UNIVERSITY OF CALIFORNIA

Santa Barbara

Self-Effects on Social Media:

Remembering and Enjoying the Experiences We Share

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Communication

by

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Abstract

Self-Effects on Social Media:

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The study of *self-effects*—the effects that sending messages have on the message senders themselves—has become a prominent research topic within a social media context, partly because social media are relatively unique, compared to other types of media, in allowing individuals to send messages to large numbers of people. This dissertation adopts a distributed cognition perspective to explore how digital technology complements human cognition to engender self-effects. More specifically, it proposes a *digital episodic memory* framework to analyze the influence of mobile phone photography and social media during the encoding, storage, and retrieval of personal experiences within a self-effects paradigm. Factors pertaining to each memory stage are identified, including self-relevance and engagement during encoding; publicness, ephemerality, valence, volition, and approval motivation during storage; and perceived social approval and presumed audience knowledge during retrieval. Through the hypothesized processes of commitment (desire to be consistent with a particular image of oneself) and capitalization (sharing positive events with others), these factors are predicted to influence message senders' subjective memory of personally-

experienced events in addition to their recalled enjoyment of and emotions during those events.

In the three studies described herein, encoding factors and retrieval factors are measured, while storage factors are either manipulated (in experiments) or randomly chosen to be further probed (in a survey). The studies require participants to take photographs during certain personal experiences (some experiences are researcher-assigned, others are of participants' own choosing) and, if instructed, to share the photos on their actual social media accounts. Study 1 manipulates publicness (share photos publicly on social media/keep them private) and ephemerality (photos are persistent/photos eventually disappear), focusing on whether the public sharing (vs. private storage) of past experiences can lead to stronger self-rated subjective memory, and by extension permit an inference whether people show greater commitment to what they share about themselves. Study 2 manipulates valence (write positive/neutral captions to accompany photos) and volition (participants write their own captions/receive instructions to write specific captions), focusing on whether experiences that are publicly portrayed as positive (vs. neutral) can foster stronger subjective memory, greater enjoyment, more positive emotion, less negative emotion, and better self-esteem. In both Study 1 and Study 2, the self-relevance of and engagement during the photographed personal experience are tested as predictors of the aforementioned outcomes. Both studies also have a longitudinal component: Participants retrieve (i.e., look at) their photos after at least three days, having given their social media contacts some time to respond to the photos they share. Perceived social approval and presumed audience knowledge (the extent to which one believes that other people have seen and therefore know about one's publicly shared photos) are measured, and are then used to predict the same set of outcomes. Study 3 is designed to

test several important mediators that bridge the relationships between publicness and subjective memory, enjoyment, or emotion. Commitment is measured (instead of being inferred in Study 1) and tested as a mediator, alongside perceived social approval and presumed audience knowledge by close others. As a whole, the findings show that the factors associated with the encoding and retrieval stages of digital episodic memory are better predictors of the various cognitive and affective outcomes than the factors associated with the storage stage.

Results demonstrate that the digital episodic memory framework illuminates the psychological and social dynamics pertaining to self-effects. Segmenting the process of creating/sending messages into the encoding, storage, and retrieval stages of memory highlights important factors that are typically not considered in self-effects research.

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I. Introduction

Scholars have long been interested in several broad aspects of communication via social media. One aspect concerns the effects of social media use, where the relationships between social media use and outcomes such as well-being, loneliness, or social media addiction were at the forefront (e.g., Bányai et al., 2017; Song et al., 2014; Verduyn et al., 2017). Another aspect involves the social dynamics afforded by the capability for ordinary people to construct messages and respond to others' messages, as well as how these social dynamics can influence people's attitudes, social relationships, or identities (e.g., Ellison et al., 2006; R. Hayes & Carr, 2015; Valkenburg & Peter, 2007). A relatively more recent but expanding aspect of social media research deals with *self-effects*, which refers to "how message creators/senders involuntarily influence their own cognitions, emotions, attitudes, or behavior" (Valkenburg, 2017, p. 478). Arising out of an implicit acknowledgement that message effects are not solely accrued by the recipients of messages but also by the senders themselves, the study of self-effects has benefitted from greater theorizing in recent years (e.g., Carr et al., 2021; Valkenburg, 2017), but the exact mechanisms driving self-effects are still not well-known.

Several mechanisms have been theorized to contribute to self-effects (see Valkenburg, 2017), with varying degrees of empirical support. To name a few examples, cognitive dissonance (Festinger & Carlsmith, 1959) and self-perception (Bem, 1972) are thought to lead to self-effects because people do not want their beliefs to contradict what they said or because people infer their beliefs by observing what they said, respectively, but the two mechanisms are empirically difficult to delineate from each other. The biased scanning (Tice, 1992) explanation suggests that self-effects arise when the crafting of messages draws

upon specific facets of people's past experiences, increasing the salience of certain personality characteristics. The public commitment (Schlenker, 1986) explanation states that self-effects are created when people feel beholden to the public images of themselves and therefore alter their privately-held self-concepts or attitudes to suit their public self-presentations. However, what has been neglected in the endeavor to identify and understand the mechanisms driving self-effects is the consideration of how different mechanisms may or may not be applicable at different stages of message creation, expression, and post-expression.

According to Pingree (2007), self-effects do not only occur at the time of message expression; it is not solely the singular act of sending a message that engenders self-effects. Rather, processes that occur before, during, and after the expression of a message are all important. For example, at a stage when people are creating messages, "expected expression effects are effects of increased attention to or processing of related received messages" (Pingree, 2007, p. 443). Furthermore:

> During an act of spontaneous expression, or during the act of composing one's remarks for scripted expression, people generally do not pull whole sentences out of long-term memory…. This reconstruction often results in new ideas and may even lead us to abandon prior beliefs because it forces us to confront gaps and contradictions in our thinking in order to construct a coherent narrative. (Pingree, 2007, p. 444)

After a message has been expressed, factors such as feedback from audience members or senders' perceptions of audience members' reactions to the message can also strengthen or weaken any self-effects (Carr & Hayes, 2019; Walther et al., 2011; see also

Pingree, 2007). Based on Pingree's (2007) categorization, it is possible to think of biased scanning as a mechanism that occurs primarily before message expression as people search their memories for the basis of their current self-presentations. Public commitment can be conceived as a mechanism that begins during the message expression stage as people hold themselves accountable for what they say and has effects that last even after a message has been expressed. Processes pertaining to feedback or presumed audience reactions can be classified as mechanisms occurring primarily after message expression. Despite the difficulty of neatly categorizing certain mechanisms into discrete stages, some effort to do so will be theoretically meaningful as self-effects are influenced by more than an isolated act of message expression.

Another area of self-effects research that has ample room for expansion is its scope. Self-effects research has, thus far, largely focused on the outcome of self-concept change/reinforcement in a variety of contexts such as political identity, brand identification, and impression management (e.g., Carr & Hayes, 2019; S. Choi et al., 2020; Lane et al., 2019), although attitude change/reinforcement is another notable outcome in self-effects research (e.g., Walther et al., 2010). Yet, as Valkenburg (2017) noted, the sending of messages can influence aspects of senders other than their self-concepts or attitudes. Among other things, sending messages to others can affect senders' own memories or enjoyment levels. For example, people's memories of events can be altered after each retelling (Marsh & Tversky, 2004), and people can enjoy experiences over material possessions because the former are more easily narrated to other people (Caprariello & Reis, 2013). A more complete understanding of self-effects could be attained if outcomes other than the change or reinforcement of self-concept or attitude were considered.

To expand the scope of self-effects research, this dissertation puts forth several outcomes that are relatively novel within the self-effects paradigm, such as perceived memory vividness, enjoyment, and emotions. And, to examine mechanisms at the different stages of message creation, message expression, and post-expression, this dissertation utilizes the three stages of memory—encoding, storage, and retrieval—as a guide within which self-effects are theorized.

Yet, the encoding, storage, and retrieval of memory can be very different when they are limited to the confines of the biological human brain, as compared to when human cognitive functions are assisted by digital technology. In a *distributed cognition* paradigm, human cognition is shared between the human mind and an external factor such as digital technology, as the usage of digital technology (e.g., mobile phones, cameras, social media, etc.) can influence the way people judge their own memories, thoughts, or feelings (Clark & Chalmers, 1998; Sutton, 2010). For example, encoding of digital episodic memory can refer to the taking of photos to complement the encoding of environmental stimuli; storage of digital episodic memory can refer to the sharing of photos on social media or keeping the photos on one's phone, which complement the storage of the photographed scenes within one's own head; and retrieval can refer to revisiting the photos after one's social media connections have given feedback (e.g., likes, reactions, comments, etc.), complementing recall based on one's own memory. The processes associated with recording then publicly sharing past personal experiences on social media and receiving feedback from friends have, on top of psychological factors, strong *social* elements (Hirst et al., 2013; Pasupathi, 2001; Schlenker, 1986). As such, this dissertation proposes the framework of digital episodic memory, defined as the utilization of digital technology (e.g., the internet, mobile phones,

etc.) to complement the encoding, storage, and retrieval aspects of human memory vis-à-vis people's past experiences.

In a spirit of expanding the scope of self-effects research, these "distributed cognition" processes can fit within a self-effects paradigm by focusing on a combination of cognitive and technological (i.e., affordance-based) factors that potentially predict cognitive and affective outcomes. The upcoming chapter describes several relevant mechanisms in self-effects, followed by another chapter on how factors in the encoding, storage, and retrieval stages of digital episodic memory can influence outcomes such as perceived memory vividness and enjoyment. Corresponding empirical studies are then described.

II. Self-Effects

Self-effects refer to the consequences that sending a message to others has on the message senders themselves (see Valkenburg, 2017 for review). It is a concept that unifies several theoretical perspectives related to message expression and receiving or anticipating social feedback for said expression, including identity shift, self-persuasion, expressive writing, and political deliberation (Valkenburg, 2017). In identity shift research, people reported changes to their self-concepts after they self-presented online with certain traits or personalities (see Carr et al., 2021 for review). Within the self-persuasion perspective, people who said things that were counter-attitudinal or who were placed in counter-attitudinal situations subsequently changed their attitudes (see Aronson, 1999 for review). In expressive writing, "when people transform their feelings and thoughts about personally upsetting experiences into language, their physical and mental health often improve" (Pennebaker & Chung, 2011, p. 418). And as for political deliberation, Pingree (2007) argued that the expectation of expression, the process of composing an argument, as well as the presumed audience reception of the message can influence senders' cognitions and opinions. Common across all four perspectives is the idea that sending a message, in and of itself, can influence the senders themselves—an important consideration in the context of social media to complement the well-established notion that senders on social media are influenced by receivers through feedback/interaction (see Bayer et al., 2020). Indeed, message sending effects and feedback effects in social media have already been examined together, in the same study, within the self-effects paradigm (e.g., Carr & Foreman, 2016).

The present research asks: In a social media context, how might the sharing of photographs (and associated captions) that depict past personal experiences lead to self-

effects for a sender? In order to answer this question, the rest of this chapter discusses three mechanisms pertaining to self-effects: public commitment, cognitive offloading, and capitalization. The ways in which these mechanisms may affect various outcomes like subjective memory and enjoyment are also explained.

A. Public Commitment in Identity Shift Research

One important line of research in self-effects comes from the work on identity shift. Identity shift (see Carr et al., 2021 for review) and its antecedent self-concept change paradigm (Tice, 1992) propose that people can experience (presumably momentary) alterations to their self-concepts after a public self-presentation. Across several experiments, people who were randomly instructed to publicly self-present as more extroverted or introverted subsequently reported feeling more extroverted or introverted, respectively, than people who privately self-presented (Gonzales & Hancock, 2008; Tice, 1992). This phenomenon was observed despite the fact that whether people portrayed themselves as an extrovert or introvert was decided at random by the researchers. This meant that an extrovert who publicly self-presented as an introvert could report being more introverted than extroverted after the experiment, and vice-versa—although it is unclear how long-lasting these effects may be. Hence, the phrases "identity shift" or "self-concept change" were used to describe the phenomenon.

Among several mechanisms that have been proposed to explain why people experience identity shift, one that is relevant to the present research on digital episodic memory is *public commitment*. Over the years, various researchers have argued that public behavior is more committing than private behavior. For example, Schlenker (1986) wrote that:

> In general, public as compared to private behavior is more committing, in that it is more difficult to revoke, implies that the actor will behave commensurately in the future, and implies that he or she has behaved similarly in the past …. It forces people to build a reputation … by which they will be known and treated. (pp. 26-27)

According to Valkenburg (2017), public behavior is more committing than private behavior because of two reasons: "firstly because other people know about it, and secondly because individuals do not like to appear inconsistent in their public self-presentations" (p. 480).

There is considerable empirical support for these arguments on public commitment. In an experiment by Gonzales and Hancock (2008), participants were randomly assigned to present themselves either as an extrovert or as an introvert while answering four questions related to experiences such as pastimes with friends and extracurricular activities. Some participants self-presented privately, by typing in a text document, while other participants self-presented publicly, by posting on an online blog. In post-experiment self-reports, participants who shared publicly on the blog rated themselves as more extroverted if they shared extroverted experiences, and as more introverted if they shared introverted experiences. Participants who shared privately did not show changes to their self-concepts based on whether they self-presented as an extrovert or an introvert. Another study also found that people who publicly portrayed themselves as Starbucks fans on an online chat platform reported greater identification with the brand than people who privately portrayed themselves as Starbucks fans (Carr & Hayes, 2019).

The effects of public commitment are also well-established in non-digital contexts, as making public self-presentations has also been found to produce similar momentary changes in people's self-concepts. For example, participants in a study by Kelly and Rodriguez

(2006) were instructed to make two self-presentations, one extroverted and one introverted, that were both recorded. One of the recordings was then deleted while the other recording was retained. Participants were told that the retained recording will be shown to psychology graduate students. Participants who had the extroverted recording retained were later found to sit closer to a confederate than participants who had the introverted recording retained, demonstrating commitment to a self-concept that could potentially be made public. Other similar studies involving self-reports and behavioral measures also supported the mechanism of public commitment (e.g., Fazio et al., 1981; Schlenker et al., 1994).

Based on Kelly and Rodriguez's (2006) findings, if people's formerly public self-presentations were no longer publicly available, then these people should be released from public commitment as they cannot be linked to their self-presentations. The real-world equivalents of deleting recordings in Kelly and Rodriguez's (2006) experiment are *ephemeral* social media such as Snapchat or Instagram Stories, which have timed content that disappears after a predetermined amount of time (typically 24 hours, with the notable exception of WeChat). If ephemeral social media can release individuals from public commitment, it can therefore be expected that identity shift effects are weaker for self-presentations made on ephemeral social media than for self-presentations made on persistent (i.e., content does not automatically disappear and persists until it is deleted manually) social media.

An exception to this line of reasoning is evident in a study by S. Choi et al. (2020), which found that publicly self-presenting on ephemeral social media led to greater identity shift than publicly self-presenting on persistent social media. This result did not demonstrate public commitment. Consistent with prior research (T. R. Choi & Sung, 2018), S. Choi et

al.'s (2020) participants may have portrayed their true or actual selves on ephemeral social media and their ideal (but less "real") selves on persistent social media, leading to stronger identity shift effects for the ephemeral condition than the persistent condition.

The public commitment explanation is popular within a social media context because it utilizes a unique aspect of social media: the capability of individuals to send messages to many other people. In contrast, other plausible explanations for self-effects—such as cognitive dissonance, self-perception, or biased scanning—do not have the same requirement of a sizable real or presumed audience, and are therefore not unique to social media. As such, the present studies, which are set in a social media context, examine the concept of public commitment from identity shift research to predict several cognitive outcomes in a self-effects paradigm.

Based on the premise of public commitment that people desire to be consistent in their public behaviors, the present research proposes that people need to remember the experiences they share publicly in order to remember what they should commit to. Put differently, to the extent that publicly sharing past personal experiences on social media leads to commitment towards one's publicly portrayed image, it should also lead to better retention and accessibility of memories related to those experiences. Yet, given that memory is malleable—subject to a variety of biases at encoding, storage, and retrieval stages due to expectations, personal motivations, or external pressure (Conway, 2005; Loftus et al., 1978; Marsh & Tversky, 2004)—the veracious "truth" may not be represented in memory in its entirety. To allow people to be their own arbiters of what self-images they are committed to, the present research utilizes the construct of *subjective memory* as an outcome variable. Defined as the subjective perception of one's own memory, as distinct from objective

measures of memory (Bott et al., 2016), subjective memory is operationalized in several ways in this dissertation (see Method sections), including vividness and consistency. The more people are committed to a certain self-image, the more cognitive effort they are likely to invest to process the experiences associated with said self-image, and subsequently the more vivid those experiences are represented in their memories or the more consistent their recall of those experiences are over time. Exact hypotheses and research questions are posed and integrated into a digital episodic memory framework in the next chapter.

One countervailing perspective to public commitment is cognitive offloading. Whereas the public commitment perspective predicts that ephemerality leads to *weaker* memory because people are released from public commitment after the time limit for ephemeral social media content expires, the cognitive offloading perspective posits the opposite: ephemerality leads to *stronger* memory.

Cognitive offloading is the usage of external (digital or non-digital) tools to reduce cognitive processing load, which includes but is not limited to memory (Risko & Gilbert, 2016). In the domain of digital media, cognitive offloading is sometimes studied in the context of memory of facts or general knowledge, although the same arguments are nevertheless applicable to the context of episodic memory. Cognitively offloading information to a digital device (or indeed any external device) frees up cognitive capacity for people to take on newer memory tasks, as shown in a study that found saving a file containing previously-learned content before learning the content of a new file improved memory for the latter file (Storm & Stone, 2015, Experiment 1).

Even though people understand that the decision to cognitively offload information or store the information in their own memories is a matter of costs and benefits (Schönpflug,

1986), people generally have a bias toward the cognitive offloading of information, such that the optimal strategy for offloading or internal memory is not achieved (Gilbert et al., 2020). Although people can cognitively offload to any external tool (e.g., post-it notes, daily planners), researchers have argued that the ubiquity of Internet-capable digital devices and their capability to store and retrieve vast amounts of information exacerbate people's bias toward cognitive offloading compared to non-digital tools (Marsh & Rajaram, 2019; Ward, 2013). As cognitive offloading, by definition, results in worse memory than storing the information in one's own head, the evidence and arguments thus far present a case for relatively poor memory when people use digital devices for memory-related work.

However, if external storage is unreliable, people do not cognitively offload information. In one study (Sparrow et al., 2011, Experiment 3), participants were told to memorize 30 trivia statements, some of which were supposedly saved on a computer and others were supposedly deleted after participants viewed them. Results of a subsequent memory test showed that participants had better memory of statements they believed were deleted than statements they believed were saved, showing that people do not cognitively offload information that may be lost. Replicating these results, another study (Storm & Stone, 2015, Experiment 2) found a lack of cognitive offloading when the process of saving a file to a computer was experimentally induced to produce errors at random than when the process of saving a file never produced errors.

