagram posts of historical Instagram accounts (as example @ichbinsophiescholl).

Moreover, the analysis showed that within those posts displaying people on the Instagram account the expression of enjoyment was the majority. Additionally, we could show that in general the majority of posts displaying people show emotions.

Table 2

Classification of the Posts to the Basic Emotions, regarding the Expressed Action Unit

Emotion	Total / Percentage	Facial Movements	
Enjoyment	52 / 44.8%	Raised cheeks	67 / 47.5%
		Lifting corners of the mouth	68 / 48.2%
		Squinting of the eyes	52 / 36.9%
Sadness	18 / 15.5%	Lifting the inner eyebrow	14 / 9.9%
		Pulling the eyebrows together	17 / 12.0%
		Pulling down the corners of the mouth	26 / 18.4%
Fear	16 / 13.8%	Pulling the eyebrows together	17 / 12.0%
		Lifting the inner eyebrow	14 / 9.9%
		Raised eyebrows	13 / 9.2%
		Tightening of the lips	16 / 11.3%
		Dropping the jaw	26 / 18.4%
Anger	17 / 14.7%	Pulling the eyebrows together	4 / 2.8%
		Lifting the upper eyelids	16 / 11.3%
		Tightening of the eyelids	15 / 10.6%
		Lips pressed together	23 / 16.3%
Neutral	13 / 11.2%	Facial expression could not be clearly assigned to any emotion above	

Exploratory Analysis

As previous research suggests that emotional presentation in media influences the users' emotional state (e.g., Masters et al., 1986), we, further, conducted an exploratory analysis to examine whether emotional expressions of historical figures in social media posts leads to related emotional expression of users. Consequently, the exploratory analysis aims to answer the following research question:

RQ3: Do emotional nonverbal expressions of historical figures in social media posts affect the users' emotional state?

Therefore, we conducted an online survey to investigate the hypotheses and research questions using a within design. Participants were shown 20 posts in a randomized order. We chose randomly 5 posts out of each classification (anger, fear, enjoyment, sadness) regarding the qualitative analysis. The study design was approved by the local ethics committee.

Sample

In total, 170 participants aged between 18 and 55 years ($M = 24.7$; $SD = 5.6$) took part in the survey. The participants were recruited via different online platforms (e.g., surveycircle.de; facebook.de). Most of them identified as women ($n = 138$), 31 identified as male, and one person identified as diverse. The age and gender distribution within the online survey can be seen as representative for the followers of the German Instagram account @ichbinsophiescholl. Most of the participants stated having a university degree (38.8%) or a higher education degree (41.8%) and were employees (22.9%) or students (52.9 %).

Measures

Based on the German version of the PANAS (Breyer & Bluemke, 2016) and the Differential Affect Scale (Krause, 1993) we assessed the recipients' emotional states by measuring the positive and negative affect of the recipients. Five adjectives were chosen to represent each positive and negative emotions. The positive affect was assessed by the emotions: attentive, interested, enthusiastic, pleased, happy. The negative affect was assessed based on the negative emotions: sad, unhappy, worried, anxious, annoyed. Subjects were asked to indicate on a six-point Likert scale (0 = not at all true to 5 = strongly true) how they felt when viewing the respective post.

As manipulation check we also assessed the *participants' perception of the presented emotion* in each post, we asked them to indicate for each of the four basic emotions (joy,

sadness, fear, anger) on a six-point rating scale (0 = not at all to 5 = very strongly) how strongly they perceived each emotion to be portrayed in the respective post.

Procedure

Within the online survey participants were first asked to answer questions regarding their sociodemographic. After that the 20 posts were shown in a randomized order and participants were asked to answer the beforementioned questions regarding their positive, negative affect and the displayed emotions. Filling in the whole questionnaire lasts at least roughly 15 minutes.

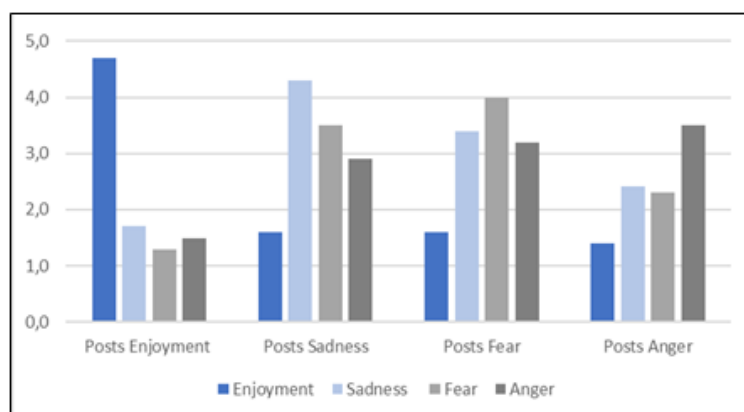
Results

Manipulation Check

As manipulation check, we examined the recipient's perception of emotions in each of the presented posts through descriptive analysis. Here, we found that those posts classified as enjoyment were mostly classified as a post portraying enjoyment by recipients, as well (see Figure 3). Also, regarding the other posts, the descriptive analysis strengthens the findings of the qualitative analysis. Each post was mainly classified in line with the conducted qualitative analysis (see Table 3).

Figure 5

Mean Values of the Perception of the Instagram Posts Regarding the Emotions Enjoyment, Sadness, Fear, Anger



Analysis

To investigate research question three (*RQ3*), we conducted a repeated measures multivariate analysis of variance (MANOVA) using IBM SPSS (Version 28.0.0.0) with positive and negative affect as dependent variables. Based on the qualitative analysis the representations (Instagram posts) of enjoyment, sadness, fear, and anger were included as independent variables.

Table 3

Mean Values and Standard Derivation of the Emotional Perception of all Posts within the Quantitative Analysis

Posts	Enjoyment		Sadness		Fear		Anger	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Enjoyment</i>								
1	4.9	0.9	1.4	1.0	1.4	0.8	1.2	0.7
2	2.9	1.3	2.3	1.4	2.5	1.4	1.7	1.1
3	4.7	1.2	1.5	1.0	1.6	1.0	1.3	0.8
4	5.8	0.6	1.3	0.9	1.2	0.7	1.2	0.8
5	5.3	1.2	1.3	0.8	1.4	0.8	1.7	1.3
<i>Sadness</i>								
1	1.1	0.5	4.8	1.3	3.3	1.5	3.3	1.5
2	1.4	0.9	3.7	1.6	4.0	1.5	2.2	1.4
3	1.2	0.7	5.3	1.2	4.2	1.6	2.7	1.5
4	1.2	0.6	5.5	1.0	3.2	1.5	2.3	1.5
5	3.5	1.5	2.4	1.5	2.2	1.4	1.5	0.9
<i>Fear</i>								
1	1.6	1.0	2.5	1.4	3.2	1.5	2.8	1.5
2	1.3	0.8	3.0	1.5	4.7	1.4	2.4	1.4
3	1.4	0.8	3.7	1.4	3.9	1.5	2.5	1.4
4	1.1	0.5	4.6	1.6	4.3	1.5	1.1	0.5
5	1.3	0.7	3.7	1.6	3.8	1.5	2.8	1.5
<i>Anger</i>								
1	1.4	0.6	3.8	1.4	3.5	1.4	3.5	1.5
2	1.3	0.7	2.7	1.5	2.6	1.4	4.6	1.5
3	1.9	1.2	2.9	1.4	2.9	1.4	2.8	1.7
4	1.4	0.7	2.4	1.4	3.5	1.5	3.6	1.6
5	1.3	0.6	2.5	1.4	3.7	1.5	3.0	1.6

The one-way MANOVA showed a statistically significant difference between positive and negative affect on the combined independent variables, $F(4, 166) = 175.09, p < .001$, partial $\eta^2 = .808$, Wilk's $\Lambda = .192$.

By investigating the reported emotions when being exposed to positive connotated posts (e.g., joy), the analysis showed a significant difference between expressions of positive emotions ($M = 3.7, SD = .95$) and negative emotions ($M = 1.7, SD = .73$), $F(1, 169) = 2903.7, p < .001$, partial $\eta^2 = .945$. Likewise, the analysis showed significant differences between the report of negative emotions and positive emotions when considering the exposure to expressions of negative connotated emotions of a historical figure. By investigating the difference in viewing Instagram posts of a historical figure displaying anger, a significant difference was observable $F(1, 169) = 2312.2, p < .001$, partial $\eta^2 = .932$. The negative emotions ($M = 3.0, SD = .93$) are significantly higher than the positive ($M = 2.5, SD = .71$). Furthermore, a significant difference was also found in regard to posts displaying sadness, $F(1, 169) = 2301.5, p < .001$, partial $\eta^2 = .932$. The report of negative emotions ($M = 3.3, SD = 1.1$) are significantly higher than the positive emotions ($M = 2.5, SD = .74$). Lastly, Instagram posts of a historical figure displaying fear via nonverbal cues were taken into account. Significant differences could be found for positive and negative emotions $F(1, 169) = 2195.5, p < .001$, partial $\eta^2 = .929$, for the negative emotions ($M = 3.1, SD = .99$) being significantly higher than the positive emotions ($M = 2.4, SD = .74$).

Discussion

The present investigation aimed to investigate whether historical new media projects use emotional expressions based on nonverbal behavior in posts on social media. Therefore, a qualitative analysis was conducted by analyzing posts from the historical social media account @ichbinsophiescholl. Furthermore, we aimed to examine whether those emotional

representations from a first-person perspective (selfie-perspective) led to matching emotions within recipients.

