



How does temporal content on social media influence engagement behaviors? The roles of experiential messages and visual features

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ARTICLE INFO

Keywords:

Social media
Temporal content
Consumer engagement behavior
Experiential messaging
Warm colors

ABSTRACT

Many firms post temporal content on social media—that is, organic publications that are visible on their profiles for a limited time—to leverage consumers' "fear of missing out" and to elicit strong reactions. This research investigates how temporal content drives consumer engagement behaviors, specifically sustained attention and recommendation behaviors. We focus on two key elements of social media content: (1) the type of message, particularly experiential messages; and (2) the visual features used to convey it, specifically addressing the inclusion of warm colors. We conducted two studies. The first used a sample of 524 Instagram Stories and employed negative binomial regression; the second utilized 788 Instagram Stories and fuzzy set qualitative comparative analysis. Findings show that the interaction between messages and colors determines the overall effect of the temporal content, and six configurations trigger higher consumer engagement. A sensitivity analysis corroborates similar results regarding permanent content.

1. Introduction

Laura has only a 10-minute break at work and decides to check Instagram. Wanting to see what is happening in real time, she goes directly to Instagram Stories. Recently, a brand that she follows has been posting Stories that have caught her attention, and she does not want to miss anything. "Oh, this is quite good," Laura thinks after rewatching a story. "I'll recommend this to my friends before it disappears." Laura knows that if she does not share the story immediately, it may no longer be available when she returns to Instagram. What is motivating Laura to rewatch this content and recommend it?

Temporal content represents a specific form of ephemeral marketing consisting of organic publications lasting up to 15 s that firms post on their profiles and that remain visible for 24 h. New publications follow, allowing consumers to navigate back and forth between them in sequential order (Belanche et al., 2019). Some of the most widespread temporal content formats include Instagram Stories, WhatsApp status updates, Facebook Stories, and Snapchat Stories. This content has revolutionized digital storytelling by emphasizing spontaneous communication (Li et al., 2021; Wardana et al., 2024) and has emerged as a key touchpoint for consumer engagement (Campbell et al., 2021; Nguyen et al., 2025), providing firms with a dynamic way to connect

with their audiences. According to Statista (2023), Instagram Stories had 500 million daily active users in 2019, WhatsApp had 450 million, and Snapchat had over 265 million in the fourth quarter of 2020. Furthermore, Instagram Stories have a reach rate of 1.5–6.2% (Earthweb, 2023) and actively engage users in social connections and interactions (Chen & Cheung, 2019).

Although academic research on temporal content in social media is still in its infancy (Jørgensen et al., 2023), several studies have begun to examine the reasons why consumers interact with this type of content. Most of these studies have focused on consumers' perceptions and motivations, drawing on theoretical frameworks such as uses and gratifications theory, the stimulus–organism–response model, and the technology acceptance model (Alhabash & Ma, 2017; Flecha-Ortíz et al., 2021; Kim et al., 2023; Menon, 2022). Likewise, some studies have investigated why consumers spend time engaging with temporal social media (Lu & Lin, 2022), while others have examined consumers' recall of ads displayed on these platforms (Campbell et al., 2021; Jørgensen et al., 2023).

Despite the progress in the literature, some major gaps remain. First, studies on temporal content have primarily focused on consumer self-reported variables—such as perceptions, attitudes, and intentions—as key outcomes of interest. These variables have provided revealing

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insights into the consumer's perspective, but they can be misremembered and inflated, creating fundamental issues (Dex, 1995). Few studies have examined consumers' actual behaviors resulting from their direct connection with temporal content on social media.

Second, studies on temporal and permanent content have examined the independent and direct influence of individual content elements, such as message dimensions or visual features, on consumers (Akpınar & Berger, 2017; Yu & Egger, 2021). Yet, social media is a multimodal means of communication that does not present content elements in isolation; rather, these elements appear together, producing combined effects that vary depending on their interactions. Consequently, existing research provides a fragmented analysis that fails to capture the interconnections among content elements on social media and their combined effects on consumers' responses.

The present study investigates how firms' temporal content on social media influences consumer engagement behaviors by examining two key elements of firm-generated content: (1) the type of message published, focusing on experiential messages; and (2) the visual features used to transmit this message, specifically addressing the inclusion of warm colors.

Experiential messages represent firm-generated marketing communications that convey meaning related to customer experiences (Hernández-Ortega et al., 2022; Nepomuceno et al., 2023; Schmitt, 1999). Recent research has demonstrated the importance of such messaging on social media in influencing consumer behavior (e.g., Waqas et al., 2021). In analyzing this aspect, we draw from Schmitt's (1999) experiential module framework, which includes five dimensions: relational, affective, sensory, intellectual, and behavioral.

Warm colors include various shades and hues of red, orange, and yellow (Labrecque et al., 2013); we focus on their effect given their proven ability to capture attention and their strong association with intense emotions and experiences (González-Martín et al., 2022). For example, the Home Depot brand is widely recognized worldwide by its nickname "Big Orange," a reference to its distinctive orange hue that functions as a strong visual identifier. This color not only attracts home improvement enthusiasts but also prompts them to take action (Home Depot, 2014).

The limited existing research has primarily focused on the individual effects of experiential messages on social media on consumers, without considering interactions with visual features, such as colors, that may condition their effects. Drawing from Crowley's (1993) two-dimensional color framework for analyzing the influence of colors on consumers' behavior, we argue that warm colors can strengthen or weaken the influence of experiential messages on consumer engagement. The interactions between messages and visual features provide powerful means to explain consumer reactions, with the efficacy of each element depending on the presence or absence of others. We therefore posit that the combination of experiential messages and warm colors, rather than a singular isolated element, determines the comprehensive effect of social media content on consumer engagement (Ceylan et al., 2023; Grewal et al., 2021).

To analyze consumer engagement on social media, we examine two non-transactional online behaviors: sustained attention and recommendation behavior (Berger et al., 2023; Dhaoui & Webster, 2021). Sustained attention refers to consumers' tendency to continue viewing or rewatching content once their attention has been captured (Berger et al., 2023). When consumers devote time to a social media publication, they likely perceive it as valuable, suggesting that the content aligns with their interests and needs. Recommendation behavior, in turn, involves consumers sharing brand publications on their social media accounts, often accompanied by personal comments (Deng et al., 2021; Gomez-Suarez & Veloso, 2022). This behavior not only influences the recommending consumer's social network but also serves as a form of visible endorsement (Dhaoui & Webster, 2021; Tellis et al., 2019). Together, these behaviors represent complementary forms of engagement, with sustained attention reflecting private content consumption,

and recommendation behavior capturing public content sharing.

We conduct two studies using two datasets comprising Instagram Stories published by a European tourism operator about its snow tourism resort. We focus on the tourism sector because the experiential nature of tourism services prompts consumers to interact on social media with the aims of obtaining information and developing relationships, thereby reducing uncertainty and perceived risks (Mariani et al., 2016). The first study examines the interaction effects between each dimension of experiential messages and warm colors on consumer engagement, and demonstrates how the direct effects of the former vary according to the colors used. The second study explores the various successful combinations of experiential message dimensions and warm colors that drive consumer engagement. The findings from both studies complement each other and together offer a comprehensive view of the phenomenon.

The present research makes three main theoretical contributions to the social media literature. First, it complements previous research on consumer attitudes and intentions via its examination of behavioral engagement metrics that reveal how consumers genuinely respond to, and interact with, temporal content. Specifically, it introduces two observable behaviors—sustained attention and recommendations—that capture private and public forms of engagement. These objective measures provide a more comprehensive and realistic understanding of temporal content's effectiveness, allowing firms to evaluate consumer interactions rather than relying solely on self-reported perceptions.

Second, rather than focusing solely on the direct effects of individual content elements on consumer engagement, this research demonstrates that the effectiveness of a social media publication lies in the interaction between the message and the visual features used to convey it. This perspective offers a comprehensive understanding of the combined impact of messages and visual features, which applies across various social media platforms as multimodal communication channels. It also highlights the importance of analyzing their effects holistically to better understand consumer behavior.

Third, this paper advances theory by identifying six validated configurations of experiential messages and warm colors that drive high consumer engagement. Rejecting the assumption that there is a single optimal formula for creating effective content, these findings illustrate that multiple configurations can simultaneously achieve strong engagement.

2. Theoretical background

2.1. Ephemeral marketing and temporal content

Ephemeral marketing encompasses marketing actions, communications, and promotions that consumers know are only available for a short time before disappearing permanently. This form of marketing provides instant gratification through authentic and exclusive experiences that arise during consumer interactions (Nguyen et al., 2025; Robertson et al., 2018). Common examples of ephemeral marketing include flash promotions and pop-up stores. In recent years, ephemeral marketing has gained popularity due to the growth of social media platforms, including the introduction of formats such as "stories" for delivering temporal content.

Along with its limited duration, temporal content often adopts informal language and a casual tone so as to foster personal and private interactions with consumers (Ma et al., 2021; Nguyen et al., 2025). It usually incorporates visual features, such as vivid colors, striking typography, high-definition images or videos, or attention-grabbing graphics, so as to enhance visibility, capture consumer attention, reinforce the message, and elicit immediate reactions (Campbell et al., 2021; Jeong & Lee, 2017; Lu & Lin, 2022; Wardana et al., 2024).

The ephemerality of temporal content triggers a "fear of missing out" that shapes how consumers experience and respond to marketing stimuli by heightening their sense of time constraints (Jørgensen et al., 2023;

Wakefield, 2024). This condition encourages more spontaneous forms of interaction, through which brief exposures are converted into meaningful experiential encounters (Chen & Cheung, 2019; Zhang et al., 2022). Overall, temporal content provides a particularly conducive context for experiential messages designed to elicit prompt and meaningful consumer engagement (Zhang et al., 2022).

2.2. Experiential messages on social media

The experiential approach in marketing proposes that firms should design interactions with consumers (i.e., touchpoints) that generate meaningful value through experience (Pine & Gilmore, 1998). Within this approach, Schmitt (1999) distinguishes five strategic modules that represent complementary dimensions of consumer experience: sense, feel, think, act, and relate. These modules provide a structured lens for understanding how touchpoints can engage consumers across multiple domains.

Although each module is conceptually independent, in the sense that it represents a distinct type of experience, the modules are not mutually exclusive—multiple dimensions can coexist within a single touchpoint and interact to shape consumer perceptions and engagement (Schmitt, 1999; Verhoef et al. 2009). As Schmitt (1999) noted, these modules are “circumscribed but not self-contained structures,” meaning they are inherently connected and capable of interacting with one another. Accordingly, “the ultimate goal of experiential marketing is to design holistic experiences that integrate individual experiences, rather than focusing on each in isolation” (Schmitt, 1999, p. 53).

Drawing from Schmitt’s (1999) experiential module framework and the literature on firm-generated content (Kumar et al., 2016; Nepomuceno et al., 2023), we define experiential messages as *marketing communications generated by firms on social media that convey meanings related to relational, affective, sensory, intellectual, and behavioral experiences for consumers*.

As in other areas, within social media multiple experiential dimensions can coexist and interact within the same publication (Verhoef et al., 2009). However, empirical research has often examined these dimensions in isolation—for example, by contrasting the effectiveness of emotional and information messages (Kujur & Singh, 2020; Lee et al., 2018). Such a reductionist view risks oversimplifying the complexity of social media content and limits insights into how firm-generated messages operate in real-world settings.

