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Augmented reality marketing and consumer–brand relationships: How closeness drives brand love

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Abstract

Marketers use augmented reality (AR) to place virtual brand-related information into a consumer's physical context. Grounded in the literature on AR, brand love, metaphor theory, and closeness as interpreted by the neural theory of language, the authors theorize that branded AR content can reduce the perceived physical, spatial distance between a consumer and a brand. This perceived closeness subsequently drives the closeness of the emotional relationship in the form of brand love. Two empirical studies validate this framework. Study 1 shows that using an AR app (vs. non-AR) increases the perceived physical closeness of the brand, which in turn drives brand love (i.e., relationship closeness). Study 2 replicates this finding in a pre-/post-use design. Here, high levels of local presence (i.e., the extent to which consumers perceive a brand as actually being present in their physical environment) drive perceived physical closeness, which leads to brand love. We also find that AR's power to generate brand love increases when the consumer is already familiar with the brand. We discuss managerial implications for AR marketing today and in a metaverse future in which AR content might be prevalent in consumers' everyday perceptions of the real world.

KEYWORDS
augmented reality, brand love, closeness, consumer–brand relationships, metaphor, metaverse, spatial computing, spatial distance

1 | INTRODUCTION

When consumers use augmented reality (AR), they have a hybrid experience consisting of the real physical environment around them and virtual objects that appear to have been placed within that world (Flaviàn et al., 2019; Peddie, 2017). The main distinctive factor between AR and other digital presentation formats is contextual embedding (von der Au et al., 2023), which means that the virtual content is integrated into the user's physical environment

(Rauschnabel, Felix, et al., 2022). For instance, Pokémon Go users perceive virtual creatures sitting on their streets, IKEA Place users explore virtual couches in their living rooms, and car enthusiasts can experience virtual cars as if the vehicles were in their driveways using the Mercedes Benz cAR app.

The growing importance of AR marketing has been reflected in an increase in academic publications. However, as recent bibliographic analyses by Du et al. (2022), Jayaswal and Parida (2023), and Kumar (2022) reveal, only a few studies have tackled issues in brand

management. Such studies typically focus on how AR can drive cognitive brand attitudes (e.g., Gatter et al., 2022; Zanger et al., 2022) or brand engagement and advocacy (Kumar et al., 2023b). What has not been sufficiently considered in relation to AR marketing is the potential to enhance brand love or other aspects of consumer–brand relationships (Scholz & Duffy, 2018). The present research is among the first to establish a link between AR marketing and brand love.

Brand love is a concept of high managerial and theoretical interest. Theoretically, brand love is a specific form of consumer–brand relationship with unique characteristics. As a complex, multidimensional construct (Batra et al., 2012), it shares similarities with interpersonal relationships (Ahuvia, 2022). Research has also established a strong link between brand love and various variables on which marketers tend to focus, such as increased loyalty and advocacy, intensified consumer–brand relationships, decreased price sensitivity and long-term profitability (e.g., Khamitov et al., 2019; Nguyen & Feng, 2021). Thus, it is not surprising that managers have a keen interest in finding ways to create and manage brand love. However, in contrast to attitude-based measures (e.g., brand liking), brand love is predominantly influenced by more *experiential* variables rather than (solely) by more utilitarian factors such as product quality or price.

Because brand experiences play a fundamental role in building brand love (Joshi & Garg, 2021), AR may have the power to positively impact brand love. To test this assumption, we develop a framework by incorporating findings from the AR marketing discipline, metaphor theory (Ahuvia & Adelman, 1993; Thibodeau et al., 2019), and the neural theory of language (Lakoff, 1993). More specifically, we theorize that experiencing branded AR content in one's physical environment increases the level of perceived physical closeness between a consumer and a brand (i.e., the feeling that a brand is actually physically close to them), which subsequently increases a consumer's sense of being emotionally close to the product, thus boosting brand love.

We tested our framework in two complementary empirical studies. Study 1 used an experimental design in which consumers experienced an automotive marketing app either in AR or not. Study 2 is based on a survey design in which all respondents used a makeup app. Rather than manipulating the use of AR versus non-AR, respondents evaluated the level of "local presence" (in other words, how convincing and realistic the AR effect was; Rauschnabel, Felix, et al., 2022). In both studies, we reveal AR's ability to increase perceived physical closeness (i.e., spatial distance) between a consumer and a brand. In Study 1, we show that respondents in the AR group perceive the brand as actually being closer to them as respondents in the non-AR group; in Study 2, we show that AR's effect is based on the quality of the contextual embedding (i.e., the perceived local presence). Furthermore, both studies reveal that perceived physical closeness drives brand love, even when controlling for prior levels of brand love (measured several days before the AR use).

Our results contribute to the literature streams on AR and branding by establishing a connection between AR and brand love. We identify a new mechanism and demonstrate how AR enhances

brand love by first, enhancing the perceived physical closeness to the brand, and second, enhancing emotional closeness, which is a core component of brand love. Our findings also provide important practical implications. Because branding is a core objective of AR marketing in many firms (Rauschnabel, Babin, et al., 2022), insights into how AR might increase brand love can potentially have a significant influence on marketing practice.

The remainder of this article is structured as follows: We first introduce the central concepts of AR and brand love and discuss them in light of prior research. Second, we develop a theoretical framework and hypotheses. Next, we present two complementary empirical studies that tested the proposed framework. Finally, we discuss our findings and outline the contributions to research, the implications for practitioners, and avenues for future research.

2 | THEORY AND PRIOR RESEARCH

2.1 | Augmented reality

Although not uniformly defined, in general, AR integrates virtual content into a consumer's perception of the real world using digital technology, such as a smartphone, tablet, or AR glasses (Flavián et al., 2019; Rauschnabel, Felix, et al., 2022). Unlike virtual reality (VR), in which consumers are isolated from the real world and immersed in a purely virtual environment, in AR, consumers still perceive their physical surroundings (Hilken et al., 2022). Thus, AR enables the coexistence of both realities—the real and virtual (i.e., physical and digital)—in the same space (Ibáñez-Sánchez et al., 2022), allowing hybrid "phygital" experiences (Rauschnabel, Babin, et al., 2022). For example, as illustrated in Figure 1, a virtual car is placed on a consumer's physical driveway. Consequently, the most important feature of AR is contextual embedding (von der Au et al., 2023)—in other words, the fusion of virtual content with a physical context (Flavián et al., 2019; Hilken et al., 2022; Peddie, 2017; Rauschnabel, Felix, et al., 2022).

2.1.1 | Contextual embedding and the role of local presence

The concept of local presence (Verhagen et al., 2014; Vonkeman et al., 2017) is defined as the extent to which a person using AR (or similar) technology experiences digital objects that have been inserted into their visual field as "actually being there" (Vonkeman et al., 2017, p. 2). In a simplistic AR app, the inserted object may seem obviously fake or disconnected from the real objects in the image, leading the user to experience the inserted object as having a low level of local presence. However, the quality of the AR app is just one of several influences on the degree of local presence experienced by the user. Rauschnabel, Felix, et al. (2022) proposed the xReality framework, which states that AR experiences can be positioned on a continuum of local presence, ranging from assisted reality (low) to mixed reality
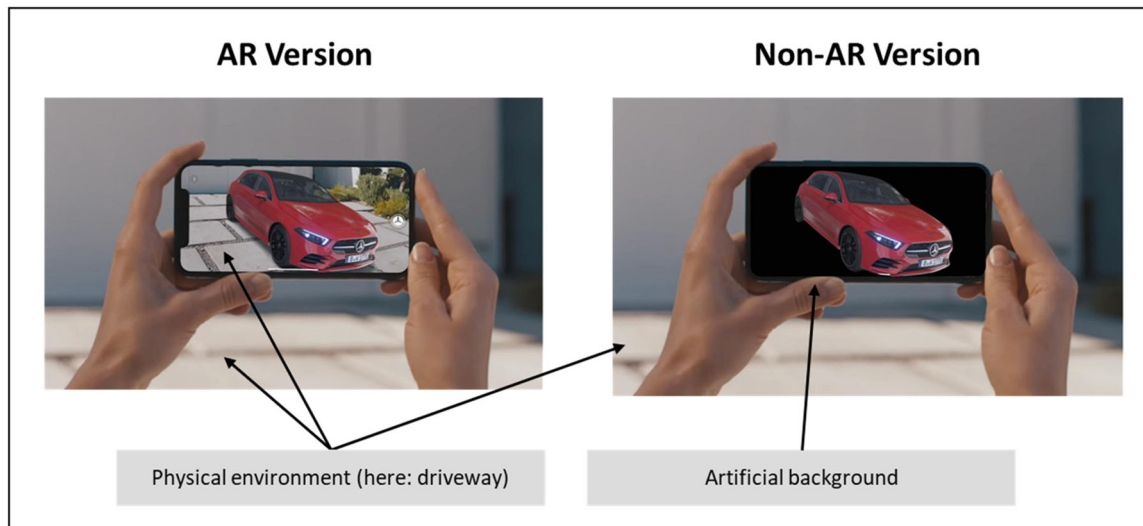
FIGURE 1 Principles of the Mercedes cAR app (sketched as used in Study 1).