Emotional Representation on Social Media History

By taking the German historical Instagram account of Sophie Scholl, a resistance fighter in World War II, into account, we found that historical social media projects make use of emotions in their presentations. Based on the qualitative analysis, most posts could be assigned to enjoyment and the other posts could be assigned to negative emotions (anger, sadness, fear) in roughly equal proportions. The study only focused on the pictures, but it needs to be mentioned that in social media the content is a combination of picture and caption. However, the first impression is on the image and particularly Instagram is mainly image-based (Musonera, 2018). Therefore, and due to the object of our study our attention was on the posted pictures.

In almost all posts in which persons were displayed, the producers used nonverbal cues to express specific basic emotions (fear, anger, sadness, enjoyment; Ekman, 1971). These results indicate that emotions are expressed in the same way as in face-to-face communication (Ekman et al., 2002). In more detail, we found that roughly half of the posts on the historical Instagram (@ichbinsophiescholl) showed the historical person from a first-person perspective using specific nonverbal cues to convey emotions. Thereby, the presentation of positive and negative was more or less equally distributed. These findings are contrary to previous findings of Sonne and Erickson (2018) showing that on Instagram more likely positive representations can be found. Also, Waterloo and colleagues (2018) found that negative emotions were least shown on Instagram. Therefore, the findings indicate that historical social media accounts might be a special type of representation on Instagram due to the content of the presentation and the distribution of displayed emotions. Moreover, many posts show positive emotions. One of the reasons may be, that such historical social media accounts try to use the common

types of representation of the social media platform Instagram (e.g., Stelmach, 2022). As already mentioned on social media more likely positive posts were published compared to negative.

However, when the content of the account @ichbinsophiescholl is compared with general content of historical learning, it is noticeable that in the historical context, more negative than positive emotions are displayed. It is often content about suffering, misery, harm et cetera. This is due to the fact, that history education is dealing among others with the atrocities of the past (e.g., World War II). In addition, previous research showed that within history education it was until now mostly made use of factual and neutral content (Henig & Ebbrecht-Hartmann, 2020). Therefore, the findings contribute to the discussion of history didactics and whether such historical social media representations are an adequate educational tool (Burkhardt, 2022).

Followers' Perception of Emotions in Social Media History

The present findings strengthen the assumptions that individuals use nonverbal cues to assess the emotions of others (e.g., Ekman et al., 2002). For instance, we found that individuals evaluated Instagram posts displaying nonverbal cues known for the expression of enjoyment as posts showing enjoyment. These findings are in line with the original assumptions of Ekman and colleagues (2002). However, we could expand these findings to the context of social media posts and, moreover, to the perception of the emotions of historical persons. These are interesting in regard to that researchers emphasize that individuals of the 21st century cannot imagine how a person from the 20th century might have felt (Bunnenberg et al., 2021). Research highlights that our emotional perceptions relate to past experiences, as well as our knowledge from the past (Terpstra, 2011). Especially in the context of history (e.g., World War II) the individual's perception is always connected to learned behavior. For instance, researchers suggest that especially in Germany people learned

how they should feel about the atrocities of the Second World War (e.g., Brauer, 2013). Therefore, the question arises whether such emotional representation of historical persons might support the recipient's impression that they know how the historical person has actually felt by getting an impression of their feelings via social media presentation. This would be contrary to the aim of history education stating that emotional distancing and reflection, for instance being aware of oneself as an individual of the 21st century cannot experience how a person of the last century has felt, are important for the interpretation of historical information on social media (Bunnenberg et al., 2021; Oswalt, 2012). Therefore, these findings are of high importance as the producers might have consciously used the actress's mimicry to convey the emotions to the followers.

As already mentioned, the individuals evaluated Instagram posts conveying enjoyment as posts showing enjoyment. Although the results suggest that the recipients were able to distinguish and separate positive and negative emotions in the images well. The distinction between negative emotions, on the other hand, were more difficult. Sadness was partially interchanged with fear and anger. Fear was in some cases rated as sadness or anger, and anger was evaluated in others as fear or sadness. It should be also considered that enjoyment was the only positive emotion, while there were three emotions with negative valence (fear, anger, sadness) probably affecting each other's recognition. Nevertheless, are these results in line with previous findings, showing a difference in recognizing positive vs. negative facial expressions (Langner et al., 2010). Likewise, in the studies, from Dores and colleagues (2020), positive emotions like happiness could be recognized better than emotions like fear, anger or sadness. The relationship between cognition and emotion has been used in the literature to explain the difference in the recognition of positive and negative emotions, (among other potential explanations). For instance, studies have demonstrated that processing happy emotions (e.g., enjoyment) uses less cognitive effort as processing negative emotions

(e.g., sadness) (Gupta, 2019; Gupta & Srinivasan, 2015). In accordance with this, another study showed that positive emotions in cartoons are better recognized than negative emotions (Zhang et al., 2021), which again is in line with our findings.

Potential Influence on Emotions

Moreover, we found first evidence that social media posts expressing emotions via specific nonverbal cues could indeed lead to matching emotions within recipients. These findings are further supported by previous findings of Ferrara and Yang (2015) indicating that emotions expressed by others on Twitter influence the emotions of the recipients. However, the present findings extend these findings to the context of visual representations of historical figures on Instagram. In addition, the findings imply that also in the social media context users use nonverbal cues to get an impression of the emotions of others and moreover, are infected with them. These findings contribute to the ongoing discussion of history didactics about emotional representation in historical social media presentations (e.g., Brauer, 2013). In Addition, the findings strengthen the theoretical assumptions of Brauer (2013) assuming that in audio-visual and interactive media, emotions are used to stimulate emotional reactions of the recipients (e.g., sadness; Brauer 2013).

Moreover, when taking into account that historical social media accounts deal with the atrocities of the past (e.g., Second World War) and, moreover, make use of emotions (e.g., anger, sadness, fear) it might be reasonable that followers will be emotionally overwhelmed (Bunnenberg, 2020). These assumptions are contrary to our findings. Although our results indicate that expressing negative emotions (fear, anger, sadness) lead to the experience of negative emotions within recipients, the mean values imply that there is not necessarily emotional overwhelming. Therefore, our findings contribute to the ongoing discussion of history didactics (e.g., Brauer, 2013) and provide new insights.

Limitations and Future Research

It is always of high importance to consider the investigation limitations when interpreting the findings. First, the generalizability of the results is limited, since the sample is not representative for the overall population, as it has a high proportion of females and highly educated people included. But it should be emphasized that it is in turn representative of the account's followers since the account is predominantly made up of female followers.

Another limitation might lie in the within subject design. This kind of design could have led in this case to the fact that it was too obvious for the test subjects in the evaluation of the displayed emotions and their associated positive or negative affect. For this reason, further research could apply a between-subject design, looking at other historical social media accounts. Another factor that could have an influence on their associated affect is the mood of the respective subjects. If one is in a bad mood and then negative emotions are portrayed in pictures, the mood could decline even further. This factor was not considered in this study. Further research could pick up here and see if prior mood influences the recognition of emotion and the associated affect.

Nevertheless, this study gives first insights whether historical social media projects make indeed use of emotional representations and to which extent. This specific topic has not been investigated empirically. More than that emotions and historical learning has not been researched in depth, which further research should focus on. For instance, the focus can lie in a comparison of historical posts with and without emotions and the resulting learning effect, or in researching whether emotional contagion really leads to emotional overwhelming.

Conclusion

The present investigation shows that the historical social media project @ichbinsophiescholl makes use of emotions in their presentations. The qualitative analysis

showed that in almost all posts in which people are shown specific nonverbal cues were used to convey emotions - positive as well as negative emotions. In addition, the exploratory analysis suggests that the Instagram posts conveying specific emotions via nonverbal cues can lead to the experience of matching emotions within the recipients. For instance, recipients are more likely to experience positive rather than negative feelings when viewing a historical figure that expresses enjoyment. These study's findings contribute to the ongoing discussion of history didactics of whether such projects are beneficial for historical learning. The results indicate that emotionally charged historical social media content can affect the recipients' emotional state. However, whether in fact this leads to emotional overwhelm needs to be further researched.

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Research Paper VII

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KEYWORDS

parasocial interaction
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RESEARCH PAPER

Posting from the Past

A Longitudinal Study of the Potentials of Parasocial Interaction with a Historical Figure for History Education.

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ABSTRACT

Historical figures have been increasingly brought into the Instagram world, providing insights into the past from a first-person perspective by addressing followers in stories or posts. This type of representation promotes the parasocial interaction (PSI) that creates the illusion of a face-to-face interaction with a media figure. This suggests the possibility that historical Instagram accounts might offer a novel platform for history education.

This longitudinal study investigates PSI via actual interaction (e.g., liking and commenting on posts) with historical figures on social media. It uses the results to analyze educational potential in terms of several outcomes: interest in and knowledge about the historical figure and awareness of the historical characteristics and fictional nature of the accounts. To achieve this, followers of the German historical Instagram account *@ichbinsophiescholl* were surveyed at two time points ($N_{t1}=239$; $N_{t2}=84$). The findings reveal that actual interaction is positively related to the experience of PSI. In turn, PSI was supported

by participants' general interest in history. PSI did not increase over time but was positively associated with interest in the historical figure. Furthermore, followers experiencing PSI were more aware of the historical characteristics of the account but less aware of its fictionality.