Accordingly, we conceptualize experiential dimensions as independent yet combinable. In social media contexts, such combinability is frequently conveyed through visual cues, such as warm colors, which shape the perception and integration of experiential meanings. By capturing how real-world messages are constructed, our framework is firmly grounded in the theoretical foundations of experiential marketing and contemporary research on customer experience (Brakus et al., 2009; Schmitt, 1999; Verhoef et al., 2009).

2.3. The role of warm colors on social media

Visual features are among the most powerful stimuli for consumers, surpassing text and audio in influence (Barnes, 2022). Among these, color plays a central role in shaping how individuals interpret information (Barnes, 2022; Nanne et al., 2020; Rietveld et al., 2020). Defined as the appearance of an object resulting from the reflection of light (Cambridge University Press, 2024), color exerts a strong psychological influence, affecting both cognitive and emotional processes that are central to understanding consumer behavior (Chan et al., 2023; González-Martín et al., 2022; Labrecque et al., 2013). Each hue carries inherent meaning and is thus capable of evoking specific emotions and attitudes that drive distinct behavioral responses (Barnes, 2022; Labrecque & Milne, 2012). For example, red is linked to heightened arousal and pleasure, which can significantly enhance purchase intentions (Wu et al., 2008).

There is growing recognition of the role of colors in online environments (Hsieh et al., 2018; Kwon et al., 2022). Colors are essential, for example, in online advertising (Moore et al., 2005), on e-commerce platforms (Hsieh et al., 2018), on online accommodation-sharing platforms (Chi et al., 2021), and among artificial intelligence influencers (Chan et al., 2023). Although exploring the current use of colors across various online contexts is important, understanding how subtle variations in color influence consumer behavior on social media is particularly valuable owing to the increasing importance of multimedia content (Kanuri et al., 2023; Yu & Egger, 2021).

Indeed, research has highlighted that colors are also important on social media, showing that they convey various meanings and influence human perceptions, ultimately impacting consumer engagement (Yu et al., 2020; Yu & Egger, 2021). For example, orange-yellow has been found to enhance consumer engagement with ad materials, while red is effective in boosting engagement with posts about ambiance (Yu & Egger, 2021).

In temporal content, colors are essential for enabling consumers to quickly interpret the content’s meaning (Singh, 2006). They play a vital role by instantly capturing attention and evoking emotions, driving immediate responses, and maximizing consumer interactions within a short time (Chi et al., 2021). The evident importance of colors in this context underscores the need to investigate how they shape consumer behavioral responses.

Crowley (1993) presented a two-dimensional color framework suggesting that colors can convey symbolic meanings to viewers, provoking various effects and associations. This framework categorizes colors into two groups according to the level of activation they generate: warm colors (i.e., red, orange, yellow) and cool colors (i.e., green, blue, violet). Warm colors have longer wavelengths and higher frequencies than cool colors, making them more arousing and capable of producing automatic physiological responses (e.g., increased brain activity and heart rate) that are unrelated to evaluative reactions (Crowley, 1993; Labrecque et al., 2013).

Based on this model, the present research focuses on warm colors for two main reasons. First, prior studies have indicated that these hues exert a particularly strong influence in business-to-consumer contexts, enhancing engagement with digital content and advertising (Kwon et al., 2022; Sokolik et al., 2014; Yu & Egger, 2021; Yu et al., 2020). Second, research has shown that warm colors carry mixed associations: they convey positive meanings such as love, passion, energy, and strength, while also signaling negative connotations such as danger, mistakes, and transgression (Elliot et al., 2007; Lunardo et al., 2021). This duality makes warm colors particularly suitable for examining interactions with experiential message dimensions, as they function as potent stimuli capable of evoking multiple reactions among consumers (Poel & Dewitte, 2019).

This paper proposes that, irrespective of the well-established impact of warm colors on consumer behavior, they do not operate in isolation but should be considered in conjunction with other elements, such as the message itself. Consumers often make unconscious inferences from colors, which significantly influences their interpretations of messages and engagement.

3. Hypotheses and propositions

In this section, we develop hypotheses and propositions regarding how experiential message dimensions interact with warm colors to influence consumer engagement.

3.1. Experiential message dimensions and engagement Behaviors: Moderation by warm colors

Building on experiential marketing and Crowley’s (1993) two-dimensional color theoretical frameworks, we describe the five dimensions of experiential messages and hypothesize how each dimension

affects sustained attention and recommendations, while considering the potential moderating role of warm colors.

The *relational dimension* of experiential messages refers to social media content that encourages consumers to relate to their social contexts and promotes their relationships with broader social groups or systems (Gentile et al., 2007; Schmitt, 1999). Relational messages nourish the bonds that consumers maintain both with the community developed around the brand and with their own social groups (comprising friends, family, partners, etc.; Gentile et al., 2007; Schmitt, 1999). For example, a publication showing a happy group of friends using a product or service might be aiming to strengthen community bonds by emphasizing the relationships among individuals with similar interests.

The combination of relational messages and warm colors may enhance their capacity to capture and maintain consumers' attention. Warm hues evoke positive perceptions such as closeness, friendliness, and bonding, fostering a sense of social connection that aligns with the message's intent (Baek et al., 2018; Chan et al., 2023; Chi et al., 2021; Huang et al., 2014; Labrecque & Milne, 2012; Labrecque et al., 2013). This congruence facilitates smoother and more engaging processing, thereby prolonging consumer focus on the content. By leveraging the psychological effects of warm colors, firms can enhance the effectiveness of relational messages and sustain consumer attention.

Hypothesis 1a Warm colors positively moderate the relationship between relational messages and sustained attention.

Similarly, pairing relational messages with warm colors can motivate consumers to share content that reinforces their social bonds by evoking perceptions of belonging and connectedness (Chi et al., 2021; Gentile et al., 2007; Schmitt, 1999). Since warm colors can intensify the sense of socialization elicited by relational messages, they strengthen consumers' intentions to express public endorsement. Although previous research has generally supported the positive influence of relational messages on recommendations (Deng et al., 2021; Liadeli et al., 2022), some studies have reported no significant effects (Veloso et al., 2023). The present study suggests that the interaction between relational messages and warm colors may play a crucial role in increasing consumers' likelihood of sharing content.

Hypothesis 1b Warm colors positively moderate the relationship between relational messages and recommendations.

The affective dimension of experiential messages encompasses social media content that is designed to resonate with consumers' moods, feelings, and emotions (Gentile et al., 2007; Schmitt, 1999). These messages connect with the affective system by eliciting feelings and emotions during interactions with the content. For example, a publication featuring an image of a heart and an emotional song might be aiming to trigger an affective experience in the consumer.

Affective messages capture and sustain attention by eliciting emotional reactions that enhance individuals' perception and memory of the content (Oliveira et al., 2022). When these affective messages are supported by warm colors, the attention effect may intensify, since such colors activate emotional responses at a subconscious level and inherently attract visual attention (Labrecque et al., 2013; Moore et al., 2005). The combination of emotionally charged messages and warm hues can therefore create a perceptual and affective synergy that maintains the consumer's attention.

Hypothesis 2a Warm colors positively moderate the relationship between affective messages and sustained attention.

Affective messages not only sustain attention but also motivate consumers to share content that elicits strong emotional reactions (Akpınar & Berger, 2017; Liadeli et al., 2022; Rimé, 2009). Because warm colors enhance the emotional appeal of messages by evoking feelings such as love, passion, cheerfulness, excitement, anger, or stress (Jalali & Papata, 2016; Labrecque et al., 2013), their presence can amplify the affective triggers underlying sharing behavior. This effect is not limited to positive emotions; messages that evoke strong feelings, including those with negative valence, are also likely to encourage

recommendations (Akpınar & Berger, 2017; Liadeli et al., 2022; Simo-netti & Bigne, 2022; Tafesse, 2020). Thus, when affective messages are visually reinforced through warm colors, consumers may experience greater emotional engagement, thereby increasing their likelihood of recommending the content.

Hypothesis 2b Warm colors positively moderate the relationship between affective messages and recommendations.

The sensory dimension of experiential messages refers to content that stimulates consumers' senses of sight, hearing, taste, touch, and smell (Das et al., 2019; Iglesias et al., 2019; Schmitt, 1999). Sensory messages can be easily created by employing elements that directly stimulate the visual and auditory senses, such as visually stunning, high-quality images or videos with aesthetic appeal (Kim et al., 2023); and music, voice, and sound effects (Kahlow et al., 2020). The other senses—taste, touch, and smell—can also be stimulated by including references to consumers' previous perceptual processes (Krishna & Morrin, 2008); for example, a publication featuring images of people touching soft materials may be used to evoke the softness of a product (Spence & Gallace, 2011).

Sensory messages enhance the perceptual richness of content and help to maintain consumers' attention for longer periods (Das et al., 2019; Kim et al., 2023). When combined with warm colors, this effect can be reinforced, as these hues stimulate the senses and attract visual interest (Baek et al., 2018; Chi et al., 2021; Grobelny & Michalski, 2015; Yu & Egger, 2021). However, sensory stimulation must be carefully calibrated to avoid overwhelming consumers (Krishna, 2012), since excessive sensory input may distract or reduce attention. Accordingly, the effective integration of warm colors into sensory messages is expected to reinforce consumers' capacity to maintain focus.

Hypothesis 3a Warm colors positively moderate the relationship between sensory messages and sustained attention.

Prior research has indicated that sensory messages create more immersive and memorable experiences, effectively encouraging message sharing (de Vries et al., 2012). Warm colors can enhance this sensory experience by evoking sensations of warmth and stimulation (Baek et al., 2018; Yu & Egger, 2021), thereby contributing to a more vivid and engaging communication environment. Despite the general consensus on the positive influence of sensory messages, some studies have reported no significant effects on recommendations (Veloso et al., 2023). By incorporating warm colors, sensory messages may stimulate stronger sensorial responses, which in turn increase consumers' willingness to recommend the content. Consequently, warm colors are expected to strengthen the impact of sensory messages on recommendations.

Hypothesis 3b Warm colors positively moderate the relationship between sensory messages and recommendations.

The intellectual dimension of experiential messages encompasses social media content designed to engage consumers' conscious mental processes, encouraging problem-solving, stimulating curiosity, or fostering creativity (Brakus et al., 2009; Gentile et al., 2007; Schmitt, 1999). Such messages can elicit cognitive responses in consumers. Thus, firms may use these messages to promote learning and a deeper understanding of topics relevant to their community (Flecha-Ortiz et al., 2021). An example would be a publication featuring interactive tools, such as quizzes, that might challenge consumers' intelligence, stimulate their cognition, and encourage critical thinking (Kim et al., 2023).

Intellectual messages require substantial cognitive processing from consumers. However, when such cognitively demanding content is presented with warm colors, its capacity to sustain attention may be reduced. This is because warm colors tend to evoke arousal and approach-avoidance responses that can divert cognitive resources away from message elaboration, making it more difficult for consumers to maintain focus and process complex information effectively (Chi et al., 2021; Hsieh et al., 2018; Labrecque & Milne, 2012). As a result, consumers may engage less deeply with intellectual messages, leading to diminished sustained attention.