(high). Pure text content or simple 2D graphics are usually perceived as artificial and represent a low level of local presence. In contrast, at the highest level of local presence, virtual content can be so realistic (Chen & Lin, 2022; Chen et al., 2022) that it is indistinguishable from real physical objects (Dwivedi et al., 2022), thus allowing for "deeper experiences" (Spangenberger et al., 2022, p. 246). Because not all AR experiences are equally compelling or realistic, local presence is central to AR research (von der Au et al., 2023; Chen & Lin, 2022; Daassi & Debbabi, 2021; Rauschnabel, Babin, et al., 2022; Schein, 2022; Smink et al., 2020).

2.1.2 | Augmented reality marketing and brand management

Common AR marketing objectives include *branding*, *inspiring*, *convincing*, and *keeping*, as stated in the BICK FOUR framework (Rauschnabel, Babin, et al., 2022). Most AR marketing articles have focused on the later stages of the customer journey, such as purchase intentions, product evaluations, or willingness to pay (Du et al., 2022; Kumar, 2022; Kumar et al., 2023a). However, surveys of managers indicate that today's AR marketing practices usually target consumers in the early stages of the customer journey and involve goals such as building stronger brands (e.g., Boston Consulting Group, 2018; Rauschnabel, Babin, et al., 2022). The studies on AR and branding that are most closely related to the present research are shown in Table 1. For example, Zanger et al. (2022) and Rauschnabel et al. (2019) showed that AR can trigger inspirational thinking, which has a positive impact on brand attitude. Javornik (2016) found that AR can lead to flow experiences, which in turn determine brand evaluation. Scholz and Duffy (2018) conducted an ethnographic study and found that engaging with a brand in one's own personal areas can foster an intimate relationship with it.

Past research on AR in consumer marketing has often focused on brand attitude. Brand attitude was a logical place to start research on AR in marketing because attitude measures capture positive and negative evaluations from a wide range of sources. Now that AR's ability to impact brand attitude has been established, it is an appropriate next step to look at other dependent variables that are of theoretical and managerial interest. Brand love includes having a positive attitude toward a favored brand but also includes other psychological features that increase its impact on a consumer's behavior. Furthermore, brand love—and other forms of consumer–brand relationships—tend to be better predictors of various managerially relevant outcome variables than attitude-based measures (Batra et al., 2012; Khamitov et al., 2019; Park et al., 2010). These findings also highlight the need for such insights from a managerial perspective.

2.2 | Metaphor theory

While metaphors were once seen principally as a stylistic flourish used by authors and poets, they are now recognized as a fundamental tool that underlies much of our everyday thinking (Lakoff & Johnson, 2013; Thibodeau et al., 2019). To review the basics of metaphor theory, we will use the example of social relationships as being "close" or "distant." Metaphors have a *source domain* (in this case, the spatial distance between objects in the physical world) and a *target domain* (social relationships). Metaphors work by *mapping* some aspects of the source domain onto the target domain, so in this example, a relationship between two individuals, like the placement of two objects, is seen as being either close together or far apart. The source domain is usually something—such as the space between objects—that is clear and concrete. The target domain is usually something, such as social relationships, that is harder to understand because it is abstract and complex. Metaphors allow the brain to

TABLE 1 Augmented reality marketing and branding: Prior research.

Study	Objective	Core brand construct	Methodology	Core findings
Javornik (2016)	Understand how perceived augmentation drives flow and affective, cognitive, and behavioral responses and intentions	Brand attitude (post usage)	Regression analyses (N = 60)	Augmentation drives flow, which leads to higher levels of brand attitude (mediation)
Scholz and Duffy (2018)	Understand how consumers use branded apps in their intimate spaces and this creates relationships with the brand	N/A	Qualitative research (ethnographic)	Engaging with AR can lead to close and intimate relationships
Rauschnabel et al. (2019)	Understand the role of inspiration and AR app attitudes in shaping brand evaluations	Brand attitude (pre-post comparison)	Survey data (N = 201), SEM	Inspiration (but not attitude toward the brand) drives brand attitude, while controlling for prior brand attitudes
Javornik et al. (2021)	Understand the deployment of AR by luxury brands from a company perspective	N/A	Qualitative interviews (N = 17) brand managers of luxury brands and AR experts	Luxury brands apply AR marketing to build specific luxury attributes
Zanger et al. (2022)	Understand how AR triggers affective responses, which subsequently determine cognitive and behavioral consequences	Brand attitude (post usage while controlling for prior brand attitudes)	Experimental data (N = 231 and N = 251), SEM	AR leads to higher levels of inspiration, which subsequently drives brand attitude, while controlling for prior brand attitudes
Kumar et al. (2023b)	Understand how AR can foster customer brand advocacy	Customer brand advocacy	Survey data (SEM) (N = 502)	High levels of AR brand experience can lead to customer brand advocacy through brand attachment and engagement.
This study	Understand perceived closeness as a mechanism to drive brand love on AR	Brand love	Two studies (N = 155, cars; N = 173, make-up), SEM	AR leads to consumers' perceptions that a brand is actually close to them in their physical environment; this, in turn, drives brand love

process abstract concepts by thinking about them in more concrete and familiar ways; for example, the huge number of nuanced feelings, beliefs, and behavioral dispositions that compose a complex social relationship are summarized in an easy-to-understand metaphor of a relationship being either close or distant.

Remarkably, many common metaphors are widely shared across cultures. These similar metaphors are believed to arise in many different cultures because they are based on the observation that, for example, pairs of things frequently interact in ways that are stable across cultures (Lakoff & Johnson, 2013). For example, when you add water to a bowl, the water level goes *up*, and when you add more stones to a pile, the height of the pile goes *up*. Thus, in many cultures, height becomes a general metaphor for quantity, such as when we say "her income went up," even though the amount of her paycheck is not directly related to height (Lakoff, 1993). Seeing social relationships as "close" is another such common metaphor. Research on what makes a relationship "close" has found that people in close relationships tend to spend a great deal of time together engaging in a wide range of activities (Berscheid et al., 1989). It is plausible that the reason relationships are seen as being

"close" or "distant" is that people in metaphorically close relationships are often physically close to each other.

The relevance of this "closeness" metaphor has previously been noted in the marketing literature. Fournier and Alvarez (2013) measured the closeness of a person–brand relationship by showing participants an image on a computer screen of a person sitting on a park bench. The participants were told to imagine that they were the person on the bench and were asked to place the logo for a brand on the same bench. The researchers found that participants who felt they had a close relationship with the brand placed the brand logo close to the person on the bench.