1 Introduction

Novel media products invoking historical topics have increasingly appeared online, ranging from 360° VR experiences on well-known online video platforms (e.g., YouTube) to representations of historical figures on social media (e.g., Burkhardt, 2021; Bunnenberg, 2018, 2020). These offerings represent an interesting and tangible approach to history. Thereby, they should not only support interest in historical topics but also teach their audience about historical events. Indeed, existing research indicates that historical social media accounts can support young people's engagement in historical events (Hening & Ebbrecht-Hartmann, 2022). Thereby, social media representations of historical figures differ from traditional media representations by enabling personalized access to history, offering space for identification and (emotional) involvement (e.g., Burkhardt, 2015). Moreover, presentation modes characteristic of social media – such as simulating eye contact by directly talking into the camera – are known to promote the experience of *parasocial interaction* (PSI; e.g., Hartmann & Goldhoorn, 2011; Horton & Wohl, 1956). PSI describes an individual experiencing an interpersonal interaction with a media persona in mass media. The original definition understands PSI to be one-sided (Horton & Wohl, 1956). However, the technological affordances of social media enable users to actually interact with these media personas, such as by commenting on or reacting to their stories and posts. Studies investigating PSI on social media have shown that such interactions positively affect the experience of PSI (Kowert & Daniel, 2021; Kyewski et al., 2018). Given that previous research has indicated that historical accounts on social media evoke user engagement in historical topics (Hening & Ebbrecht-Hartmann, 2022), PSI with a historical figure may offer a novel form of audience involvement and the possibility of experiencing past events in some way.

However, such media approaches to history are viewed critically within the community of history education researchers (e.g., Bunnenberg et al., 2021; Burkhardt, 2021; Chapman & Haydn, 2020; Haydn & Ribbens, 2017). This position argues that emotional, fictional representations that aim to immerse followers in the past diminish their ability to distinguish between fiction and reality. For instance, followers might not be aware that the historical figure is played by an actress or actor and is not the historical figure themselves. This effect might be further compounded by the experience of PSI evoking intimacy and trust (Jin & Ryu, 2020). This prompts history education researchers to

emphasize the importance of historical consciousness and the ability to reflect on (media) representations of the past (Pandel, 2017; Popa, 2022). Historical consciousness includes consciousness of fictionality, historicity, and time. However, there has not yet been any empirical inquiry into whether the experience of PSI with a historical figure impacts the historical consciousness of followers by blurring the boundaries between fiction and reality and between past and present. Furthermore, previous studies of immersive virtual environments have argued that such presentation modes undermine the delivery of information and preclude conveying knowledge about the past (e.g., Ahn et al., 2022; Parong et al., 2021). However, according to other investigations, the opportunity for (parasocial) interaction with a historical figure on social media might prompt follower interest in that historical figure, allowing them to attain knowledge about the figure (e.g., Chua, 2002; Hurst et al., 2013).

The present investigation aims to address this research gap by investigating whether PSI with a historical figure on Instagram affects various aspects of history education (historical consciousness, historical interest, and knowledge). We examine whether actual interaction on social media (e.g., commenting, viewing posts) affects followers' experience of PSI with a historical figure using the example of the German Instagram account of *Sophie Scholl (@ichbinsophiescholl)*, a German resistance fighter during World War II. This enables the study to produce empirical data concerning the extent to which social media-based historical reenactments can serve an educational purpose.

2 Theoretical Framework

2.1 Historical Figures on Social Media

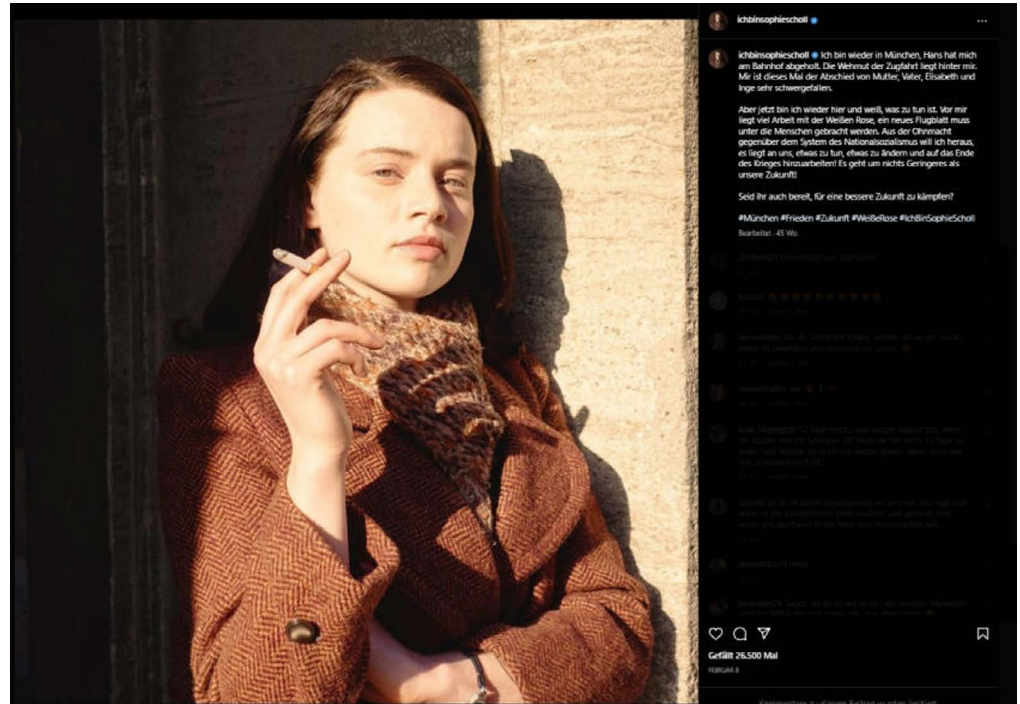
In recent years, individuals have been increasingly exposed to new media approaches to history online. Such media products are designed to provide a tangible approach to history and to stimulate interest in historical topics, especially among young people (e.g., Haydn & Ribbens, 2017). These approaches range from video games and virtual reality applications to social media accounts on various platforms (e.g., Twitter, YouTube, Instagram). The mixed empirical findings regarding the impact of immersive media (e.g., VR) on aspects of historical learning (e.g., knowledge, interest) mainly suggest that such approaches support interest in historical topics rather than deliver factual information about the past (e.g., Ahn et al., 2022; Parong et al., 2021). However, introducing historical figures to social media differs from immersive media applications as the presentation is personalized and putting a particular historical figure in the spotlight, invoking the past on the basis of an individual from history's biography (e.g., Bergmann, 1997; Berg et al., 2023). This approach

consequently offers possibilities for identification (e.g., Giles, 2002). For example, in 2021, the Anne Frank House published the “Anne Frank Diaries” on YouTube¹. Several videos depict Anne Frank’s life between her 13th birthday on June 12, 1942, and August 4, 1944, the day she and her family were deported. The producers of this YouTube channel communicate with the audience at various verbal and nonverbal levels by creating the impression that Anne Frank was filming the videos herself using a video camera she had received for her birthday (i.e., “What if Anne Frank had a camera instead of a diary?”). A similar project launched in 2021 is the Instagram account @ichbinsophiescholl, produced by the German public broadcaster SWR to depict the life of Sophie Scholl, a German resistance fighter during World War II, from a first-person perspective in a narrative format (SWR, 2021). The producers used real footage of the events and persons involved in Sophie Scholl’s life, reenacted photos and videos, provided weekly summaries, and adjusted drawings with captions from the perspective of Sophie Scholl. Stories were posted and comments were answered in *Sophie Scholl’s* name (see Figure 1).

¹ <https://youtube.com/playlist?list=PLDwwb2V397Q6192UeDFpcNuSoK8uS1cgz>

Figure 1: Example post from the German Instagram account *@ichbinsophiescholl*

Note. *@ichbinsophiescholl* [Screenshot], Post by *@ichbinsophiescholl* on Instagram, (2022, February 7). (<https://www.instagram.com/ichbinsophiescholl/>) | Caption (translated): “I am back in Munich; Hans has picked me up at the station[...] But now I am here again and know what has to be done[...] Are you also ready to fight for a better future?”



2.2 Parasocial Interaction on Social Media

Presentation modes that create the impression that a media figure is personally and privately talking to the audience are known to promote the experience of *parasocial interaction* (PSI; e.g., Hartmann & Goldhoorn, 2011; McLaughlin & Wohn, 2021). PSI describes the illusion of interpersonal interaction with media figures in a mass media context (e.g., newscasters), an illusion that is grounded in the experience of a “simulacrum of conversational give and take” (Horton & Wohl, 1956, p. 215). PSI includes cognitive (e.g., linking the media figure’s persona to one’s own memories), affective (e.g., empathy for the media figure), and behavioral responses of the recipients (e.g., Schramm & Hartmann, 2008, 2019). However, recent technological innovations have led to the establishment of novel platforms for experiencing PSI (e.g., social media). Research has already investigated the effects of PSI on certain aspects (e.g., purchasing intention) in the social media context (e.g., Lin et al., 2021). However, the PSI concept was originally defined by one-sidedness, the control of the interaction by the media figure, and the lack of mutual development of the relationship between the two parties (Horton & Wohl, 1956). By contrast, the technological characteristics of social media platforms offer a range of interaction opportunities that enable followers to interact with media figures, opportunities ranging from liking posts

or stories to writing comments or private messages. As such, it is strongly debated whether the concepts can be transferred to social media, given that the (parasocial) interaction might be either reciprocal (Reinikainen et al., 2020) or “one-and-a-half sided” (Kowert & Daniel, 2021). Nonetheless, studies have indicated that actual interaction with a media figure on social media can encourage PSI (Kyewski et al., 2018). Furthermore, social media interaction continues to be controlled by the media figure (e.g., influencers), who decide what to post and who to respond to (e.g., Reinikainen et al., 2020). Additionally, not every social media user actually interacts (e.g., via comments or direct messages) with media figures on platforms such as Instagram. In these cases, the interaction could still be classified as one-sided and non-dialectical, aligning with the original definition of PSI. Nonetheless, to distinguish between PSI on social media and the original one-sided mass-media-based version (Horton & Wohl, 1956), we understand PSI on social media as one-and-a-half-sided (Kowert & Daniel, 2021).