Hypothesis 4a Warm colors negatively moderate the relationship between intellectual messages and sustained attention.

Intuitively, one might assume that intellectual messages, which provide cognitive stimuli such as timely company updates or breaking news, are more likely to be shared (Akpınar & Berger, 2017; de Vries et al., 2012). However, prior research has produced mixed results: some studies have found no significant effects of intellectual messages on sharing (Veloso et al., 2023), while others have reported outcomes that vary depending on the type of information conveyed (Tellis et al., 2019), and a few have even revealed negative effects (Lee et al., 2018; ShabirHusain et al., 2023). Warm colors, by contrast, may be less suitable for conveying complex information, as they do not evoke the sense of tranquility, intelligence, and clarity necessary for deep cognitive processing (Chi et al., 2021; Hsieh et al., 2018; Labrecque & Milne, 2012). When intellectual messages are presented together with warm colors, cognitive processing may be taxed, reducing consumers' ability to recognize the informational value of the message. Consequently, the content may be perceived as less coherent or overly demanding, lowering consumers' willingness to recommend it.

Hypothesis 4b Warm colors negatively moderate the relationship between intellectual messages and recommendations.

Finally, the behavioral dimension of experiential messages refers to social media content that encourages physical actions, the adoption of new lifestyles, or alternative approaches to everyday tasks (Brakus et al., 2009; Schmitt, 1999). These messages are designed to motivate consumers to act (Das et al., 2019). For example, a publication prompting consumers to perform a specific action aims to create a meaningful behavioral experience during their interaction with the content.

While behavioral messages are designed to stimulate action, their ability to sustain attention may be reduced when they are presented using warm colors. Although visually engaging, these colors are often associated with danger, mistakes, negative perceptions of usefulness, and discomfort, all of which can trigger avoidance behaviors (Hsieh et al., 2018; Jalali & Papatla, 2016; Oyibo & Vassileva, 2020). As a

result, consumers may become distracted or disengage more quickly, making it difficult to sustain attention on the message's call to action. In this way, warm colors may interfere with the attentional processes required to effectively process behavioral messages.

Hypothesis 5a Warm colors negatively moderate the relationship between behavioral messages and sustained attention.

Behavioral messages often include clear calls to action, such as "Share," which are designed to capture attention and directly trigger specific behaviors (Chae, 2021). Although such content might intuitively seem likely to enhance recommendations (Moran et al., 2020), previous research suggests that action-oriented images, such as visuals depicting a person performing a specific gesture, are actually less likely to be shared (Villaruel Ordenes et al., 2019). Moreover, the potentially negative associations of warm colors may affect how these messages are interpreted, making them more difficult to process. Therefore, consumers may perceive the content as less appealing and be less inclined to recommend it.

Hypothesis 5b Warm colors negatively moderate the relationship between behavioral messages and recommendations.

Fig. 1 illustrates the model tested in Study 1.

While the preceding hypotheses highlight the moderating role of warm colors across distinct experiential message dimensions, social media content integrates multiple dimensions within the same publication. Thus, the next subsection advances propositions that capture the joint effects of such message configurations on sustained attention and recommendations.

3.2. Configurations of experiential messages and warm colors in driving engagement behaviors

As noted above, on social media no individual content element can be understood in isolation; combinations of elements work together to

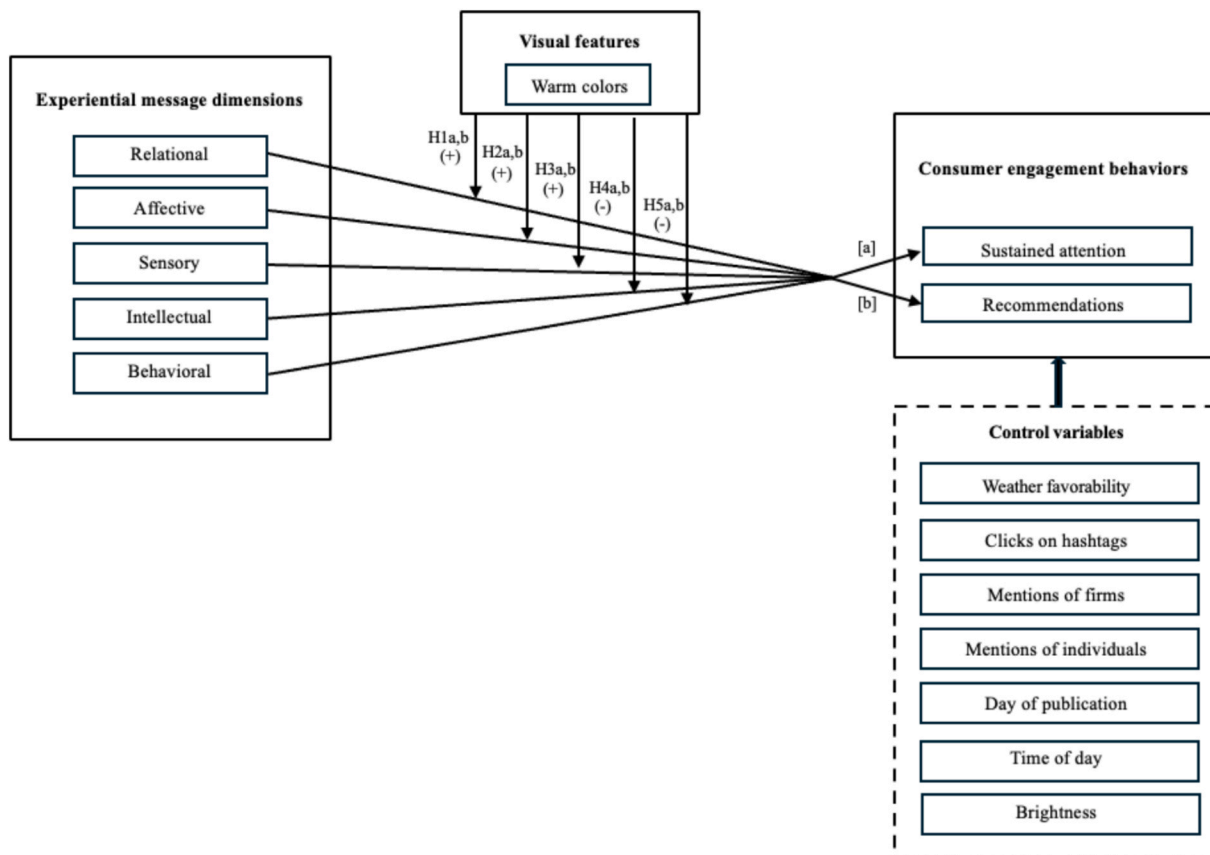


Fig. 1. Conceptual model proposed.

drive the desired outcome (Villarroel Ordenes et al., 2019). Thus, social media content should be designed holistically, with careful consideration of how different elements fit together to achieve optimal results. These elements, each of which represents different meanings, can vary in intensity and, when interacting, can form distinct and effective combinations that elicit specific outcomes. Each combination is characterized by the presence of interconnected elements and the absence of others.

This paper proposes a conceptual framework that emphasizes the importance of combining content elements, such as experiential messages and warm colors, to enhance consumer engagement behaviors. Given the limited research on the combined effects of content elements on social media, the current study draws on the three principles of causal complexity in social science, as applied through qualitative comparative analysis (QCA; Woodside, 2016).

First, the principle of conjunctural causation highlights that outcomes arise from the interaction of multiple conditions rather than from any single condition in isolation. In other words, it is the combination and interplay of various conditions that produce a specific result (Pappas and Woodside, 2021; Ragin, 2008; Salonen et al., 2021). Building on this principle, we suggest that consumer engagement behaviors are not driven by any single content element alone, but emerge from the combination of experiential message dimensions and warm colors.

Proposition 1 The presence of a single element from the set of experiential message dimensions or warm colors is insufficient to enhance sustained attention and/or recommendations.

Second, the principle of causal asymmetry posits that the same set of conditions may produce different outcomes depending on their configuration. Accordingly, the effect of a given condition on an outcome depends on its interaction with other conditions, rather than on its mere presence or absence (Salonen et al., 2021; Woodside, 2016). Following this reasoning, we propose that the influence of experiential message dimensions and warm colors on consumer engagement behaviors varies according to the presence or absence of other elements within the overall configuration.

Proposition 2 The influence of experiential message dimensions and warm colors on sustained attention and recommendations is contingent on their specific configuration, and depends on the presence or absence of other experiential message dimensions and warm colors.

Finally, the principle of equifinality asserts that multiple configurations of conditions can equally explain the outcome of interest, with sufficient combinations leading to the desired result (Woodside, 2016). Consistent with this logic, QCA identifies which conditions, whether connected or unconnected, contribute to an outcome by examining how they combine across multiple causal pathways (Fiss, 2011; Ragin, 2000). Applied to this research, we suggest that different configurations of experiential message dimensions and warm colors can each effectively drive consumer engagement behaviors.

Proposition 3 Multiple distinct causal combinations of experiential message dimensions and warm colors can equally lead to higher levels of sustained attention and recommendations.

To empirically test the hypotheses and propositions developed above, we conducted two complementary studies. Together, the two studies provide a comprehensive analysis of both the isolated and combined effects of content elements on social media engagement.

4. Study 1: The moderating role of warm colors on the effect of experiential message dimensions on engagement behaviors

Study 1 examines how the interaction between each dimension of experiential messages and the use of warm colors affects sustained attention and recommendations. We propose that the strategic selection and integration of colors can significantly enhance or undermine the effectiveness of experiential messages.

4.1. Methodology

4.1.1. Description of the context and dataset

The dataset was developed through a long-term collaboration between the researchers and a major snow tourism resort operator in a southern European country. This operator is the leading competitor in its geographical area, generating about 35 million euros of annual revenue and employing an average workforce of 700 staff members. It is managed through a public-private partnership aimed at promoting the region's economic development, with snow tourism accounting for approximately 15% of its gross domestic product. After excluding six Instagram Stories that were not the firm's original content (i.e., reposted Stories) and four promotional Stories, the dataset included non-paid Stories published between February and March 2019, including 524 sets of photos (69.5%) and videos (30.5%). Due to the platform's intrinsic characteristics, each video was a maximum of 15 s long, with an average duration of 9.6 s. Stories could include additional resources, such as GIFs, emojis, mentions, or hashtags.

In accordance with the firm's policy, all content was posted organically (i.e., no paid advertising). The firm posted an average of nine Stories per day, typically during anticipated peak engagement times. The content varied, from images of landscapes from the resort, to activities available, to other local tourist attractions at the destination (e.g., typical food, beverages, or festivals). During data collection, the number of followers remained stable, with a maximum increase of less than 5%.

To assemble the dataset, we worked with the firm's marketing department, which had access to Instagram analytics, to create an Excel file that included relevant data for each story. The Stories were organized chronologically and each one was assigned a unique identification number. Moreover, the firm provided the researchers with all Stories downloaded from its Instagram account in JPG (images) and MP4 (video) formats, with each identified by the unique identification number corresponding to the story's entry in the Excel file. The final dataset contained information on (a) the date and time of the story's publication; (b) its content; and (c) consumer interactions, including the number of consumers who viewed each story, the number of clicks to rewatch it, and the number of shares.