Ephemeral content that automatically disappears after a short time can be understood as the social media equivalent of deleting saved files or experimentally inducing errors to saved files. Given the lack of cognitive offloading when memory storage is unreliable, people may be more inclined to store in their heads digital episodic memories that were

saved on ephemeral platforms (e.g., Snapchat) than digital episodic memories that were saved on persistent platforms (e.g., Facebook, Twitter). As a consequence, according to the cognitive offloading principle (and in contrast to the public commitment perspective), people should have better memories of past experiences that are stored ephemerally than those that are stored on persistent media.

In all, considering public commitment, ephemerality, and cognitive offloading together gives rise to the following interlinked general assertions: (a) people commit to things that they express to others publicly, (b) people remember, subjectively, things they are publicly committed to, (c) public expression via persistent media requires public commitment but public expression via ephemeral media eventually releases people from public commitment, and (d) expression via persistent media enables cognitive offloading but expression via ephemeral media discourages cognitive offloading. The corollary of (c) is that ephemerality results in weaker subjective memory but the corollary of (d) is that ephemerality results in stronger subjective memory.

On the surface, these competing approaches appear to suggest that there is no clear directional hypothesis for the influence of ephemerality on subjective memory. However, the context is likely to play a role in determining which hypothesis is likely to be more applicable. In research across digital and non-digital circumstances that found support for a cognitive offloading effect (e.g., Sparrow et al., 2011; Storm & Stone, 2015; Wegner, 1987), the information that is offloaded—and therefore not remembered—has a *factual* quality about it (i.e., semantic memory). An example would be writing a grocery list on a notepad or a mobile phone. After writing the list, people do not have to remember each item they want to buy, that is, they can cognitively offload the memory work to the list. In contrast, research

that found support for a public commitment effect (e.g., Gonzales & Hancock, 2008; Schlenker et al., 1994) deals with information that is—at least partially—a past experience (i.e., episodic memory) and may have implications for a person's public image. Given the present context of sharing past experiences on social media, the hypothesis that ephemerality releases people from public commitment is arguably more applicable, and is formally stated in the next chapter.

B. Enjoyment and Emotions in Capitalization Research

It is reasonable to assume that the posts people share on social media have a neutral-to-positive affective valence for sharers themselves. People are motivated to present themselves to others favorably (Leary & Kowalski, 1990), or at the very least motivated to avoid accruing negative impressions (Arkin, 1981). But beyond self-presentation motives, people may share digital episodic memories on social media because they want others to know about the good things that have happened to them. The sharing of events like weddings, the birth of a new baby, or graduating from university can be understood by a process called capitalization, defined as "the social sharing of positive events" (Gable & Reis, 2010, p. 198).

According to Langston (1994), people can capitalize on—maximize the advantages of—positive experiences by publicly sharing them with other people. Just like people can cope with negative experiences by talking about those experiences to others, people can also celebrate positive experiences by retelling those experiences to others, leading them to perceive positive experiences as even more positive after the retelling (Langston, 1994). Subsequent studies found that the benefits of capitalization—such as having more positive affect—were greatest when audience members respond with enthusiastically supportive

(active-constructive) feedback, and that these effects were driven primarily by said feedback and not by other plausible mechanisms like private expressive writing or thinking about positive events (Gable et al., 2004; Lambert et al., 2013; Reis et al., 2010). Additionally, telling a greater number of people about a positive experience made the experience more memorable (Gable et al., 2004), which is commensurate with the aforementioned public commitment perspective (although repeated reproduction is an alternative—but nonetheless complementary—explanation).

Whereas the public commitment and cognitive offloading perspectives are relevant to digital episodic memory due to their influence on memory *storage* (among other things), the capitalization perspective is relevant to digital episodic memory for its influence on affective outcomes like enjoyment or emotions, especially at the memory *retrieval* stage when people get to see feedback (e.g., likes, comments, direct messages) from their social media contacts. From a self-effects perspective, research on capitalization introduces important affective outcomes that potentially result from the sharing of messages and receiving feedback, complementing the existing outcomes based on self-concept change and attitude change (see Carr et al., 2021 for review). As a whole, the social dynamics described in capitalization research lead to the following general assertion: Sharing positive experiences and receiving feedback engenders people to feel more enjoyment, more positive emotion, and less negative emotion regarding those experiences.

Taken together, the public commitment and capitalization perspectives show why subjective memory, enjoyment of experiences, and emotions are outcomes that should be considered when studying effects related to the sending of messages and receiving of

associated feedback. The next chapter situates these outcomes within a digital episodic memory framework consisting of the encoding, storage, and retrieval stages.

III: Digital Episodic Memory

Perspectives from memory research can also benefit self-effects research. Dominant themes in self-effects research center around how, as a result of expression and feedback in digital contexts, changes in one's self-concept (e.g., Lane et al., 2019; Carr & Foreman, 2016) or changes in one's attitude towards particular targets (B. Johnson & Van Der Heide, 2015; Walther et al., 2010) could occur. Yet it is clear that self-effects comprise more than self-concept change or attitude change, and include effects on cognition and emotion, among other things (Valkenburg, 2017). Memory research in the contexts of digital photography and social media has shown that taking photos and sharing them online or taking photos with the intention to share online can influence people's memory and enjoyment of the photographed events (Barasch et al., 2018; Tamir et al., 2018). This process of taking photos and uploading them on social media lends itself well to research on self-effects, as it is still about the impact of sending messages on the message senders themselves. As such, this dissertation attempts to advance self-effects research by considering digital episodic memory—specifically, how social elements and digital affordances, in a social media context, influence the encoding, storage, and retrieval of photographs of people's past experiences in ways that affect their cognitive and affective assessment of those experiences.

Memory can be broadly categorized into three stages: encoding, storage, and retrieval. Encoding is the registering of information, storage is the maintenance of information in short- or long-term memory, and retrieval is the accessing of previously stored information (Baddeley, 2002). This section presents several factors that are important in each stage of memory, which serve to (a) represent the theoretical mechanisms presented in the previous section, (b) highlight important factors in prior research regarding self-effects or

digital episodic memory within the context of social media, or (c) explain discrepant findings in past research.

A. Encoding

1. Self-Relevance

Within episodic memory research, various studies—including those regarding memory in a word list context (Forsyth & Wibberly, 1993) and memory in more naturalistic everyday scenarios (Trafimow & Wyer, 1993)—have demonstrated that highly self-relevant information has a greater effect on people's cognitions than information that is less self-relevant. However, as will be demonstrated later in this subsection, research in digital episodic memory does not always take into account the relevance of an experimental treatment experience for each participant. Whereas a standardized procedure for everyone is helpful for tight experimental control, excluding self-relevance can potentially have unintended downstream effects on the dependent variables.

For example, in a study that employed a daily diary method over a one-week period, participants were tasked to describe, at the end of each day, all the events that happened to them that day (Wang et al., 2017). Participants were also told to indicate whether they had shared any of these events on social media. Entries in the daily diary were submitted via an online survey tool and could not be revisited by participants after submission. One week after the completion of the daily diary recording, participants received a surprise memory quiz, for which they had to recall as many events as possible from the one-week daily diary period. Results showed that episodic memories that were shared on social media were better remembered than those that were not.

While these results could potentially imply that public storage of digital episodic memories on social media leads to more accurate memory, it could very well be that digital episodic memories that were stored on social media had greater self-relevance than digital episodic memories that were not stored on social media. Therefore, there could be a selection bias for the digital episodic memories that are stored on social media: memories shared on social media have greater self-relevance and are better encoded[1] to begin with, even before anything was publicly shared.

In another series of studies (Tamir et al., 2018, experiments 2 and 3), participants toured the Stanford Memorial Church, and were placed in one of three experimental conditions. They either took photos for themselves, took photos to post on their personal Facebook accounts (which they did after the tour), or did not take photos. One to two weeks after the tour, participants were given a surprise multiple-choice memory quiz to test their episodic memories of the visit. Results for both experiments showed that participants who did not take photos performed better on the memory quiz than participants who took photos and shared them on their personal Facebook accounts. Participants in the different conditions—observe, taking photos for private storage, taking photos and sharing them on social media—did not report significantly different levels of enjoyment. These results, which demonstrate that sharing digital episodic memories on social media have a deleterious effect

[1] It is difficult to claim that self-relevance functions exclusively at the encoding stage and not at other stages, as the stages are not entirely discrete (McDermott & Roediger, 2022). Nonetheless, research on the self-reference effect showed that people are better at *encoding* information that is linked to themselves (e.g., an adjective that describes themselves) than information that is not (see Symons & Johnson, 1997 for review). The present construct of self-relevance considers the overall importance of a target digital episodic memory rather than an explicit self-reference (e.g., a photo featuring oneself or a selfie), but to the extent that both self-reference and self-relevance are about association with the self, encoding is still a better stage at which to discuss the effects of self-relevance than either storage or retrieval.

on memory, are at odds with the results in Wang et al.'s study (2017), which show that sharing digital episodic memories improves memory.

While it is not immediately obvious how to resolve discrepancies between Wang et al.'s (2017) results and Tamir et al.'s (2018) results, it is possible that *self-relevance* is a potentially important factor that deserves consideration. For the present purposes, self-relevance is defined as the extent to which an activity or experience is personally important to the individual who made the social media post. Self-relevance may be much higher for participants in Wang et al.'s naturalistic study (participants could choose what to share) than for participants touring the Stanford Memorial Church in Tamir et al.'s more controlled study (participants must share photos taken in the church), leading to superior memory accuracy in the former study than in the latter study. Another way to think about self-relevance is to recognize that while some social media posts may be intended to claim specific identities or to signal specific preferences (high self-relevance), other posts may be comparatively mundane or do not make strong assertions about the individual who made the post (low self-relevance).

Describing episodic memories with autobiographical (i.e., life story) significance, Nelson (1993) pointed out that:

> What I ate for lunch yesterday is today part of my episodic memory, but being unremarkable in any way, it will not, I am quite sure, become part of my autobiographical memory. It has no significance to my life story beyond the general schema of lunch. In contrast, the first time I presented a paper at a conference is part of my autobiographical memory: I remember the time, place, and details of the

program and participants, and I have a sense of how that experience fits into the rest of my personal life story. (p. 8)

While autobiographical memory is a rather high bar for general digital episodic memories of the sort that are regularly seen on social media, Nelson's (1993) consideration of the self-relevance of experienced events is still important because things that are self-relevant are better remembered than things that are not. One study in the eyewitness paradigm of memory found that people were more likely to recall and recognize (based on a cued-recall test and a multiple-choice recognition test) events that were self-relevant than events that were not self-relevant (Block et al., 2009). Another study in the word list paradigm found that self-relevant adjectives were better recalled than adjectives that were not self-relevant (Forsyth & Wibberly, 1993). People also had better recall of major historical events that were self-relevant than events that were not self-relevant (Brown & Kulik, 1977).

Given what is known about self-relevance and memory, they should have a positive correlation. Relatedly, to the extent that greater self-relevance enhances intrinsic motivation for a task (Brophy, 1999), self-relevance can also have a positive effect on psychological well-being if task motivation is high (see Ryan & Deci, 2000 for review). As such, in a digital episodic memory context,

H1: Self-relevance is positively related to (a) subjective memory, (b) enjoyment, and (c) positive emotion, and (d) inversely related to negative emotion.

Appendix A contains a list of all hypotheses and research questions.

2. Engagement and Mind-Wandering

Engagement is defined as the extent to which one's attention is immersed in a task or, conversely, the absence of mind-wandering (Seli et al., 2015; Tamir et al., 2018). In the

context of research in education, the relationship between engagement/mind-wandering and learning outcomes—and by extension, memory—is well-established (Fredricks et al., 2004; Hembrooke & Gay, 2003; Szpunar et al., 2013). In the context of digital episodic memory, greater engagement should also lead to better memory by dint of improved encoding. For example, Henkel (2014, Experiment 2) found that participants who photographed various objects by zooming into specific parts had superior memory of the overall objects (the memory test comprised parts of objects that were zoomed as well as parts that were not zoomed) than participants who did not zoom. Memory did not differ between participants who zoomed and participants who observed without a camera. Zooming may have led participants to focus their attention on the photographed objects, thereby increasing engagement, preventing memory impairment, or enhancing memory encoding relative to not zooming. In contrast, if people take photos without zooming, operating the camera could disrupt people's engagement with the photographed objects—described as "the attentional-disengagement hypothesis" by Soares and Storm (2018, p. 155)—leading to poorer memory than if people did not take photos at all (Henkel, 2014, Experiment 1; Soares & Storm, 2018).

Other than subjective memory, engagement can also influence enjoyment and emotions. Engagement is often theorized as one of several crucial ingredients in positive psychology, as a contributor to well-being but also something that is pursued for its own sake (Csikszentmihalyi, 2014; Seligman, 2011). In the context of digital episodic memory, a series of lab and field studies by Diehl et al. (2016) found that taking (vs. not taking) photographs increased overall enjoyment, and that engagement (operationalized as either immersion or a feeling that one is part of the experience) mediated the relationship between photo-taking and enjoyment. These photo-taking effects were robust across a variety of contexts from the

relatively novel like going on a city bus tour of Philadelphia to the more mundane like dining at a restaurant.

However, these findings by Diehl et al. (2016) are in contrast to other research that found photo-taking can reduce engagement (Henkel, 2014, Experiment 1; Soares & Storm, 2018). How can photo-taking lead to greater engagement, which then leads to greater enjoyment (Diehl et al., 2016), but also lead to lesser engagement, which then leads to poorer memory (Henkel, 2014, Experiment 1; Soares & Storm, 2018)? The answer lies in what the photographed activity is about. If the activity is highly enjoyable or highly cognitively demanding, then photo-taking reduces engagement; but if the activity is moderately enjoyable or not very cognitively demanding, then photo-taking can enhance engagement (Diehl et al., 2016, Study 8; Nardini et al., 2019). But more importantly, the fact that these discrepancies exist in the first place suggests that the crucial factor influencing outcomes such as memory or enjoyment is not photo-taking or the lack thereof—but engagement itself.

In more general everyday contexts, one experience sampling study found that people were less happy when their minds wandered (that is, when they lacked engagement) to something other than the activity they were doing than when their minds did not wander (Killingsworth & Gilbert, 2010). Interestingly, people were not more happy when their minds wandered to pleasant topics than when their minds wandered to unpleasant topics; no significant effect was found for pleasantness of mind-wandering topic (Killingsworth & Gilbert, 2010). Among ADHD patients, those with high-mind-wandering reported that they have a lower quality of life than those with low-mind-wandering (Biederman et al., 2019). Given the empirical evidence on engagement across various contexts and samples, it is hypothesized that in a digital episodic memory context:

H2: Engagement is positively related to (a) subjective memory, (b) enjoyment, and (c) positive emotion, and inversely related to (d) negative emotion.

B. Storage

1. Publicness

Research involving memory storage—including the storage of digital episodic memory—often asks whether people will store information in their heads if the same information is also stored using digital or non-digital external tools. The cognitive offloading perspective posits that people will store their memories externally and not internally if the costs and benefits of external storage are favorable (see for review Nestojko et al., 2013), resulting in poorer memory accuracy when using digital devices than when not using digital devices (Henkel, 2014; Sparrow et al., 2011). However, an extension to that perspective centered around the public sharing of offloaded memory suggests that the detrimental effects of cognitive offloading, if any, can be attenuated or even reversed.

According to the *public commitment* perspective, people may have greater memory accuracy if they store their memories on publicly accessible social media platforms than if they store their memories on private digital platforms (e.g., on a hard drive or private cloud storage). This is because "individuals feel more beholden to self-presentations that are visible to others" (Carr et al., 2021, p. 203). In other words, cognitive offloading may not always result in poorer memory, as where memory is cognitively offloaded to—public or private platforms—potentially matters.

Borrowing the public commitment argument based on the finding in identity shift research that public enactments of one's personality or preferences have greater influence

over one's self-concept than private enactments (Carr & Hayes, 2019; Gonzales & Hancock, 2008), it is hypothesized that:

H3: People who share their digital episodic memories publicly have better subjective memory than people who store their digital episodic memories privately.

The relationship between public sharing and enjoyment/emotions is less clear. Research on capitalization has found that sharing positive experiences with others leads to various benefits such as more positive emotion and better subjective well-being (Gable & Reis, 2010; Langston, 1994). However, the mere act of posting about one's (presumably positive) experiences on social media is bereft of social feedback, and assumes a future audience without necessarily having a current audience at the moment of posting. Is the anticipation of a future audience enough to lead to positive outcomes?

Conversely, public sharing can lead to negative outcomes if self-presentational concerns become a source of anxiety. In a series of studies by Barasch et al. (2018), taking photos with the intention to share publicly results in less enjoyment than taking photos with the intention of keeping them privately for oneself. This effect was consistent across ecologically-valid contexts (taking photos at a tourist attraction or over Christmas) and laboratory contexts (taking photos while watching a video of a city bus tour or a video of feeding warthogs on a safari). The explanation for this was that taking photos to share publicly, as opposed to taking photos for private storage, causes greater anxiety over one's own self-presentations (e.g., "How anxious did you feel during the bus tour experience?"), which detrimentally affects both engagement and enjoyment (Barasch et al., 2018).

Considering the uncertainty around the effect of public sharing on enjoyment and emotions,

RQ1: Do people who share their digital episodic memories publicly have (b)[2] greater enjoyment, (c) more positive emotion, and (d) less negative emotion than people who store their digital episodic memories privately?

2. Ephemerality

For a long time, digital episodic memories posted on social media were persistent, in that they were accessible unless users manually deleted their posts or the social media platform shut down (Treem & Leonardi, 2013). In recent years, however, *ephemeral* social media like Snapchat or Instagram Stories have risen in popularity. On these ephemeral platforms, shared digital episodic memories typically disappear from public view after 24 hours or after audiences have viewed them once, depending on the app and the function that was used. Users can nevertheless choose to save the ephemeral photos/videos on their personal mobile devices, or choose to share an existing photo/video from their camera roll to an ephemeral platform. In either of these cases, users will still keep a personal copy of the digital episodic memories they shared ephemerally, even after 24 hours.

Ephemerality is important because it potentially releases people from—and therefore potentially negates the effects of—public commitment. If a social media post is no longer available to others, do individuals still feel a need to commit to the image of themselves as depicted in their social media posts?

Experimental evidence on the influence of ephemerality on memory is mixed. In one study on semantic memory (Sparrow et al., 2011, experiment 2), participants read a list of trivia statements and typed them into a computer. Some participants were then led to believe

[2] The sequential lettering system for the dependent variables was not restarted from "a" to maintain consistency between each letter and its assigned variable across all hypotheses. This principle applies also to later hypotheses.

that the information they typed was saved (persistent), while others were led to believe the information was deleted (ephemeral). In a subsequent free-recall task, participants in the deleted condition could remember more statements correctly than participants in the saved condition. The results showed a cognitive offloading effect, implying that "people forget items they think will be available externally and remember items they think will not be available" (Sparrow et al., 2011, p. 778). Yet in another study (Kahn & Martinez, 2020), which was also on semantic memory, there was no significant memory difference between participants who read trivia information on a fictitious Snapchat interface (ostensibly ephemeral) and participants who read the same trivia information on a fictitious iMessage interface (ostensibly persistent).