Based on previous research indicating that actual interaction on social media promotes the experience of PSI (e.g., Kyewski et al., 2018), the present study assumes that actual interaction on social media—viewing, commenting on, and liking posts—encourages the experience of PSI with the historical figure *Sophie Scholl*, prompting the following hypothesis:

H1: Actual interaction with a historical figure on Instagram positively affects parasocial interaction.

Impacts of Followers’ Interests

On the side of the recipient, several factors influence the social media content that individuals will expose themselves to (e.g., interest; Abdu et al., 2017; Macafee, 2013; Parmelee & Roman, 2019). For instance, politically interested individuals are more likely to follow political leaders on Instagram (Parmelee & Roman, 2019) and take part in online political activities, such as sending and receiving political information (Abdu et al., 2017) and posting politics-related links, status updates, or likes (Macafee, 2013). Because historical Instagram accounts such as *@ichbinsophiescholl* address historical and political topics (e.g., World War II, the Nazi regime, and how to become a member of the resistance), historically and politically interested individuals can be expected to be more likely to follow these accounts and are more likely to interact with them (e.g., by liking and commenting), leading to the following hypothesis:

H2: [a] Political interest and [b] historical interest positively affect actual interaction with a historical figure on Instagram.

2.3 Educational Perspective

Building on the existing discussion within the community of history education researchers concerning Instagram projects involving historical figures (e.g., Bunnenberg et al., 2021; Burkhardt, 2021; Chapman & Haydn, 2020; Haydn & Ribbens, 2017), this paper evaluates whether this novel form of (parasocial) interaction with a historical figure (Sophie Scholl) on Instagram affects different aspects of history education.

Interest in Historical Figures

Producers of social media–based history projects, such as *@ichbinsophie-scholl*, emphasize that they intend to promote the interest of young people in historical topics (SWR, 2021). Supporting this claim, researchers have found that the opportunity to be a contemporary witness by following a historical person on social media encourages engagement with historical topics (Hening & Ebbrecht-Hartmann, 2022). Furthermore, researchers have identified relationships between interaction on social media and interest in a media figure (e.g., He et al., 2016). Elsewhere, different investigations have demonstrated that social media interaction can foster topic-specific or person-related interest. In the political context, Campbell and Wolbrecht (2006) indicated that political campaigns with visible female candidates recorded increased political involvement from adolescent girls. Meanwhile, in the context of college athletes' accounts on Twitter, Yuksel and Labrecque (2016) reported that sharing detailed information as a media figure fostered interest from followers. These findings have been explained by the emotional connection followers establish with a media figure (Brown & Basil, 2010), enabling the assumption that this emotional connection encourages the perception of the persona as a role model. In turn, this increases interest in this person. In the context of a historical figure – for example, Sophie Scholl – it might be assumed that the experience of PSI causes follower perceptions of *Sophie Scholl* as a role model to enhance their interest in the historical figure *Sophie Scholl*. This allows us to suggest that PSI with a historical figure, including the development of an emotional connection (Schramm & Hartmann, 2008, 2019) and the perception of the historical figure as a role model, produces the effects identified by previous research, leading to the following hypothesis:

H3a: An individual's parasocial interaction with a historical figure on Instagram positively affects their interest in the historical figure.

Increased interest in the historical figure following the experience of PSI may also be influenced by individual factors. Regarding the impact of a person's general interest in history on their interaction with a historical figure on Instagram, research suggests that those followers who are generally highly interested in history are also more interested in historical figures (e.g., Rotgans &

Schmidt, 2018). This led to the following hypothesis concerning the relationship between PSI and interest in Sophie Scholl.

H3b: Historical interest positively moderates the relationship between parasocial interaction and interest in historical figures.

Historical Knowledge

Beyond fostering interest in history, another important aim of history education is to deliver knowledge of history (Sakki & Pirttilä-Backman, 2019). Previous research has suggested that novel media approaches to history, such as VR, distract from factual learning about the past, producing doubt around such applications (e.g., Parong et al., 2021; Burkhardt et al., 2015). However, as mentioned, previous studies have reported that historical social media accounts support young people's engagement in the remembrance of historical events, such as the Holocaust (Hening & Ebbrecht-Hartmann, 2022). A study examining the Instagram project *Eva Stories*, which recounts the real-life story of a 13-year-old Jewish girl in the days prior to her deportation to Auschwitz, revealed that the account evoked user engagement on social media (e.g., screen-shotting, posting). Furthermore, the experience of PSI is known to encourage engagement with media figures (e.g., Horton & Wohl, 1956), including the affective and cognitive processing of the presented media content (Schramm & Hartmann, 2008, 2019). Consequently, increased engagement with historical figures on Instagram via PSI could support the cognitive processing of the presented media content and consequently promote the development of historical knowledge. Similarly, Chua (2002) positively correlated social interaction with knowledge quality, highlighting, in particular, the relational dimension of social interaction. This allows the following hypothesis concerning the impact of PSI with a historical figure on the development of knowledge about that figure:

H4a: Parasocial interaction with a historical figure positively affects knowledge about the historical figure.

Elsewhere, Flowerday and Shell (2015) have demonstrated that topic interest indirectly affects engagement through situational interest, which itself influences learning. This might also be applied to the Instagram account examined in the present study. This prompted the following hypothesis concerning the moderating role of historical interest in the relationship between PSI and knowledge:

H4b: Historical interest positively moderates the effect of parasocial interaction on knowledge of a historical figure.

Historical Consciousness

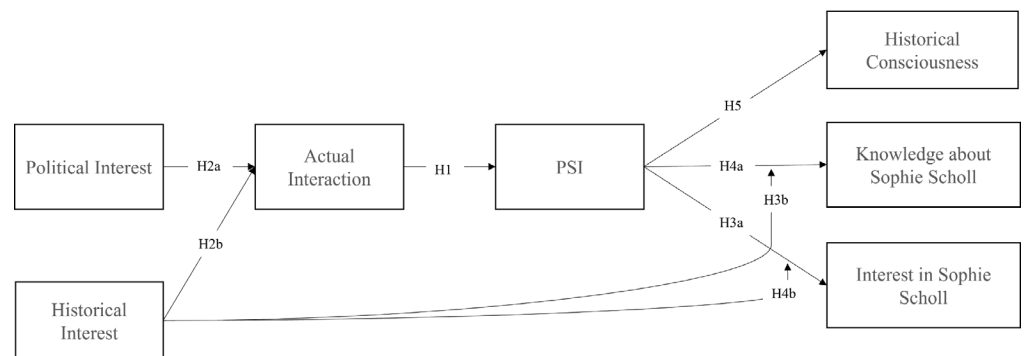
Notably, it has been proposed that the experience of PSI with a historical figure on Instagram might blur the boundaries between reality and fiction and between past and present (e.g., Bunnenberg et al., 2021; Schreier, 2004). Followers might experience PSI as actual social interaction with a historical figure, undermining their awareness of the fictional characteristics of the media product (e.g., Sophie Scholl is played by an actress). History education researchers emphasize the role of historical consciousness in enabling individuals to reflect on historical (media) representations (Pandel, 1987; Popa, 2022). Consequently, historical consciousness has become a part of many history education curricula (e.g., Körber, 2011; Silfver & Myyry, 2022). Pandel (2017) has described historical consciousness in terms of the subdimensions of consciousness of time, consciousness of reality, and consciousness of historicity (Pandel, 2017). Consciousness of time refers to the ability to differentiate between past, present, and future (i.e., the historical figure lived in the past, but the Instagram account depicts episodes as though they are taking place in the present). Consciousness of reality refers to the ability to distinguish between the “real” or “fictional” nature of the episodes depicted (e.g., the historical figure was real but the actor’s representation on the Instagram account is fictional). Finally, consciousness of historicity describes the understanding of the dynamics of people and relationships and of the static characteristics of certain things and events (e.g., the historical figure is dead, but the Instagram account is dynamic and has been constructed by producers).

Previous research has shown that novel media representations have the potential to confuse recipients by encouraging the perception of fiction as reality, although this might be mitigated by providing further information about the production process (Schreier, 2004). Experiencing PSI with a historical figure on Instagram might blur the boundaries between fiction and reality and between past and present, undermining the historical consciousness of the audience (e.g., Bunnenberg et al., 2021; Schreier, 2004). Similarly, previous research has demonstrated that new media technologies and formats (e.g., “reality tv”) have created problems for audiences “categorizing a personality as either fictional or real” (Jarzyna, 2021, p. 415). This might be especially applicable in the present case, where novel media formats have the potential to confuse audiences by supporting the perception of fiction as reality (Schreier, 2004). This understanding prompted the development of the following hypothesis:

H5: Parasocial interaction with a historical figure on Instagram negatively affects historical consciousness.

The hypotheses introduced (H1–H5) enable the research model presented in Figure 2.