4.1.2. Operationalization of variables

Regarding *dependent variables*, sustained attention was measured by the total number of clicks with the aim of rewatching content during the course of the story or upon its completion, without exiting Instagram Stories. Recommendation behavior was measured by the total number of shares of each story during its 24-hour availability (Dhaoui & Webster, 2021). This action principally refers to consumers sharing content from one account to their own on the Instagram platform, but also encompasses sharing through other messaging platforms, including WhatsApp, iMessage, and direct messages. When consumers share a story through Instagram Stories, it becomes visible to their followers for the duration of time it remains available, with a link directing to the original account.

Our *independent variables* of interest were the five dimensions of experiential messages—relational, affective, sensory, intellectual, and behavioral—and the use of warm colors within the Instagram Stories.

Experiential message dimensions were rated independently for all Stories by three trained human coders. Human coders can capture content features that automated systems cannot, such as the simultaneous use and interaction of multiple formats (i.e., text, photos, and videos), nuanced tools like emoticons or GIFs, and characteristics such as humor, anger, or irony. They can also interpret meanings derived from combinations of content elements, applying consistent criteria across Stories.

Coders were recruited from the local labor market by the firm, targeting social media content specialists with expertise in managing large databases. Nine candidates were selected from over 200 applicants based on prior experience in similar roles and their track record of

professional success. As part of our recruitment procedure, candidates completed a task in which they identified Instagram posts containing different types of experiential messages. Three coders were selected based on their performance on this recruitment task. All were blind to our hypotheses.

The evaluation process followed six phases, as detailed in Web Appendix A, and adhered to prior methodological approaches in the literature (Berger and Milkman, 2012).

Before coding, the coders underwent structured training to ensure a shared understanding of the evaluation criteria. During this training, the researchers and coders jointly developed a standardized template that defined each experiential dimension and specified the meaning of each point on the five-point measurement scales (see Table 1). Coders referred to this template throughout the evaluation to maintain consistency and comparability. To enhance reliability and address potential construct validity concerns, we adopted a triangulation approach to the content, which allowed us to compare and refine coders' interpretations. Each dimension was rated independently, so a story could receive high or low scores across multiple dimensions depending on its attributes.

After coding, the researchers reviewed all scores. Intercoeder reliability was ensured because the value of Krippendorff's (2004) alpha in all cases exceeded the threshold of 0.67 established in the literature: 0.71 for relational message, 0.75 for affective message, 0.79 for sensory message, 0.85 for intellectual message, and 0.83 for behavioral message. Discrepancies between coders were resolved through a constructive discussion, and a unique score was assigned to each story.

To measure the color composition of each Instagram Story, we employed Clarifai, an artificial intelligence tool that provides a variety of pre-trained models for image analysis. Specifically, we used its color model, which identifies the dominant colors in an image and provides two outputs: (1) the color name in hexadecimal format, and (2) a density value (ranging from 0 to 1) for each of the 140 possible color hues detected in the image, representing the proportion of pixels corresponding to each hue. These 140 hues are grouped into eight broader color clusters: red, orange, yellow, purple, green, blue, white, and black (Barnes, 2022). The tool analyzed all colors present in the entire publication, accounting for every visual element, including the background, foreground, symbols, logos, products, and so on. For our study, we classified warm colors as red, orange, and yellow; cool colors as purple, green, and blue; and neutral colors as white and black (Crowley, 1993). For each story, we calculated an overall warm color score by summing the density values of red, orange, and yellow. This produced a single continuous variable ranging from 0 (no warm colors) to 1 (image composed entirely of warm colors). Static content, such as photographs, images, and screenshots, was analyzed directly. For dynamic content (videos), all frames were extracted and analyzed individually, and their warm color scores were averaged to obtain a single measure per story. Thus, all pixels in each image or video were included in the analysis. A higher score in the *warm colors* variable indicated a greater presence of warm colors in the story.

Table 2 provides three examples to illustrate how Stories were rated on the independent variables.

We added several control variables to assess whether other factors may influence sustained attention and recommendations. First, we analyzed whether favorable weather conditions in the resort's geographical area at the time of posting could stimulate certain social media behaviors. For this, we elaborated the *weather favorability* variable, which was coded as a dichotomous measure: 1 when weather conditions are favorable for snow tourism and 0 when they are not (Hernández-Ortega et al., 2022). This classification was based on objective meteorological parameters, such as precipitation, cloudiness, and temperature, provided by the State Meteorological Agency. These parameters are commonly used by tourism firms to assess whether weather conditions are suitable for their activities, and have also previously been shown to influence social media engagement (Baylis et al., 2017; Minor et al., 2023).

Table 1
Definitions of experiential message dimensions and meanings of scale points.

Experiential Message Dimensions	Definition	Meaning of Scale Points
Relational	The story is rated higher on this dimension if it stimulates collective activities and/or consumption or if the story generates a feeling of belonging to the community	<ol style="list-style-type: none"> 1. The story does not include any reference to the individual's social systems (e. g., friends, family, collective actions). 2. The story includes indirect or implicit references to the individual's social systems (e. g., friends, family, partners, collective actions) in the text, photos, or videos. 3. The story includes explicit references to the individual's social systems (e.g., friends, family, partners, collective actions) in the text, photos, or videos. 4. The story includes clear and easily recognizable references to the individual's social systems (e.g., friends, family, partners, collective actions) in the text, photos, or videos. 5. The main topic of the story is the individual's social systems (e.g., friends, family, partners, and collective actions), and it is transmitted in a powerful way.
Affective	The story is rated higher on this dimension if it induces emotions, feelings and/or moods	<ol style="list-style-type: none"> 1. The story does not include any reference to the individual's emotions, feelings or moods. 2. The story includes indirect or implicit references to the individual's emotions, feelings or moods in the text, photos, or videos. 3. The story includes explicit references to the individual's emotions, feelings or moods in the text, photos, or videos. 4. The story includes clear and easily recognizable references to the individual's emotions, feelings and/or moods in the text, photos, or videos. 5. The main topic of the story is the individual's emotions, feelings, and/or moods, and it is transmitted in a powerful way.
Sensory	The story is rated higher on this dimension if it stimulates or evokes experiences based on at least one of the five senses.	<ol style="list-style-type: none"> 1. The story does not include any reference that evokes or stimulates human senses (sight, hearing, smell, taste and touch). 2. The story includes indirect or implicit references that evoke human senses (sight, hearing, smell, taste and touch) in the text, photos or videos. 3. The story includes explicit references that evoke human senses (sight, hearing, smell, taste and touch) in the text, photos or videos. 4. The story includes clear and easily recognizable references that stimulate human senses (sight, hearing, smell, taste and touch) in the text, photos or videos.

(continued on next page)

Table 1 (continued)

Experiential Message Dimensions	Definition	Meaning of Scale Points
Intellectual	The story is rated higher on this dimension if it stimulates convergent/analytic or induces divergent/imaginative thinking	<p>5. The main topic of the story is the stimulation of human senses (sight, hearing, smell, taste, and touch), and it is transmitted in a powerful way.</p> <p>1. The story does not include any reference that stimulates the individual's creativity/curiosity.</p> <p>2. The story includes indirect or implicit references that stimulate the individual's creativity or curiosity in the text, photos, or videos.</p> <p>3. The story includes explicit references that stimulate the individual's creativity or curiosity in the text, photos, or videos.</p> <p>4. The story includes clear and easily recognizable references that stimulate the individual's creativity or curiosity in the text, photos, or videos.</p> <p>5. The main topic of the story is the stimulation of the individual's creativity or curiosity, and it is transmitted in a powerful way.</p>
Behavioral	The story is rated higher on this dimension if it stimulates the development of physical actions or induces some type of behavioral actions	<p>1. The story does not include any call for physical or behavioral actions in an explicit or implicit way.</p> <p>2. The story includes indirect or implicit calls for physical or behavioral actions in the text, photos, or videos.</p> <p>3. The story includes explicit calls for physical or behavioral actions in the text, photos, or videos.</p> <p>4. The story includes clear and easily recognizable calls for physical or behavioral actions in the text, photos, or videos.</p> <p>5. The main topic of the story is the call for physical or behavioral actions, and it is transmitted in a powerful way.</p>

Second, to evaluate whether the presence of hashtags (or a single hashtag) in Stories prompted consumer interactions, the coders counted the number of clicks on hashtags (Deng et al., 2021; Kumar et al., 2022).

Third, we included two dummy variables to assess whether mentioning¹ firms or individuals (e.g., influencers) in a story encouraged consumer interactions with the content (Deng et al., 2021), with a value of 1 showing that the story included at least one mention of a firm or individual.

Fourth, we considered the brightness of the published content (images and videos) as a control variable, capturing the overall luminance of each Story (Kanuri et al., 2023; Zhang et al., 2022). Brightness was measured using the Clarifai tool, which assigns values ranging from 0 (darkest) to 1 (brightest). Controlling for brightness allows us to isolate the effect of warm colors by ensuring that observed differences in engagement behaviors are not simply due to variations in image luminance.

¹ Mentions are specific linguistic elements that employ the @ symbol, followed by the referenced username.

Finally, we accounted for temporal effects by implementing fixed effects for both day of the week and time of day. To capture day-of-the-week variations, we created a binary weekend indicator (1 if the Story was published on Saturday or Sunday) (Berger et al., 2023; Dhaoui & Webster, 2021; Duan et al., 2008). For time-of-day effects, four mutually exclusive indicator variables were defined: night (00:00–05:59), morning (06:00–11:59), afternoon (12:00–17:59), and evening (18:00–23:59) (for similar practices, see Berger et al., 2023; Kanuri et al., 2018; Meire et al., 2019). To avoid perfect multicollinearity (the dummy-variable trap), only three of the four time-of-day dummies were included simultaneously in each regression model, with night serving as the reference category. These temporal fixed effects help to control for systematic variations in consumer engagement attributable to predictable temporal patterns, allowing us to isolate the impact of experiential message dimensions and warm colors.

Table 3 presents the operationalization of variables in this study, while Table 4 provides descriptive statistics and correlations for all variables.

Diagnostic tests were undertaken to ensure that multicollinearity was not a problem in the study. Variance inflation factors (VIFs) were calculated for the set of predictors. A dummy variable for time-of-day fixed effects had the highest VIF score of 3.35, which is below the critical cut-off value of 5.00, while the corresponding tolerance values ranged from 0.29 to 0.90—all within the acceptable limit of 0.20 reported in the literature (Hair et al., 1998). These results indicate that multicollinearity is not a concern in our models.

4.1.3. Model specification

To determine the most appropriate hypothesis testing method, we considered the characteristics of our dataset. The dependent variables (the number of clicks to rewatch a story and the number of shares) had non-negative integer values (count data) and could display overdispersion, such as a long tail distribution or high variability (Heimbach & Hinz, 2016). Fig. 2 presents histograms illustrating the distribution of these variables across all Stories, highlighting the percentage of Stories that were seen again and shared. These figures demonstrate overdispersion in our data, especially for shares, where the variance exceeded the mean (see Table 4), with over 28% of Stories not being shared. Therefore, we opted to test count data models in our analyses as they were more suitable than log-transforming the data (O'Hara & Kotze, 2010).