One of the most important changes in our understanding of metaphor has been the development of the neural theory of language, which applies brain science to linguistics (Feldman, 2008). Metaphor, in particular, has been found to easily map onto how the brain processes language (Lakoff, 1993). Although a review of the neuroscience of metaphor is beyond the scope of this paper, it is worth noting that regardless of whether we are talking about an object that is close to us or a friend with whom we feel close, the word "close" will activate "the

same node in the same frame circuitry" in the brain (Lakoff, 1993, p. 14). One outcome of this is that hearing the phrase "she *grasped* the idea" activates the region of the brain associated with hand motor movement (Boulenger et al., 2012). If a word used metaphorically activates the same node or localized area associated with its source meaning, one would expect that feelings and beliefs connected with that source could also become activated (and thus become associated with the metaphor's target). Although neurolinguists study many different metaphors, it is fortuitous for our purposes that several studies have looked specifically at using spatial distance as a metaphor to describe social relationships between individuals and groups. For instance, Kerkman et al. (2004) asked Americans about their attitudes toward Mexicans and Canadians and also asked how far away major cities in Mexico and Canada were. The more negative people's attitudes were toward each nationality, the further away they estimated their cities to be. In another study, Matthews and Matlock (2011) gave participants a map showing their starting point, destination, and the position of some other people in cars along the way. They told half of the participants that the people in the other cars were friends of theirs, and they told the other participants that the people in the other cars were strangers. They then asked the participants to draw the route they expected a taxi would take from the start to reach their destination. When participants thought the other cars contained their friends, they imagined that the taxi driver would drive closer to those other cars than did the participants who imagined those cars contained strangers. In a similar way, there may be a link between how close a person perceives a product to be from them and how emotionally close they feel toward that product.

2.3 | Brand love

Brand love is simply love when the object of that love is a brand, product, or service (Ahuvia, 2022). As the brand love literature developed beyond its initial stages (Ahuvia, 1992, 2005; Albert et al., 2008; Carroll & Ahuvia, 2006), brand love has been shown to be a complex hierarchical construct with six main dimensions: consumers (1) have a positive attitude toward the things they love, (2) behave passionately toward them, (3) feel a positive emotional connection with them, (4) usually have a long-term relationship with them, (5) integrate the things they love with their identity, and (6) feel that if the love object were to go away, it would be terrible (Bagozzi et al., 2016; Batra et al., 2012). This description of brand love has emerged from research that looked holistically at consumers' love for brands as well as the products and services from those brands that had touched their lives (Ahuvia, 2005; Batra et al., 2012). This six-dimensional description of brand love also includes both brand passion (Albert et al., 2013) and gentler forms of brand love.

There are important commonalities and differences between brand love and interpersonal love. Watanuki and Akama (2020) conducted a meta-analysis of neuroscience studies on the differences among brand love, romantic love, and parental love. They found that all three types are associated with positive emotions (Maxian et al., 2013; Schmid & Huber, 2019). Likewise, all three types of love strongly activate parts of the brain associated with the self. This strong neurological connection between love and one's self-concept supports work on both interpersonal love (Aron & Aron, 1996; Aron & Tomlinson, 2018; Branand et al., 2019; Fromm, 1956; Sprecher & Fehr, 2010) and brand love (Ahuvia, 2005; Ahuvia et al., 2009, 2022; Albert et al., 2013; Huang, 2019; Reimann & Aron, 2009), which finds that a primary psychological mechanism underlying love occurs when a person integrates a love object into their self-concept. However, Watanuki and Akama (2020) also found differences between interpersonal love and brand love. Compared with parental love, brand love creates a stronger activation in the parts of the brain used to judge quality, suggesting that brand love is more dependent than parental love on the person making positive judgments about the love object. The levels of passion, longing, and craving were also found to be far higher in romantic love than in brand love. This suggests that while passion for a brand can be powerful (Albert et al., 2013), brand passion is nonetheless far less powerful than the passion individuals feel for romantic partners.

Past research has demonstrated the managerial importance of brand love. Brand love is positively associated with brand trust (Kaufmann et al., 2016), skepticism about negative brand information (Batra et al., 2012), positive word of mouth (Batra et al., 2012), willingness to pay a price premium (Bagozzi et al., 2016), brand forgiveness (Hegner et al., 2017), commitment to a brand community (Kaufmann et al., 2016), and willingness to engage in brand co-creation (Kaufmann et al., 2016). Perhaps most significantly, a meta-analysis of research on predictors of brand loyalty concluded that love and attachment are the predictors that "are most strongly linked to customer brand loyalty" (Khamitov et al., 2019, p. 450).

Due to brand love's managerial importance and theoretical interest, many studies have investigated its antecedents (for an extended discussion, see Ahuvia, 2022). Consumers have been found to love brands when they perceive them to be high quality and prestigious (Bairrada et al., 2018), highly involved (Bügel et al., 2011), identity expressive (Ahuvia, 2005, 2022; Carroll & Ahuvia, 2006), innovative (Bairrada et al., 2018), unique (Bicakcioglu et al., 2016), hedonic (Sarkar, 2014), sensual and mysterious (Rodrigues & Rodrigues, 2019), credible (Bairrada et al., 2018), caring (Bairrada et al., 2018), anthropomorphic (Ahuvia, 2022; Rauschnabel & Ahuvia, 2014), and communal or social in nature (Ahuvia, 2022). We aim to build on this growing literature by showing that perceived physical closeness can also function as an antecedent of brand love.

3 | HYPOTHESIS DEVELOPMENT: AUGMENTED REALITY, CLOSENESS, AND BRAND LOVE

3.1 | Augmented reality and perceived physical closeness

We argue that when using an AR marketing tool, such as the Mercedes cAR app (as shown in Figure 1), consumers experience the

the product or brand as being physically closer to themselves than they would if they were looking at the product with a conventional app. While there is no AR research on closeness at the brand level, a few studies have looked at similar concepts in XR from different theoretical angles. For instance, Finken et al. (2021) showed that viewing products in AR increases psychological proximity to those products. That is, products viewed in AR (vs. controls) feel closer to consumers, which in turn positively affects psychological ownership and subsequent consumer reactions. A recent study furthermore showed that meetings in VR made people feel closer to other members in these meetings compared to traditional video conferencing (Aliman et al., 2023; Sostmann & Dalton, 2023).

There are two reasons for hypothesizing AR's influence on closeness perceptions of a brand: setting and local presence. Setting refers to the background against which an advertised product is placed. In Figure 1, the setting for the car is the consumer's driveway. Depending on the particular AR marketing tool and how it is used, the exact distance between the user and the inserted image will vary. For example, in Figure 1, the car image is positioned directly in front of the consumer, but it might also have been positioned across the street from the consumer. That said, because most of today's AR devices use cameras to capture the consumer's immediate surroundings and place the product in those surroundings, the product will always be placed close enough for the consumer to see it. In contrast, the settings for typical car ads are situations such as winding country roads or well-designed dealer showrooms—all of which are typically experienced by the consumer as outside of their current location. Even if the product is depicted against a blank (presumably neutral) background, it is still not in the same location as the consumer. This difference in the product's setting will lead a person using AR to feel physically closer to the product than they would when viewing a conventional app for the product.

The idea that consumers will perceive a product or brand logo as close to them when it is presented as being in their immediate physical environment is not only very intuitive, it can also be supported by theory. When the background for a product image is the user's physical environment, consumers process the product and brand together with the other objects around them, such as furniture, buildings, or trees, that happen to be nearby. When these stimuli are processed together, information integration theory suggests that the assessments of these stimuli converge (Anderson, 1981). Because people know that their furniture and other things depicted in the AR image are, in fact, close to them, it is likely that they adjust the closeness assessment of the product presented alongside those elements. In addition, due to the importance of contextual cues for consumer evaluation processes (e.g., von der Au et al., 2023; Meyers-Levy & Tybout, 1997; Pfaff & Spann, 2023), we argue that the common processing of cues in the physical context (e.g., driveway and garage) with the virtual content (e.g., a branded car) leads to a coherent hybrid experience (Rauschnabel, Felix, et al., 2022). In other words, consumers tend to look *through their screen* in AR into their actual, local physical environment (as if it were a window rather than a projected image).

In contrast, when looking at conventional branded content on a smartphone or tablet, consumers experience the content *on their screen* (rather than metaphorically looking through it). Thus, unlike in AR, contextual cues of the environment are not part of the experience. In non-AR settings, it is therefore unlikely that consumers will perceive the product or brand logo as "being here." Thus, we proposed the following:

H1a. Seeing a product or brand through AR (vs. non-AR) will increase its perceived physical closeness.