Figure 2: Research Model (Including Independent, Dependent, and Moderating Variables)



2.4 A Longitudinal Perspective

Previous research has indicated that the frequency of viewing a media persona in online streaming formats promotes *parasocial relationships* (McLaughlin & Wohn, 2021). The concept of a parasocial relationship (PSR) refers to the illusion of an interpersonal relationship with a media persona that is comparable to other social relationships (e.g., Horton & Wohl, 1956; Gleich, 1996). According to the mere-exposure effect, positive feelings toward another person arise from frequently seeing them in media, leading to the experience of intimacy that promotes PSRs (Horton & Wohl, 1956; Saegert et al., 1973). Horton and Wohl (1956) proposed that PSRs develop through the experience of PSI. Building on that understanding, Kyewski and colleagues (2018) demonstrated that the frequency of interaction supports the experience of PSI with characters on TV in a study based on the frequency of seeing a character on social media. In the social media context, this effect might be promoted by the amount of time that an individual follows a specific media persona (e.g., Sophie Scholl; Rubin & McHugh, 1987). Consequently, individuals who follow a historical figure for a longer period of time – exposing them more frequently to this figure – might experience a greater sense of PSI (e.g., empathy towards Sophie Scholl; Schramm & Hartmann, 2008, 2019). The notion that the frequency of media exposure seems to be an important factor for PSI prompted the following hypothesis:

H6: Parasocial interaction with a historical figure on Instagram increases with increased exposure over time.

Building on this, we also anticipate an increase in the constructs interest in and knowledge about Sophie Scholl, which may be positively affected by PSI. Continuous exposure to a historical figure on Instagram and engagement with the historical figure's account might encourage both interest in and knowledge about that historical figure. This prompted the following hypotheses:

H7: [a] Interest in and [b] knowledge about a historical figure increase over time.

Considering, together, the assumptions concerning the negative impact of PSI on historical consciousness and the increase in PSI over time, we also expect an impact on historical consciousness over time. The experience of PSI with a historical figure over time and the frequent exposure to this historical figure in daily life (via Instagram) might increasingly blur the boundaries between past and present and between fiction and reality (e.g., Bunnenberg et al., 2021; Schreier, 2004). Nonetheless, several studies have reported findings supporting the opposite assumption, suggesting that social media (e.g., WhatsApp) can enhance student involvement in – and, thus, their understanding of – historical contexts (Silfa, 2021). In sum, PSI may exert negative long-term effects on historical consciousness and positive long-term effects on awareness. This prompted the development of the following non-directional hypothesis:

H8: Historical consciousness changes over time.

3 Method

3.1 Study Design

To test the hypotheses, an online survey of followers of the *@ichbinsophie-scholl*² Instagram account was conducted at two measurement time points. The first survey period began on July 9, 2021 (several weeks after the account's launch in May 2021) and continued to September 9, 2021. The second survey period began on January 21, 2022, and continued to February 28, 2022, close to the end of the account's posts representing Sophie Scholl's death on February 22, 1943.

3.2 Open Science

The study was preregistered on the Open Science Framework (OSF³) prior to data collection. Within the online survey, we also assessed constructs examining whether following a historical figure on Instagram over a longer period enhances followers' empathy and affects their moral orientation. Hypotheses investigating these additional research questions appear on the OSF. Figure 3

² <https://www.instagram.com/ichbinsophiescholl/>

³ <https://osf.io/ta26f>

provides an overview of the constructs assessed by the two online surveys. For transparency, it should be noted that we partly changed the wording of some of the preregistered hypotheses, but we did not alter the content or meaning. The study was approved by the local Ethics Committee.

3.3 The Historical Instagram Account

The Instagram account *@ichbinsophiescholl* was produced by German public broadcasters in 2021 in collaboration with historians (SWR, 2021). The account introduces the 21-year-old Sophie Scholl, played by a German actress (Luna Wedler), and gives followers insights into the last ten months of Scholl's life. Scholl (* May 9, 1921, † February 22, 1943) was a German resistance fighter opposed to the National Socialism regime. Because of her involvement in a resistance group (White Rose), she and her brother Hans Scholl were sentenced to death by Nazi judges and executed on the same day. On the Instagram account, the producers used several components of Instagram (e.g., stories, posts, reels) to time-shift into the Nazi dictatorship and allow Sophie Scholl to talk to her followers in Instagram stories or posted reels. The channel aims to provide intimate insights into Sophie Scholl's everyday life and uses partly original historical material to tell the story of her path to exemplary civil courage in the resistance. For example, viewers follow the surprise party that Sophie's brother Hans organizes for her 21st birthday, and they suffer the doubts Sophie has about her love affair with her boyfriend Fritz, who is serving as an officer in the Russian campaign. The material is based on the letters and notes Sophie Scholl wrote from the end of 1937 up to her execution. The account remains online and provides detailed insights into the historical content presented, such as through weekly reviews in English and German.

3.4 Sample

Participants were recruited by directly approaching them on Instagram via private messages inviting them to take part in the online survey. Those who participated in both surveys could enter a lottery to win one of four 50€ vouchers from their chosen retailer.

First Measurement Time Point

The data set comprised 239 participants aged between 18 and 68 years ($M=31.3$; $SD=11.3$). The majority identified as female (179), 55 identified as male, and five persons identified as gender diverse. Regarding educational attainment, most participants had university-entrance-level qualifications

(43.5%) or a university degree (39.7%). Furthermore, most participants were employed (37.7%) or students (29.7%).

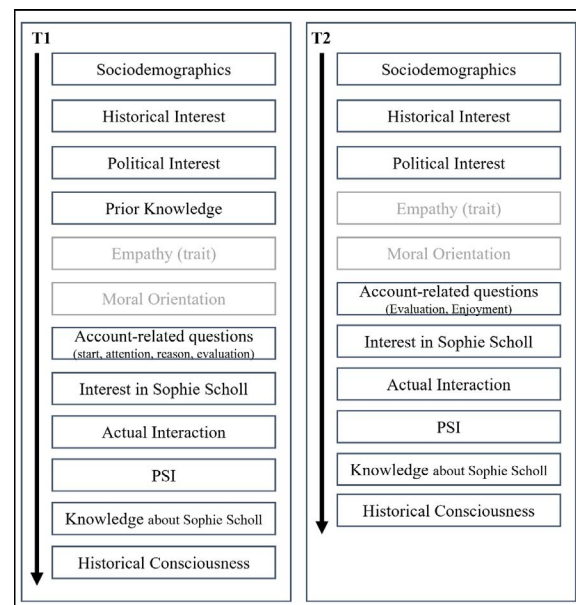
Second Measurement Time Point

A total of 84 participants could be matched to records from the first measurement using a coding procedure. These 84 participants comprised the data set used for the analyses of the longitudinal hypotheses ($H6-H8$). The participants were aged between 18 and 62 years ($M=33.7$, $SD=12.43$). The majority identified as female (65), 17 identified as male, and two persons identified as gender diverse. Regarding educational attainment, most participants had university-entrance-level qualifications (44%) or a university degree (41.6%). Regarding occupation, most were employed (36.9%) or students (32.1%).

Measures

Within the online survey, participants completed different questionnaires assessing the constructs included in the hypotheses. The questionnaires within the online survey and the order of presentation appear in Figure 3. If not mentioned otherwise, responses to items were given on a six-point Likert scale (1 = strongly disagree to 6 = strongly agree). The average survey completion times were 18.21 minutes ($t1$) and 14.86 minutes ($t2$).

Figure 3: Order of the Questionnaires within the Online Survey



Note. The questionnaires with gray titles are not part of the present investigation. For more information, see the OSF⁴.

⁴ <https://osf.io/ta26f>

Political and Historical Interest & Interest in Sophie Scholl

Political interest was measured based on the German version of the Short Scale of Political Interest (Otto & Bacherle, 2011). The scale comprises six items (e.g., “For me, politics is an exciting topic.”; $M_{t1}=4.4$, $SD_{t1}=1.1$, $\alpha=.91$; $M_{t2}=4.4$, $SD_{t2}=1.1$).

Historical interest and interest in Sophie Scholl were measured based on adapted versions of the Short Scale of Political Interest (Otto & Bacherle, 2011). The modified historical version comprises five items (e.g., “For me, history is an exciting topic.”; $M_{t1}=4.8$, $SD_{t1}=1.2$, $\alpha=.95$). The modified version regarding Sophie Scholl includes four items (e.g., “Ever since I started following the Instagram account @ichbinsophiescholl, Sophie Scholl has been an exciting person for me.”; $M_{t1}=4.1$, $SD_{t1}=1.2$, $\alpha=.80$; $M_{t2}=4.6$, $SD_{t2}=1.3$).

Actual Interaction

Actual interaction with the Sophie Scholl Instagram account was assessed using an adapted version of the interactivity scale by Rihl and Wegener (2019). The ten items were adjusted to cover the possible forms of interaction available on Instagram (viewing, commenting, liking, and reacting to stories, posts, and private messages; e.g., “I reacted to the stories of @ichbinsophiescholl.”; $M_{t1}=2.9$, $SD_{t1}=0.9$, $\alpha=.78$; $M_{t2}=2.8$, $SD_{t2}=1.0$). Table 3 presents the items and follower responses at each time point.