For each dependent variable, we estimated two alternative count data models that differed in their underlying statistical distributions: the Poisson model assuming an equidispersed distribution, and the negative binomial model accounting for overdispersion (Rietveld et al., 2020). Since many Stories received zero shares, potentially making the data incompatible with a standard count data model (Winkelmann, 2008), we also considered zero-inflated versions of both the Poisson and negative binomial models for this dependent variable. All models were estimated in Stata 14.0.

Table 5 summarizes the goodness-of-fit statistics for the models estimated for each dependent variable. The models were compared between the log-likelihood, Akaike information criterion (AIC), and Bayesian information criterion (BIC; Lovett et al., 2013; Rooderkerk & Pauwels, 2016). The AIC and BIC statistics balance the model fit and complexity, with lower values being preferred. These goodness-of-fit statistics indicated that the negative binomial model without zero inflation was most suitable for analyzing both dependent variables. Consequently, this model was employed to test the hypotheses.

4.2. Results

Building on the aforementioned comparison, we conducted estimations using negative binomial regressions, applying a stepwise approach with three blocks of variables and effects: control effects (Models 1a and b), direct effects (i.e., the five dimensions of experiential messages and

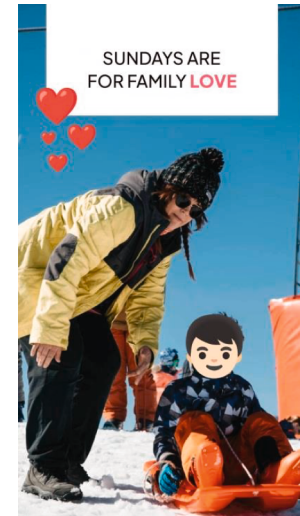
Table 2
Examples of stories.



Relational experiential message: 1
Affective experiential message: 1
Sensory experiential message: 3
Intellectual experiential message: 5
Behavioral experiential message: 1
Warm colors: 0.00



Relational experiential message: 1
Affective experiential message: 3
Sensory experiential message: 4
Intellectual experiential message: 1
Behavioral experiential message: 5
Warm colors: 0.08



Relational experiential message: 5
Affective experiential message: 4
Sensory experiential message: 2
Intellectual experiential message: 2
Behavioral experiential message: 1
Warm colors: 0.22

warm colors; Models 2a and b), and two-way interaction effects between experiential message dimensions and warm colors (Models 3a and b). [Table 6](#) presents the results.

Models 1a and 1b reported the control effects. First, weather favorability had a negative and significant effect on both dependent variables, suggesting that favorable skiing conditions reduced consumer attention to Instagram Stories and decreased recommendations. Second, clicks on hashtags were significantly associated with sustained attention to content but had no significant impact on recommendations. Third, mentions in Stories, whether referring to firms or individuals, positively influenced both dependent variables. Fourth, the brightness of content did not have a significant effect. Finally, Stories published on weekdays generated a higher volume of interactions compared to those posted on weekends (see similar conclusions in [Rietveld et al., 2020](#); [Rooderkerk & Pauwels, 2016](#)).

Models 2a and 2b displayed direct effects for the dimensions of experiential messages. Model 2a demonstrated that three dimensions significantly and positively influenced sustained attention: sensory ($\hat{\beta} = 0.086$, $p < 0.001$), intellectual ($\hat{\beta} = 0.086$, $p < 0.001$), and behavioral ($\hat{\beta} = 0.110$, $p < 0.001$). Relational ($\hat{\beta} = -0.016$, $p > 0.10$) and affective ($\hat{\beta} = 0.024$, $p > 0.10$) messages did not have significant effects. Model 2b validated that the affective ($\hat{\beta} = 0.364$, $p < 0.001$), sensory ($\hat{\beta} = 0.450$, $p < 0.001$), and intellectual ($\hat{\beta} = 0.292$, $p < 0.001$) dimensions positively influenced recommendation behavior. Nevertheless, relational ($\hat{\beta} = 0.040$, $p > 0.10$) and behavioral ($\hat{\beta} = 0.058$, $p > 0.10$) messages did not have significant effects. Warm colors had no significant effects on either of the two dependent variables ($\hat{\beta} = 0.063$ for sustained attention and $\hat{\beta} = -0.686$ for recommendations; $p > 0.10$, respectively).

Models 3a and 3b examined two-way interaction effects and tested Hypotheses 1–5. Affective messages had a stronger impact on sustained attention behavior when warm colors were predominant ($\hat{\beta} = 0.358$, $p < 0.05$), whereas the effect of intellectual messages diminished under the same conditions ($\hat{\beta} = -0.604$, $p < 0.001$). However, the interaction effects between relational, sensory, and behavioral message dimensions

and warm colors were not significant with respect to sustained attention ($\hat{\beta} = -0.257$; $\hat{\beta} = -0.162$; $\hat{\beta} = 0.056$, $p > 0.10$, respectively). Consequently, Hypotheses 2a and 4a were supported, and Hypotheses 1a, 3a, and 5a were rejected.

Regarding recommendation behavior, relational and affective messages had a greater influence when warm colors were present ($\hat{\beta} = 1.570$; $\hat{\beta} = 1.177$, $p < 0.05$, respectively), while the impact of intellectual messages decreased in such contexts ($\hat{\beta} = -0.963$, $p < 0.05$). The interaction effects between sensory and behavioral messages and warm colors were not significant ($\hat{\beta} = 0.156$; $\hat{\beta} = 0.426$, $p > 0.10$, respectively). Therefore, Hypotheses 1b, 2b, and 4b were supported, and Hypotheses 3b and 5b were rejected. [Table 7](#) summarizes the hypothesis testing results.

The global significance of the negative binomial regressions was evaluated using the likelihood ratio test, comparing the log-likelihood of the fitted model with that of a null model containing only the constant ([Hilbe, 2011](#)). The analysis revealed that for both dependent variables, Models 3a and 3b including two-way interaction effects were significant and provided the best fit compared to Models 1a, 1b, 2a, and 2b. Results indicated that Models 3a and 3b were significant for both dependent variables: $\chi^2(20) = 554.44$, $p = 0.000$ for sustained attention, and $\chi^2(20) = 145.87$, $p = 0.000$ for recommendations. Moreover, these models demonstrated a reasonable ability to explain the variance in both dependent variables, with Cragg–Uhler R^2 values of 0.49 and 0.21, respectively ([Cameron & Trivedi, 1998](#); [Nagelkerke, 1991](#)).

4.3. Robustness checks

To ensure that our results hold under varying conditions, we conducted several robustness checks (Web Appendix B), all of which confirmed the stability of our findings. Each of these checks is discussed below.

First, we re-estimated the models to examine the inclusion of cool colors (green, blue, violet) in each story, considering both their direct effects on the dependent variables (Table WA.B1, Models 5a and 5b) and

Table 3
Operationalization of variables.

VARIABLE	OPERATIONALIZATION
<i>Relational message</i>	Variable indicating if the message of the story appeals to the bond that individuals maintain with their social systems (friends, family, partners, etc.). Measured with a five-point scale by human coders. A story is rated higher on this dimension if it refers to collective activities and/or consumption or if it addresses feelings of belonging to the community.
<i>Affective message</i>	Variable indicating if the message of the story appeals to the individuals' affective system through the feelings and emotions they experience during consumption. Measured with a five-point scale by human coders. A story is rated higher on this dimension if it refers to emotions, feelings and/or moods.
<i>Sensory message</i>	Variable indicating if the message of the story appeals to human senses stimulated during the consumption experience: sight, hearing smell, taste and touch. Measured with a five-point scale by human coders. A story is rated higher on this dimension if it refers to one or more of the five senses.
<i>Intellectual message</i>	Variable indicating if the message of the story appeals to the individuals' conscious mental processes that can be stimulated during their consumption experience. Measured with a five-point scale by human coders. A story is rated higher on this dimension if it addresses convergent/analytic or divergent/imaginative thinking, such as the practical resolution of problems, the stimulation of curiosity or the application of the individual's creativity.
<i>Behavioral message</i>	Variable indicating if the story appeals to the individuals' physical or behavioral actions related to the consumption experience. Measured with a five-point scale by human coders. A story is rated higher on this dimension if it induces physical actions or addresses behavioral actions.
<i>Warm colors</i>	Continuous variable indicating the relative intensity of warm colors (i.e., red, orange, yellow) in the story, ranging from 0 (no warm colors) to 1 (story composed entirely of warm colors).
<i>Brightness</i>	Continuous variable indicating the overall brightness level of the story, ranging from 0 (darkest) to 1 (brightest).
<i>Weather favorability</i>	Dummy variable indicating if the weather conditions are favorable (1) or adverse (0) for skiing. Measured by a public weather station.
<i>Clicks on hashtags</i>	Number of clicks that users made on hashtags included in the story.
<i>Mentions of firms</i>	Dummy variable indicating if the story included a mention of firm(s) (1) or not (0).
<i>Mentions of individuals</i>	Dummy variable indicating if the story included a mention of individual(s) (1) or not (0).
<i>Day of publication</i>	Dummy variable indicating if the story was published on weekend (1) or from Monday to Friday (0).
<i>Time-of-day fixed effects</i>	Four dummy variables indicating if the story was published during certain hours. The first indicator variable served as the default: 1. at night, 00.01–06.00; 2. morning work hours, 06.01–12.00; 3. afternoon work hours, 12.01–18.00; 4. after work, 18.01–00.00. Coded by human coders from Facebook Insights.
<i>Sustained attention behavior</i>	Number of clicks the story obtained to re-watch the content.
<i>Recommendation behavior</i>	Number of shares obtained by the story.

their interaction effects with experiential message dimensions (Table WA.B1, Models 6a and 6b). The results remained consistent across these alternative model specifications.

Second, to ensure that differences in story duration did not unduly influence the findings, we introduced a new categorical variable for story length, divided into three ranges: (1) 1–5 s, (2) 6–10 s, and (3) 11–15 s (Table WA.B2, Models 7a and 7b). Additionally, we created a new estimation sample that excluded all stories longer than 10 s (i.e., category 3) and re-estimated the full models using this reduced sample (n = 458) (Table WA.B2, Models 8a and 8b). In both cases, the results

Table 4
Descriptive statistics and correlations (Study 1).

	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Relational message	2.06	1.25	1	5	1														
2. Affective message	2.04	1.03	1	5	0.43***	1													
3. Sensory message	2.64	0.96	1	5	0.095**	0.05	1												
4. Intellectual message	2.31	1.37	1	5	-0.24***	-0.27***	-0.40***	1											
5. Behavioral message	1.48	0.88	1	5	-0.08*	-0.05	-0.07	0.29***	1										
6. Warm colors	0.05	0.10	0	0.93	0.10**	0.14***	-0.02	0.01	0.06	1									
7. Brightness	0.63	0.01	0.10	0.99	-0.06	-0.05	-0.05	0.05	0.013	-0.18***	1								
8. Weather favorability	83%	0.38	0	1	0.05	0.02	0.05	-0.09*	-0.09**	-0.01	-0.09**	1							
9. Clicks on hashtags	6.75	6.02	0	114	0.09**	0.10**	-0.05	0.05	0.05	0.03	-0.07	0.04	1						
10. Mentions of firms	6.87% ^b	0.25	0	1	0.04	-0.02	0.08*	0.07	-0.05	0.10**	-0.10**	0.02	-0.01	1					
11. Mentions of individuals	6.11% ^b	0.24	0	1	0.06	0.12**	-0.13**	0.10**	-0.01	0.10**	-0.06	-0.05	0.23***	0.12***	1				
12. Day of publication	27% ^c	0.45	0	1	0.23***	0.10**	-0.03	0.03	-0.09**	0.09**	-0.09**	-0.07	-0.04	0.22***	0.08*	1			
13. Sustained attention	335.21	174.48	56	1154	-0.23***	-0.16***	-0.03	0.44***	0.25***	-0.05	0.09**	-0.16**	0.06	0.06	0.03	-0.10**	1		
14. Recommendations	6.45	12.75	0	164	0.03	0.12**	0.10**	0.11**	0.08*	-0.01	0.03	-0.03	0.16***	0.07	0.18***	-0.09**	-0.09**	1	

Number of observations: 524; * p < 0.10; ** p < 0.05; *** p < 0.01.