We have just explained that when comparing AR content to conventional digital content, the objects in AR will feel closer to the consumer than they will in the conventional image, but not all AR apps are created equally. When comparing two AR images, the quality of the AR implementation can also impact the consumer's sense that the product is physically close to them. This can occur when the two AR apps differ in their degree of "local presence" (Chen & Lin, 2022; Chen et al., 2022; Rauschnabel, Felix, et al., 2022). In addition, people differ in how they perceive AR content and the extent to which they tolerate when the AR experience does not feel sufficiently real. Against this background, local presence reflects the extent to which users feel that the inserted AR object is realistically integrated into their real-world environment. Put differently, it reflects the perceived quality (or *convincingness* or *intensity*) of the AR experience. To clarify the difference between local presence and perceived physical closeness, consider two different AR experiences. In the first experience, an app creates the image of a car resting on the palm of somebody's hand, but the individual feels that the image is not convincing. In a second experience, an AR app is better designed and creates a more convincing impression that a car is parked on the other side of the street. In the first experience, the consumer will score the perceived physical closeness higher because the car is depicted as being in the palm of their hand rather than across the street (i.e., lower spatial distance). However, in the first experience, the consumer will score local presence as lower because the image appears less realistic and convincing than in the second experience.

Although local presence and perceived physical closeness are different, they are interlinked. We argue that when comparing two AR experiences, higher levels of local presence lead to higher levels of perceived physical closeness. Why would this be the case? AR enables the coexistence of two realities—physical and digital—in the same space (Azuma, 1997). As a result, using AR presents the brain with conflicting information. When the user focuses on the AR device, the product appears to be right there, near the consumer. However, when the consumer's eyes stray from the device, it is clear that the object is not present. This leads to the subjective experience of the object being "sort of there." Unlike conventional reality, where objects are either present or not, in AR, an object's "sort of" presence is a matter of degree. (This is reflected in the measurement items of local presence, such as "Everything I saw in the display appeared to be real.").

An analogy can be drawn from research on anthropomorphism. One might think that people categorize things as either a human or object. However, research shows that we categorize human-like objects (e.g., talking products or cars in which the front of the car resembles a human face) as being partway along a continuum from person to object (Touré-Tillery & McGill, 2015), depending on the extent and convincingness of the human-like attributes. Similarly, Gong (2008) found that a computer's anthropomorphic qualities are a matter of degree, and that people treat a computer in more human-like ways, the more anthropomorphic qualities it has. Following this pattern, we expect that consumers will see virtual objects in AR as being partly here, and the more local presence the consumer experiences an object as having, the more "here" they will feel it to be. Thus, when virtual AR objects have high levels of local presence, consumers will experience them as physically present and close. In contrast, objects with low levels of local presence will be seen as "not really here," causing more distant perceptions.

This is quite different from the issue of the setting in which a virtual object is embedded. With the setting, a virtual object depicted as being one meter away will naturally be seen as closer than a virtual object depicted as being three meters away. However, with regard to local presence, the issue is not that the object is perceived to occupy a physical space that is further away; rather, it is that the object ceases to be seen as an integral part of the environment. An object that is experienced as "really existing" one meter away will be perceived as closer than an object that is seen as "somewhat existing" at the same distance. Thus, we proposed the following:

H1b. The perceived level of local presence will be positively related to the perceived physical closeness of a brand.

3.2 | Physical closeness, relationship closeness, and brand love

As discussed above, past research has shown the power of metaphors in influencing behavior (Thibodeau et al., 2019). The notion of a *close relationship* relies on the application of a spatial metaphor to the relational domain. We theorize that through metaphoric thinking, when consumers perceive a brand to be physically close to them, they will also see themselves as having a close relationship to that brand—as described above with regard to metaphor theory.

In addition, we argue that consumers will be affected by a propinquity effect (Festinger et al., 1950), which, in essence, describes the phenomenon in which people tend to form close relationships with other people who are physically close to them. The term "propinquity" means nearness in space (Cambridge Dictionary, 2023). It has often been used to explain the formation of relationships in work environments and workplace interactions. A study among teachers, for example, has shown that, in addition to similarity, the mere physical closeness of their classrooms was positively related to their emotional attachment with each other (Reagans, 2011).

Although the idea that closeness (i.e., low spatial distance) increases liking and fosters relationships in an interpersonal context was initially presented decades ago (Festinger et al., 1950; Nahemow & Lawton, 1975), unambiguous causal evidence has been presented more recently. Shin et al. (2019) showed that spatial distance has a direct effect on how much individuals react with an approach reaction, such as liking, toward a target object. The propinquity effect is related to the mere exposure effect, which posits that people tend to develop a preference for things or individuals to which they are frequently exposed (Fang et al., 2007). For the present research, the propinquity effect provides further support for the notion that perceived physical closeness enhances emotional closeness and relationship closeness with a brand.

To test this theory, we needed to measure both perceived physical closeness and the relationship closeness between a person and a brand. This presented a practical difficulty because if we asked about both physical closeness and relationship closeness, the fact that both measures used the word "closeness" may lead to hypothesis guessing and other biases that would weaken the validity of the results. It was advantageous, then, to use a measure of relationship closeness that approached the underlying construct without specifically using the word "closeness." The brand love measure put forward by Bagozzi et al. (2016) could function as such a measure of closeness because love and relationship closeness have such a high degree of overlap that they are, as normally studied and measured, two different terms for the same concept. Empirically, in their classic papers, Aron et al. (1992) presented a theory of relationship closeness identical to their widely used theory of love. Later, Aron and Fraley (1999) created a scale that is used both as a measure of interpersonal closeness and love. Thus, because perceived physical closeness strengthens relationship closeness and relationship closeness is a form of brand love, we arrived at the following hypothesis, which we test in Study 1 and replicate in Study 2:

H2. The perceived physical closeness of a brand will be positively related to relationship closeness as measured through brand love.

3.3 | The moderating role of brand familiarity

Brand familiarity has been defined as the degree to which a consumer has had a set of direct and indirect experiences with a brand (Alba & Hutchinson, 1987). Consumers with stronger brand familiarity have more and stronger mental associations with a brand (Fazio, 1986; Keller, 1993; Simonin & Ruth, 1998). We argue that brand familiarity moderates the effect of local presence on the perceived physical closeness of a brand, as described in H1b and tested in Study 2, such that the effect will be stronger at higher levels of consumer brand familiarity.

Several arguments support this proposition. First, the mere sense of familiarity can create a mild positive feeling, which is something people typically accept rather than avoid (Jones et al., 2011; Zajonc &

Markus, 1982). As outlined above, the objective or physical degree of closeness between the consumer and the app does not vary. Nonetheless, we argue that from a participant's perspective, they will accept a brand more when they are familiar with it and hence experience it as closer. In addition, it has been argued in the literature that the positive affective value of familiarity is based on its ability to signal the harmlessness of a situation (Winkielman & Cacioppo, 2001). In contrast, when people have the impression that a stimulus is unfamiliar, perceptions of higher risk occur, and people tend to keep their distance (Song & Schwarz, 2009). Linking these considerations back to the research question, we argue that when assessing perceived physical closeness after an AR intervention, this perception will be enhanced as people will desire, or at least accept, more closeness compared with when confronted with a completely unfamiliar object.

In addition, we can provide a cognitive explanation for the moderating role of familiarity. Existing knowledge of past experiences becomes activated when an individual is involved in a realistic AR intervention, which makes the whole experience more meaningful and more easily memorable (Keller, 1993, 2003). In turn, when evaluating perceived brand closeness, it is likely that consumers will perceive it at a higher level when the brand possesses meaning from their perspective. Thus, we proposed the following:

H3. Familiarity will moderate the effect of local presence on perceived physical closeness (**H1b**) in a way that the effect will be stronger (vs. weaker) when consumers have higher (vs. lower) levels of brand familiarity.

To close the theoretical considerations, we briefly summarize our assumptions and hypotheses and present an illustration of our framework (see Figure 2). When consumers use AR technology, its embedding capabilities increase the consumer's perceived physical closeness to the brand (H1). This effect may be stimulated by the mere use of the AR (i.e., compared with an app usage situation without AR features), which is tested in Study 1 with H1a, or by the perceived quality of the impression that the AR technology is really placing the brand in the consumer's environment (i.e., "local presence"; Study 2, H1b). We further theorize that perceived physical closeness drives relationship closeness in the form of brand love (H2). In addition, we assume that the strengths of the effects will differ based on the level of brand familiarity (H3), because this will determine the strength of the brand associations a consumer can generate based on the knowledge they have stored in their memories.