Table 3: Overview of the Descriptive Values of the Actual Interaction Measure at Both Time Points

	T1		T2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I look at the comments on the posts of <i>ichbinsophiescholl</i> .	3,8	1,6	3,9	1,7
I use the like function of the posts.	4,1	1,9	3,5	2,1
I comment on the posts of <i>ichbinsophiescholl</i> .	2,1	1,4	2,1	1,5
<i>ichbinsophiescholl</i> responds to my comments.	2,3	1,8	2,6	2,0
I watch the stories of <i>ichbinsophiescholl</i> .	5,2	1,2	4,8	1,4
I respond to the stories of <i>ichbinsophiescholl</i> .	2,0	1,5	1,9	1,5
I write private messages to <i>ichbinsophiescholl</i> .	1,3	0,7	1,3	0,7
<i>ichbinsophiescholl</i> replies to my private messages.	1,7	1,5	1,8	1,6
<i>ichbinsophiescholl</i> replies to my reactions.	1,9	1,6	2,0	1,6
I see <i>ichbinsophiescholl</i> 's posts and stories on my timeline.	5,1	1,3	4,4	1,9

PSI

PSI was measured using six subscales from the PSI Process Scale (Schramm & Hartmann, 2019; $M_{t1} = 3.8$, $SD_{t1} = 0.8$; $M_{t2} = 3.7$, $SD_{t2} = 0.8$; $\alpha = .94$): comprehension of the situation and of the acts of the persona (e.g., “I made an effort to comprehend the reactions of⁵ .”; $\alpha = .80$), linking the persona’s statements/actions to one’s memories (e.g., “I repeatedly pondered whether I know people who resemble *ichbinsophiescholl*.”⁵; $\alpha = .76$), evaluation of the persona and their actions (e.g., “I have formed an opinion about *ichbinsophiescholl*.”⁵; $\alpha = .84$), establishment of a relationship between the persona and the self (e.g., “I did not compare myself to *ichbinsophiescholl*.”⁵; $\alpha = .89$), empathy (e.g., “I always felt compassion for *ichbinsophiescholl*.”⁵; $\alpha = .86$), and emotional release (“*ichbinsophiescholl*’s feelings were sometimes contagious.”⁵; $\alpha = .89$).

Knowledge about Sophie Scholl

Knowledge about Scholl was measured using eight self-developed items assessing general knowledge. Four of the statements could be answered based on the information given on the Instagram account *@ichbinsophiescholl* (e.g., “Sophie Scholl was no member of the BDM⁶”). Because the hypotheses suggest that stronger follower engagement with a historical topic increases information seeking, we added four items which that could only be answered by further research about Scholl, such as “Sophie Scholl was executed on the same day as her brother Hans Scholl and Christoph Probst.” Answers were coded based on whether participants provided the correct (2) or incorrect (1) answer (according to a true-or-false format) to each of the eight statements, and a mean score was calculated ($M_{t1} = 1.8$, $SD_{t1} = 0.2$; $M_{t2} = 1.4$, $SD_{t2} = 1.1$). All items appear on the OSF⁷.

⁵ We decided to include “*ichbinsophiescholl*” instead of “Sophie Scholl” in the items to emphasize that we are referring to the presentation of Sophie Scholl on Instagram (by employing the “Instagram username”). Nonetheless, we are aware that this might have manipulated the recipients’ reflective processes, including their consciousness of fictionality, something that we discuss in terms of the limitations of the study.

⁶ The Bund Deutscher Mädel (BDM) was the female branch of the Hitler Youth (HJ) during the National Socialist era.

⁷ <https://osf.io/92h35/>

Historical Consciousness

Historical consciousness was measured using a self-developed questionnaire (Table 4).

Table 4: Results of the Exploratory Factor Analysis of the Historical Consciousness Questionnaire (t1)

Item	Factor			<i>M</i>	<i>SD</i>
	1.	2.	3.		
The Instagram account ichbinsophiescholl shows how Sophie Scholl's life really was. (R)	.858	-.191	-.068	3.24	1.63
Through the Instagram account ichbinsophiescholl I can witness Sophie Scholl's actions. (R)	.788	-.316	.015	2.24	1.53
The Instagram account ichbinsophiescholl shows the past. (R)	.686	-.162	-.145	1.90	1.52
The depicted life of Sophie Scholl on the Instagram account ichbinsophiescholl is customizable and constructed.	.654	.065	.069	4.13	1.56
On the Instagram account ichbinsophiescholl you are able to follow Sophie Scholl's life in real-time. (R)	.627	-.303	.171	2.86	1.93
The Instagram account ichbinsophiescholl and Sophie Scholl herself are the same. (R)	.604	-.006	.171	4.91	1.57
Sophie Scholl's life impacts the present.	-.042	.873	.003	4.46	1.28
The Instagram account ichbinsophiescholl will impact the future.	-.247	.846	-.062	3.99	1.42
The Instagram account ichbinsophiescholl impacts the present.	-.075	.838	-.080	4.10	1.42
Sophie Scholl's life will impact the future.	-.265	.788	-.067	4.28	1.35
Sophie Scholl's life has already passed and is unchangeable.	-.038	-.069	.826	5.84	0.63
Sophie Scholl has already lived.	.137	-.051	.636	5.80	0.76
Sophie Scholl was a real person.	-.02	-.034	.614	5.98	0.21
Sophie Scholl's life took place in the past.	.048	-.125	.610	5.69	0.99
An actress portrays Sophie Scholl on the Instagram account ichbinsophiescholl.	.035	.082	.599	5.85	0.71
Reliability (Cronbach's Alpha)	.814	.880	.628		

Note. (R): items are reverse-coded. 1: consciousness of reality, 2: consciousness of time, 3: consciousness of historicity.

The original 19 items were formulated according to the first three dimensions of Pandel's dimensions of time, reality, and historicity. After eliminating four items due to low factor loadings ($< .50$) and low Cronbach's alphas ($< .50$), an exploratory factor analysis revealed a three-factor solution (Ferguson & Cox, 1993): consciousness of time (e.g., "Sophie Scholl's life will impact the future.", $M_{t1} = 4.1$, $SD_{t1} = 1.2$; $M_{t2} = 3.9$, $SD_{t2} = 1.4$), consciousness of reality (e.g., "The depicted life of Sophie Scholl on the Instagram account *ichbinsophiescholl* is customizable and constructed."; $M_{t1} = 3.2$, $SD_{t1} = 1.2$; $M_{t2} = 3.6$, $SD_{t2} = 1.4$) and consciousness of historicity (e.g., "Sophie Scholl's life has already passed and is unchangeable.", $M_{t1} = 5.9$, $SD_{t1} = 0.3$; $M_{t2} = 5.9$, $SD_{t2} = 0.2$). All items, and the results of the exploratory factor analysis, appear in Table 4 ($M_{t1} = 4.4$, $SD_{t1} = 0.5$; $M_{t2} = 4.5$, $SD_{t2} = 0.5$).

Control Variables

Evaluation. Participants were asked whether they liked the account and consider it valuable (e.g., "I think the Instagram account *ichbinsophiescholl* is useful."; $M_{t1} = 5.1$; $SD_{t1} = 1.4$; $M_{t2} = 4.7$; $SD_{t2} = 1.7$).

Account-Related Questions. Participants were also asked to indicate their impression of Sophie Scholl in terms of five items (e.g., "Sophie Scholl was an important personality."). Furthermore, they were asked at the first measurement time point why they had started following the account (interest: 88.3%; school/study: 2.5%; job: 3.3%; other: 5.9%), when they had started following the account (when the account was launched: 75.3%; several weeks after the account launched: 14.7%; several days after the account launched: 10%), and how they became aware of the account (media: 61.9%; friends/family: 21.3%; school/study: 2.5%; job: 1.3%; other: 13%).

Self-Reported Prior-Knowledge. We asked participants at the first measurement time point to indicate their prior knowledge based on a self-assessment question: "How would you evaluate your prior knowledge about Sophie Scholl on a scale ranging from 0 to 10?" ($M_{t1} = 3.5$; $SD_{t1} = 1.4$). Furthermore, participants were asked whether they had previously heard about Sophie Scholl during school/studies (74.1%), watched a movie about Sophie Scholl (37.7%), or read about Sophie Scholl (63.2%).

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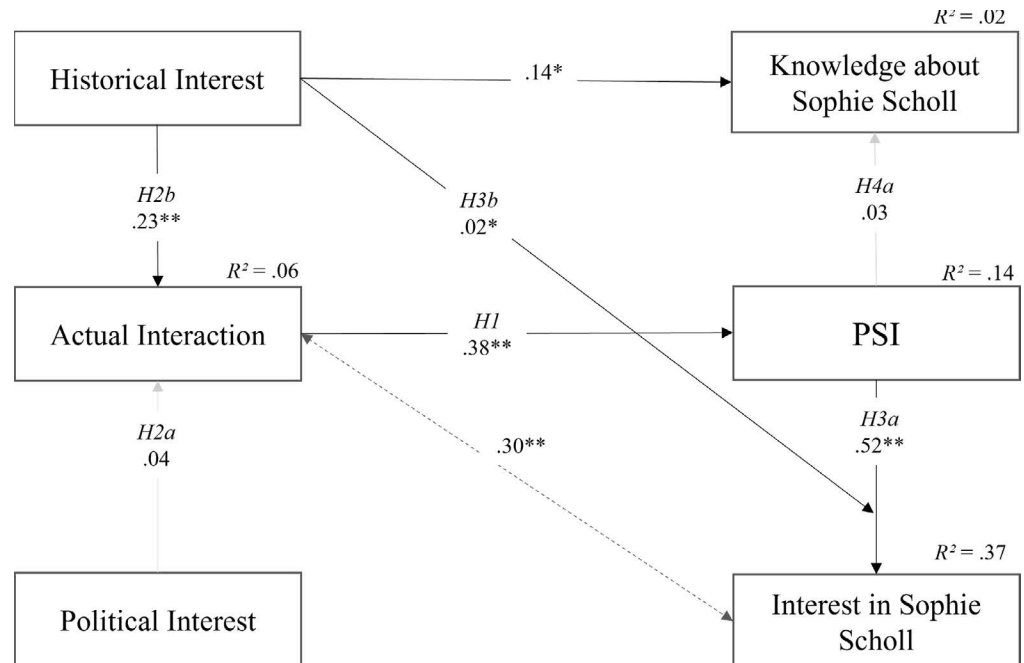
4 Results

4.1 Model Testing

To test the proposed model, including *H1–H5*, a path model was calculated using R-Studio (Version 4.2.0). According to the customary fit indices, the original model fit was insufficient: $\chi^2(10) = 29.03$, $p = .001$, $\chi^2/df = 0.98$, CFI = 0.90, TLI = 0.82, RMSEA = .09 (90% CI from .05 to .13), SRMR = .055 (Hu & Bentler, 1999). Therefore, we decided to exclude the self-developed historical consciousness questionnaire from the analysis and examine hypothesis five (*H5*) in a separate model. Furthermore, following the modification indices, an additional path between actual interaction and interest in Sophie Scholl was added, producing the following sufficient model fit: $\chi^2(6) = 4.38$, $p = .625$, $\chi^2/df = 0.99$, CFI = 1.0, TLI = 1.0, RMSEA = .00 (90% CI from .00 to .07), SRMR = .024 (Hu & Bentler, 1999; see Figure 4).