Empirical results regarding ephemerality in the domain of digital episodic memory are also inconsistent. A study by Soares and Storm (2018, Experiment 1) got participants to watch a slideshow of paintings, and while watching, either use the camera app (persistent condition) or the Snapchat app (ephemeral condition) of a provided iPhone to take photos of the paintings. Contrary to the cognitive offloading perspective, participants who used Snapchat had poorer memory than participants who used the camera app. A follow-up study (Soares & Storm, Experiment 2) replaced the Snapchat condition with a delete condition, in which participants manually deleted each photo after taking it with the regular camera app. The camera app condition, representing media persistence, was retained. This time, no significant differences in memory were found between the persistent camera app condition and the ephemeral delete condition. In another similar study involving an online museum tour, again no significant differences in memory accuracy were found between those who

took photos that were saved versus those who took photos that were later deleted (Barasch et al., 2017, Study 3).

Yet, the studies on ephemerality described in this subsection did not contain any element of self-presentation. These studies were about taking photographs of artworks seen on a computer screen, and participants did not share anything to their personal social media accounts. The phones used in the studies by Kahn and Martinez (2020) and by Soares and Storm (2018) belonged to the researchers rather than the participants, and the photo-taking in Barasch et al. (2017, Study 3) was done using a function that was part of the museum tour stimulus program. Despite the inconsistencies and non-significant findings regarding the effect of ephemerality on memory, it is plausible that if people have some personal stake—if people engage in some form of self-presentation on their actual social media accounts in a way that has ramifications for their real-life impression management—then persistent media may compel people to maintain the public commitment to a portrayed self-image whereas ephemeral media may release people from the need to commit to a portrayed self-image.

Put differently, ephemerality can be more important when dealing with ecologically valid ways of using social media than in laboratory contexts that undermine such validity. Qualitative interviews have found that people use ephemeral social media like Snapchat to share quotidian things or for everyday superficial talk (Bayer et al., 2016; Xu et al., 2011). In fact, interviewees claim they can afford to be less careful about what they post on Snapchat precisely because others cannot hold them accountable for what was previously said (Xu et al., 2016). Conversely, people are also known to engage in bulk deletion of old persistent content because they feel their identities have changed over the years, and they do not want to be associated with their old social media posts (Luria & Foulds, 2021). Ephemerality even

allows people to forge new identities without being held back by one's past words or behaviors (Connerton, 2008; Van House & Churchill, 2008).

Therefore, ephemerality could negate the influence of public commitment on people's self-concepts and memories. If digital episodic memory were stored on a public and persistent social media platform, then for reasons presented earlier, people should want to commit to their public self-presentations. However, if digital episodic memory were stored on an ephemeral platform, then the deletion of the stored memory could release participants from public commitment.

H4: People who store their digital episodic memories on persistent media have better subjective memory than people who store their digital episodic memories on ephemeral media.

The relationship between ephemerality and enjoyment or emotion is less clear. On one hand, ephemeral media can limit the audience of shared social media content, producing fewer opportunities for capitalization. On the other hand, ephemeral media can alleviate anxiety caused by self-presentational concerns. Therefore,

RQ2: Do people who store their digital episodic memories on persistent media have (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion than people who store their digital episodic memories on ephemeral media?

Building on H3 and H4,

H5: There is an interaction between publicness and ephemerality such that people who store digital episodic memories on public + persistent media have better subjective memory than people who store digital episodic memories on media that are (i) public + ephemeral, (ii) private + persistent, or (iii) private + ephemeral.

Building on RQ1 and RQ2,

RQ3: Do publicness and ephemerality interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?

3. Approval Motivation

People are intrinsically motivated to seek social interactions with others (Baumeister & Leary, 1995; Ryan & Deci, 2000), and one manifestation of this motivation in a social media context is the desire to receive feedback from others, via a variety of means including but not limited to comments, personal direct messages, likes, or upvotes. Although the term social desirability is sometimes used to refer to individuals' desire to be well-liked, it is also conflated with—and originally conceptualized as—self-enhancement biases in self-reported measures (Crowne & Marlowe, 1960). As such, the term *approval motivation* is used for the present purposes to refer to people's desire to gain social approval (Martin, 1984).

Approval motivation is a well-established construct that has been demonstrated to influence cognition and behavior in both digital and non-digital contexts (e.g., Insko et al., 1985; Park et al., 2009; Sciara et al., 2021). It is important for understanding digital episodic memory as it could have implications for people's memory and enjoyment of experiences that are publicly shared, *prior* to any audience feedback. People may feel the need to commit to memory the digital episodic memories that they have shared on social media, but this relationship could hold only for people who care about social approval, i.e., who have high approval motivation. For people who have low approval motivation, sharing publicly or privately could have very little influence on their memory—they just do not care. Hence,

H6: There is an interaction between publicness and approval motivation such that people who store their digital episodic memories publicly (vs. privately) have better

subjective memory, and this effect is stronger as people have higher approval motivation.

Similarly, public sharing could influence enjoyment and emotion only if people care what others think about themselves, that is, if they have high approval motivation.

RQ4: Do publicness and approval motivation interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?

C. Retrieval

After digital episodic memory is shared on social media, apps will by default send out notifications if viewers leave some sort of feedback, prompting those who shared to retrieve the memory. However, what is retrieved is not the same as what was originally shared. Newly incorporated into the digital episodic memory are various forms of feedback—such as comments, direct messages, likes, or poll results—that explicitly or implicitly provide new information, potentially influencing memory, enjoyment, emotions, and self-esteem (i.e., satisfaction with one's self-image).

1. Perceived Social Approval

Feedback can influence memory accuracy. According to Pasupathi (2001), memories are co-constructed by people who share publicly and their audiences, through social interaction. Social feedback and individual attributes (e.g., personality, goals) jointly influence which episodic memories are recalled, which details are recalled and which details are left out, what opinions and evaluations are articulated, and what emotions are remembered or fostered. In the context of social media, feedback is most likely to make certain posts more salient, as most sites or apps send notifications to users when people leave likes, comments, or direct messages. People therefore refresh their memories of the content

of their posts when they receive feedback-triggered notifications and reinforce those memories if they reply to any feedback left by others.

Feedback can also influence how much enjoyment people find in their shared experiences. In non-digital contexts, experiments and daily diary studies in the capitalization paradigm show that sharing real-life positive episodic memories with interested, responsive listeners increases people's enjoyment of those experiences, puts people in a positive mood, and enhances well-being, as compared to not sharing equally-positive episodic memories (Reis et al., 2010) or sharing with unsupportive listeners (Gable et al., 2004; Lambert et al., 2013).

Relatively unique to the social media context is receiving feedback such as likes or *favorites*, to use Facebook and Twitter terminology for paralinguistic digital affordances, or "cues in social media that facilitate communication and interaction without specific language associated with their messages" (R. Hayes et al., 2016, pp. 172-173; because the term "likes" has entered common parlance, it will be used to refer to paralinguistic digital affordances in general, as opposed to being a specific feature in Facebook, where it originated from). However, the meaning of likes can be ambiguous because people give social media likes for a variety of reasons, including but not limited to actually having a favorable opinion of a post, acknowledging that one has seen a post, or to show social support (R. Hayes et al., 2016).

At a surface level, a social media post that has received more likes seems as if it has gotten more favorable feedback than a social media post that has received fewer likes. Research shows that receiving more likes can be beneficial to people's mental health, or at least result in a positive short-term state of mind. For individuals with low purpose in life,

receiving more social media likes is correlated with stronger self-esteem, as one survey found (Burrow & Rainone, 2017, study 1). This empirical relationship was also replicated in a follow-up experiment that instructed participants to take selfies and upload them on a fictitious social media site. Researchers gave experimentally-manipulated feedback in terms of the number of likes each selfie received, and found that receiving more likes boosts self-esteem for people with low purpose in life (Burrow & Rainone, 2017, study 2). In a separate functional MRI study that also manipulated the number of likes each participant received for their own photos, researchers found greater activity in the reward regions of the brain when their photos had a higher number of likes than when their photos had a lower number of likes (Sherman et al., 2016).

However, what may be more important is not the raw number of likes, but how likes are interpreted. For example, if one expects a post to get 50 likes, but it got only 25 likes, the feedback can potentially be interpreted as negative. But if one expects a post to get 5 likes, and it got 20 likes, the feedback may be interpreted as positive—despite 20 likes being fewer in number than 25 likes. Indeed, what constitutes a "successful" number of likes by those who share social media posts is influenced by social comparison and reciprocity norms (Carr et al. 2018). It is therefore appropriate to consider the perceived social approval accrued due to a social media post instead of the raw number of likes.

Perceived social approval, in the present context, refers to the extent to which one believes that others display favorable attitudes towards one's digital episodic memories. It is unlikely—at least under most typical circumstances—that individuals' social media friends will provide disconfirmatory feedback that severely undermines their self-presentations, or contradicts their account of events in egregious ways. Insofar as text-based feedback (e.g.,

comments, personal direct messages) is concerned, the valence of the feedback can be assumed for the most part to be neutral to positive. As for feedback in the form of likes, it is reasonable to think that there is a positive correlation between the raw number of likes and the social approval people think that they have obtained, despite the more equivocal interpretation of likes than text (R. Hayes et al. 2016).

Given well-established findings that positive feedback or social approval—in both online and offline contexts—can lead to greater self-esteem (Burrow & Rainone, 2017; Leary & Baumeister, 2000; Valkenburg et al., 2006), self-esteem is introduced as an additional outcome variable in the retrieval stage.

> **H7**: Perceived social approval is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.

Like before, consistency is maintained between each outcome and its corresponding letter.

2. Presumed Audience Knowledge

Extant research has not always explicated in depth what constitutes "public" when discussing public behavior. That is, who—which groups of individuals—make up the public? Early operationalizations of public behavior defined it entirely in contrast to private behavior, in that as long as even one other person had the potential to witness one's self-presentation, the self-presentation was considered public (e.g., Kelly & Rodriguez, 2006; Schlenker et al., 1994; Tice, 1992). In studies on public commitment by Tice (1992), participants in the public condition were led to believe that a single graduate student, whose identity is unknown to the participant, is observing the participant through a one-way mirror, while participants in the private condition were not observed. In Gonzales and Hancock's (2008) study, participants in

the public condition were told to make text-based self-presentations that would be posted on a public blog, while participants in the private condition were told to make self-presentations on a text document. There was evidence for public commitment—public behaviors had greater effect on people's self-concepts than private behaviors—in both Tice (1992) as well as Gonzales and Hancock (2008), suggesting that (a) "public" can be just one unknown observer in Tice's studies or that (b) "public" can really refer to public accessibility in Gonzales and Hancock's study. Marwick and Boyd (2011) even asserted that "bloggers write for a 'cognitively constructed' audience, an imagined group of readers who may not actually read the blog" (p. 116). This argument that can be extended to other social media platforms, such that (c) "public" can mean a presumed, imagined audience.

It therefore seems like the bar for what constitutes "public" may be somewhat low, but several questions remain: Can the effects of public commitment be magnified if "public" comprises people whom one is close to, as opposed to strangers? Do users of social media make a distinction between close others and general others? Some evidence suggests the answers to these questions is "yes," with participants in a study who publicly self-portrayed as extroverted or introverted reporting that they felt more extroverted or introverted, respectively, after receiving affirmative feedback from close others than affirmative feedback from non-close others (Carr & Foreman, 2016). Relationally close social media contacts who clicked like on a post also engender greater perceptions of social support in the recipient than relationally non-close contacts who clicked *like* (Carr et al., 2016). These results showed that people do not treat the public as a monolithic whole, and do in fact make distinctions between various types of audiences, such as close others and non-close/general others (see also Marwick & Boyd, 2011).

Therefore, the concept of *presumed audience knowledge* is proposed to represent the extent to which people perceive audience members to have knowledge of the information they share on social media. In the present research, as a parallel to the weak/strong ties dichotomy previously studied in social media research (e.g., Ellison et al., 2007), presumed audience knowledge is subdivided into two aspects: presumed general audience knowledge and presumed close audience knowledge. Presumed general audience knowledge is the extent to which one perceives that other people in general know about what one shared on social media. Presumed close audience knowledge is the extent to which one perceives that close others know about what one shared on social media. This distinction served to test whether the notion of publicness (as introduced in the concept of public commitment) can have a more fine-grained distinction than originally conceptualized by Schlenker (1986). Empirical evidence for presumed general/close audience knowledge as a predictor will support the notion of a monolithic/differentiated perception of audience respectively, while adding nuance to the understanding of public commitment effects.

H8.1: Presumed general audience knowledge is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.

H8.2: Presumed close audience knowledge is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.

3. Ephemerality

The ephemerality or persistence of digital episodic memory shared on social media could interact with time to produce combined effects on the outcome variables. As mentioned

earlier, ephemeral social media posts can release people from public commitment, as the evidence for a certain self-presentation is either deleted or becomes inaccessible to the public (Bayer et al., 2016, cf. S. Choi et al., 2020). In line with the public commitment perspective but in a news context instead of a self-presentation context, journalists have explained that they may delete their old Tweets if they want to minimize potential negative consequences (Ringel & Davidson, 2022). Therefore, people's memory of ephemeral digital episodic memories—as well as their associated enjoyment, emotion, and self-esteem—should fade over time. In contrast, these outcomes should be comparatively more enduring for persistent digital episodic memories, as people not only have to remain committed to what they shared publicly, but are also reminded of those memories as apps send notifications whenever someone comments or likes the post.

Thus, H9 builds on H4 (which hypothesizes that persistent media lead to better subjective memory than ephemeral media) by explicitly incorporating time as a within-subjects factor:

> **H9**: There is an interaction between ephemerality and time such that over time, people who store digital episodic memories on persistent media have better subjective memory than people who store digital episodic memories on ephemeral media.
>
> Extending the questioning from RQ2,
>
> **RQ5**: Do ephemerality and time interact to influence (b) enjoyment, (c) positive emotion, (d) negative emotion, and (e) self-esteem?

IV: Study 1

Study 1 was a naturalistic experiment with a 2 (publicness: public/private) × 2 (ephemerality: persistent/ephemeral) between-subjects design that was used to test Hypotheses H1-H9 and research questions RQ1-RQ5 (see Appendix A). The study consisted of two parts, which resulted in the 4 conditions (C1-C4). Part 1 required participants to take three photos while engaged in an activity that was part of their daily lives. Depending on the condition participants were randomly assigned to, they were then given different instructions: They had to share their photos *publicly* on (C1) a persistent or (C2) ephemeral social media platform, or store their photos *privately* (i.e., private + persistent condition, C3). Next, they answered a questionnaire. Participants in the private + ephemeral condition (C4) then received an instruction to delete their photos (to simulate ephemerality as private photos do not have a 24-hour self-destruct timer), while participants in the other three conditions did not receive additional instructions. With this, Part 1 was concluded. After three days, the Part 2 questionnaire was emailed to participants. The Part 2 questionnaire contained some of the questions from Part 1 (i.e., as repeated measures) as well as some new questions related to feedback or memory retrieval. Part 2 was made up entirely of the questionnaire; no additional photo-taking was required.

A. Sample

Participants were UC Santa Barbara undergraduates who, as a qualifying criterion, posted at least three photo/video posts about their personal experiences (i.e., not memes or news stories) on either Snapchat or Instagram in the four weeks preceding Part 1 of the study. Participants were rewarded with course credit for their efforts.

Power analyses via G*Power (Faul et al., 2007) based on a small-to-medium effect size (f^2 = .085), as is common in social science research, showed that 176 participants were required to have .80 power for the linear regression analysis needed for hypothesis testing (described later). After removing participants (n = 55) who failed either of two attention check questions in the Part 1 questionnaire (e.g., "Select disagree if you are paying attention"), a total of N = 163 participants (power = .76) were retained for analyses.

Participants were mostly female (73.6%; male = 24.5%; other/prefer not to say = 1.8%) and their ages ranged from 18 to 38 years old (M = 19.93, SD = 2.23). White participants comprised 36.8% of the sample, Asian participants 31.9%, Hispanic or Latino participants 9.2%, Black or African American participants 2.5%, Native Hawaiian or Pacific Islander 1.2%; others indicated mixed ethnicity.

B. Procedure

1. Part 1

An invitation to participate for course credit was placed on Sona, an online subject pool management tool. Potential participants who clicked on the link were brought to a screener questionnaire, which asked whether they posted at least 3 personal experiences in photo or video form in the last four weeks, whether they used Snapchat/Instagram Stories/Instagram posts at least once a month, and whether they used Instagram at least once a month. People who answered "no" to the first question were not allowed to participate. The latter three questions affected the randomization possibilities for the ephemerality condition: people who used Instagram posts (49.4%) can be placed into the persistent condition, and people who used Snapchat (78.0%) or Instagram Stories (73.9%) can be placed into the ephemeral condition.

All participants were told to take three photos of a solo activity the next time they left their home, and to "make their photos interesting." Depending on the condition they were placed in, they were then given additional instructions regarding which app to post the three photos on. Those in the public + ephemeral condition (n = 55) were told to post on either Snapchat or Instagram Stories; those in the public + persistent condition (n = 24)[3] were told to post on Instagram (not Instagram Stories); those in the private + ephemeral condition (n = 59) were told to craft a post on either Snapchat or Instagram, but to save the "post" as screenshots instead of actually posting; and those in the private + persistent condition (n = 25) were told to craft a post on Instagram (not Instagram Stories), but to save the "post" as screenshots instead of actually posting. All instructions were emailed to participants' university email accounts so that they could refer to the instructions when they needed to. See Appendix B for full instructions.

After participants took their photos, they clicked the link in the emailed instructions to complete the Part 1 questionnaire. At the end of the Part 1 questionnaire, participants in the private + ephemeral condition received one extra instruction: "Finally, to simulate the

[3] The unequal cell sizes were due to unequal reported use of persistent media (Instagram posts: 49.4%) and ephemeral media (Snapchat: 78.0%, Instagram Stories: 73.9%). The exact procedure to assign participants into conditions was as follows: Participants were asked whether they use each of the following: Instagram posts, Instagram Stories, and Snapchat. Two new variables were created on Qualtrics for the sole purpose of assigning participants to conditions: "persistent" and "ephemeral." Each variable took on one of two possible values: "yes" and "no." Participants who said they use Instagram posts were assigned to "persistent: yes" and participants who said they do not use Instagram posts were assigned to "persistent: no." Participants who said they use *either* Snapchat *or* Instagram Stories were assigned to "ephemeral: yes." Participants who said they use *neither* Snapchat *nor* Instagram Stories were assigned to "ephemeral: no." Participants categorized under "persistent: yes" *and* (in a Boolean sense) "ephemeral: yes" were placed in a randomizer that could assign them to all four conditions (i.e., public+ephemeral, public+persistent, private+ephemeral, private+persistent). Participants categorized under "persistent: yes" *and* "ephemeral: no" were placed in a randomizer that could assign them only to the public+persistent and the private+persistent conditions. Participants categorized under "persistent: no" *and* "ephemeral: yes" were placed in a randomizer that could assign them only to the public+ephemeral and the private+ephemeral conditions. Participants categorized under "persistent: no" *and* "ephemeral: no" were told they were ineligible.

temporary nature of Snapchat/Instagram Stories, please delete the 'posts' from your phone right now." Participants also had to check a box in the questionnaire declaring that they have deleted the photos from their phones before they were allowed to proceed. This additional step was necessary to mimic the ephemeral quality of content uploaded on Snapchat or Instagram Stories, which automatically disappear after 24 hours. Completing the questionnaire marked the end of Part 1.