4 | STUDY OVERVIEW

We conducted two studies to assess the proposed hypotheses (see Table 2). In Study 1, we began with a procedure based on an AR present-versus-absent comparison to establish the causal effect that, if an AR app is projecting an object in one's environment, it becomes closer and is loved more intensely. To this end, we applied an experimental two-cell between-subjects design in which consumers were randomly assigned to either the AR or non-AR version of a car brand's AR app (an in-room AR). In the second study, the focus was on further examining the hypothesized relationship by assessing the subjectively perceived quality of the augmentation experience, which is referred to as the local presence induced by the AR app. This way of conceptualizing the independent variable in Study 2 complements
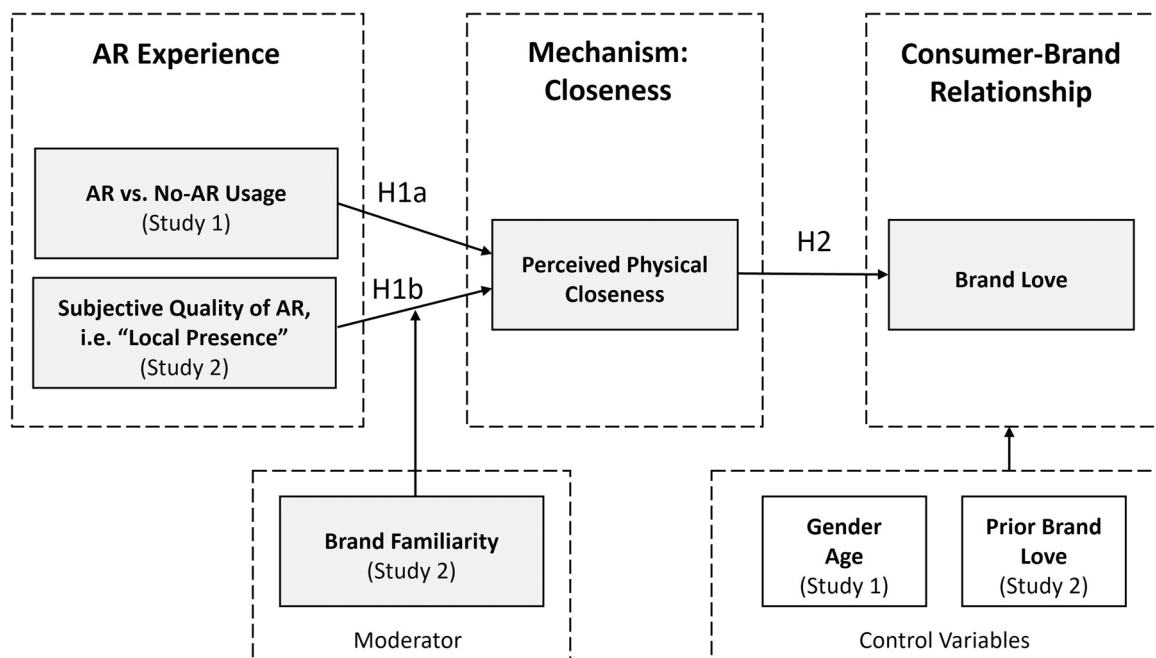
FIGURE 2 Overall framework: How AR marketing drives brand love through perceived physical closeness.

TABLE 2 Overview of the studies on how AR drives perceived physical closeness and brand love.

	Study 1	Study 2
Objectives	• Establish the causal effects that AR can increase brand love through perceived physical closeness	• Further establish the effect by assessing the perceived *intensity* of the augmentation (local presence) • Assess the moderating effect of brand familiarity • Replicate the effects of physical closeness on brand love (H2) by controlling for prior brand love
Sample	N = 155	N = 173
App	Mercedes "cAR" app (an app that allows users to experience virtual cars either simply on their smartphone (non-AR) or in their physical environment (AR))	Sephora Makeup app, which allows consumers to experience makeup in real-time on their face
Research design	Two-cell factorial design (AR vs. non-AR)	Survey design, longitudinal for the DV (brand love) to control for bidirectional effects
Independent variable	Presence of AR experience (AR vs. non-AR)	Subjective quality of AR experience, that is, local presence; this reflects how *well* the integration of the virtual content into the real-world is perceived by consumers
Mediator	Perceived physical closeness	Perceived physical closeness
Moderator	N/A	Brand familiarity
Dependent variable	Brand love	Brand love (while controlling for prior levels of brand love)

the experimental present-versus-absent logic applied in Study 1 and accounts for the fact that AR experiences differ depending on the users' perceptions. Thus, in Study 2, all participants used an AR feature of an app, and the study followed a survey research design with a before-after assessment of the dependent variable to test H1b, H2, and H3. Here, the participants used an AR makeup app (an on-body AR).

5 | STUDY 1

As outlined in the overview, Study 1 followed a two-cell (AR present vs. AR absent) between-subjects design, testing H1a and H2.

5.1 | Methodology

We recruited 155 students at a German university (76.8% male, 23.2% female; age: M = 23.8, SD = 3.18 years) who were part of a cooperative leadership program on full salary (University of the Bundeswehr München, Germany). The respondents were randomly assigned to either the AR (n = 76) or the non-AR (n = 79) version of the Mercedes cAR app. The following video explains the feature of the app in detail: https://www.youtube.com/watch?v=eQScXtZYTqw (as used in Figure 1).

In AR mode, the cAR app uses the device's camera to track and capture the surrounding real-world environment while integrating the car as existing in it in real time. The cAR app allows the user to turn off the AR mode if desired; in this case, identical content and features (except for the AR) are presented in front of a neutral background on the screen. In other words, the content and all features, except for the AR, were equal between the two groups when using the app. This

was one reason for choosing this particular app (many other published AR studies simply test AR apps against traditional websites with different interfaces and content). Figure 1 illustrates the principles of the app.

The AR and non-AR participants were separated to avoid treatment contamination due to exposure to those in the other group. Trained research assistants managed data collection in an on-campus lab. The participants used the app for as long as they desired (most individuals used it for approximately 2–4 min) on an iPad provided by the research team before completing the questionnaire. Candy was provided as an incentive to participate.

Brand love was measured using the conceptualization from Batra et al. (2012) and the six-item scale from Bagozzi et al. (2016). Consistent with our definition, we measured perceived physical closeness using three items (inspired by Balcetis et al., 2015; Chae, 2016; O'Leary et al., 2014). Age and gender served as control variables. The item wording and evidence of reliability are presented in the confirmatory factor analysis presented in Appendix A. We also applied common tests for discriminant validity and common method variance. None of these procedures indicated concerns.

5.2 | Results

We analyzed the experimental data using a covariance-based structural equation modeling (SEM) approach in Mplus with a maximum likelihood estimator. We modeled the experimental factor as a dichotomous dummy variable (0 = non-AR; 1 = AR version), and both perceived physical closeness and brand love were latent reflective constructs in one model while accounting for measurement error.

Before testing the hypotheses, we assessed the measurement model using confirmatory factor analysis (the results are presented in Appendix A) and the overall model fit. All common fit measures (chi square $[\chi^2]$ = 77.37, df = 48; $p < 0.005$; comparative fit index [CFI] = 0.965; Tucker–Lewis index [TLI] = 0.954; root mean square error of approximation [RMSEA] = 0.063; standardized root mean square residual [SRMR] = .042) met the recommendations in the literature (Bagozzi & Yi, 2012) that indicated an excellent model fit.

Next, we assessed the standardized path coefficients. In line with H1a, we find a positive effect of the experimentally manipulated independent variable of AR presence (0 = non-AR; 1 = AR) on perceived physical closeness (β = 0.238; p = 0.01). In line with H2, our results show that perceived physical closeness drives relationship closeness in the form of brand love (β = 0.351; p = 0.01). We also assessed the effects of the control variables on perceived physical closeness (age: β = −0.268; $p < 0.001$; gender: β = −0.013; p = 0.861) and brand love (age: β = −0.103; p = 0.210; gender: β = −0.197; p = 0.012). Dropping the control variables from the model or including a direct effect from AR on brand love (which was not significant) did not affect the conclusions. Figure 3 summarizes the results.