Regarding the first hypothesis, concerning the positive effect of follower interactivity on PSI (*H1*), the model demonstrated a medium positive significant effect ($\beta = .38$, $p < .001$), thus confirming our hypothesis. The second hypothesis, concerning the positive effects of political interest (*H2a*) and historical interest (*H2b*) on interactivity, was partly confirmed, with the model demonstrating a positive effect of historical interest on interactivity ($\beta = .23$, $p < .001$) but no effect of political interest on interactivity ($\beta = .04$, $p = .583$). As such, *H2a* was rejected and *H2b* was confirmed. Next, the analysis revealed positive effects for the impact of PSI on interest in Sophie Scholl ($\beta = .52$, $p < .001$) and the moderating role of historical interest ($\beta = .02$, $p = .022$) in the first relationship, confirming *H3a* and *H3b*. However, the fourth hypothesis — concerning the positive effect of PSI on knowledge about Sophie Scholl (*H4a*) and, again, the moderating role of historical interest (*H4b*) — was not confirmed. The model showed no significant effect for *H4a* ($\beta = .03$, $p = .665$) and, consequently, no significant effect for *H4b*. However, the direct effect of historical interest on knowledge about Sophie Scholl was positive and significant ($\beta = .14$, $p = .022$). Finally, the added path between interactivity and interest in Sophie Scholl demonstrated a significant positive effect ($\beta = .30$, $p < .001$), indicating a correlation between the two variables. The explained variances and beta values appear in Figure 4.

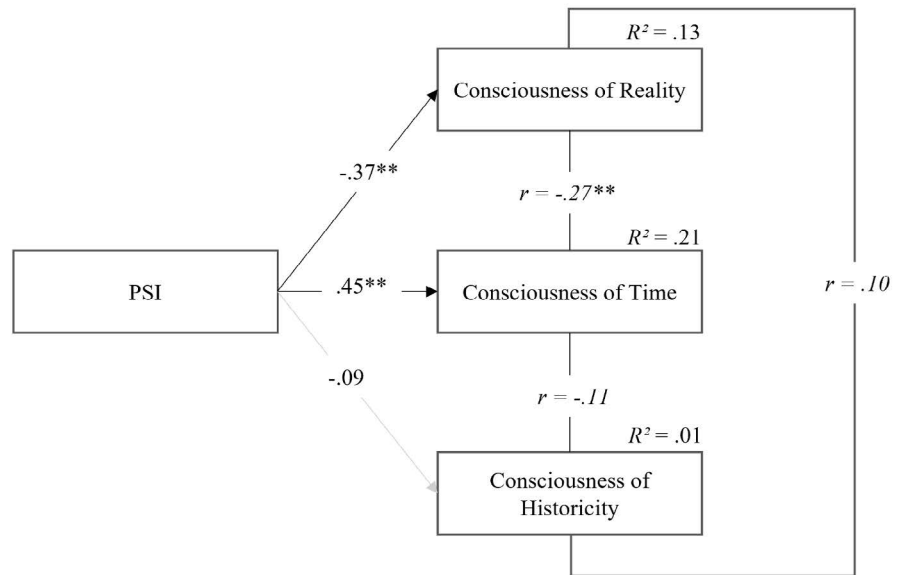
Figure 4: Explained Variances of the Dependent Variables: Interactivity, PSI, Interest in Sophie Scholl, Knowledge about Sophie Scholl, and Beta Values of the Effects



Note. Gray paths were non-significant. The dotted path is the path added to enhance the fit indices. * $p < .05$. ** $p < .001$.

To test the fifth hypothesis (*H5*), which suggests a negative effect of PSI on historical consciousness, a second path model was calculated featuring PSI as the independent variable and the three factors of the historical consciousness questionnaire (i.e., consciousness of reality, time, and historicity) as dependent variables. We decided to calculate a path model instead of multiple regressions to control for measurement errors, enabling us to gain more reliable estimations of the beta coefficients (Bollen, 1989). Due to the model construct (zero degrees of freedom), the model fit cannot be interpreted. Therefore, it is not provided here. The model revealed a significant negative effect of PSI on consciousness of reality ($\beta = -.37, p < .001$) and a significant positive effect of PSI on consciousness of time ($\beta = .45, p < .001$) but no significant effect of PSI on consciousness of historicity ($\beta = -.09, p = .214$). Thus, *H5* was partly confirmed. The explained variances, beta values, and correlations between the factors of historical consciousness appear in Figure 5.

Figure 5: Explained Variances, Beta Values, and Correlations Regarding the Hypothesis 5



Note. The gray path represents a non-significant path. * $p < .05$. ** $p < .001$.

4.2 Longitudinal Analysis

A repeated measures MANCOVA was conducted to test the longitudinal hypotheses, which suggest increased PSI, historical knowledge, interest in Sophie Scholl, and increased historical consciousness with increased engagement over time ($H6-H8$). The analysis was conducted using IBM SPSS (version 28.0.0.0).

As dependent variables, we included in the analysis PSI and the three measured factors of historical consciousness, interest in Sophie Scholl, and knowledge about Sophie Scholl. Due to the theoretical assumption that actual interaction affects the dependent measures, we included actual interaction ($t1$ and $t2$) as covariates in the analysis. The one-way repeated measures MANCOVA showed no statistically significant difference between the two measurement time points: $F(6, 76) = 2.37, p = .069, \eta^2 = .140, \text{Wilks' } \Lambda = .860$. As such, $H6$, $H7$, and $H8$ were rejected.

5 Discussion

The present study investigated whether PSI with a historical figure on Instagram affects different aspects of history education (i.e., historical consciousness, historical interest, and historical knowledge). The objective was to add empirical evidence to the discussion of whether such historical projects on social media can be considered historical learning devices. We focused on the mechanism of PSI by examining the role played by the actual interaction of followers on social media (e.g., commenting, viewing posts) in the experience of PSI with a historical figure (using the example of Sophie Scholl on Instagram: *@ichbinsophiescholl*). Furthermore, recognizing the lack of longitudinal studies on PSI, we addressed this research gap by investigating the longitudinal effects of PSI on different aspects of historical consciousness and examining whether PSI itself increases over time.

5.1 Follower Interactions and PSI

In line with previous investigations (e.g., Kyewski et al., 2018), the results reveal a positive association between followers' actual interaction with a historical figure on social media and PSI. Those followers who frequently interacted with Sophie Scholl on Instagram (e.g., liking, commenting, viewing posts/stories) experienced PSI to a greater extent. As such, the current study extends previous research by investigating PSI in the context of a historical figure on Instagram. Such social media accounts seemingly represent a special case: followers likely know that this person is already dead and that their life story has already been told. Even with that knowledge, followers tend to interact with the historical figure in various ways. For example, the results show not only that those followers who viewed stories and posts more often experienced a higher sense of PSI but also that engaging more actively by writing comments or private messages increased the experience of PSI. Furthermore, the descriptive insights into follower interaction behaviors indicate that participants were more likely to consume the presented historical media content (e.g., stories and posts) than interact in the form of private messages, comments, or giving likes. Moreover, the findings demonstrate that the relationship between interaction and PSI was independent of whether the historical figure responded to comments or private messages. As such, it appears that social media users do indeed experience so-called one-sided PSI with historical figures on social media.

Contrary to expectation, we observed no effect of political interest on followers' actual interaction with the historical figure on Instagram. Politically interested followers were not found to be more likely to interact with *Sophie Scholl*. These findings contradict previous studies reporting a relationship between political interest and political social media activity (Abdu et al., 2017; Macafee, 2013; Parmelee & Roman, 2019). However, because the Instagram

account did not show any recent political content, it might be perceived as historical rather than political. The main topic on the Instagram account was Sophie Scholl's private life, which we could not predict when the account was launched, instead assuming politics to be a central focus given that Sophie Scholl is known for her political activism during World War II (McIlroy, 2017). Moreover, although political topics were partly addressed (e.g., the Nazi regime), no current politics were included. This may have led to the perception of the account as mainly historical, rendering it not particularly interesting for those motivated to engage in current political topics. Additionally, the public might have perceived the Instagram account to be more historical than political due to the media campaigns of the producers (see SWR, 2021). Consequently, the historical interest of followers might have more impact than political interest on actual interaction with the account, a proposition proven by the significant positive effect of historical interest on actual interaction with the account. Furthermore, we observed that followers who indicated being interested in history in general interacted with the historical figure to a greater extent. These findings suggest that individual characteristics and interests are an important factor in users' social media interaction behavior.