^a Percentage of stories posted during periods of favorable weather conditions; ^b Percentage of stories including mentions of firms/individuals; ^c Percentage of stories published on weekends.

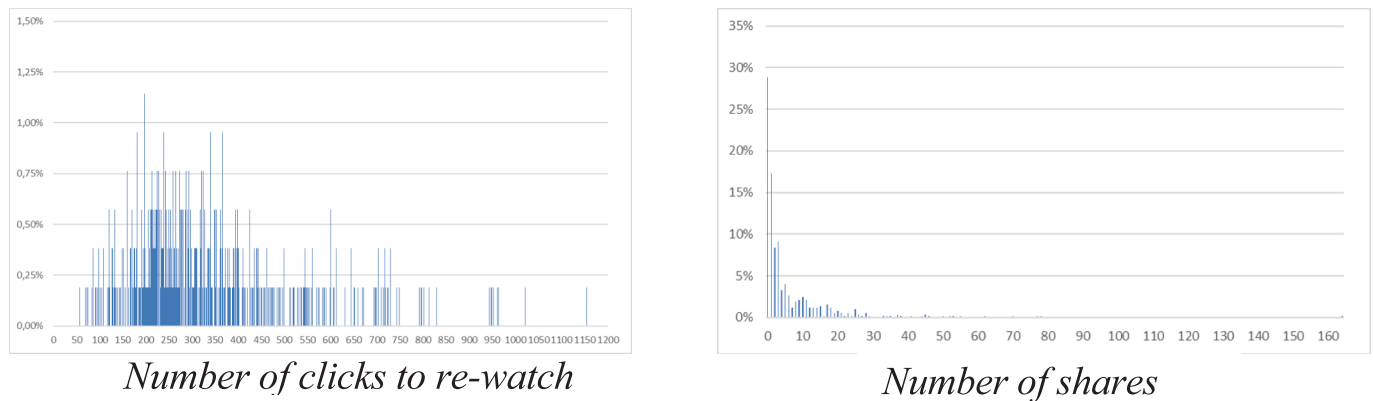


Fig. 2. Distribution of the dependent variables.

Table 5
Model selection based on fit statistics.

	Sustained attention Log-likelihood	AIC	BIC	Recommendations Log-likelihood	AIC	BIC
Poisson	-14243.40	28526.80	28612.02	-3216.22	6472.44	6557.66
Negative Binomial	-3225.40	6492.80	6582.30	-1386.69	2815.38	2904.87
Zero-inflated Poisson	-	-	-	-2696.81	5445.62	5536.42
Zero-inflated Negative Binomial	-	-	-	-1384.04	2822.08	2937.14

Note: In bold the best-fitting model.

Table 6
Results for Study 1.

	Sustained attention				Recommendations							
	Model 1a		Model 2a		Model 3a		Model 1b		Model 2b		Model 3b	
	Par. Est.	Std. Error	Par. Est.	Std. Error	Par. Est.	Std. Error	Par. Est.	Std. Error	Par. Est.	Std. Error	Par. Est.	Std. Error
Relational message			-0.016	0.015	-0.051	0.018			0.040	0.062	-0.067	0.073
Affective message			0.024	0.018	0.009	0.019			0.364***	0.074	0.269***	0.081
Sensory message			0.086***	0.020	0.103***	0.021			0.450***	0.076	0.441***	0.084
Intellectual message			0.086***	0.018	0.111***	0.018			0.292***	0.069	0.306***	0.071
Behavioral message			0.110***	0.021	0.103***	0.022			0.058	0.093	0.046	0.099
Warm colors			0.063	0.242	-0.138	0.202			-0.686	0.564	-0.627	0.742
Relational message *					-0.257	0.260					1.570**	0.801
Warm colors											1.177**	0.521
Affective message *					0.358**	0.173						
Warm colors												
Sensory message *					-0.162	0.111					0.156	0.436
Warm colors												
Intellectual message					-0.604***	0.132					-0.963**	0.432
* Warm colors												
Behavioral message					0.056	0.128					0.426	0.540
* Warm colors												
Brightness	0.031	0.108	0.052	0.098	0.027	0.097	0.204	0.411	0.027	0.404	0.023	0.398
Weather favorability	-0.268***	0.059	-0.204***	0.051	-0.217***	0.051	-0.441**	0.182	-0.576***	0.193	-0.536***	0.191
Clicks on hashtags	0.006***	0.001	0.005***	0.001	0.005***	0.001	0.014	0.013	0.013	0.013	0.018	0.015
Mentions of firms	0.263***	0.073	0.225***	0.074	0.239***	0.071	0.507*	0.294	0.492*	0.273	0.383	0.244
Mentions of individuals	0.193**	0.078	0.197**	0.077	0.170**	0.077	0.982**	0.468	0.640*	0.353	0.430	0.302
Day of publication	-0.209***	0.042	-0.168***	0.040	-0.165***	0.040	-0.723***	0.174	-0.897***	0.162	-0.830***	0.162
Time-of-day fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Constant	6.622***	0.096	5.836***	0.131	5.759***	0.133	2.670***	0.378	0.160	0.506	0.393	0.507
Wald-chi2	329.27(9); p = 0.000		487.17(15) p = 0.000		554.44(20) p = 0.000		53.74(9) p = 0.000		130.78(15)p = 0.000		145.87(20)p = 0.000	

Note: * p < 0.10; ** p < 0.05; *** p < 0.01.

remained consistent with the main analyses.

Third, to verify data stability and rule out multicollinearity issues, we performed an additional robustness test by excluding the variable with the highest VIF, a dummy capturing time-of-day effects, and re-estimating the full models. In these updated estimations, the highest

VIF value was 1.50 and the lowest tolerance value was 0.66 (for the intellectual message variable); both values are well within the commonly accepted thresholds in the literature. The magnitude and significance of the effects for both dependent variables remained virtually unchanged, confirming the stability of our results (Table WA.

Table 7
Summary of results (Study 1).

	Sustained attention	Recommendations
Two-way interaction effects		
Relational message * Warm colors	H1a: Non significant	H1b: Significant (positive effect)
Affective message * Warm colors	H2a: Significant (positive effect)	H2b: Significant (positive effect)
Sensory message * Warm colors	H3a: Non significant	H3b: Non significant
Intellectual message * Warm colors	H4a: Significant (negative effect)	H4b: Significant (negative effect)
Behavioral message * Warm colors	H5a: Non significant	H5b: Non significant

B3). Finally, to address potential concerns related to the *warm colors* variable, particularly its low mean (0.05) and relatively high standard deviation (0.10), we conducted a bootstrap analysis with 3,000 replications to test the robustness of the estimated coefficients. The results confirmed that the coefficients for warm colors remained consistent and statistically non-significant for both sustained attention ($\hat{\beta} = -0.211, p > 0.10$) and recommendations ($\hat{\beta} = -0.646, p > 0.10$). These findings indicate that the lack of significance is not attributable to sampling variability, thereby reinforcing the robustness and validity of the results.

4.4. Discussion

Our findings provide a comprehensive understanding of how experiential message dimensions and warm colors influence consumer engagement on social media. The discussion is structured to consider first the role of control variables, followed by the direct effects of experiential messages, and finally the interactions between messages and warm colors.

Analysis of the control variables revealed that favorable weather conditions negatively affected both sustained attention and recommendations, likely because consumers prioritized real-life activities over checking social media under optimal conditions. This result is consistent with previous research (Minor et al., 2023). The use of hashtags was associated with sustained attention but did not affect recommendations, while mentions in publications positively influenced both behaviors, highlighting the importance of interactive content. In contrast, the brightness of content did not have a significant influence on any of the outcomes. Furthermore, content published on weekdays received more interactions compared to content posted on weekends, likely because consumers are more active on social media during days when they are at work.

Regarding the direct effects of experiential message dimensions, sensory, intellectual, and behavioral messages significantly enhanced sustained attention, whereas affective and relational messages did not. For recommendations, affective, sensory, and intellectual messages were most effective, consistent with prior research demonstrating the positive influence of emotional content (Liadeli et al., 2022; Tellis et al., 2019), sensory stimulation (Krishna, 2012), and informative messages (Akpınar & Berger, 2017) on consumer engagement. Relational and behavioral messages were not significant. These results indicate that relational, sensory, and intellectual dimensions exhibit similar effects for both dependent variables, whereas affective and behavioral messages show divergent patterns. Specifically, behavioral messages capture consumers' immediate attention during brief content exposure of temporal content but do not significantly influence their recommendations. In contrast, affective messages are more effective in driving consumers' recommendation behavior than in capturing their immediate attention. These findings are consistent with prior research showing that messages designed to evoke emotional reactions are particularly

effective in motivating social sharing, whereas action-oriented messages primarily drive short-term engagement (Berger & Milkman, 2012; Hollebeek et al., 2019).

Finally, our results underscore the critical role of interactions between experiential message dimensions and warm colors in shaping engagement behaviors. The inclusion of these colors amplified the influence of affective messages while attenuating the effect of intellectual ones on both sustained attention and recommendation behaviors. This pattern suggests that using warm colors in temporal content enhances the effectiveness of emotionally driven messages, which consumers process subconsciously, while reducing the impact of cognitively demanding ones (Hernández-Ortega et al., 2022; Hsieh et al., 2018). Moreover, warm colors strengthened the effect of relational messages on recommendations, aligning with prior evidence that these colors foster perceptions of social closeness (Baek et al., 2018; Chi et al., 2021).

5. Study 2: Configurations of experiential messages and warm colors influencing engagement behaviors

Building on the insights from Study 1, Study 2 aims to identify the optimal overall combinations of variables that enhance consumer engagement behaviors, including sustained attention and recommendations.

5.1. Methodology

To examine how different dimensions of experiential messages and warm colors interact to trigger sustained attention and recommendations, we used fuzzy set QCA (fsQCA; Ragin, 2000), which bridges the most useful attributes of qualitative and quantitative approaches to study complex causal relationships (Pappas & Woodside, 2021).

The data analysis followed the established five-step fsQCA guidelines: (1) calibration and transformation of conditions, (2) construction of a truth table, (3) identification of necessary conditions, (4) identification of sufficient conditions, and (5) interpretation of results (Frösén et al., 2016; Pappas & Woodside, 2021; Salonen et al., 2021). For clarity, this "Methodology" subsection describes the data collection process and operationalization of conditions, calibration and transformation of conditions, and construction of the truth table. The "Results" subsection reports the identification of necessary and sufficient conditions and the interpretation of results.