Following the recommendations in the mediation literature (e.g., Hayes, 2018), we also assessed the indirect effects by inspecting the confidence intervals (b = 0.205; 95% BCCI: low = 0.066; high = 0.454; bootstrapping with 10,000 resamples). Because the interval did not contain 0, the mediation was formally established. This conclusion does not change when including the direct effect of AR on brand love.

5.3 | Discussion of Study 1

Based on an experimental procedure, this study provides causal evidence that AR can increase perceived physical closeness between a consumer and a brand. Through metaphorical thinking, this perceived physical closeness enhances perceptions of relationship closeness, which is reflected by an increase in brand love. Serving the main goal of acquiring causal evidence, the absent-present logic of the dichotomous independent variable may have fallen short in

capturing variations in the subjective experiences of people, as discussed above. This is addressed in Study 2. In addition, brand love is a relatively stable construct, and consumers with higher levels of brand love might therefore have a stronger perception of physical closeness, indicating a bidirectional effect. This is addressed by a before-after assessment in Study 2. Moreover, a single product category using a predominantly male sample and a well-known and popular brand might limit the generalizability of the results of Study 1. Study 2 provides a conceptual replication of the key findings from Study 1 while taking another perspective on the AR experience and addressing Study 1's most important limitations.

6 | STUDY 2

Study 2 followed a survey research design in which all participants used the AR feature of a makeup app and included a before-after assessment of the dependent variable brand love to test H1b, H2, and H3.

6.1 | Methodology

The participants were female students (N = 173) from a German university (age: M = 24.0, SD = 2.77 years) who took part in a two-stage survey using the Sephora Makeup AR app. We collected the data in 2019 (when Sephora was less prevalent in Germany) and had two measurement points: before and after the use of the AR feature. The participants completed an online questionnaire that included the brand love measure and various personal information at the first measurement point. About two and a half weeks later, they were invited to a physical lab to participate in the main part of the study (the second measurement point). Upon entering the lab, the participants were handed a tablet computer. They received instructions to try out the Sephora app, which was installed on the tablets. They could take as much time as they desired to interact with the app (e.g., trying various makeup products virtually). Trained research assistants managed the data collection, and vouchers, as well as a lottery for a beauty treatment, were offered as incentives for
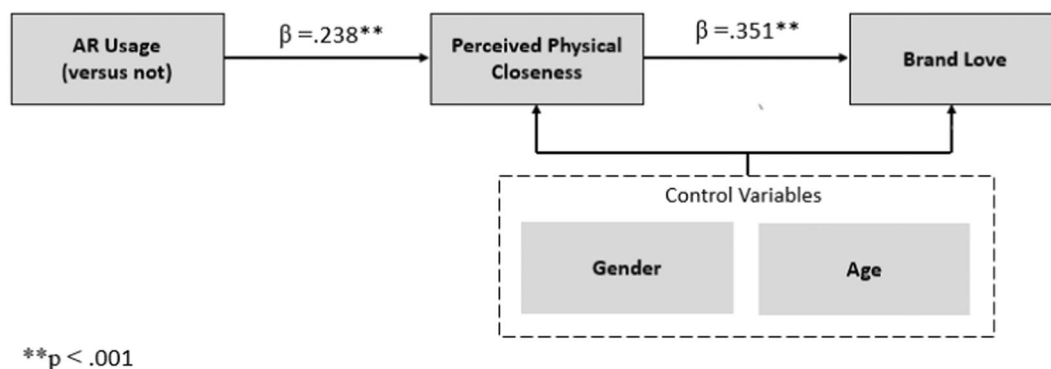
FIGURE 3 Results of Study 1: AR usage, perceived physical closeness, and brand love.

participation. After using the app, the participants completed various evaluations of the AR experience, including the level of local presence of the digital makeup, their perceived physical closeness to the brand, and their brand love for Sephora, using the same scales as in Study 1. However, in contrast to Study 1, we did not manipulate whether the virtual content was integrated with the participant's physical environment; here, we measured how well this integration was achieved, as reflected by the degree to which a user perceived the virtual content as actually being in their physical environment (i.e., the level of perceived local presence). Because local presence is a subjective measure (Rauschnabel, Felix et al., 2022; Schein, 2022), it can vary among users of the same AR technology. As the confirmatory factor analysis in Appendix A shows, all fit measures reached satisfactory levels.

Please note that this data collection also involved the investigation of another research question that has been presented in another paper (Gatter et al., 2022). However, the key variables used in this study were not part of the other research.

6.2 | Results

As in Study 1, we conducted SEM in Mplus 7.31. First, we assessed the overall model fit with all the variables from our main model. The results indicated good model fit (χ^2 = 163.374, df = 63; $p < 0.001$; CFI = 0.940; TLI = 0.925; RMSEA = 0.096; SRMR = 0.064). Common tests supported the presence of discriminant validity and the absence of common method bias.

The results of the main effects show that local presence is positively related to the perceived physical closeness of the brand (β = 0.501; $p < 0.001$), supporting H1b. Next, in line with H2, the perceived physical closeness of the brand leads to relationship closeness with the brand in the form of brand love (β = 0.485; $p < 0.001$)—replicating the effect documented in Study 1 (also see Figure 4). Similar to Study 1, we assessed the indirect effect of local presence on brand love by inspecting the corresponding confidence interval. Formal mediation was established (b = 0.151; 95% BCCI: low = 0.084; high = 0.238), based on a bootstrapping procedure with 10,000 resamples.

6.2.1 | Moderation analyses

To assess the hypothesized moderating effect of brand familiarity on the relationship between local presence and perceived physical closeness (H3), we followed the interaction probing procedure described by Aiken and West (1991). More specifically, we modeled the interaction term between local presence and brand familiarity using the latent moderated structural equations (LMS) approach in Mplus while controlling for brand familiarity's direct effect (Klein & Moosbrugger, 2000).

The results indicate a significant interaction effect (b_{int} = 0.084; p = 0.007; $b_{localpresence}$ = 0.368; $p < 0.001$; $b_{brandfamiliarity}$ = 0.074; p = 0.154), supporting H3. Thus, the effect of local presence on perceived physical closeness increases if consumers are familiar with a brand.

6.2.2 | Controlling for prior brand love

One could argue that consumers with higher levels of brand love also feel physically closer to a brand, suggesting that the effect hypothesized in H2 is bidirectional. To account for this, we controlled for prior brand love, which was collected from each participant at the first measurement point (an average of 18 days before the main survey).

To account for the longitudinal nature of this approach, one would have to allow for correlations between each pre- and post-item's error terms (Jöreskog & Sörbom, 1996). Because modeling another six-item construct in addition to six correlated pairs of error terms would drastically increase model complexity, we used item parceling for the pre-measure. More specifically, we averaged all six items into a single variable, which we integrated with the model.

Not surprisingly, prior brand love is significantly related to postbrand love ($\beta_{priorbrandlove}$ = 0.563; $p < 0.001$). Most importantly, the relationship between the perceived physical closeness of the brand and brand love remains similar and significant ($\beta_{H2-controlled}$ = 0.314, $p < 0.001$).
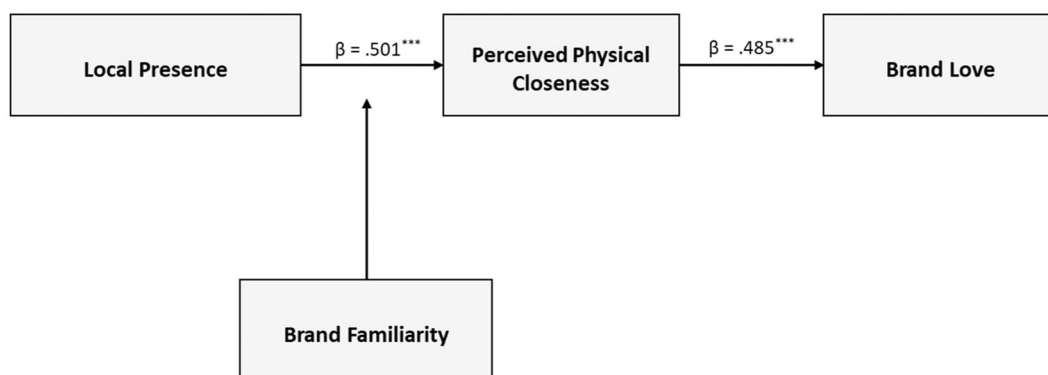
FIGURE 4 Results of Study 2: local presence, perceived physical closeness, and brand love.