2. Part 2

Three days after completing the Part 1 questionnaire, participants received another email in their university email accounts containing the link to the Part 2 questionnaire. The Part 2 questionnaire began with: "Recall that you were previously instructed to take 3 photos while engaged in an activity. Without referring to or looking back at the photos you took, answer the following: [list of questions]." Part 2 concluded upon the completion of this questionnaire.

C. Measures

Measures completed in the Part 1 questionnaire are classified under "Time 1" (T1) and measures completed in the Part 2 questionnaire are classified under "Time 2" (T2).

1. Time 1 Predictors

Self-relevance was measured by asking participants, "Think of the activity that is captured in your post ['photos' in private conditions]. How important is the activity to you personally?" Responses were rated on a scale of 1 (*not important at all*) to 7 (*extremely important*).

Engagement was measured using the question stem, "During the photo-taking activity:" followed by five items: "I was engaged in the activity," "I was attentive to my

surroundings," "I was focused on taking photos," "My mind wandered often" (reverse coded), and "I was distracted by other things" (reverse coded). Items were rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Reliability for the five-item scale was poor, Cronbach's $\alpha = .57$. The worst items were taken out, one by one, until reliability reached an acceptable level. Two items inspired by Tamir et al. (2018) were eventually retained: "My mind wandered often" and "I was distracted by other things," Cronbach's $\alpha = .71$. Therefore, the construct of engagement can also be interpreted as the absence of mind-wandering, although it will still retain its original nomenclature of "engagement."

Approval motivation was measured using a shortened Revised Martin-Larsen Approval Motivation Scale (Martin, 1984). The question stem read, "Thinking now not of your photos but rather about who you are in general, how much do you agree or disagree with the following statements." The five items were: "I change my opinion (or the way that I do things) in order to please someone else," "In order to get along and be liked, I tend to be what people expect me to be," "I find it difficult to talk about my ideas if they are contrary to group opinion," "I am willing to argue only if I know that my friends will back me up," "I am careful at parties and social gatherings for fear that I will do or say things that others won't like," Cronbach's $\alpha = .79$.

2. Time 1 Outcomes

Two measures of subjective memory were employed. The first was *perceived memory vividness*, which was measured using a subset of items from M. Johnson et al.'s (1988) memory characteristics questionnaire. The memory characteristics questionnaire was designed to capture the phenomenal characteristics of autobiographical memories, and asked about a variety of memory characteristics such as the subjective vividness of visual detail,

sound, touch, order of events, time of day/year, and so on. Due to the highly visual nature of photos in the present study, only visual-centric items were chosen from the original list of items by M. Johnson et al. (1988). The question stem read, "Assess your current memory of the activity shown in your post [photos]." It contained six semantic differential items: very sketchy–very detailed, very vague–very vivid, very dim–very sharp, very murky–very clear, very incomplete–very complete, and very inaccurate–very accurate. The items were scored on a 7-point scale, Cronbach's $\alpha = .92$. The second measure for subjective memory, *memory consistency*, is described in its own subsection later.

Enjoyment was an original measure with a question stem that said, "How do you feel about the activity depicted in your post? It was:" and four items scored on a 7-point semantic differential scale. The items were: unpleasant–pleasant, unenjoyable–enjoyable, dissatisfying–satisfying, and uninteresting–interesting, Cronbach's $\alpha = .86$.

Emotion was measured using 16 emotion words from Barrett and Russell (1998). Participants were asked, "How much of each of the following emotions do you feel about the activity depicted in your post?" According to Barrett and Russell (1998), the 16 emotion words contributed to four dimensions. Positive emotion/high activation words were: alert, excited, elated, and happy. Positive emotion/low activation words were: contented, serene, relaxed, and calm. Negative emotion/high activation words were: tense, nervous, stressed, and upset. Negative emotion/low activation words were: sad, depressed, bored, and fatigued. Each emotion was scored on a scale of 1 (*not at all*) to 7 (*extremely*). However, scores for reliability were mediocre, Cronbach's $\alpha_{\text{positive emotion/high activation}} = .62$, Cronbach's $\alpha_{\text{positive emotion/low activation}} = .73$, Cronbach's $\alpha_{\text{negative emotion/high activation}} = .78$, Cronbach's $\alpha_{\text{negative emotion/low}}$

$_{activation}$ = .58. Confirmatory and exploratory factor analyses were inconclusive (see Appendix C).

A more parsimonious way to categorize emotion is to consider only positive and negative emotion, without taking activation into account (e.g., Watson et al., 1988). Reliability was acceptable when all the positive emotion words were combined into one dimension (Cronbach's α = .70), but could be improved by taking out "alert." After doing so, the *positive emotion* variable was made up of seven items: excited, elated, happy, contented, serene, relaxed, and calm, Cronbach's α = .74. The *negative emotion* variable was made up of eight items: tense, nervous, stressed, upset, sad, depressed, bored, and fatigued, Cronbach's α = .78.

Self-esteem was measured using a scale from Heatherton and Polivy (1991). The question stem read, "How true are each of these statements for you right now?" Items were scored on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*): "I feel satisfied with myself," "I feel that others respect me," "I feel good about myself," "I feel that others admire me," and "I feel confident," Cronbach's α = .89.

3. Time 2 Predictors

Presumed audience knowledge was an original measure with six items on a 1 (strongly disagree) to 7 (strongly agree) scale comprising two dimensions*: close audience knowledge* and *general audience knowledge*. A confirmatory factor analysis (CFA) was performed, producing these fit statistics: $\chi^2(8) = 11.83$, $p = .16$; RMSEA = .08, 90% CI = [.00, .17]; CFI = .98; SRMR = .04. The fit statistics as a whole show evidence for the validity of a 2-factor solution using Hu and Bentler's (1999) recommendations. Factor loadings are shown together with the items in parentheses, as follows: "Close others may know what I

posted" (factor loading = .72), "Close others may remember what I posted" (.89), "Close others may be able to recall what I posted" (.93), "Others in general may know what I posted" (.71), "Others in general may remember what I posted" (.87), and "Others in general may be able to recall what I posted" (.98). The correlation between close audience knowledge and general audience knowledge was $r = .44$. Consequently, a close audience knowledge scale ($\alpha = .88$) and a general audience knowledge scale ($\alpha = .88$) were created.

Perceived social approval was measured using six items scored from 1 (*strongly disagree*) to 7 (*strongly agree*): "Other people approve of my post," "Other people have favorable opinions towards my post," "Other people have positive impressions of my post," "Other people react supportively towards my post," "Other people are not impressed by my post" (reverse coded), and "Other people don't care about my post" (reverse coded), Cronbach's $\alpha = .76$.

4. Time 2 Outcomes

Perceived memory vividness was measured identically to its Time 1 counterpart, Cronbach's $\alpha = .94$. Enjoyment was also measured identically as in Time 1, Cronbach's $\alpha = .88$. Positive emotion comprised the same seven items, Cronbach's $\alpha = .82$ (Cronbach's $\alpha = .79$ if "alert" was included, showing that its aforementioned removal was still warranted). Negative emotion comprised the same eight items, Cronbach's $\alpha = .81$. Self-esteem was made up of the same five items, Cronbach's $\alpha = .84$.

5. Memory Consistency

The memory consistency measure was calculated based on the similarity of two open-ended questions at Time 1 and Time 2. At Time 1, participants were told to describe, to an imagined friend who was not there and who had not seen the photos, the activity for which

they took photos. At Time 2, participants were told to again describe, but this time to another friend who was also not there and who also had not seen the photos, the activity for which they took photos. See Appendix D for the full instructions.

Natural language processing techniques were used to evaluate the similarity between participants' responses to these questions. The idea was to obtain a correlation between participants' open-ended responses at T1 and T2 based on the unique words they used, adjusted for linguistic inflections and stop words (i.e., extremely common words, such as determiners, conjunctions, and prepositions). Some meaning is inevitably lost through such an approach based on the unique words across the T1/T2 responses, although it retains an advantage in reproducibility and avoids error due to intercoder/interrater reliability if human judges were used instead.

The procedure involved several steps. Using a spaCy natural language processing pipeline (Explosion, n.d.), linguistic inflections were removed from both the Time 1 and Time 2 responses in a lemmatization process (e.g., words in past tense were converted to the present tense, words in plural form were converted to singular form). Common stopwords (e.g., "a," "the," "and," "is") were also removed based on the spaCy dictionary. At the same time, all words were converted to lowercase and punctuation was taken out for the sake of machine-readability.

After that, scikit-learn's CountVectorizer (scikit-learn, n.d.) was used to extract and do a word count of all the words in each Time 1/Time 2 response, representing the result in matrix form. This matrix can be conceptually understood as a $m \times n$ data frame, where the m rows represent different texts, the n columns represent different words, and values in the data frame represent word counts. In the present scenario, $m = 2$ because there were two texts

(i.e., the Time 1 response and the Time 2 response) to be compared for each participant. The number of columns, *n*, depended on the number of unique words across both responses.

Each row in the data frame (i.e., the words in each Time 1/Time 2 response) was then treated as a multidimensional vector, and the angle, θ, between the two vectors is calculated. To explain this step, an example with a two-dimensional vector is presented because a multidimensional vector is difficult to visualize. Suppose there are two texts for comparison: Text 1 is "happy birthday birthday birthday" and Text 2 is "happy happy birthday." As there are only two unique words across the two texts, the two texts can be represented as vectors in two-dimensional space, as shown in Figure 1 in Appendix G (if there are *n* unique words across the two texts, an *n*-dimensional vector will be needed). The angle between the two vectors, shown in Figure 1 as θ, can then be calculated.

After the value of θ was obtained, a cosine θ value was calculated. This value was the cosine similarity score for the two (i.e., Time 1 and Time 2) responses. Cosine similarity is a common metric used to gauge the similarity between different corpora in text analysis (Manning et al., 2008). For the present purposes, cosine similarity (the similarity between participants' Time 1 and Time 2 responses) was used as a proxy for memory consistency, notwithstanding the limitations of an approach that essentially measured consistency of word choice.

Considering first the value of θ, the maximum value for similarity is 0 degrees (i.e., two overlapping vectors) and the minimum value for similarity is 90 degrees (i.e., a right angle, as negative values are not possible). Considering next the value of cosine θ, given that cosine 0 degrees = 1 and cosine 90 degrees = 0, the widest possible range of cosine θ is from 0 to 1. Therefore, a cosine similarity score closer to 1 signifies greater similarity (or greater

memory consistency) and a score closer to 0 signifies less similarity (or less memory consistency).

Via the process described above, cosine similarity scores were calculated for each participant, and taken as the measure for memory consistency. See Appendix D for an example.

D. Results

Analyses were divided into two segments: T1 analyses and T2 analyses. The T1 analyses aimed to test hypotheses and research questions pertaining to the encoding and storage of digital episodic memory (H1-H6, RQ1-RQ4). Measures were obtained at T1, which was after participants took photos and stored them publicly (via social media) or privately (on their phones), but before any passage of time that gave participants an opportunity to receive feedback from their social media contacts.

The T2 analyses targeted hypotheses and research questions related to retrieval (H7-H9, RQ5) and ephemerality (H4, RQ2), but only for participants who shared publicly. This was because feedback from people's social media contacts was predicted to influence outcomes at the retrieval stage, but feedback-related variables could not be measured for participants who stored their photos privately. Outcome variables were repeated measures obtained at two time points, T1 and T2.

With this distinction between T1 analyses and T2 analyses, it is possible to isolate self-effects from social effects, and at the same time separately examine factors preceding message expression and factors succeeding message expression. The affordance of ephemerality is theoretically relevant across various stages of pre- and post-expression, and is a predictor in both the T1 and the T2 analyses.

1. T1 Analyses

See Appendix A for details on which hypotheses and research questions were supported or unsupported.

Hypotheses pertaining to the encoding and storage of digital episodic memory required measures collected at Time 1 (i.e., in the Part 1 questionnaire, immediately after public or private storage but before any feedback). To test H1 to H6 and RQ1 to RQ4, a series of linear regressions was performed. Codes for categorical predictors were: for publicness, private condition = -1, public condition = 1; for ephemerality, ephemeral condition = -1, and persistent condition = 1. Continuous predictors were mean-centered.

First, perceived memory vividness was regressed on self-relevance, engagement, as well as main and interaction effects for publicness × ephemerality and publicness × approval motivation. The overall model was significant, $F(7, 155) = 2.43$, $p = .022$, $R^2 = .10$, $R_{adj}^2 = .06$. Self-relevance ($b = .11$, $p = .009$) and the interaction between publicness and approval motivation ($b = .14$, $p = .024$) significantly predicted perceived memory vividness, while the other predictors were not significant. See Table 1 (in Appendix G) for full results of the analysis. Probing the interaction (via a simple slopes analysis using the *emtrends* function in R) between publicness and approval motivation revealed that the slope representing the effect of approval motivation on perceived current memory was $b = -.16$ ($p = .089$) for private social media posts and was $b = .13$ ($p = .130$) for public social media posts, averaged across both levels of ephemerality/persistence (see Figure 2, in Appendix G). As neither of the simple slopes were significantly different from zero (i.e., a horizontal line), the significant interaction effect was driven not by any individual slope, but by the disordinal interaction itself. H1a was supported for perceived memory vividness, as the linear relationship between

self-relevance and perceived memory vividness was positive. H6 was partially supported: There was a significant interaction between publicness and approval motivation, but public sharing did not lead to greater perceived memory vividness than private storage. Among participants who shared their photos publicly, greater approval motivation led to greater perceived memory vividness. But among participants who stored their photos privately, greater approval motivation led to less perceived memory vividness.

Memory consistency was regressed on self-relevance, engagement, as well as main and interaction effects for publicness × ephemerality and publicness × approval motivation. The measure of memory consistency relied on responses from both the T1 and T2 questionnaire, and as such was capped by a reduced T2 sample because 16 participants either did not complete the T2 questionnaire or failed an attention check question in T2. Therefore, the sample size for memory consistency (but not any other outcome variable) was reduced to $n = 147$. The overall model was significant, $F(7, 139) = 3.13$, $p = .004$, $R^2 = .14$, $R_{adj}^2 = .09$. Greater engagement led to greater memory consistency, $b = .02$, $p = .027$.[4] Unexpectedly, public sharing of photos led to less memory consistency than private storage, $b = -.05$, $p = .001$. Other predictors were non-significant. See Table 2 for full results of the analysis. H2a was supported for memory consistency. Across the two measures of subjective memory, H3, H4, and H5 were unsupported. Additionally, results for publicness were significant, but in the direction opposite to what H4 hypothesized.

[4] According to Bender and Lange (2001), adjusting the alpha level that determines whether a *p*-value is interpreted as significant or non-significant is appropriate when multiple tests are used to make a single conclusion. In the present study, two tests—one for factors that predict perceived memory vividness and another for factors that predict memory consistency—were used to make conclusions about subjective memory. If the Bonferroni approach were adopted, *p*-values for tests predicting either perceived memory vividness or memory consistency need to be less than .025 before a result should be interpreted as significant. And if so, the finding that engagement predicted memory consistency ($p = .027$) would be non-significant. This result should therefore be interpreted with caution. No other result was affected by alpha-correction.

Enjoyment was regressed on self-relevance, engagement, as well as main and interaction effects for publicness × ephemerality and publicness × approval motivation. The overall model was significant, $F(7, 155) = 8.19$, $p < .001$, $R^2 = .27$, $R_{adj}^2 = .24$. Self-relevance ($b = .29$, $p < .001$) and engagement ($b = .11$, $p = .019$) were significant, but not the other predictors. See Table 3 for the full results. H1b was supported, as greater self-relevance led to greater enjoyment. H2b was also supported, as greater engagement predicted greater enjoyment. No evidence was found for RQ1b, RQ2b, RQ3b, RQ4b, and RQ5b.

Positive emotion was regressed on self-relevance, engagement, as well as main and interaction effects for publicness × ephemerality and publicness × approval motivation. The overall model was significant, $F(7, 155) = 4.56$, $p < .001$, $R^2 = .17$, $R_{adj}^2 = .13$. Self-relevance was the only significant predictor, $b = .21$, $p < .001$. See Table 4 for the full results. H1c was supported, but not H2c, RQ1c, RQ2c, RQ3c, RQ4c, and RQ5c.

Lastly, negative emotion was regressed on self-relevance, engagement, as well as main and interaction effects for publicness × ephemerality and publicness × approval motivation. The overall model was significant, $F(7, 157) = 3.58$, $p = .001$, $R^2 = .14$, $R_{adj}^2 = .10$. Self-relevance and engagement were significant predictors. Greater self-relevance led to less negative emotion, $b = -.11$, $p = .003$, and less engagement led to more negative emotion, $b = -.10$, $p = .013$. Other predictors were non-significant. See Table 5 for full results. H1d and H2d were supported. No evidence was found for RQ1d, RQ2d, RQ3d, RQ4d, and RQ5d.

2. T2 Analyses

Hypotheses pertaining to the retrieval of digital episodic memory required measures collected at T2. As the T2 analyses involved predictors related to social feedback, which

were impossible to obtain in the private storage condition, only participants in the public sharing condition were used in the analysis. This resulted in $N = 71$ participants, contributing to 142 repeated-measures observations across two time points.

To test H7 to H9 and RQ5, a series of mixed model analyses were performed in order to account for the repeated outcome measures. Presumed general audience knowledge, presumed close audience knowledge, perceived social approval, ephemerality, time, and the ephemerality × time interaction were modeled as fixed effects. Interpersonal difference (i.e., participants) was modeled as a random effect. As in the T1 analyses, the ephemeral condition was coded as -1, the public condition was coded as 1, and continuous predictors were mean-centered.

The *lmer* function of the *lme4* package in R was used to obtain the model estimates (using the restricted maximum likelihood [REML] method), and thereafter the *lmer* function of the *lmerTest* package was used to obtain Satterthwaite approximations for degrees of freedom, based on which *p*-values were automatically derived. Due to the lack of consensus in calculating degrees of freedom in mixed models, definitive *p*-values are not obtainable (Luke, 2017). One solution is to use Satterthwaite's method of approximating degrees of freedom (Luke, 2017). Another popular approach is to compare different models along criteria such as *AIC* or *BIC* (Zuur et al., 2009). The present analysis primarily employed the former solution (*p*-values based on approximated degrees of freedom), although vestiges of the latter approach were retained due to convention. Specifically, comparisons between the null models (that contain only the random effect) and the random intercepts models (that contain fixed and random effects) were made. The random intercepts and random slopes models did not converge and therefore were not compared.