5.1.1. Data collection and operationalization of conditions

We used a database from the same snow tourism resort operator as in Study 1, comprising 788 sets of photos (72.7%) and videos (27.3%) published between January and March 2024. The average video duration was 10.3 s.

The data collection, evaluation process, and operationalization of the conditions (i.e., experiential dimensions and warm colors) and outcomes of interest (i.e., sustained attention and recommendations) followed the same procedure as in Study 1 (see Web Appendix A). The firm's characteristics and the type of content published on Instagram Stories showed no variation from those of Study 1. Similarly, the number of followers during the analysis period fluctuated by less than 3%.

The reliability of the coding process was confirmed via satisfactory Krippendorff's (2004) alpha coefficients, all of which surpassed the minimum threshold of 0.67 proposed in the literature: 0.73 for relational messages, 0.81 for affective messages, 0.84 for sensory messages, 0.86 for intellectual messages, and 0.75 for behavioral messages.

Table 8 presents the correlations, means, and standard deviations for the conditions and outcomes of interest in this study.

5.1.2. Calibration and transformation of conditions

To generate fuzzy set membership measures, we considered three theoretical thresholds: full membership, no membership, and crossover point (Pappas & Woodside, 2021). For metric outcomes and conditions

Table 8
Descriptive statistics and correlations (Study 2).

	Mean	SD	Min	Max	1	2	3	4	5	6	7	8
1.Relational message	2.09	1.25	1	5	1							
2.Affective message	2.17	1.11	1	5	0.48***	1						
3.Sensory message	2.60	0.99	1	5	0.11***	-0.06	1					
4.Intellectual message	2.32	1.45	1	5	-0.33***	-0.36***	-0.38***	1				
5.Behavioral message	1.49	0.88	1	5	-0.19***	-0.19***	-0.25***	0.55***	1			
6.Warm colors	0.07	0.13	0	1	0.04	0.09***	-0.21***	-0.01	-0.01	1		
7.Sustained attention	296.44	201.79	39	1226	-0.11***	-0.10***	0.04	-0.03	-0.03	-0.10***	1	
8.Recommendations	5.47	11.67	0	151	0.04	0.04	0.12***	0.03	-0.03	-0.06*	0.21***	1

Notes: Number of observations: 788; * p < 0.10; ** p < 0.05; *** p < 0.01.

(i.e., sustained attention, recommendation behavior, and warm colors), given the absence of external anchors, we calibrated using percentiles (Pappas & Woodside, 2021). For experiential message dimensions, measured on a 5-point scale, we used three qualitative anchors in our calibration approach (Frösén et al., 2016). Table 9 presents the calibration and transformation of conditions and outcomes.

5.1.3. Construction of the truth table

A truth table organizes all possible configurations into a matrix, with each row representing a unique combination. This format allows for assessing whether these combinations lead to the desired outcome (Salonen et al., 2021). Using the truth table algorithm from the fs/QCA

Table 9
Calibration and transformation of conditions and the outcomes (Study 2).

Condition/Outcome	Original Scale	Thresholds used in Calibration
Relational message	Five-point scale	0 (No membership): Point 1 0.5 (Cross-over point): Point 2 1 (Full membership): Point 3, 4, 5
Affective message	Five-point scale	0 (No membership): Point 1 0.5 (Cross-over point): Point 2 1 (Full membership): Point 3, 4, 5
Sensory message	Five-point scale	0 (No membership): Point 1 0.5 (Cross-over point): Point 2 1 (Full membership): Point 3, 4, 5
Intellectual message	Five-point scale	0 (No membership): Point 1 0.5 (Cross-over point): Point 2 1 (Full membership): Point 3, 4, 5
Behavioral message	Five-point scale	0 (No membership): Point 1 0.5 (Cross-over point): Point 2 1 (Full membership): Point 3, 4, 5
Warm colors	Percentage ranging from 0 to 1	0 (No membership): percentile 0.20: 0 0.5 (Cross-over point): percentile 0.50: 0.017 1 (Full membership): percentile 0.80: 0.086
Sustained attention behavior	Number of clicks to re-watch the content	0 (No membership): percentile 0.20: 141 0.5 (Cross-over point): percentile 0.50: 247 1 (Full membership): percentile 0.80: 405
Recommendation behavior	Number of shares	0 (No membership): percentile 0.20: 0 0.5 (Cross-over point): percentile 0.50: 2 1 (Full membership): percentile 0.80: 8

3.0 software package (Ragin, 2008), we generated two truth tables, one for sustained attention and another for recommendations (Tables WA.C1 and WA.C2 in Web Appendix C).

We selected configurations according to specific frequency and consistency criteria (Ragin, 2008). Frequency refers to the number of cases for which a configuration accounts (Pappas & Woodside, 2021), while consistency measures how reliably a configuration leads to the desired outcome (Frösén et al., 2016). As the dataset included more than 150 cases, we set a minimum frequency threshold of three (Frösén et al., 2016; Pappas & Woodside, 2021; Ragin, 2008). Consistency values ranged from 0.00 to 1.00, with a minimum acceptable threshold of 0.75 (Pappas & Woodside, 2021; Rihoux & Ragin, 2009). To prevent overlapping subset relations, we applied a proportional reduction in the inconsistency score, setting the threshold at 0.65 (Pappas & Woodside, 2021).

5.2. Results

5.2.1. Identification of necessary conditions

First, we evaluated whether any condition was necessary for achieving the outcome. According to the literature, a causal condition must have a minimum consistency of 0.90 and coverage of 0.75 to be considered necessary (Ragin, 2006; Schneider & Wagemann, 2010). In our analysis, consistency scores for the conditions ranged from 0.28 to 0.79 for sustained attention and 0.30 to 0.80 for recommendations, while coverage scores ranged from 0.50 to 0.58 for sustained attention and 0.48 to 0.54 for recommendations. None of the conditions met the necessity criteria, suggesting that neither the dimensions of experiential messages nor warm colors were essential for achieving high levels of sustained attention or recommendations.

5.2.2. Identification of sufficient conditions

To evaluate sufficient conditions, fsQCA provides three types of solution: complex, parsimonious, and intermediate. Following established guidelines, we present the intermediate solution (Table 10), which identifies both core and peripheral conditions and thereby enables a more comprehensive understanding of the results (Frösén et al., 2016; Ragin, 2008). Core conditions, which are present in both the parsimonious and intermediate solutions, show strong causal links to the outcome. Peripheral conditions, which appear only in the intermediate solution, exhibit weaker connections but still support the core conditions (Fiss, 2011).

Our findings revealed an overall solution consistency of 0.84 and coverage of 0.19 for sustained attention, and an overall solution consistency of 0.82 and coverage of 0.20 for recommendations, all of which surpassed the minimum thresholds (Pappas & Woodside, 2021). Therefore, the configurations as a whole effectively explained a significant portion of the outcome and offered valuable theoretical insights (Ragin, 2006, 2008).

The consistency measure for each configuration indicates the degree to which cases sharing similar conditions present the same outcome value (Ragin, 2006). The data showed that each configuration consistently led to an improvement in sustained attention and

Table 10
Configurations with sufficient conditions for sustained attention and recommendation behaviors (intermediate solution).

	Sustained attention		Recommendations			
	C1	C2	C3a	C3b	C4a	C4b
Relational	●	⊗	●	●	⊗	⊗
Affective	●	⊗	●	●	●	●
Sensory	●	●	●	●		●
Intellectual	⊗	●	●		●	●
Behavioral	●	⊗	●	●	⊗	⊗
Warm colors	●	⊗		●	⊗	⊗
Consistency	0.88	0.83	0.86	0.86	0.86	0.88
Raw coverage	0.08	0.14	0.16	0.15	0.12	0.12
Unique coverage	0.04	0.1	0.01	0.004	0.004	0.04
Solution consistency		0.84	0.82			
Solution coverage		0.19	0.20			

Notes: Large circles represent core conditions, while smaller circles denote peripheral conditions. A filled black circle signals the presence of a content element; a white circle with an “x” marks its absence; and an empty space shows that the content element is not significant.

recommendations, with consistency values ranging from 0.83 to 0.88 for sustained attention, and from 0.86 to 0.88 for recommendations (Pappas & Woodside, 2021). Moreover, the coverage value for each configuration indicates the relative importance of that configuration in achieving the outcomes, and its formation by raw and unique coverage. The raw coverage values of configurations ranged from 0.08 to 0.14 for sustained attention, and from 0.12 to 0.16 for recommendations. Unique coverage values for each configuration were relatively low but remained meaningful, confirming that these configurations contributed to explaining the outcomes (Salonen et al., 2021).

5.2.3. Interpretation of results

Our analysis identified six distinct configurations that influence consumer engagement behaviors, with two primarily enhancing sustained attention and four primarily promoting recommendations.

Regarding sustained attention, Configuration 1 (C1) highlights the importance of delivering a comprehensive experience, incorporating relational, affective, sensory, and behavioral dimensions, along with warm colors, while deliberately excluding intellectual messages. In contrast, Configuration 2 (C2) combines sensory and intellectual messages without warm colors, emphasizing the strategic exclusion of relational, affective, and behavioral message types to sustain attention.

The four configurations associated with recommendations are grouped based on their core conditions, forming two pairs of related combinations. Configurations 3a (C3a) and 3b (C3b) aim to deliver a comprehensive experience by incorporating relational, affective, sensory, and behavioral dimensions of experience. Variation C3a further incorporates the intellectual dimension, creating an integrated experience across all five experiential domains, while variation C3b omits intellectual messages but introduces warm colors into the combination. Configuration 4a (C4a) focuses on affective and intellectual messages, excluding relational and behavioral messages and warm colors. Configuration 4b (C4b) extends this combination by including sensory messages.

Notably, no configuration consists of a single content element. This finding supports Proposition 1 (conjunctural causation), confirming that engagement arises from the interaction of multiple elements rather than any isolated dimension. The differing effects of individual elements

across configurations illustrate Proposition 2 (causal asymmetry); for example, warm colors enhance attention in some configurations but are absent in others, showing that the influence of a dimension depends on its combination with other elements. Finally, the existence of six distinct configurations that successfully drive engagement—two associated with sustained attention and four with recommendations—illustrates Proposition 3 (equifinality), emphasizing that multiple combinations of content elements can produce similar consumer responses.

5.3. Discussion

The configurations identified in our study can be grouped into two overarching types according to their constituent conditions. The first type, comprising C1, C3a, and C3b, delivers a comprehensive experience by integrating multiple message dimensions (i.e., relational, affective, sensory, intellectual, and behavioral) often complemented by warm colors. This pattern aligns with the foundational principles of experiential marketing (Schmitt, 1999), which emphasize the importance of creating holistic, multidimensional experiences that engage consumers across multiple domains. The configurations illustrate that combining diverse elements can create synergistic effects, enhancing both sustained attention and recommendations.