6.2.3 | Robustness tests

We ran multiple additional models, such as models without the direct effect of local presence on brand love and models that controlled for all endogenous effects of age and brand familiarity. We also replicated the model using different estimation methods. All of these analyses reproduced the reported results, indicating the robustness of the conclusions.

6.3 | Discussion of Study 2

This study addressed the major shortcomings of Study 1 and extended it by measuring how well (rather than whether) consumers perceive the augmentation of their physical environment. Thus, Study 2 replicates the primary finding that AR can drive perceived physical closeness between a consumer and a brand, which can subsequently drive consumer–brand relationship closeness in the form of brand love. This research further confirms the moderating role of brand familiarity, suggesting that the effect of local presence on perceived physical closeness increases if consumers are familiar with a brand.

7 | GENERAL DISCUSSION

AR has huge potential to reshape marketing practices (e.g., Du et al., 2022; Dwivedi et al., 2023; Kumar, 2022; Tan et al., 2022). In this study, we focused on an area of high managerial importance— branding (Boston Consulting Group, 2018; Rauschnabel, Babin, et al., 2022)—by examining AR's potential to foster brand love. Our results show that because AR makes digital objects appear directly in front of the consumer, or even virtually applied to the consumer's body, it can increase the perceived physical closeness between a consumer and a brand. Study 2 shows that this effect is more powerful when AR is more realistic and hence produces a greater sense of local presence (Chen & Lin, 2022; Rauschnabel, Babin, et al., 2022) for the digital objects. Moreover, the effect of local presence on perceived physical closeness is stronger when consumers are familiar with the brand, as they need some sense of familiarity to metaphorically allow themselves to become very close to objects (even in relation to their skin, as implemented in Study 2). Perceived physical closeness, in turn, leads to consumer–brand relationship closeness in the form of brand love. This effect holds when controlling for the level of brand love consumers had before using the AR app.

Because prior research has repeatedly shown that brand love is closely linked to long-term firm performance (Barker et al., 2015; Nguyen & Feng, 2021), this study shows AR's marketing profitability potential. In other words, the current research shows that AR is an effective tool for brand management. In doing so, it leads to several key theoretical contributions, as discussed below.

7.1 | Theoretical contributions

Generally speaking, this study contributes to our understanding of how technical features that enhance or modify our perception, such as AR, influence the way consumers interpret and conceptualize the world around them and form relationships with abstract instances, such as brands. More specifically, this study makes several theoretical contributions to the literature—in particular, to the AR literature—by (1) deciphering a new theoretical mechanism (i.e., closeness) and (2) further establishing local presence as a central construct. Moreover, it contributes to (3) AR marketing in particular by assessing the link between AR and brand love and (4) to the brand love and consumer–brand relationship literature by examining a new antecedent condition. We now discuss each of these contributions in detail.

First, this research contributes to the AR literature by showing that presenting virtual content in a consumer's local physical environment can increase the perceived physical closeness between a consumer and a brand. We also show that through metaphorical thinking, this perceived physical closeness between the consumer and the brand leads to greater closeness in a consumer–brand relationship in the form of brand love. In this way, this study complements previous work (e.g., von der Au et al., 2023; Flavián et al., 2019; Hilken et al., 2022; Pfaff & Spann, 2023; Rauschnabel, Felix et al., 2022) linking the contextual embedding of AR to various positive outcomes. Based on metaphor theory, our study demonstrates, in particular, the relevance of the "closeness" metaphor with regard to AR tools. We show that AR apps can influence the way people understand and interpret the world, and thus affect how people categorize things in their environment. AR creates an artificial experience by combining real and virtual objects. Human categorization tends to group things together that co-occur or, in other words, are close (e.g., Loken et al., 2008; Mervis & Rosch, 1981). We extend prior research by showing that this occurs not only on a mere perceptual level but also on a *conceptual* level, as people link the co-occurring concepts metaphorically based on the "closeness" metaphor (Lakoff, 1993; Lakoff & Johnson, 2013). This can shape how people think and understand the world and how they interpret more abstract concepts, such as brands, and our relationship to them. In addition, our results add new insights to the literature on the propinquity effect. Bringing an object closer to consumers by means of AR technology not only makes things more attractive based on perceived endowment (i.e., an endowment effect; e.g., Carrozzi et al., 2022). It also elicits a propinquity effect, encouraging people to build relationships with seemingly close objects (Shin et al., 2019). Interestingly, this effect has been reflected in consumer responses to advertising that include a scent (Ruzeviciute et al., 2020), which can also be seen as an enrichment in sensual perception. In a very different way, but also by enriching the sensual perception of an object, AR technology can trigger propinquity effects.

Second, this research also furthers work on the role of local presence in AR. Local presence was first studied in the e-commerce literature (e.g., Verhagen et al., 2014) and has recently gained attention in the context of AR. Rauschnabel, Felix, et al. (2022), for example,

conceptualized local presence as the key differentiator between various forms of AR and recent research empirically validated its persuasive nature (e.g., von der Au et al., 2023; Chen & Lin, 2022; Schein, 2022). This study contributes to the literature on local presence in the context of AR by showing that local presence can increase perceived physical closeness. In other words, when consumers using AR perceive that branded cues (e.g., a brand name or logo) are *actually present with them* (high local presence), it increases the perceived physical closeness between a consumer and a brand. In addition, we conceptually contribute to disentangling the concepts of local presence and perceived physical closeness. We clarify that, whereas local presence mirrors the perceived quality of the illusion that an AR-projected object is actually "here," perceived physical closeness refers to the perceived spatial distance. Importantly, this study also applies metaphor theory (Ahuvia & Adelman, 1993; Lakoff, 1993; Lakoff & Johnson, 2013; Thibodeau et al., 2019) and the neural theory of language (Lakoff, 1993) as theoretical lenses to AR. This points to the potential of AR to create metaphorical content virtually, which usually takes its form only in the imagination of the individual. Through AR, metaphors can become visible and more tangible to users. In addition to this contribution to the AR literature, it could also be an interesting angle for education and learning research because metaphor, by making things exciting and understandable, has always been used in education (e.g., Low, 2008).

Third, our study broadens and deepens the understanding of the effectiveness of AR marketing. Most previous studies have looked at more *transactional* consequences, such as an increased willingness to pay (Heller et al., 2019), impulse purchases (Kumar & Srivastava, 2022), or actual purchases (Tan et al., 2022). According to surveys of managers (e.g., BCG, 2018; Rauschnabel, Babin, et al., 2022), AR has tremendous potential for brand management. Indeed, previous research has shown that AR plays an important role in driving brand attitudes (for an overview, see Table 1). This study extends and deepens AR research on brand management by addressing brand love, a specific and strong form of consumer–brand relationship. It also illustrates the role of brand familiarity, which can inform a consumer journey perspective. Our results show that if an AR tool is to be used for deepening the relationship with customers, a basic level of familiarity should initially be built.

Fourth, this study contributes to the literature on consumer–brand relationships, especially brand love (Ahuvia, 2005, 2015, 2022). Scholars have shown a keen interest in exploring the antecedents, characteristics, and outcomes of brand love in recent decades (Ahuvia et al., 2020; Schmid & Huber, 2019). The current research adds perceived physical closeness to the growing list of brand love antecedents and is the first to explore brand love in the context of AR marketing.

7.2 | Managerial implications

This research shows that AR can be an effective tool for brand management, especially for fostering consumer–brand relationships. In light of recent work on brand love showing its impact on long-term business performance (Barker et al., 2015; Nguyen & Feng, 2021), the

findings urge managers to strategically integrate AR into brand marketing strategies.

Using AR to enhance and design the experiences consumers have with brands is highly relevant in times in which an increasing number of online purchases are made and fewer opportunities exist to create physically meaningful brand experiences. Under these circumstances, it is a great challenge to create opportunities in which consumers interact with and experience a brand. We have shown that these "phygital" experiences created by AR technology can effectively contribute to the formation of a strong consumer–brand relationship and the building of brand love. This is an encouraging result for marketers thinking about investing in developing or acquiring an AR application to promote their brand.