For the outcome variable of perceived memory vividness, the random intercept model (*AIC* = 415.46) was better than the null model (*AIC* = 455.75), $\chi^2(6) = 52.28$, $p < .001$. Time was the only significant predictor of perceived memory accuracy, $b = -.62$, $SE = .08$, $t(69) = -8.04$, $p < .001$. H7a, H8.1a, H8.2a, and H9 were unsupported for perceived memory vividness. See Table 6 for full results.

For the outcome variable of enjoyment, the random intercept model (*AIC* = 372.83) was better than the null model (*AIC* = 380.33), $\chi^2(6) = 19.51$, $p = .003$. Perceived social approval predicted enjoyment, $b = .37$, $SE = .14$, $t(66) = 2.68$, $p = .009$. Presumed close audience knowledge also predicted enjoyment, $b = .26$, $SE = .10$, $t(66) = 2.61$, $p = .011$. Other predictors were non-significant. H7b and H8.2b were supported. No evidence was found for H8.1b and RQ5b. See Table 7 for full results.

For the outcome variable of positive emotion, the random intercept model (*AIC* = 365.21) was better than the null model (*AIC* = 366.95), $\chi^2(6) = 13.74$, $p = .033$. Social approval was the only significant predictor of positive emotion, $b = .36$, $SE = .14$, $t(66) = 2.52$, $p = .014$. H7c was supported, but H8.1c and H8.2c were not. No evidence was found for RQ5c. See Table 8 for full results.

For the outcome variable of negative emotion, the random intercept model (*AIC* = 300.48) was not better than the null model (*AIC* = 292.73), $\chi^2(6) = 4.25$, $p = .643$. None of the predictors were significant in the random intercept model. H7d, H8.1d, and H8.2d were not supported. No evidence was found for RQ5d. See Table 9 for full results.

Although self-esteem was not analyzed as an outcome in the T1 analyses, it was nonetheless measured in the T1 questionnaire, and therefore could still be analyzed as repeated measures. For the outcome variable of self-esteem, the random intercept model (*AIC*

= 323.83) was not better than the null model (*AIC* = 321.55), $\chi^2(6) = 9.72$, $p = .137$. None of the predictors were significant in the random intercept model. H7e, H8.1e, and H8.2e were not supported. No evidence was found for RQ5e. See Table 10 for full results.

Presentation of the results for the outcome of memory consistency was left to the last because its analysis did not require mixed models. This was because each participant had only one score for memory consistency, calculated by comparing their responses at T1 and T2. As such, there was no repeated measure. A linear regression model was used to test the effect of the same predictors (as the other T2 analyses) on memory consistency. The overall model was not significant, $F(4, 66) = 2.38$, $p = .06$, $R^2 = .13$, $R_{adj}^2 = .07$. None of the predictors were significant, which meant that H7a, H8.1a, H8.2a, and H9a were unsupported for memory consistency.

3. Summary of Analyses

Overall, results from the T1 analyses showed that self-relevance and engagement are highly influential encoding factors affecting people's memory of and affect towards events represented in digital episodic memory.

Event self-relevance predicted perceived subjective memory (memory vividness; H1a), enjoyment (H1b), positive emotion (H1c), and negative emotion (H1d), while engagement, or the lack of mind-wandering, predicted subjective memory (memory consistency; H2a), enjoyment (H2b), and negative emotion (H2d). The T1 analyses also showed qualified support for the notion that public sharing influences subjective memory. The more people were motivated to garner social approval, the more vivid they perceived their memories to be—if they shared photos of those memories in public. However, private storage surprisingly led to worse perceived memory vividness the more people were

motivated to garner social approval. Private storage also led to better memory consistency than public sharing. Results from the T2 analyses showed the importance of perceived social approval in predicting enjoyment (H7b) and positive emotion (H7c), although notably it did not significantly predict any outcome related to subjective memory. Presumed close audience knowledge—but not presumed general audience knowledge—also predicted enjoyment (H8.2b). Taken together, these results suggest that one's enjoyment of events captured and shared in digital episodic memory depends on whether one thinks that close others know about one's own experiences as well as the extent to which one perceives that others have provided social approval via various forms of social media feedback.

E. Study 1 Discussion

Results from Time 1 analyses showed that psychological factors (i.e., self-relevance of activity, engagement during activity) occurring at the encoding stage of digital episodic memories were better predictors of a variety of cognitive and affective outcomes than factors related to digital affordances (publicness, ephemerality) at the storage stage. Greater self-relevance was found to predict greater perceived memory vividness, enjoyment, positive emotion, and fewer negative emotion. Greater engagement was found to predict better memory consistency, more enjoyment, and less negative emotion. Across the various predictors tested at T1, self-relevance and engagement were the most consistently useful. These findings supplement the current understanding of self-effects by providing evidence that what happens before the sending of messages—how relevant a message is and how engaged/distracted one may be—is potentially more important than the affordance (e.g., publicness, ephemerality) a message exhibits.

Publicness played a qualified role in influencing various cognitive and affective outcomes. Contrary to the predictions of H3, public sharing led to less memory consistency than private storage. However, it is unclear why publicness predicted only one measure of subjective memory (memory consistency) but not the other (perceived memory vividness). Given the unconventional operationalization of memory consistency as the consistency of word choice used to describe a photographed activity at two time points, the results should be interpreted with caution. It is also plausible that public sharing—instead of making message senders committed to the original, shared message—exposed message senders to external, social influences that changed their memories without them being aware of the change. If effect of publicness on (weaker) subjective memory were indeed robust, future studies should be able to find that publicness influences subjective memory in its various operationalizations.

The effect of publicness on perceived memory vividness was found to depend on people's approval motivation: Public sharing of digital episodic memories was associated with greater perceived memory vividness the more participants were motivated to seek social approval, in contrast to private storage of digital episodic memories, which was associated with less perceived memory vividness and memory consistency the more participants were motivated to seek social approval. This result presents some limited evidence for the notion that people's intrinsic need for relational connection with others can lead to various cognitive and emotional effects (see Baumeister & Leary, 1995; Deci & Ryan, 2012), especially when also considering that perceived social approval and presumed close audience knowledge predicted enjoyment and positive emotion at T2. The downward slope representing the relationship between approval motivation and perceived memory vividness when photos

were stored privately (see Figure 2) requires some reconsideration of the public commitment hypothesis. Originally, the interaction between publicness and approval motivation was hypothesized to be driven only by public storage of media content, such that people with greater approval motivation have greater subjective memory due to greater public commitment, but this perspective cannot explain the inverse effect for private storage. Results are tentative and further research is needed. Speculatively, the pattern of results could potentially be explained by whether certain conditions are more or less likely to satisfy people's need for relational connection. For example, photos shared in public are likely to satisfy people's need for relational connection, and therefore as people's approval motivation increases, the more cognitive effort they invest in remembering the experience, resulting in stronger subjective memory/greater perceived memory vividness. However, photos stored in private are unlikely to satisfy people's need for relational connection, and so as people's approval motivation increases, the less cognitive effort they expend on remembering an experience that has scant social reward value, resulting in weaker subjective memory/less perceived memory vividness.

Ephemerality did not influence any of the outcomes. The predicted interaction between publicness and ephemerality, based on the notion that ephemerality releases people from public commitment, was also not found. However, the lack of a significant interaction may be due to the lack of strong findings for public commitment, rather than the lack of merit of the "release from public commitment" idea.

Results from the T2 analyses showed that social approval predicted enjoyment and positive emotion, while presumed close audience knowledge predicted enjoyment. These results introduced an affective component to self-effects research, which has tended to focus

on changes to self-concept and attitudes (see Valkenburg, 2017 for review). They are commensurate with the capitalization perspective (Langston, 1994), demonstrating that the sharing of presumably positive experiences and thereafter receiving feedback from close others can produce positive affective outcomes. In line with Leary and Baumeister's (2000) argument that "when assessing their own behavior as it relates to relational evaluation, people presumably rely primarily on the standards of the people whose acceptance they desire" (p. 19), presumed close audience knowledge—but not presumed general audience knowledge—predicted enjoyment. This result also replicated previous findings on self-effects that the public is not a monolithic whole (Carr & Foreman, 2016), as what relationally close others might know about one's social media posts had a greater effect on enjoyment than what general others might know. Taken together, T2 results added nuance to the understanding of feedback in a social media/self-effects context: More than the mere quantification of feedback as likes, comments, and personal direct messages, the psychological effect they produce, such as social approval and presumed close audience knowledge, can lead to more enjoyment or positive emotion.

However, the relatively small sample size may have detrimentally affected the probability of finding a larger number of significant relationships or increased the probability of obtaining significant results by chance. Data for Study 1 were collected from February 2021 to July 2021, during the worst, pre-vaccine months of the Covid-19 pandemic. Collecting more data for Study 1 would be inappropriate, especially because it was a naturalistic experiment, and the most extreme health/social restrictions imposed in those days no longer exist. Notably, the university campus was closed during this period, and many students (who formed the sample) went back home.

Several other limitations affected Study 1, including the reduction in sample size for all T2 analyses due to the lack of feedback from the private conditions, the lack of an explicit measure of valence for participants' photographed experiences, the potential for unaccounted external influences given the highly naturalistic procedures, and the lack of a manipulation check to verify whether participants faithfully followed instructions (the current study could only assume they did). The next chapter elaborates on these limitations, and describes the rationale for another study that can resolve them.

V: Rationale for Study 2

Several limitations of Study 1 influenced the design of Study 2. First, data in the private condition could not be analyzed for all hypotheses related to digital episodic memory retrieval, because no feedback was obtained by participants. This meant that the sample size for all T2 analyses in Study 1 was approximately halved. In Study 2, all participants were instructed to take photos and share them publicly, avoiding the substantial drop in sample size for the T2 analyses.

Second, Study 1 made the assumption that people photographed neutral-to-positive experiences. But without an indication of the valence of participants' digital episodic memories, it is not possible to delineate the effect of sharing positive (vs. neutral) experiences and the effect of receiving feedback. Therefore, Study 2 contained a manipulation of content valence, with instructions for participants to write either neutral captions or positive captions to accompany the photos they shared on social media.

Third, although the naturalistic design in Study 1 was advantageous for its real-world relevance, increased experimental control regarding what to photograph would help to reduce randomness in the data and minimize the influence of extraneous, unmeasured variables. To this end, Study 2 gave explicit instructions for participants to take photos of particular landmarks. Yet, taking away all autonomy from participants as to what they should photograph and share on social media may have unintended methodological implications. The next section explores some of these implications, before introducing Study 2.

A. Valence of Digital Episodic Memory

Results of Study 1 showed that perceived social approval and presumed close audience knowledge (measured at T2) were vital in predicting people's after-the-fact

enjoyment of the experience. However, Study 1 presumed that participants would share neutral-to-positive information about themselves on social media, which was a reasonable expectation given typical impression management motivations (Leary & Kowalski, 1990). This meant that the design of Study 1 did not allow the delineation of (a) the valence of the publicly shared digital episodic memory and (b) perceived social approval and presumed close audience knowledge. In other words, results of Study 1 were commensurate with, but cannot unequivocally support Reis et al.'s (2010) point regarding capitalization that, "retelling positive news to another person is associated with higher levels of affective wellbeing" (p. 325).

Past research in a social media context has demonstrated support for capitalization, although not always with the same outcome variables employed in this dissertation. One survey found that that sharing positive messages on social media was correlated with overall satisfaction with the communication outcome (Bazarova et al., 2015). Another survey found that sharing positive messages on social media garnered more likes and comments than sharing negative messages for individuals with low self-esteem, who ostensibly saw the likes and comments as socially rewarding (Forest & Wood, 2012). A study that used the daily diary method instructed participants to report, every day for seven days, the most important positive event of the day. Results showed that participants' positive affect was higher the more they shared details, feelings, or thoughts regarding positive events via social media posts as well as via other channels such as in-person conversations (M. Choi & Toma, 2014). These findings support the notion that public sharing of positive events via social media can enhance the general well-being of message senders above and beyond any benefits due to the

experience itself (see Peters et al., 2018; cf. Utz [2015] who found support for capitalization only when positive messages were sent via private direct messages but not via public posts).

Therefore, participants were told to either upload the photos they took with neutral captions or positive captions in Study 2. The associated prediction was:

> **H10**: People who share positive digital episodic memories have greater (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but (d) less negative emotion than people who share neutral digital episodic memories.

Results would shed light on whether any increases in enjoyment or positive emotion, or decreases in negative emotion, are conditional on the positive valence of shared digital episodic memories, or whether neutral digital episodic memories are sufficient if specific feedback-related conditions (i.e., social approval, close audience knowledge) are met. To assess this, H10 will be tested using data at two time points, T1 (immediately after sharing) and T2 (after receiving feedback). Results can also show, with regard to the outcome of subjective memory, whether people invest more cognitive effort into remembering publicly-shared positive or neutral information. As in Study 1, self-esteem will be tested using only T2 data because it is theoretically reasoned to be influenced by feedback.

Regarding results of Study 1, approval motivation was speculated to be an important moderator between publicness and subjective memory not because of public commitment (as theorized pre-Study 1), but because of how much people's need for relational connection can be satisfied. To recapitulate, the public commitment hypothesis can explain the finding (in Study 1) of a positive linear relationship between approval motivation and subjective memory when photos are shared in public—the more one is motivated to seek approval, the greater public commitment one experiences, and therefore stronger subjective memory of the

experience due to the commitment. However, public commitment cannot explain why there was a negative linear relationship between approval motivation and subjective memory when photos are stored in private (see Figure 2). In contrast, the "satisfaction of need for relational connection" explanation seems better: Publicly shared photos are more likely to satisfy people's need for relational connection, hence having greater approval motivation leads to greater cognitive effort in remembering the photographed experience. But privately stored photos are less likely to satisfy people's need for relational connection, hence having greater approval motivation leads to less cognitive effort spent on remembering a photographed experience that has little reward value.

If the "satisfaction of need for relational connection" explanation were valid, then as approval motivation increases, people who share positive information about their past experiences should invest more cognitive effort in remembering the experiences, but people who share neutral information should invest less cognitive effort in remembering the experiences. This is because positive information is more likely to lead to some form of positive relational connection (perhaps more likes, comments, or direct messages) than neutral information. Therefore, building on H10,

> **H11**: There is an interaction between valence and approval motivation such that people who share positive digital episodic memories have better subjective memory as approval motivation increases, but people who share neutral digital episodic memories have weaker subjective memory as approval motivation increases.
>
> **RQ6**: Do valence and approval motivation interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?

Previously presented arguments for ephemerality being a potential release from public commitment (i.e., in H4) as well as exploratory research questions on ephemerality (i.e., in RQ2) are still applicable in Study 2. In addition, it is also possible that ephemerality interacts with valence, such that the release from public commitment provided by ephemerality is applicable only for neutral information, which is less important for people's impression management efforts, but people may commit to positive information because they are presented in a positive light. As such,

RQ7: Do valence and ephemerality interact to influence (a) subjective memory, (b) enjoyment, (c) positive emotion, (d) negative emotion, and (e) self-esteem?

B. Volitional and Non-Volitional Creation of Digital Episodic Memory

Due to the naturalistic design of Study 1, all participants in Study 1 had the freedom to choose which activity they wanted to take photos of. As a result, Study 1 lacked the ability to definitively rule out selection effects. That is, participants in Study 1 could have selected particular activities to photograph because they were told—prior to any photo-taking—whether they had to make their photos public/private and persistent/ephemeral. Study 2 had two aims for manipulating volition. First, having volition as an experimental condition allowed the statistical and procedural control over selection effects. Second, volition could explain some inconsistent findings in past research on digital episodic memory.

In the real world, most people take photos volitionally. When people go on vacation or go to an interesting event, they sometimes take photos—usually on their own accord. In contrast, researchers may give participants instructions on what exactly to photograph in a controlled study. However, denying participants the volition to photograph what they want for the sake of experimental control may have led to some unintended effects.

In one case, Soares and Storm (2018) conducted a counter-balanced within-subjects experiment, with three conditions: camera, Snapchat, and observe. Participants were shown 15 paintings on a monitor, one by one, for 15 seconds each. For the camera condition, participants took photos of the paintings, which were saved on a phone. For the Snapchat condition, participants took photos of the paintings using the Snapchat app, and sent the snaps to the researcher, so the photos were not saved on the phone. For the observe condition, participants observed the paintings without taking any photos. Finally, participants were given a multiple-choice memory quiz. Memory in the observe condition was superior to both the Snapchat and camera conditions. This result was also observed in a second experiment where the Snapchat condition was replaced by a delete condition, for which participants took photos and manually deleted them from the phone's photo album (Soares & Storm, 2018). The researchers suggested that the results could be explained by an attentional-disengagement hypothesis, which predicts that the act of using a camera distracts people from observing a scene, causing people to encode the scene more poorly. However, participants in Soares and Storm's (2018) studies did not have the freedom to *choose* what they wanted to photograph. This lack of ecological validity could have influenced results. In a less-controlled setting, individuals are likely to take photos of scenes that capture their attention. If people care about the aesthetic quality of their photos, they are also likely to put effort into getting right various photographic characteristics like framing, colors, light, and depth of field. It therefore seems counter-intuitive that using a camera results in attentional disengagement.

The importance of volition can be seen in four experiments by Barasch et al. (2017), for which participants visited a museum (real museum in experiment 1, virtual museum in

the other experiments) and either used a camera to take photos or did not take photos, among other conditions. Importantly, participants selected which artworks to photograph on their own volition. After the museum tour, participants were given a visual recognition test. In all four experiments, participants consistently performed better in the visual recognition test in the photo condition than in the no-photo condition. Barasch et al. (2017) reasoned that "people in fact take photos in order to engage with and remember those experiences that are self-relevant," and that their results "demonstrate a process in which photo taking improves visual memory by directing attention to photo-worthy aspects of experiences" (p. 1065). If this argument is true, then it is possible that participants in Soares and Storm's (2018) studies were going through the motions of taking photographs in a mechanical way. They may not have cared about what they were shooting, instead only putting their attention on completing the tasks given to them by the researchers. This potentially explains why Soares and Storm (2018) found that encoding of digital episodic memory led to poorer memory accuracy, but Barasch et al. (2017) found that encoding of digital episodic memory led to superior memory accuracy.

Experimental control of the exact scenes that participants photograph can inadvertently confound the very encoding process that an experiment is investigating (e.g., Soares & Storm, 2018; Tamir et al., 2018). Self-determination theory (Deci & Ryan, 1980, 2012) proposes that autonomy is one of several universal psychological needs, and that having the volition to choose fulfills people's need for autonomy, which increases motivation. In digital episodic memory research, participants who volitionally take photos are therefore more likely to be motivated by the task set by the researchers, which potentially affects other downstream outcomes.