The second type of configuration, represented by C2, C4a, and C4b, involves a more selective combination of experiential dimensions, typically pairing intellectual messages with sensory or affective ones. This finding resonates with prior research highlighting the benefits of blending cognitive and emotional content to foster consumer engagement (Lee et al., 2018). It underscores that less comprehensive but strategically designed combinations can be equally effective, depending on the intended behavioral outcome.

Interestingly, our analysis shows that no configuration includes intellectual messages together with warm colors, which supports the negative interaction effect identified in Study 1.

Overall, these results demonstrate that consumer engagement on social media is driven by the interdependent combination of experiential message dimensions and warm colors.

6. Sensitivity Analysis: Examining permanent content and Controlling for brands

We conducted a sensitivity analysis to assess the brand’s influence on outcomes and to compare results across different social media platforms. Specifically, we focused on permanent content on Facebook to ensure that our findings were not influenced by the platform’s algorithm during data collection; this allowed for consistent comparisons across social media formats.

For the analysis, we compiled a new database comprising 533 social media posts published between January and March 2024 by four leading firms in the same sector as that analyzed in Studies 1 and 2. These firms, including the previously studied company and its three main competitors, collectively account for 77% of the total market demand in the region under study. This level of market concentration is typical in regional tourism sectors, where a few key providers often capture the majority of local demand. The inclusion of multiple leading firms ensured variation across brands, which allowed us to control for brand-specific effects. All posts were organic, not promoted content, and did not include any form of advertising.

We accessed the content directly from the firms’ profiles and measured the same variables as in Studies 1 and 2, using the same operationalization procedures. In this sensitivity analysis, the researchers undertook the tasks previously performed by human coders. A limitation we faced is that Facebook does not provide metrics to determine whether consumers rewatch content, which prevented us from measuring sustained attention. Therefore, this sensitivity analysis focused solely on recommendation behavior.

The sensitivity analysis followed the same structure as in Studies 1

and 2. First, we conducted negative binomial regressions, incorporating brand fixed effects through control variables corresponding to the four analyzed brands. The results, presented in Web Appendix D, revealed that the direct effects of experiential messages on recommendation behavior were consistent between permanent and temporary content, with affective, sensory, and intellectual messages showing significant effects, while relational and behavioral messages did not. The findings also indicated that warm colors interacted with relational, affective, and intellectual experiential messages, amplifying their effect on the first two and attenuating it on the latter. The Cragg–Uhler R^2 value was 0.32 (Cameron & Trivedi, 1998; Nagelkerke, 1991). The analysis therefore confirmed that the baseline findings from Study 1 remained robust when accounting for brand effects and examining permanent content.

Second, we conducted fsQCA, following the same procedure as in Study 2, to examine the combinations of experiential messages and warm colors that led to recommendations. This analysis identified two configurations in permanent content: C1P and C2P (Table WA.D2 in Web Appendix D). Configuration C1P, which was similar to C3a in temporal content, represented publications centered on an overall experience encompassing all five experience dimensions. Configuration C2P, which was similar to C4b in temporal content, included affective, sensory, and intellectual messages while excluding relational messages and warm colors. Both configurations were consistent with the findings from Study 2, confirming the robustness of our results.

7. Conclusions

Temporal content is emerging as a popular touchpoint for firm–consumer interaction on social media. However, there are no clear guidelines for optimizing consumer behavior through the design of such content. To address this gap, we conducted two studies in order to obtain a nuanced understanding of how various dimensions of experiential messages, along with the use of warm colors, influence consumer engagement behaviors—specifically, sustained attention and recommendations.

Overall, the experiential dimensions have a direct positive effect on engagement behaviors, as indicated in previous studies highlighting the benefits of experiential content (Waqas et al., 2021). Moreover, warm colors do not complement all the dimensions. On the one hand, warm colors enhance the impact of affective messages on sustained attention and recommendations by reinforcing feelings and moods while also strengthening the influence of relational messages on recommendations by fostering social connections (Chi et al., 2021; Labrecque & Milne, 2012). On the other hand, such colors reduce the effectiveness of intellectual messages, aligning with studies revealing the potential negative effects of warm colors on social media (Jalali & Papatla, 2016).

The findings also underline the need to move beyond analyzing message dimensions in isolation (Akpınar & Berger, 2017) or in limited combinations, such as considering intellectual and affective messages together (Lee et al., 2018). This research demonstrates that experiential messages and visual features, such as warm colors, must be holistically combined to sustain consumer attention and encourage recommendations.

Additionally, the findings underscore that insights derived from analyzing permanent publications can be generalized to temporal content, as both display similar combinations of elements (i.e., C3a for temporal content and C1P for permanent content; C4b for temporal content and C2P for permanent content). However, temporal content reveals unique combinations of elements (i.e., C3b and C4a) that drive engagement and reflect distinctive consumer response patterns. This indicates that while certain consumer behaviors are consistent across publication types, temporal content requires tailored strategies to fully harness its potential impact. Understanding these nuances can help in developing more effective strategies that capitalize on the strengths of both permanent and temporal content.

8. Theoretical contributions

The present research offers three key theoretical contributions to the social media and consumer engagement literature by integrating insights from experiential marketing, multimodal communication, and principles of causal complexity.

First, it advances engagement theory by moving beyond perception-based, self-reported measures, which have commonly been used in prior studies, and instead adopting observable behavioral metrics that reveal consumers' actual interactions with temporal content. By examining sustained attention and recommendations, the findings show that engagement is not limited to a psychological or attitudinal state but is also manifested through concrete digital actions. Sustained attention, which has rarely been examined in the context of temporal media, reflects a private form of engagement pertaining to the internal connection between consumers and content. It builds on prior research in attention-based marketing (Berger et al., 2023) and links directly to the experiential features of firm-generated content. In contrast, recommendation behavior captures a public form of engagement, illustrating how consumers externalize their connection by endorsing content to others. Together, these complementary metrics enrich the understanding of consumer engagement and highlight the value of assessing both private and public behaviors to evaluate the effectiveness of temporal content on social media.

Second, this research contributes to the literature by offering a more nuanced theoretical understanding of the multimodal nature of social media communication. Prior studies have largely examined message and visual features in isolation (e.g., Akpınar & Berger, 2017; Yu & Eger, 2021), neglecting the synergistic effects that emerge from their joint presence. Drawing on Schmitt's (1999) experiential module framework and Crowley's (1993) color theory, we integrate these perspectives to demonstrate that the effectiveness of experiential messages depends on their alignment with warm colors. This advances theory by showing that consumer engagement results from the configurational interplay between content elements, rather than from the additive effects of isolated elements. Thus, we respond to recent calls for more holistic approaches to studying social media communication (Ceylan et al., 2023; Grewal et al., 2021).

Third, this research advances theory by identifying six empirically validated content configurations, highlighting the contingency-based nature of consumer engagement. Rather than assuming a single optimal approach, the findings reveal that multiple combinations of experiential message dimensions and warm colors can achieve similarly high levels of engagement. Therefore, by showing how different combinations systematically influence sustained attention and recommendations, our studies provide a more detailed and actionable understanding of content effectiveness.

8.1. Managerial Implications

The growing popularity of temporal content on social media highlights the importance of understanding how to effectively design such content. This research provides valuable insights to help practitioners optimize temporal content so as to enhance consumer engagement behaviors. The key takeaways for practitioners are as follows.

Takeaway 1: Firms should leverage interactions between experiential messages and warm colors to drive consumer engagement. Our findings suggest that warm colors can either amplify or diminish the impact of experiential messages on consumer engagement. Therefore, firms should carefully consider the diverse interactions between these content elements when designing temporal content.

Warm colors are particularly effective when paired with affective messages, evoking emotions and strengthening the impact of stories centered on themes such as love, happiness, gratitude, serenity, and pride.

Warm colors also enhance consumers' perception of the social

environment depicted in relational stories. Firms should use colors such as red, orange, and yellow when seeking to improve the connection between the brand and the consumer's social environment. Omitting these colors may reduce the influence of relational messages on consumers' recommendation behavior.

Conversely, warm colors should be avoided in intellectual messages, as they can overstimulate consumers (Labrecque et al., 2013), hindering their ability to process the information effectively and thereby diminishing the effectiveness of messages. Hence, firms should avoid using red, orange, and yellow in intellectual messaging intended to enhance consumers' sustained attention and recommendations.

Takeaway 2: Firms should employ holistic combinations of experiential messages and warm colors to drive consumer engagement. Our findings identify six key configurations that effectively drive consumer engagement. Accordingly, we present six comprehensive guides outlining the specific dimensions of experiential messages or warm colors to include or avoid for optimizing consumer engagement in temporal content.

We propose two overarching strategies for firms in designing social media content. First, they should holistically integrate various content elements to enhance both sustained attention and recommendation behaviors. This entails incorporating relational, affective, sensory, and behavioral messages in combination with warm colors to improve sustained attention and recommendations. Additionally, including all five dimensions of experiential messaging while excluding warm colors can further enhance recommendations.

Second, firms can generate content that prioritizes intellectual messaging, strategically combining it with sensory or affective messages while avoiding the use of warm colors to foster consumer engagement. In particular, pairing intellectual and sensory messages can improve sustained attention, while adding affective messages to this combination can further boost recommendations. The combination of intellectual and affective messages is also effective in increasing recommendation behaviors.

In sum, these findings underscore the importance of adopting a holistic and strategic approach to content design, in which firms carefully consider how different experiential dimensions interact with warm colors, recognizing that effectiveness arises from specific configurations of elements rather than from universal best practices.

8.2. Limitations and future research Avenues

This research is subject to several limitations that future studies should address. First, it examined an experiential activity—tourism. Although focusing on the tourism sector provides valuable insights into the sector's dynamics, future studies should examine the impact of experiential messages and warm colors across other industries. This would help in assessing the generalizability of the findings and deepen our understanding of how experiential messaging and warm colors interact in temporal content.

Second, this research examined the effects of firm-generated temporal content on consumer engagement using actual metrics obtained from social media. While these data provide valuable insights, alternative approaches focusing on consumer characteristics may reveal additional perspectives not captured by analyzing stories as the unit of analysis. For example, exploring disaggregated consumer data could uncover the underlying mechanisms driving consumer engagement.

Finally, future research could extend the exploration of warm colors' interaction effects by examining other visual features, such as saturation and color complexity. For videos, these characteristics might be analyzed globally across the entire publication, as in the present research, or by focusing specifically on their presence in the first and last frames to identify dominant effects. Moreover, investigating the interaction between the message and auditory elements would be valuable as sound can reinforce the message or introduce nuances. Together, these elements can provide valuable insights into how temporal content should be designed to maximize its positive impact while minimizing

negative effects.

Credit authorship contribution statement

Sara Lapresta-Romero: Writing – original draft, Investigation, Conceptualization. **Blanca Hernández-Ortega:** Writing – original draft, Supervision, Project administration, Funding acquisition, Formal analysis. **José L. Franco:** Methodology, Investigation, Data curation.

Funding

This work was supported by the Spanish Government (PID2020-118425RB-I00 and PID2024-159398OA-I00), the Government of Aragón (Spain) and the European Social Fund (GENERES, Group S54), and Cátedra Integra, Estrategia y Tecnología, from University of Zaragoza.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We thank Assistant Professor Larissa Becker for friendly review in previous versions of this manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jbusres.2026.116148>.

Data availability

The authors do not have permission to share data.

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