However, Study 2 clearly shows that "any" AR is not necessarily good for generating brand love. More specifically, a low local presence (AR that feels artificial to users) can actually be detrimental to brands. Therefore, our findings call for brand managers to maximize local presence.[1] Following previous research, this could be achieved by using state-of-the-art content development tools and tracking technology on hardware displaying content (nowadays, mainly smartphones). However, smartphones with better sensor and tracking technology, for example, may well enable more sophisticated experiences. Nowadays, we are seeing an increasing number of new smartphones with built-in lidar (light detection and ranging) and spatial cameras. Therefore, marketers might consider limiting their AR apps to newer devices to reduce the risk of disappointing experiences, thus protecting their brands. Implementing this recommendation could reduce reach; thus, some consumers might feel excluded. However, it would also protect other outcome variables, such as hedonic value, inspiration, and behavioral intent—as revealed in related work (e.g., Rauschnabel et al., 2019; Kumar et al., 2023a).

The findings are particularly relevant and promising for well-known brands (H4). Does this mean that less well-known brands should avoid AR? Definitely not. First, AR apps can create benefits beyond creating brand love, such as awareness, purchases, or brand attitudes. These behavioral, intentional, and attitudinal consequences have not been studied in this research, but they have been studied in extant work (as discussed above). For example, many business-to-business brands have low brand awareness levels, yet could benefit from using AR in their marketing—such as in exhibits or to support sales people. Second, even smaller or specialized brands, which may lack broad recognition among the general population, could have highly engaged niche audiences that are well acquainted with their brand. Here, average brand awareness levels might be low, but within their smaller target groups (i.e., among prospective users), they could be high.

7.3 | Limitations and future research

This research uses young consumers who are presumably less skeptical toward AR technology when compared with the overall population and

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[1]We acknowledge that low levels of local presence can be beneficial in other AR use cases, such as work instructions or navigation.

thus represent a managerially relevant target group. However, the effects may differ for a less tech-savvy segment of the population, which always raises concerns about ecological validity. Nonetheless, we call for replications with more diverse samples and more brands to increase generalizability; for instance, among luxury brands (Chu et al., 2021). The integration of further moderators and mediators could generate additional insights into when and why AR leads to brand love. Finally, AR is not limited to smartphones or tablets; the effects could also be studied on wearables ("smart glasses", "headsets") or virtual mirrors in stores (Schultz & Gorlas, 2023).

The core of this research evaluated the mechanisms that drive brand love as a psychological construct. The relationship between brand love and subsequent behavioral consequences, such as actual sales and profitability, has been established in previous research (Nguyen & Feng, 2021). However, further behavioral consequences that may be driven by perceived physical closeness or brand love remain avenues for future research.

The core finding that AR can increase closeness also calls for further investigations of AR through the lens of construal-level theory. For instance, one might theorize that AR elicits more concrete thinking styles due to its increased proximity (Finken et al., 2021). Further research on AR through the lens of metaphor theory could also lead to fruitful insights. Related concepts, such as anthropomorphism, share similarities with metaphorical thinking and, thus, could play a dominant role in AR (c.f., Schmitt, 2019), which future studies could identify and assess.

We researched brand management in AR. In VR, brands could also be presented in a way that reduces perceived physical distance, yet with a replaced real world (Israel et al., 2023). In AR, the brand is brought into the user's physical environment, while in VR, the brand and the user can meet closely in a purely fictional environment.

In addition, closeness can prove to be a relevant factor in contexts that go beyond traditional marketing and branding. Take, for example, the potential to communicate environmental concerns to consumers. Based on our research, one could argue that AR could communicate environmental issues as "closer," which could induce emotional responses (e.g., love of the environment) and thus more environment-friendly behaviors. AR-induced proximity could also play a significant role in the classroom, making seemingly "distant" topics concrete, interesting, and "approachable."

Recently, both academics and managers have discussed the idea of a "metaverse" or "spatial computing" future. Although we admit that these terms are still inconsistently—and often blurrily—defined, they are generally understood to refer to some sort of next-generation virtual (VR) and/or hybrid (AR) 3D Internet in which future consumers will spend a great deal of time (Dwivedi et al., 2022; Mladenović et al., 2023). These new environments will enable novel forms of interaction between consumers and brands, and thus, a "race for proximity" could begin. We call for visionary research to identify these challenges early and propose—and ideally test—strategic options for brands, along with advancements in nonfungible (Hofstetter et al., 2022; Sung et al., 2023) and non-transferrable (Mladenović et al., 2023) tokens.

8 | CONCLUSION

As we envision a future where AR plays a dominant role in consumers' lives, the question of what is real and what is not becomes relevant. Our research shows that the question of what is near and what is far may also arise because AR can trigger closeness perceptions between a user and a virtual object. Marketers can benefit from this perceived physical closeness—especially in brand management—as this research shows. We hope that this research will inspire scholars to understand how AR can be used to solve personal, business, or societal problems. Using AR to create closeness between a user and a specific subject (e.g., a brand, a product, a topic, a societal problem, etc.) could be an effective strategy across disciplines.

CONFLICT OF INTEREST STATEMENT
The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

I. Descriptive statistics of Study 1 and Study 2.

Study 1

Brand love (M = 3.184, SD = 1.430, AVE = 0.560, C.R. = 0.884, Cronbach's α = 0.882) (taken from Bagozzi et al., 2016; short scale)

Owning a Mercedes would say something "true" and "deep" about whom I am as a person.

I feel myself desiring to drive a Mercedes.

I feel emotionally connected to Mercedes.

I believe that I will be using products of Mercedes for a long time.

Supposing Mercedes were to go out of existence, I would you feel anxiety.

My overall feelings and evaluations towards Mercedes are positive.

Perceived physical closeness (M = 3.561, SD = 1.546, AVE = 0.780, C.R. = 0.913, Cronbach's α = 0.909) (adapted from Balcetis et al., 2015; Chae, 2016; O'Leary et al., 2014)

The app allows the brand to get "closer" to me.

I perceived the brand as being close by when I used the app.

I had the impression that the brand was close to me during the experience.

χ^2 = 54.259; df = 26; p < 0.001; CFI = 0.965; TLI = 0.952; RMSEA = 0.084; SRMR = 0.045.

Study 2

Brand love (M = 3.158, SD = 1.291, AVE = 0.574, C.R. = 0.889, Cronbach's α = 0.888) (taken from Bagozzi et al., 2016; short scale)

Using Sephora says something "true" and "deep" about whom I am as a person.

I feel myself desiring to use Sephora products.

I feel emotionally connected to Sephora.

I believe that I will be using products of Sephora for a long time.

Supposing Sephora were to go out of existence, I would you feel anxiety.

My overall feelings and evaluations towards Sephora are positive.

Local presence (M = 3.915, SD = 1.587, AVE = 0.789, C.R. = 0.937, Cronbach's α = 0.937) (adapted from Javornik, 2016; Rauschnabel et al., 2019)

Study 2

I had the feeling that the Sephora products actually existed in my face.

It seemed as if the beauty products had shifted from the tablet onto my face.

Everything I saw in the display appeared to be real.

I perceived the virtual make-up as being real.

Perceived physical closeness (M = 4.189, SD = 1.541, AVE = 0.774, C.R. = 0.911, Cronbach's α = 0.907) (adapted from Balcetis et al., 2015; Chae, 2016; O'Leary et al., 2014)

The app allows the brand to get "closer" to me.

I perceived the brand as being close by when I used the app.

I had the impression that the brand was close to me during the experience.

Brand familiarity (M = 4.101, SD = 1.764, AVE = 0.708; C.R. = 0.826; Cronbach's α = 0.811; r = 0.685) (adopted from Kent & Allen, 1994)

Study 2

The brand Sephora is well known to me.

I know a lot about the Sephora brand.

χ^2 = 197.662; df = 84; p < 0.001; CFI = 0.938; TLI = 0.923; RMSEA = 0.088; SRMR = 0.061.

    II. Correlation tables.

STUDY 1	Brand love
Brand love	
Perceived physical closeness	0.368

STUDY 2	Brand love	Perceived physical closeness	Local presence
Brand Love			
Perceived physical closeness	0.476		
Local presence	0.313	0.495	
Brand familiarity	0.542	0.086	0.133