In an attempt to balance the dual needs for experimental control and ecological validity, and given the potential for the volitional or non-volitional creation of digital episodic memory to influence outcomes, volition was introduced in Study 2 as a manipulated independent variable. Participants either wrote captions according to their own understanding of what constituted neutral or positive captions, or were given researcher-created captions that were either neutral or positive. Its associated prediction was:

> **H12**: People who volitionally encode digital episodic memories have greater (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but (d) less negative emotion than people who do so non-volitionally.

To reiterate, self-esteem will be tested using only T2 data (like in Study 1) because it is theoretically reasoned to be influenced by feedback.

C. Additional Differences Between Studies 1 and 2

Study 2 differed from Study 1 in a few other ways. A major change from Study 1 to Study 2 was that the private storage condition was dropped, as all participants now shared their photos publicly. This solved a problem in Study 1, where the sample size for all analyses related to retrieval (T2) was halved due to the lack of social feedback in the private storage condition.

The outcome measure of memory consistency was dropped in Study 2 because all participants in Study 2 were given explicit instructions what landmarks to take photos of. As such, unlike the naturalistic photo-taking in Study 1, there would most likely be scant variation in terms of memory consistency.

Ephemerality was no longer manipulated in Study 2. However, it was still recorded by asking participants which app/function they used to share their photos. More details on its

derivation is found in the measures section. Therefore, it was still retained as a measured, rather than manipulated, predictor. Crucially, testing ephemerality as a predictor still permits an inference of whether commitment functions as a self-effects mechanism in Study 2. The same logic as that presented in the lead-up to H4 applies here: The deletion of information stored on ephemeral media releases people from public commitment, hence people who store their digital episodic memories on persistent media should have better subjective memory than people who do so on ephemeral media.

Hypotheses and research questions from Study 1 that remain relevant in Study 2 (less the factor of publicness and the outcome of memory consistency) were: H1, H2, H4, RQ2, H7, H8.1, H8.2, H9, and RQ5 (see Appendix A). Study 2 has three new hypotheses (H10, H11, and H12) and two new research questions (RQ6 and RQ7).

VI: Study 2

Study 2 was a 2 (valence: positive/neutral captions) × 2 (volition: volitional/non-volitional captions) between-subjects experiment.[5] The study had two parts. Part 1 required participants (undergraduate students) to go on an in-person photography tour, taking photos of three different landmarks on the university campus, and sharing the photos to their actual social media accounts. Participants were given different instructions based on their randomly-assigned condition. They had to write either positive captions or neutral captions when they uploaded their photos to social media, and they either came up with a suitable positive/neutral caption volitionally, or were told by a randomizer exactly what positive/neutral caption to write non-volitionally. After participants uploaded their photos to their own social media, they filled out a questionnaire, and upon completion of the questionnaire, finished Part 1. After three days, the Part 2 questionnaire was emailed to participants. The Part 2 questionnaire contained some of the questions from Part 1 (i.e., as repeated measures) as well as some new questions related to feedback or memory retrieval. Part 2 was made up entirely of the questionnaire; no additional photo-taking was required.

A. Sample

Participants were UC Santa Barbara undergraduates who, as a qualifying criterion, posted at least three photo/video posts about their personal experiences (i.e., not memes or news stories) on any social media in the four weeks preceding Part 1 of the study. Participants were rewarded with course credits for their efforts.

[5] But note that no interaction between valence and volition was hypothesized or tested. As mentioned in the previous chapter, the manipulation of valence stemmed from concerns over method artifact

Power analyses via G*Power (Faul et al., 2007) based on a small-to-medium effect size (f^2 = .085), as is common in social science research, showed that 201 participants were required to have .80 power for the linear regression analysis needed for hypothesis testing (described later). Participants who failed either of two attention check questions in the Part 1 questionnaire (e.g., "Select disagree if you are paying attention") were removed from analyses (n = 51). Participants who uploaded their photos to an unsuitable social media app (n = 11) were also removed (see discussion on ephemerality in the Time 1 Predictors section, below). A total of N = 299 participants were retained for analyses.

Participants were mostly female (64.2%; male = 20.7%; the remaining 15.1% did not indicate their sex). Their ages ranged from 18 to 27 years old (M = 19.7, SD = 1.3). White participants comprised 35.1% of the sample, Asian participants 18.4%, Hispanic or Latino participants 16.7%, Black or African American participants 1.3%, Native Hawaiian or Pacific Islander 0.7%; 12.7% indicated mixed ethnicity and 15.1% did not state their ethnicity.

B. Procedure

An invitation to participate for course credit was placed on Sona, an online subject pool management tool. Potential participants who clicked on the link were brought to a screener questionnaire, which asked whether they posted at least three personal experiences in photo or video form in the last four weeks. People who answered "no" were not allowed to participate. After the screening, participants booked a timeslot to go down to a lab on campus. At this point, participants were only told very briefly that the study required them to "visit several locations on campus, take photos, write captions, then post on social media."

At the scheduled time for Part 1 of the study, participants arrived at a lab on campus, where they were randomly placed into experimental conditions and received the appropriate instructions. All participants were told to take at least one photo at each of the following locations on campus: the clock tower, the campus lagoon, and a specific prominent building between the first two places. Participants also received condition-specific instructions telling them that they would eventually be asked to post the photos to any social media of their choice, alongside neutral or positive captions that were either assigned (non-volitional) or up to them to make up (volitional).[6]

After taking the required photos, participants returned to the lab, where they were told to post the photos to their actual social media accounts. Exact condition-specific instructions were also repeated to guide participants. Participants then took screenshots of what they posted, and emailed the screenshots to a researcher present in the lab for verification that they followed instructions. Lastly, participants completed the Part 1 questionnaire.

Three days later, participants received a link to the Part 2 of the study in their university emails. Part 2 comprised entirely of a questionnaire. The study was complete upon finishing the Part 2 questionnaire.

See Appendix E for the full set of instructions participants received.

C. Measures

As in Study 1, measures completed in the Part 1 questionnaire are classified under "Time 1" (T1) and measures completed in the Part 2 questionnaire are classified under "Time 2" (T2).

[6] The manipulation of volition applied only to the captions that participants wrote to accompany the photos they posted on social media. Participants were given explicit instructions to take photos of particular landmarks, which constrained their volition somewhat; they did not have complete freedom to post whatever they wanted.

1. Manipulation Check

Participants were asked one question to gauge their perception of the valence of their captions: "Thinking of the captions you wrote for your post, how positive or negative do you think the captions were?" Responses ranged from 1 (*very negative*) to 7 (*very positive*).

2. Time 1 Predictors

Self-relevance was measured in the same way as in Study 1. Participants were asked, "Think of the activity that is captured in your post. How important is the activity to you personally?" Responses were rated on a scale of 1 (*not important at all*) to 7 (*extremely important*).

Engagement was measured in the same way as in Study 1. Like in Study 1, reliability for the five-item scale was poor, Cronbach's $\alpha = .68$. Following Study 1, two items inspired by Tamir et al. (2018) were retained: "My mind wandered often" and "I was distracted by other things," Cronbach's $\alpha = .71$.

Approval motivation was measured using the same five items from Martin (1984) as in Study 1: "I change my opinion (or the way that I do things) in order to please someone else," "In order to get along and be liked, I tend to be what people expect me to be," "I find it difficult to talk about my ideas if they are contrary to group opinion," "I am willing to argue only if I know that my friends will back me up," "I am careful at parties and social gatherings for fear that I will do or say things that others won't like," Cronbach's $\alpha = .75$.

Ephemerality was derived using a question that asked participants which social media platform they uploaded their photos to. Participants were classified into the "persistent" category if they uploaded their photos to Instagram (as a post), Facebook (as a post), Twitter, or TikTok. They were classified into the "ephemeral" category if they uploaded their photos

to Instagram Stories, Facebook Stories, or Snapchat. Participants who uploaded to WeChat (*n* = 7) or Weibo (*n* = 2) were removed from analyses because these apps do not have a standardized ephemerality function. On WeChat, users can set as publicly viewable the content they uploaded in the last three days, the last month, the last six months, or for all time. On Weibo, viewable content can be set to either the last six months or for all time. Participants who uploaded to VSCO (*n* = 2) were also eliminated from analyses as the photo-sharing app does not allow likes or comments and does not display a follower count. As such, VSCO is not useful for studying feedback/post-expression effects.

3. Time 1 Outcomes

In Study 2, the sole measure of subjective memory was perceived memory vividness, which comprised items from M. Johnson et al.'s (1988) memory characteristics questionnaire. The same 7-point semantic differential items as in Study 1 were used: very sketchy–very detailed, very vague–very vivid, very dim–very sharp, very murky–very clear, very incomplete–very complete, and very inaccurate–very accurate, Cronbach's $\alpha = .95$.

The other measure for subjective memory used in Study 1, memory consistency, was not used in Study 2. The memory consistency measure instructed participants to describe the activity in detail to an imaginary friend at T1 and T2, and a score was derived by comparing the consistency of words used in the T1 and T2 responses (see Study 1 Measures section for details). However, as all participants were given explicit instructions what to do in Study 2, this measure had potentially low variance, and therefore was not expected to be effective.

Enjoyment was measured using the same four 7-point semantic differential items: unpleasant–pleasant, unenjoyable–enjoyable, dissatisfying–satisfying, and uninteresting–interesting, Cronbach's $\alpha = .89$.

Emotion was measured using 16 emotion words from Barrett and Russell (1998), categorized into two dimensions, positive and negative emotion. The positive-emotion words were: alert, excited, elated, happy, contented, serene, relaxed, and calm, Cronbach's α = .81. Like in Study 1, reliability was improved after "alert" was taken out, Cronbach's α = .83. Therefore, the final positive emotion variable comprised seven items, without "alert." The negative-emotion words were: tense, nervous, stressed, upset, sad, depressed, bored, and fatigued, Cronbach's α = .78. Taking out "bored" improved reliability, Cronbach's α = .80. As such, the final negative emotion variable for Study 2 comprised seven items, without "bored."

Self-esteem was measured using the same 7-point items from Heatherton and Polivy (1991) as in Study 1:: "I feel satisfied with myself," "I feel that others respect me," "I feel good about myself," "I feel that others admire me," and "I feel confident," Cronbach's α = .88.

4. Time 2 Predictors

Presumed audience knowledge was measured using the same items as in Study 1, and categorized into two dimensions: close audience knowledge (Cronbach's α = .88) and general audience knowledge (Cronbach's α = .90). Perceived social approval was measured using the same six items as in Study 1, Cronbach's α = .79.

5. Time 2 Outcomes

Perceived memory vividness was measured identically to its Time 1 counterpart, Cronbach's α = .95. Enjoyment was also measured identically as in Time 1, Cronbach's α = .90. Positive emotion comprised the same seven items, Cronbach's α = .87 (Cronbach's α = .85 if "alert" was included). Negative emotion comprised the same seven items,

Cronbach's α = .87 (Cronbach's α = .84 if "bored" was included). Self-esteem was made up of the same five items, Cronbach's α = .91.

D. Results

Analyses were again divided into T1 analyses and T2 analyses. The T1 analyses aimed to test hypotheses and research questions pertaining to the encoding and storage of digital episodic memory (H1, H2, H4, H10, H11, H12, RQ2, RQ6, RQ7). Measures were obtained at T1, after participants took photos and shared them on a social media app of their choice, but before participants received feedback from their social media contacts. The T2 analyses targeted hypotheses and research questions related to retrieval (H7, H8.1, H8.2, H9, H10, H12, RQ5, RQ7), using repeated measures that were collected at least 3 days later. The experimental conditions—valence and volition—were employed as predictors in both the T1 and T2 analyses.

1. Manipulation Check

As a manipulation check, an independent samples t-test found that participants in the positive captions condition (M = 6.18, SD = .78) rated their captions as more positive than participants in the neutral captions condition (M = 4.80, SD = .95), $t(297) = 13.67$, $p < .001$, Cohen's d = 1.58.

2. T1 Analyses

See Appendix A for details as to whether each hypothesis or research question was supported or unsupported.

A series of linear regressions was performed for the T1 analyses. Codes for categorical predictors were: for ephemerality, ephemeral condition = -1, persistent condition

= 1; for valence, neutral captions = -1, positive captions = 1; and for volition, non-volitional = -1, volitional = 1. Continuous predictors were mean-centered.

Perceived memory vividness was regressed on self-relevance, engagement, volition, and all interactions involving ephemerality, valence, and approval motivation. The overall model was significant, $F(8, 290) = 2.61$, $p = .009$, $R^2 = .07$, $R_{adj}^2 = .04$. Self-relevance ($b = .07$, $p = .035$), engagement ($b = .08$, $p = .015$), and the interaction between valence and approval motivation ($b = .10$, $p = .033$) significantly predicted perceived memory vividness, while the other predictors were not significant. See Table 11 for full results. A simple slopes analysis (using the emtrends function in R) probing the interaction between valence and approval motivation showed that the slope representing the effect of approval motivation on perceived memory vividness was $b = -.16$ ($p = .021$) for neutral captions and was $b = .04$ ($p = .537$) for positive captions (see Figure 3). Therefore, the interaction can be considered to be primarily driven by the negative relationship between approval motivation and perceived memory vividness when captions were neutral; the more one desires social approval, the less vivid one's memory seemed when photos were accompanied by neutral captions. H1a, H2a, and H11 were supported. H4, H10, and H12 were unsupported; there was no evidence for RQ7a.

Enjoyment was regressed on self-relevance, engagement, volition, and all interactions involving ephemerality, valence, and approval motivation. The overall model was significant, $F(8, 290) = 12.97$, $p < .001$, $R^2 = .26$, $R_{adj}^2 = .24$. Self-relevance ($b = .31$, $p < .001$), engagement ($b = .08$, $p = .034$), and the valence × approval motivation interaction ($b = .16$, $p = .001$) significantly predicted enjoyment, while the other predictors were not significant. See Table 12 for full results. A simple slopes analysis probing the interaction between valence

and approval motivation showed that the slope representing the effect of approval motivation on enjoyment was b = -.23 (p = .002) for neutral captions and was b = .09 (p = .178) for positive captions (see Figure 4). The interaction seemed driven by the negative relationship between approval motivation and enjoyment when captions were neutral. H1b and H2b were supported, and there was evidence for RQ6b. No evidence was found for H10b, H12b, RQ2b, and RQ7b.

Positive emotion was regressed on self-relevance, engagement, volition, and all interactions involving ephemerality, valence, and approval motivation. The overall model was significant, $F(8, 290) = 8.80$, $p < .001$, $R^2 = .20$, $R_{adj}^2 = .17$. Self-relevance (b = .25, p < .001), engagement (b = .10, p = .005), and the valence × approval motivation interaction (b = .13, p = .013) significantly predicted positive emotion, while the other predictors were not significant. See Table 13 for full results. A simple slopes analysis to probe the interaction between valence and approval motivation showed that the slope representing the effect of approval motivation on enjoyment was b = -.08 (p = .276) for neutral captions and was b = .17 (p = .016) for positive captions (see Figure 5). This time, the interaction was driven by the positive relationship between approval motivation and positive emotion when captions were positive: the greater one's motivation for social approval, the more positive emotion one experiences when the captions are positive. There was empirical evidence for H1c, H2c, and RQ6c. H10c and H12c were unsupported; no evidence was found for RQ2c or RQ7c.

Negative emotion was regressed on self-relevance, engagement, volition, and all interactions involving ephemerality, valence, and approval motivation. The overall model was significant, $F(8, 290) = 4.72$, $p < .001$, $R^2 = .12$, $R_{adj}^2 = .09$. Engagement (b = -.12, p < .001) and approval motivation (b = .11, p = .006) predicted negative emotion. See Table 14

for full results. H2d was supported, but not H1d, H10d, or H12d. No evidence was found for RQ2d, RQ6d, and RQ7d.

3. T2 Analyses

As some participants (n = 37) did not complete Part 2 of the questionnaire, the sample size for all T2 analyses was N = 262. Following Study 1, mixed models with random intercepts were used to test retrieval-related hypotheses while accounting for individual variance across two time points. As before, the lmer function of the lme4 package in R was used to obtain the model estimates via the restricted maximum likelihood (REML) method. Subsequently, the lmer function of the lmerTest package was used to obtain Satterthwaite approximations for degrees of freedom, so that p-values can be derived (Luke, 2017).

For the outcome variable of perceived memory vividness, the random intercept model (AIC = 1451.78) was better than the null model (AIC = 1601.01), $\chi^2(9) = 167.23$, $p < .001$. Perceived memory vividness was predicted by presumed close audience knowledge (b = .13, SE = .05, p = .007), perceived social approval (b = .18, p = .005), and time (b = -.45, p < .001). Other predictors were non-significant. See Table 15 for the full results. H7a and H8.2a were supported. No evidence was found for H8.1a, H9, H10a, H12a, and RQ7a.

For the outcome variable of enjoyment, the random intercept model (AIC = 1375.70) was better than the null model (AIC = 1421.74), $\chi^2(9) = 64.04$, $p < .001$. Enjoyment was predicted by perceived social approval (b = .35, $p < .001$), and time (b = -.11, $p < .001$). Other predictors were non-significant. See Table 16 for the full results. H7b was supported, but no evidence was found for H8.1b, H8.2b, H10b, H12b, RQ5b, and RQ7b.

For the outcome variable of positive emotion, the random intercept model (AIC = 1444.35) was better than the null model (AIC = 1455.13), $\chi^2(9) = 28.77$, $p < .001$. Perceived

social approval (b = .29, p < .001) was the sole significant predictor of positive emotion. See Table 17 for the full results. H7c was supported, but no evidence was found for H8.1c, H8.2c, H10c, H12c, RQ5c, and RQ7c.

For the outcome variable of negative emotion, the random intercept model (*AIC* = 1166.91) was no better than the null model (*AIC* = 1159.95), $\chi^2(9) = 11.07$, p = .273. None of the predictors were significant. See Table 18 for full results. No evidence was found for H7d, H8.1d, H8.2d, H10d, H12d, RQ5d, and RQ7d.

For the outcome variable of self-esteem, the random intercept model (*AIC* = 1404.36) was better than the null model (*AIC* = 1410.82), $\chi^2(9) = 24.46$, p = .004. Perceived social approval (b = .25, p = .003) was again the only significant predictor. See Table 19 for full results. No evidence was found for H7e, H8.1e, H8.2e, H10e, H122, RQ5e, and RQ7e.

4. Summary of Analyses

Results from the T1 analyses showed that self-relevance and engagement were the two best predictors, overall. Self-relevance predicted subjective memory (H1a), enjoyment (H1b), and positive emotion (H1c). Engagement predicted subjective memory (H2a), enjoyment (H2b), positive emotion (H2c), and negative emotion (H2d). Approval motivation also moderated the relationship between valence and several outcomes, namely: subjective memory (H11), enjoyment (RQ6b), and positive emotion (RQ6c).