5.2 Interest in the Historical Figure

When considering the educational impacts of PSI, aligning with expectations, we observed a positive relationship between PSI with the historical figure and interest in the historical figure. This seems logical given that the original definition of PSI describes how establishing a social connection with a media persona and regarding that persona as a friend leads to a feeling of knowing and identifying with the person, in turn suggesting an interest in the person and their environment (Horton & Wohl, 1956; Rubin & McHugh, 1987). PSI with *Sophie Scholl* promoted interest in the historical figure Sophie Scholl through the development of a social connection. The perception of Sophie Scholl as a role model may also exert an influence. That is, the emotional connection with the representation of Sophie Scholl, built through PSI, might lead followers to view her as a role model, in turn fostering interest in the historical figure (Brown & Basil, 2010; He et al., 2016). Overall, the current investigation supports the assumed causal relationship between PSI and interest in the media persona (Horton & Wohl, 1956; Rubin & McHugh, 1987).

Notably, many participants indicated that they started following the account because they were interested in Sophie Scholl and her life. Consequently, because we also found no significant differences in interest in Sophie Scholl in the long-term analysis, it cannot be concluded that following a historical figure over time supports interest in the historical topic. Rather, the results suggest that a combination of PSI, engagement, and personal interest in historical topics is critical. Furthermore, we found that followers' general interest in history affects

the relationship between PSI and interest in the historical figure, with a greater experience of PSI particularly associated with greater interest in the historical figure when followers recorded a generally high level of interest in history.

5.3 Historical Knowledge

Contrary to expectation, PSI with Sophie Scholl on Instagram did not increase knowledge about Sophie Scholl. These findings indicate that PSI, depending on the presentation mode, might be more likely to promote affective responses (e.g., interest) than cognitive responses (e.g., learning). Moreover, followers' knowledge about Sophie Scholl did not increase over time. There are several potential reasons for these findings. Although many studies have highlighted the educational potential of social media (e.g., Silfa, 2021), other researchers have suggested that (social) media may distract from learning, in turn negatively impacting the amount of information attained (Anderson & Dron, 2014; Parong & Mayer, 2021). However, the type of presentation and the information presented might be an important factor when focusing on the impact of social media representations on (historical) knowledge. As such, the fictional portrayal of historical figures on Instagram might be more likely to trigger emotional involvement, diminishing the boundaries between past and present (e.g., Brauer, 2016) and reducing the reflective, cognitive processing of the relevant historical information. Consequently, when historical information is presented more objectively on social media, other effects can be assumed, similar to the differences between historical films and documentaries.

5.4 Historical Consciousness

Our findings revealed that although PSI positively affects consciousness of time, it negatively impacts consciousness of reality and has no effect on consciousness of historicity. By contrast, when followers experienced PSI with Sophie Scholl, they were less likely to be able to distinguish between fiction and reality. This supports previous findings suggesting that PSI might make it harder for some people to distinguish between reality and fiction (Jarzyna, 2021). Our findings might be partially explained by the account's content, which mainly comprised modified images and videos featuring lookalikes of Sophie Scholl and her family and friends, with (almost) no indication that they were reenactments. This may have given followers the impression that the material represents reality, especially because most of the generally available content on Instagram is real and reflects the present day. Such blurring of the boundaries between fiction and reality may be further compounded by the fact that the presentation of historical figures on social media is a relatively new phenomenon. Furthermore, interacting with Sophie Scholl by, for example, reacting to her stories, commenting on and liking her posts, and messaging

her (and perhaps even receiving a reply) may make the historical figure seem more real due to the perceived interaction (Labrecque, 2014). This, in turn, might have a detrimental effect on the consciousness of reality.

Furthermore, the results showed that PSI positively influences consciousness of time, measured as the influence of Sophie Scholl and the account *@ichbinsophiescholl* on perceptions of the present and future. This contradicted our assumption that the blurred boundary between Sophie Scholl and her representation on Instagram would inhibit consciousness of time. A possible explanation for the perceived influence of the account might be found in followers' engagement with *@ichbinsophiescholl*. Seeing content and stories on their Instagram timelines and being confronted with posts might enhance perceptions of the account's influence on the present. Furthermore, the uniqueness of the account in the media landscape might prompt followers to understand that the account was launched because of Sophie Scholl's political actions, suggesting that her influence extends beyond the past and into the present and the future.

5.5 Longitudinal View of PSI

Contrary to our hypothesis, PSI did not change over time. That is, followers did not experience stronger PSI with Sophie Scholl after engaging with her over a longer period and consequently seeing her more often. These findings contradict the results of previous research observing an increase in PSI due to the frequency of seeing a character on screen (Kyewski et al., 2018). It is conceivable that the participants already knew the historical figure (e.g., from history classes in school or from movies) and therefore felt some kind of relationship with her independent of the Instagram content. Furthermore, followers may not necessarily have been exposed to more content over the course of the study period. Research has indicated that social media users do not notice all the content to which they are exposed in their social media feeds due to the information overload that is generally characteristic of social media and encouraged by the algorithms driving the platforms (Matthes et al., 2020). Moreover, the descriptive statistics regarding followers' actual interactions suggest that followers reported seeing fewer posts and stories of Sophie Scholl at the second measurement time point compared to the first. This may have hindered an increase in PSI.

5.6 Implications and Future Research

The present study has revealed that the experience of PSI with a historical figure on Instagram supports followers' topic-related historical interest, indicating that such historical projects on social media can promote interest in historical topics. However, the experience of PSI was not positively related to followers' knowledge about the historical figure and did not lead to increased knowledge about the historical figure over time. Nonetheless, given that previous findings suggest that interest motivates individuals to inform themselves about a specific topic (Rotgans & Schmidt, 2018), such projects may not lead directly to a knowledge gain, instead potentially representing a first step toward interest, which in turn increases the likelihood that they inform themselves about the historical topic. Therefore, in educational contexts (e.g., school), such approaches might usefully foster student interest in historical topics. Furthermore, our findings suggest that seeing historical content on social media, such as Instagram, increases interactivity and exchange, promoting further engagement with historical topics.

Additionally, the present findings have revealed that PSI with a historical figure on Instagram blurs the boundaries between reality and fiction. Followers who experienced PSI were more likely to believe that the historical Instagram account depicted reality. These findings highlight the importance of marking fictional content as such to avoid diminishing the seriousness of historical events (e.g., by indicating sources and providing additional information about the production process). Furthermore, the producers of such historical social media projects should be aware that when presentation modes promote PSI (e.g., by simulating eye contact), they also promote the non-reflective processing of historical information.

Finally, the findings suggest that the construct of historical consciousness is defined by different dimensions, as already theoretically assumed by Pandel (1987). We have empirically demonstrated that consciousness of time and consciousness of reality, as subdimensions of historical consciousness, are affected by media representations.

Because social media also allows the development of relationships with (media) personas over time, future research should also examine the effects of developing a (parasocial) relationship with a historical figure via social media. This may be of substantial interest because individuals tend to trust people to whom they feel close (e.g., Papadopoulou et al., 2001), potentially encouraging them to perceive (historical) information as more trustworthy.

5.7 Limitations

This research features several notable limitations. First, it should be acknowledged that the longitudinal analyses were based on a relatively small number of participants, and the sample size may only have been sufficient to detect small to medium effects. Future studies should endeavor to include larger sample sizes in longitudinal investigations. Furthermore, the sample is not representative of the general population. It mainly comprised female, highly educated participants, negatively affecting the generalizability of the results. Nonetheless, the present sample can be perceived as representative of the followers of the historical Instagram account on which we focused. The study was further limited by beginning six weeks after the Instagram account was launched, which might have negatively impacted the results of PSI over time, due to an initial connection already having been established between Sophie Scholl and her followers.

To assess knowledge, we used several items addressing specific knowledge about Sophie Scholl. This might not have provided a comprehensive understanding of the knowledge followers might have gained by following the historical Instagram account (e.g., knowledge about World War II, the Nazi regime, or the German population's situation during World War II). Furthermore, we could not ensure that participants did not find answers online when responding to the online questionnaire. Future research should consider using other measures to assess followers' knowledge. Similarly, the quantitative assessment of historical consciousness might be considered insufficiently complex for accessing such a complex construct. Therefore, future research should consider additional assessments, such as qualitative assessments based on recipient responses (e.g., Lewers & Frentzel-Beyme, 2023). Furthermore, we assessed PSI with the historical figure on Instagram via items that used the name of the Instagram account (*ichbinsophiescholl*) instead of the name Sophie Scholl. This might have affected reflection processes, including awareness of the fictionality of the account. Meanwhile, in addition to user interest in historical topics, other personal characteristics (e.g., users' general social media interaction behavior) may influence PSI and the dependent variables examined in this study. Therefore, future research should consider the impact of individual factors. Finally, it should be emphasized again that the original definition of PSI assumes a one-sided interaction. Therefore, the implications of PSI for the contexts of other media should be treated with caution because this study has only considered one-and-a-half-sided PSI in the social media context.

6 Conclusion

The present study contributes to the understanding of PSI with historical figures on social media and its educational effects from a longitudinal perspective. We found that followers' actual interaction on social media (e.g., liking and commenting) related positively to the experience of one-and-a-half-sided PSI, supported by their pre-existing general interest in history. PSI with a historical figure on Instagram has been observed to positively relate to interest in historical figures and consciousness of time but negatively relate to consciousness of reality — that is, awareness of the fictional nature of the social media content. The longitudinal perspective did not reveal any increase in PSI and historical knowledge. In sum, our findings indicate that PSI with a historical figure on Instagram can enhance followers' historical interest and understanding of aspects of historical consciousness, but caution is advised to avoid diminishing audience perceptions of the boundaries between reality and fiction.

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