Results from the T2 analyses revealed the importance of perceived social approval, which predicted subjective memory (H7a), enjoyment (H7b), positive emotion (H7c), and self-esteem (H7e). Presumed close audience knowledge, but not presumed general audience knowledge, predicted subjective memory (H8.2a).

E. Study 2 Discussion

Results from Study 2 showed that the findings of Study 1 could be replicated in a similar digital episodic memory context, despite differences in experimental manipulation. Statistically significant predictors from Study 1—such as self-relevance, engagement, perceived social approval, and presumed close audience knowledge—again predicted outcomes such as perceived memory vividness and enjoyment in Study 2.

Unique among the findings of Study 2 is the significant valence × approval motivation interaction effect on perceived memory vividness, enjoyment, and positive emotion. These results give support to the idea that people with different levels of approval motivation are differentially affected by the extent to which experiential information (e.g., photos) can satisfy people's need for relational connection. Put differently, more approval motivation should lead to *greater* perceived memory vividness/enjoyment/positive emotion if the information is *likely* to satisfy people's need for relational connection (e.g., public information, positive information), but more approval motivation should lead to *less* perceived memory vividness/enjoyment/positive emotion if the information is *unlikely* to satisfy people's need for relational connection (e.g., private information, neutral information).

Crucially, these interaction results in Study 2 also make it less probable that the finding of a positive linear relationship between approval motivation and perceived memory vividness when photos were publicly shared in Study 1 was due to public commitment. If public commitment were the reason why approval motivation was a moderator in Study 1, then approval motivation should not have been a significant moderator in Study 2 because all the experimental conditions in Study 2 required participants to share their photos publicly.

Volition did not influence any of the outcomes. In other words, taking some autonomy away from participants did not make participants subjectively remember an experience more poorly, find it less enjoyable, or alter the emotions they felt during the experience. Volition was introduced as a manipulated factor in Study 2 in order to balance the need for experimental control with the need for ecological validity. A concern was that if participants wrote the same positive/neutral captions for the sake of experimental control, subjective memory could be adversely affected if participants were unmotivated and therefore invested little cognitive effort in the study. Additionally, enjoyment and emotion could also be dampened if participants felt reactance (i.e., unhappiness when autonomy is denied) towards being told exactly what to write on their actual social media accounts. However, with the non-significant main and interaction effects involving volition, these concerns appear to be unfounded.

One caveat, however, is that although volition was operationalized as whether participants came up with their own captions as a matter of experimental procedure, the psychological degree of volition that participants may have felt is a separate matter, and could have influenced results. Unlike in Study 1, participants in Study 2 did not have complete volition to post whatever they wanted. Rather, they were either given *specific* instructions containing exactly what captions to post (non-volitional condition), or they were given *general* instructions to post captions with a certain valence and given the liberty to make up the details (volitional condition). Additionally, the photography locations were experimentally predetermined, and thus participants did not have volition in selecting what/where to photograph. As such, the volition manipulation may have induced varying degrees of a psychological sense of volition, as opposed to a binary distinction between

volitional and non-volitional experimental instructions. From this perspective, the lack of a manipulation check for volition as a psychological construct can be viewed as a limitation (and as a future research opportunity).

Considering the non-significant effects of ephemerality in Study 2, as well as the results of Study 1, it becomes obvious that a key hypothesized theoretical mechanism that originally motivated this dissertation—public commitment—has had very little empirical support. That is, any effect that publicly sharing photos of past experiences has on subjective memory, was not, apparently, due to public commitment. Rather, factors such as perceived social approval and presumed close audience knowledge seem to be the most important drivers of the various tested outcomes where public sharing is concerned (i.e., excluding factors from the encoding stage, such as self-relevance and engagement, which precede the act of public sharing). However, in order to have better evidence regarding the effects of public commitment, commitment needs to be measured, as opposed to merely inferred, as was the case in Study 1. As such, a chief aim of Study 3 was to test (public) commitment as a measured variable, alongside the other variables that have received empirical support in Studies 1 and 2. The detailed reasoning is provided in the next chapter.

VII: Rationale for Study 3

Based on the results of Study 1 and Study 2, some observations can be made with regard to the psychological and social dynamics that govern self-effects in a digital episodic memory context. Concerning the encoding of digital episodic memory, engagement and self-relevance were found to be crucial factors. Regarding the retrieval of digital episodic memory, perceived social approval and presumed close audience knowledge were found to be crucial factors, *assuming the prior public sharing* of those memories.

However, regarding the factor of publicness, there was little to no evidence for public commitment as an important digital episodic memory storage mechanism in Study 1. Past research on self-effects inferred that public commitment occurred when people reported that their self-concepts and/or attitudes were aligned with their public self-presentations (e.g., Carr & Hayes, 2019; Gonzales & Hancock, 2008). However, this conclusion was not supported in Study 1, which manipulated publicness. No evidence was found for commitment in Study 2 (inferred via ephemerality) as well. Given these results, there are two possible pathways forward. The first path asks, is there a better way to study commitment? The second path asks, if public commitment is not a mechanism that drives self-effects, what other mechanisms can explain the role of publicness on outcomes like subjective memory, enjoyment, and emotion?

Is there a better way to study commitment? Although Study 1 produced the conclusion that there was no support for public commitment as a mechanism that explains why publicness can lead to better subjective memory, this conclusion was inferred and not based on a measurement of commitment. Actually measuring commitment can lead to a more robust, empirically-based test of Valkenburg's (2017) argument that "private behavior can

easily be discounted or forgotten, whereas public behavior leads to commitment" (p. 480)—as well as other potential resultant effects produced due to commitment. Within the present context of digital episodic memory, the key theoretical logic is that when people share digital episodic memories in public (vs. store them in private), they experience greater commitment to what they shared, and as a result have better subjective memory of the event—because they need to remember what they are committed to. This logic can be represented as a mediation model, in which publicness leads to greater commitment, and greater commitment leads to better subjective memory. Study 3 aimed to test this mediation model. There is less reason why commitment might influence the other potential outcomes (enjoyment, positive emotion, and negative emotion), but for the sake of completeness, these other outcomes are tested as research questions.

What mechanisms—other than public commitment—can explain the role of publicness on various cognitive and affective outcomes? Results from Study 1 and Study 2 indicated that perceived social approval and presumed close audience knowledge could be mechanisms that explain why publicness can lead to better subjective memory, greater enjoyment, more positive emotion, and less negative emotion—but these relationships were hitherto untested due to the lack of a "private" condition for comparison in Studies 1 and 2.[7] Therefore, Study 3 was conceived to test commitment, perceived social approval, and presumed close audience knowledge as mechanisms driving the potential effects of publicness.

[7] Recall that perceived social approval and presumed close audience knowledge were exclusively tested among participants who publicly shared their photos in Study 1, at Time 2. In Study 2, all participants shared their photos publicly.

To this end, commitment, perceived social approval, and presumed close audience knowledge are hypothesized as mediators in the following hypotheses:

H13: People who share their digital episodic memories publicly have better subjective memory than people who store their digital episodic memories privately, and the relationship between publicness and subjective memory is mediated by (a) commitment, (b) perceived social approval, and (c) presumed close audience knowledge.

H14: People who share their digital episodic memories publicly have greater enjoyment than people who store their digital episodic memories privately, and the relationship between publicness and enjoyment is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ8: Is the relationship between publicness and enjoyment mediated by commitment?

H15: People who share their digital episodic memories publicly have more positive emotion than people who store their digital episodic memories privately, and the relationship between publicness and positive emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ9: Is the relationship between publicness and positive emotion mediated by commitment?

H16: People who share their digital episodic memories publicly have less negative emotion than people who store their digital episodic memories privately, and the relationship between publicness and negative emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ10: Is the relationship between publicness and negative emotion mediated by commitment?

See Figure 6 for a graphical representation of these, and subsequent, hypotheses.

Another aim of Study 3 is to attempt to replicate the publicness × approval motivation interaction found in Study 1. H6 predicted an interaction between publicness and approval motivation that was driven by people who store their digital episodic memories publicly, specifying a positive linear relationship between approval motivation and subjective memory for people who shared photos publicly. However, results in Study 1 showed the reverse effect for people who stored photos privately. Therefore, modifying H6 to also specify a negative linear relationship between approval motivation and subjective memory for people who stored photos privately results in:

H17: There is an interaction between publicness and approval motivation such that people who publicly share digital episodic memories have (a) better subjective memory, (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion as approval motivation increases, but people who privately store digital episodic memories have (a) worse subjective memory, (b) less enjoyment, (c) less positive emotion, and (d) more negative emotion as approval motivation increases.

The final aim of Study 3 is to explore if ephemerality can affect these outcomes in a similar way to publicness, although the non-significant findings for ephemerality in Studies 1 and 2 suggest that the likelihood of this happening is not high. Earlier in this dissertation, ephemerality was theorized to release people from public commitment, as people do not have to commit to something that is not accessible to others. Put differently, people who share their past experiences on persistent media should have greater commitment than those who

share on ephemeral media, and as a result have better subjective memory. Ephemerality can also constrain opportunities for capitalization, as the presumably positive experiences can reach a fewer number of people due to the time limit. Thus, people who share their past experiences on persistent media should perceive more social approval and have greater presumed close audience knowledge than people who share on ephemeral media, which potentially results in greater enjoyment, more positive emotion, and less negative emotion. Therefore, the following hypotheses—corresponding to H13-H17 and RQ8-RQ10—are proposed:

H18: People who share their digital episodic memories on persistent media have better subjective memory than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and subjective memory is mediated by (a) commitment, (b) perceived social approval, and (c) presumed close audience knowledge.

H19: People who share their digital episodic memories on persistent media have greater enjoyment than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and enjoyment is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ11: Is the relationship between ephemerality and enjoyment mediated by commitment?

H20: People who share their digital episodic memories on persistent media have more positive emotion than people who share their digital episodic memories on ephemeral

media, and the relationship between ephemerality and positive emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ12: Is the relationship between ephemerality and positive emotion mediated by commitment?

H21: People who share their digital episodic memories on persistent media have less negative emotion than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and negative emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.

RQ13: Is the relationship between ephemerality and negative emotion mediated by commitment?

H22: There is an interaction between ephemerality and approval motivation such that people who share digital episodic memories on persistent media have (a) better subjective memory, (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion as approval motivation increases, but people who share digital episodic memories on ephemeral media have (a) worse subjective memory, (b) less enjoyment, (c) less positive emotion, and (d) more negative emotion as approval motivation increases.

See Appendix A for a list of the hypotheses.

VIII: Study 3

Whereas the longitudinal, experimental method in Studies 1 and 2 was useful for separating encoding, storage, and retrieval effects, the chief purpose of Study 3—to investigate the potential mechanisms that drive effects related to publicness—requires analyzing both storage and retrieval effects together, as both sets of (i.e., storage and retrieval) effects are potentially influenced by the public/private storage of digital episodic memory. Collapsing storage and retrieval effects into a single cross-sectional survey, Study 3 was designed to test the potential mediating effects of commitment, perceived social approval, and presumed close audience knowledge between the publicness-subjective memory/enjoyment/emotion relationships. This was especially important because Study 1 did not show evidence for public commitment, despite well-established theorizing that information shared in public warrants greater commitment (Schlenker, 1986; Valkenburg, 2017).

In Studies 1 and 2, undergraduate participants were instructed to take photos in a certain way, then keep the photos private or share them publicly on their actual social media accounts. However, if the participants did so in a perfunctory way, perhaps for the sole purpose of earning the course credits on offer, they may not experience any sort of commitment at all. Study 3 avoids this potential pitfall by asking participants questions about photos they have already uploaded on their own accord (i.e., not because they received instructions to do so). It required participants to recall, based on random assignment, one of three things: a public + persistent photo, a public ephemeral photo, or a private photo. In other words, the *photo condition* was a between-subjects factor with three levels. Participants then answered questions about the photo regarding their commitment to how they portrayed

themselves in the photo, the amount of social approval they perceived, how much they presumed their close others know about the photo, as well as the following outcome variables: subjective memory, enjoyment, positive emotion, and negative emotion.

A. Sample

Participants were recruited from Prolific, a commercial vendor that manages a pool of online survey takers (see Palan & Schitter, 2018). Participants had to be US citizens who used Instagram at least once a month. Participants who failed either of two attention check questions (e.g., "Select disagree if you are paying attention") were removed from analyses (n = 7). At the end of the questionnaire (after the demographic questions), one question asked, "As the research could be compromised if the data quality was bad, we would like you to tell us: Did you faithfully follow the instructions given in this survey?" One participant who admitted to not following the instructions was removed (n = 1). By manually reading the responses from the open-ended questions (see Procedure, below, for details), several participants were also removed because their responses showed that they clearly did not follow instructions (n = 4). After deleting these bad data, a total of N = 440 participants were retained for analyses. Participants who completed the questionnaire were paid $1.75 each, which was Prolific's recommended rate for a study estimated to take 10 minutes.

Participants were mostly female (64.3%; male = 33.2%; the remaining 2.5% did not indicate their sex). Their ages ranged from 18 to 50 years old (M = 31.3, SD = 8.2). White participants comprised 73.0% of the sample, Asian participants 7.5%, Black or African American participants 5.9%, Hispanic or Latino participants 4.5%, American Indian or Alaskan Native 0.2%; 8.0% indicated mixed ethnicity; the rest either did not state their ethnicity or indicated "other" ethnicity.

B. Procedure

After agreeing to participate, participants were told: "Without searching your phone or looking at the photo, think of the most recent photo you have" that fulfilled two criteria. The first criterion was that the photo had to be "taken when you were personally engaged in an activity," with the elaboration that "this could be any activity—such as walking the dog, cooking at home, meeting friends, watching the sunset, etc." The second criterion depended on the condition that participants were randomly assigned to, as participants were randomly instructed to recall (a) a public + persistent photo, (b) a public + ephemeral photo, or (c) a private photo. The second criterion for participants in the public + persistent photo condition was that the photo must have been previously "shared on Instagram as a post;" for participants in the public + ephemeral condition, the photo must have been previously "shared on Instagram as an Instagram Story;" for participants in the private condition, the photo cannot have been "[shared] with anyone else through social media." See Appendix F for the exact wording of questions for each condition.

Based on the selected photo condition, participants were then required to answer three open-ended questions regarding the photo. The first question asked, "where were you?", the second question asked, "what were you doing?", and the third question required participants to describe the photo to an imaginary friend. Participants had to answer the third question with at least 40 words before they were allowed to proceed. Refer to Appendix F for the exact wording. These three questions were designed with two purposes in mind. First, they should help participants focus their thoughts on the selected photo. Second, they were used to obtain a measure of perceived recall accuracy, which is a new, original operationalization of

subjective memory introduced in Study 3 (see Measures section, below, for how this was done).

After answering these three questions, participants were told to "[think] about the photo but without looking at it" as they completed the measures for commitment, perceived social approval, presumed close audience knowledge, perceived memory vividness, enjoyment, positive emotion, and negative emotion. Next, participants were re-presented with their answers to the three open-ended questions regarding the photo (described in the previous paragraph). Having seen their open-ended answers again, participants were told to "look at the photo" (as opposed to only thinking about the photo) and complete the measure for perceived recall accuracy,[8] which captured the extent to which participants rated their answers to the three open-ended questions as accurate or inaccurate after looking at the photo. Finally, participants filled in demographic information.

C. Measures

Participants were told to think about the photo but without looking at it as they answered all questions, except for *perceived recall accuracy*.

Commitment was measured using a two-step approach. The first step required participants to write a word or phrase that described how they thought they portrayed themselves in the photo. Participants were told to "fill in the blank below with an adjective or two: This photo makes me come across as _____." A few examples were also provided to participants; they were told: "for example, if the photo shows you scaling Mt. Everest, you

[8] In Study 3, subjective memory had two operationalizations. The first was perceived memory vividness, which was also used in Studies 1 and 2. The second was perceived recall accuracy, a novel measure unique to Study 3. Questions on perceived memory vividness were answered based on participants' memory, but questions on perceived recall accuracy were answered after participants looked at the photo.

might write ‘strong and adventurous’ in the blank. If the photo shows a painting you worked on, you might write ‘creative’ or perhaps ‘artistic’ in the blank.”

The second step instructed participants to consider the adjective or phrase they provided in step one as the “image” of themselves. Participants were then asked to indicate the extent to which they would like to maintain this “image” of themselves. The question stem read: “Consider the aspect of yourself you just mentioned – that is, you are sometimes [adjective]. If being [adjective] is one dimension of your image of yourself, would you say that:”. The question stem was followed by five items, namely: “You are committed to this image of yourself,” “You try to live up to this image of yourself,” “You strive for consistency between who you are in real life and this image of yourself,” “You try to maintain this image of yourself in various situations,” and “You are committed to being true to this image of yourself.” Each item was rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*), Cronbach’s $\alpha = .94$.

The other mediators/moderators were measured in the same way as in Studies 1 and 2, but with occasional minor differences in phrasing. For example, the questions for perceived social approval were amended to take into account the possibility that a photo could be private.[9] The question stem read, “People who saw my photo would:” and it was accompanied by the following items: “Approve of my photo,” “Have favorable opinions towards my photo,” “Have positive impressions of my photo,” “React supportively towards my photo,” “Not be impressed by my photo” (reversed), and “Not care about my photo” (reversed). Presumed close audience knowledge was measured with statements about the

[9] In Study 1 and Study 2, the assumption that other people have seen the photo was built into the items for perceived social approval, e.g., “Other people approve of my post.”

photo (e.g., “Close others may know about my photo”) instead of statements about the post as in Study 1 and Study 2 (e.g., “Close others may know what I posted”). Approval motivation was measured in exactly the same way as previously. Reliability was good: perceived social approval, Cronbach’s α = .86; presumed close audience knowledge, Cronbach’s α = .94; approval motivation, Cronbach’s α = .83.

As for outcome variables, perceived memory vividness (Cronbach’s α = .95) and enjoyment (Cronbach’s α = .88) were measured in the same way as in Studies 1 and 2.

Due to the erratic factor loadings for the previous measure of positive and negative emotion, the PANAS scale (Watson et al., 1988) was used in Study 3 instead. Participants were asked, “to what extent did you feel this way during the activity shown in your photo?” The 20 items were rated on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Cronbach’s α for positive emotion was .90, and for negative emotion, .85.

Alongside perceived memory vividness, one other novel measure—*perceived recall accuracy*—was used to assess participants’ subjective memory. Participants were instructed not to look at their photos when answering all the above measures, but for perceived recall accuracy, participants were told that the question requires them to “actually look up the photo instead of only thinking about it.” Participants’ open-ended responses (see previous section on Procedures and Appendix F) were re-presented to them: “Think about the photo that you said was taken at: [answer to ‘where were you?’]. You said you were: [answer to ‘what were you doing?’]. You also wrote the following about the photo: [answer to their 40+ word description of the photo to an imaginary friend].”

Below these re-presented answers, participants were told: “Now, search your phone for the photo you described above. Now that you’re looking at the photo…”, followed by

four questions rated using 7-point semantic differential scales. The four questions were: "To what extent would you say your answers were accurate?" (1 = *very inaccurate*, 7 = *very accurate*), "How well did you describe the photo?" (1 = *very poorly*, 7 = *very well*), "Was the photo as you described it?" (1 = *not at all*, 7 = *very much so*), and "How precise was your description of the photo?" (1 = *very imprecise*, 7 = *very precise*). In other words, whereas perceived memory vividness was a self-rating of the vividness of a past experience without having checked the photo, perceived recall accuracy was a self-rating of one's text-format recall of the photo that was assessed after one has checked the photo.

D. Results

Model 5 of PROCESS (A. Hayes, 2022) was used to test the hypotheses. The predictor in the model was photo condition, where the public + persistent condition was coded 0 and dummy codes were created for the public + ephemeral condition and the private condition. Therefore, the first dummy code comparing the public + persistent condition vs. the public + ephemeral condition was a test of ephemerality, and the second dummy code comparing the public + persistent condition vs. the private condition was a test of publicness. As the private condition was implicitly persistent (i.e., photos stored on a phone's memory do not delete themselves), comparing the private condition against only the public + persistent condition was a more appropriate test of publicness than comparing the private condition to both the public + persistent and the public + ephemeral conditions. Mediators (commitment, perceived social approval, presumed close audience knowledge) were set up in parallel. The moderator (approval motivation) was modelled to interact with the predictor only on the "direct effect path" and not with any of the mediators. See Figure 6 for a graphical representation.

The regression paths from the two dummy-coded variables for photo condition (i.e., "public ephemeral" and "private," representing the constructs of ephemerality and publicness, respectively) to each of the three mediators were the same for all the relevant analyses (i.e., H13-H16, RQ8-RQ10, H18-H22, RQ11-RQ13), as they were unaffected by the outcome variables. The model estimating the effect of ephemerality (denoted by the "public ephemeral" condition) and publicness (denoted by the "private") on the outcome of commitment was not significant, $R^2 = .01$, $F(2, 437) = 1.82$, $p = .164$. Neither ephemerality ($b = -.26$, $p = .081$) nor publicness ($b = -.23$, $p = .125$) predicted commitment. See Table 20 for the detailed statistics.

The model estimating the effect of ephemerality (public ephemeral) and publicness (private) on perceived social approval was significant, $R^2 = .01$, $F(2, 437) = 3.28$, $p = .039$. Publicness predicted perceived social approval ($b = -.28$, $p = .011$) but not ephemerality ($b = -.16$, $p = .153$); see Table 20.

The model estimating the effect of ephemerality (public ephemeral) and publicness (private) on presumed close audience knowledge was significant, $R^2 = .10$, $F(2, 437) = 24.85$, $p < .001$. Publicness predicted presumed close audience knowledge ($b = -1.10$, $p < .001$) but not ephemerality ($b = -.15$, $p = .374$); see Table 20.

The next step of the analyses involved testing whether the three mediators, as well as the interaction and direct effects of photo condition and approval motivation, predicted each of the outcomes. Subsequently, the bootstrapped indirect effects of photo condition (i.e., ephemerality and publicness) can also be calculated via PROCESS.

For the outcome of perceived memory vividness, commitment ($b = .11$, $p = .002$), perceived social approval ($b = .22$, $p < .001$), and presumed closed audience knowledge (b

= .08, p = .008) were significant predictors. Approval motivation did not interact with ephemerality (b = -.10, p = .197) or publicness (b = -.14, p = .083) to predict perceived memory vividness. The other predictors were also non-significant. Mediation tests showed a significant indirect effect of publicness on perceived memory vividness via perceived social approval ($effect_{indirect}$ = -.06, $SE_{bootstrapped}$ = .03, 95% $CI_{bootstrapped}$ = [-.127, -.012]) and presumed close audience knowledge ($effect_{indirect}$ = -.09, $SE_{bootstrapped}$ = .04, 95% $CI_{bootstrapped}$ = [-.171, -.013]), but not via commitment ($effect_{indirect}$ = -.03, $SE_{bootstrapped}$ = .02, 95% $CI_{bootstrapped}$ = [-.072, .008]). No significant indirect effects of ephemerality on perceived memory vividness were found. See Table 20 for details.

For the outcome of perceived recall accuracy, perceived social approval (b = .14, p = .015) and the ephemerality × approval motivation interaction (b = -.26, p = .002) were significant predictors, while the other predictors were not significant. Mediation tests showed a significant indirect effect of publicness on perceived recall accuracy via perceived social approval ($effect_{indirect}$ = -.04, $SE_{bootstrapped}$ = .02, 95% $CI_{bootstrapped}$ = [-.094, -.0002]), but not commitment ($effect_{indirect}$ = -.01, $SE_{bootstrapped}$ = .01, 95% $CI_{bootstrapped}$ = [-.045, .007]) or presumed close audience knowledge ($effect_{indirect}$ = .00, $SE_{bootstrapped}$ = .04, 95% $CI_{bootstrapped}$ = [-.083, .077]). No significant indirect effects of ephemerality on perceived recall accuracy were found. See Table 21 for details. As for the significant interaction effect between ephemerality and approval motivation, Figure 7 shows that the interaction was driven by people who shared their photos on public + ephemeral media: the more approval motivation they had, the less perceived recall accuracy they reported. There was a slight upward trend for people who shared their photos on public + persistent media.

Assessing the results across the two operationalizations of subjective memory, H13b was fully supported, H13c was supported only for perceived memory vividness but not for perceived recall accuracy, and H13a was unsupported. H18, which predicted an indirect effect of ephemerality on subjective memory, was unsupported. As for tests involving approval motivation, H17a was unsupported, and H22a was supported for perceived recall accuracy but not for perceived memory vividness.

For the outcome of enjoyment, publicness, i.e., "private," (b = -.20, p = .040), commitment (b = .14, p < .001), and perceived social approval (b = .37, p < .001) were significant predictors, while the other predictors were not significant. Mediation tests showed a significant indirect effect of publicness on enjoyment via perceived social approval ($effect_{indirect}$ = -.10, $SE_{bootstrapped}$ = .05, 95% $CI_{bootstrapped}$ = [-.202, -.022]), but not commitment ($effect_{indirect}$ = -.03, $SE_{bootstrapped}$ = .03, 95% $CI_{bootstrapped}$ = [-.094, .008]) or presumed close audience knowledge ($effect_{indirect}$ = -.05, $SE_{bootstrapped}$ = .04, 95% $CI_{bootstrapped}$ = [-.137, .017]). No significant indirect effects of ephemerality on enjoyment were found. See Table 22 for details. Therefore, for hypotheses regarding mediation effects, H14b was supported, but not RQ8, H14c, H19, or RQ11. As approval motivation did not interact with either publicness or ephemerality, H17b and H22b were also unsupported.

For the outcome of positive emotion, publicness, i.e., "private," (b = -.21, p = .018), commitment (b = .16, p < .001), perceived social approval (b = .30, p < .001), and presumed close audience knowledge (b = .08, p = .002) were significant predictors, while the other predictors were not significant. Mediation tests showed a significant indirect effect of publicness on positive emotion via perceived social approval ($effect_{indirect}$ = -.08, $SE_{bootstrapped}$ = .03, 95% $CI_{bootstrapped}$ = [-.153, -.018]) and presumed close audience knowledge ($effect_{indirect}$

= -.09, $SE_{bootstrapped}$ = .03, 95% $CI_{bootstrapped}$ = [-.160, -.029]), but not commitment ($effect_{indirect}$ = -.04, $SE_{bootstrapped}$ = .03, 95% $CI_{bootstrapped}$ = [-.093, .010]). No significant indirect effects of ephemerality on positive emotion were found. Therefore, the mediation tests showed that H15b and H15c were supported, but not RQ9, H20, or RQ12. Tests involving approval motivation also showed that neither H17c nor H22c were supported.

For the outcome of negative emotion, perceived social approval was the only significant predictor (b = -.06, p = .001). Mediation tests showed a significant indirect effect of publicness on negative emotion via perceived social approval ($effect_{indirect}$ = .017, $SE_{bootstrapped}$ = .10, 95% $CI_{bootstrapped}$ = [.002, .039]), but not commitment ($effect_{indirect}$ = .004, $SE_{bootstrapped}$ = .005, 95% $CI_{bootstrapped}$ = [-.002, .016]) or presumed close audience knowledge ($effect_{indirect}$ = -.016, $SE_{bootstrapped}$ = .010, 95% $CI_{bootstrapped}$ = [-.037, .004]). No significant indirect effects of ephemerality on negative emotion were found. Therefore, the mediation tests showed that H16b was supported, but not RQ10, H16c, H21 or RQ13. As for the hypotheses involving approval motivation, both H17d and H22d were unsupported.

In all, perceived social approval mediated the relationships between publicness and perceived memory vividness, perceived recall accuracy, enjoyment, positive emotion, and negative emotion. Compared to people who stored their photos privately, those who publicly shared their photos experienced greater perceived social approval, which then led to greater subjective memory (i.e., perceived memory vividness and perceived recall accuracy), enjoyment, and positive emotion, as well as less negative emotion.

Presumed close audience knowledge mediated the relationships between publicness and perceived memory vividness as well as publicness and positive emotion. People who publicly shared their photos thought that their close others will know more about their photos

than people who stored their photos in private, which in turn engendered greater perceived memory vividness and positive emotion.

Commitment did not mediate any of the relationships between publicness and the outcomes, or between ephemerality and the outcomes.

Approval motivation interacted only with ephemerality (i.e., the public ephemeral condition, when the reference category was the public persistent condition) to influence perceived recall accuracy.

E. Study 3 Discussion

Results of Study 3 showed very consistent evidence for perceived social approval as a mediator between publicness and all measured outcome variables. Some support was found for presumed close audience knowledge as a mediator, but no support was found for (public) commitment. Excluding encoding effects, which were not tested in Study 3, these results therefore show that people's interpretation of social feedback (i.e., perceived social approval, presumed close audience knowledge) during the retrieval stage of digital episodic memory may be more important than mechanisms that occur during the storage stage (i.e., commitment), in terms of influencing people's cognition and affect. When people perceive greater social support and/or believe that their close social connections know about their photo, they claim to have better subjective memory, enjoyment, and positive emotion. These results are aligned with earlier research on self-effects and capitalization, which found that social feedback—especially from close others—is cardinal to (temporary) changes to one's self-concept and overall positive affect, above and beyond the effects of message expression (e.g., Carr & Foreman, 2016; Walther et al., 2011).

One finding that warrants scrutiny is the mediation of the relationship between publicness and perceived memory vividness, by presumed close audience knowledge. In an earlier chapter, presumed close audience knowledge was theorized to influence subjective memory by magnifying the effects of public commitment: If people presume that their close social connections know about a photo, then they should invest greater cognitive resources to remember the photo or the event it depicts, as part of their commitment to the image of themselves already witnessed by their close social connections. However, this line of reasoning was not supported, as commitment did not mediate the relationship between publicness and subjective memory (i.e., perceived memory vividness or perceived recall accuracy).

Speculatively, the concept of communicatory utility can be an alternative explanation why publicness led to greater presumed close audience knowledge, which then led to greater perceived memory vividness. Communicatory utility is defined as "the anticipated usefulness of information for future informal interaction with family, friends, co-workers and acquaintances" (Atkin, 1972, p. 188). In Atkin's (1972) study, a positive correlation was found between exposure to news featured in the mass media and the frequency of interpersonal conversations with friends, acquaintances, and co-workers regarding the news. Indeed, participants in Atkin's (1972) study indicated that one important reason why they read newspapers was "to give [themselves] something to talk about with others" (p. 198). These results led Atkin to conclude that media selection/exposure is a function of the perceived value of information in anticipated future interactions with others—communicatory utility. In the present context, it is plausible that photos shared in public have greater communicatory utility than those stored in private, and greater communicatory utility

makes people expend greater effort in remembering the photographed event, boosting perceived memory vividness. Put another way, people may have greater perceived memory vividness because they look forward to future conversations with their close social connections about the photos they shared publicly, assuming those close others know about the photo. However, this post-hoc explanation for the unexpected findings should be explored more thoroughly in future studies.

Approval motivation moderated the relationship between ephemerality and perceived recall accuracy (see Table 21), providing partial support for H22a, for perceived recall accuracy. Judging by the slopes of the graphs (see Figure 7), the proposed explanation—satisfaction of need for relational connection (see Chapter V: Rationale for Study 2)—holds up. That is, the more one is motivated to garner social approval, the more one will invest cognitive resources to remember a photo or an experience only if doing so is likely to lead to positive relational connections. And the condition that is most likely to lead to positive relational connections is the public + persistent condition, as more friends can view the photo and talk to the sender about it. Indeed, Figure 7 shows a slightly upward sloping graph for the public + persistent condition. In contrast, the public + ephemeral condition is less likely to lead to positive relational connections as fewer people will be exposed to the photo due to its disappearance after 24 hours, leaving fewer opportunities for conversation regarding the photo. And indeed, there is a downward sloping graph for the public + ephemeral condition in Figure 7.

It is less clear, however, why the slope for the public + ephemeral condition was steeper than the slope for the private condition. Referencing Table 21, the significant interaction was only between approval motivation and ephemerality (i.e., the public +

ephemeral condition), and not between approval motivation and publicness (i.e., the private condition). One plausible reason is that some participants in the private photo condition may have shown their photos to other people in offline circumstances (participants in the private photo were told to think of a photo "that you did not share with anyone else through social media"). If true, this would have been a source of noise in the data, and potentially weakened the negative relationship between approval motivation and perceived memory recall for the private photo condition. In Study 1, explicit instructions were given to experimental participants in the private photo condition not to show their photos to anyone else, but giving the same instruction was not feasible for the survey method of Study 3. Given the present focus on social media, Study 3 did not ask questions about offline behavior, which may be a limitation—although the private photo condition did not totally fail, given the aforementioned significant indirect relationships (with perceived social approval and presumed close audience knowledge as mediators) that compared the private and public photo conditions.

Most importantly, Study 3 empirically reaffirmed, via the measurement of commitment, what was inferred from Study 1: there was no sign that publicness made people have better subjective memory due to greater commitment. It should be noted, however, that Study 3 found a significant effect of commitment on perceived memory vividness (b = .11, p = .002; see Table 20). That is, people who experienced greater commitment also claimed to have more vivid memories. The reason why commitment was not significant as a mediator was because public sharing did not lead to greater commitment than private storage (b = -.23, p = .125; see Table 20). People who were committed to the image of themselves as portrayed in a photo have greater perceived memory vividness of the photographed event, but

publicness did not lead to greater commitment. Instead, Study 3 found that publicness led to greater perceived social approval and to greater presumed close audience knowledge, and that these two mechanisms were the key drivers of outcomes such as subjective memory, enjoyment, and positive/negative emotion—replicating the results of Studies 1 and 2.

IX: General Discussion

The aim of this dissertation was to learn more about self-effects by examining how cognition can be "extended" from the human mind to external entities such as social media and digital photography, within the context of people's past experiences. A "digital episodic memory" framework was used to derive a non-exhaustive set of predictors related to the encoding, storage, and retrieval stages of human memory, as complemented by digital technology. This dissertation also investigated outcomes novel to the self-effects paradigm that pertained to people's own cognitive and affective judgments of their experiences; it expanded the range of outcomes typically associated with self-effects research (see e.g., Carr & Hayes, 2019; Lane et al., 2019) by examining subjective memory (across three different operationalizations), enjoyment, positive emotion, negative emotion, and self-esteem. Methodologically, the chronological separation of Time 1 and Time 2 data collection points in Studies 1 and 2 permitted the assessment of message expression effects as distinct from social/feedback effects.

Based on the collective results of the three studies, the digital episodic memory framework has demonstrated its usefulness as a lens through which mechanisms from different stages of message expression can be studied. By classifying the predictors of self-effects into three stages—encoding, storage, and retrieval—the digital episodic memory perspective facilitates understanding of how digital technology can supplement human cognition in the memory and affective evaluation of past experiences in a social media context.

At the encoding stage, two factors were consistently found (in Studies 1 and 2) to be of substantial importance to self-effects: self-relevance and engagement. People who find

that a photographed scene is highly relevant to themselves and/or who were highly engaged (i.e., who experienced little mind-wandering) in the activities depicted in the photographed scene had better subjective memory, enjoyed the experience more, and experienced more positive emotion and/or less negative emotion regarding the activity.

These findings from the encoding stage add a new dimension to self-effects research, which does not typically consider factors that precede the expression of a message—such as those pertaining to message creation, the expectation of expression, or the encoding of digital episodic memory (see Pingree, 2007). In the identity shift paradigm, for example, participants' self-presentations were often randomly determined as part of the experimental procedures, and therefore there was no need to consider factors that precede message expression, such as self-relevance or engagement (see Carr et al., 2021 for review). Yet, the present findings on self-relevance and engagement show that in a more naturalistic environment, the psychological processes during the encoding of digital episodic memory are just as important to self-effects as processes that occur during or after message expression. Of course, self-relevance and engagement are but two encoding-stage factors, among many, that can influence cognition/affect. Another potentially influential factor that future studies can explore is co-presence: The accompaniment of friends when one is experiencing an event (vs. experiencing an event solo) can make the event more enjoyable (Jolly et al., 2019). Indeed, the presence of close others during the encoding stage could also make an event perceivably more memorable, and future studies can try to identify other important factors to supplement self-relevance and engagement where digital episodic memory is concerned.

As for processes at the storage stage, Valkenburg (2017) and Schlenker (1986) have argued that portrayals of some aspect of oneself, when made in public, have a more profound

influence on the self than the same portrayals made in private, because public identity performances require more commitment than private identity performances. As Schlenker (2012) explained, "self-presentations produce obligations for people to be what they say they are or risk personal and interpersonal sanctions" (p. 551), thereby motivating people to commit to their public self-presentations. Extending this reasoning to digital episodic memory, publicly sharing photos of one's past experiences on social media should engender greater commitment than storing photos in private. And to the extent that people are committed, they should also remember the shared experiences.

Whereas Studies 1 and 2 attempted to infer the presence/absence of commitment, Study 3 was unique in that it was perhaps the first study—insofar as research on self-effects is concerned—that attempted to empirically measure commitment. Nonetheless, across all three studies, there was no evidence that public sharing of past experiences (vs. private storage) results in greater commitment to the publicly-presented image of oneself. In Study 3, participants who publicly shared their photos did not report greater commitment than those who kept their photos private, despite the positive relationship between commitment and perceived memory vividness. Additionally, publicness did not result in better subjective memory in Studies 1 and 2, and thus there was no evidence for the inference that public sharing engendered greater commitment.

Results across all three studies in this dissertation, therefore, did not demonstrate evidence for public commitment as a key mechanism that drives online self-effects. One plausible reason for this could be, ironically, because participants' self-presentations in the current set of studies were insufficiently distinct from their typical self-presentations. According to Schlenker (2012), some self-presentations "involve relatively little cognitive

effort, in that the actor does not expend valuable and limited cognitive resources on the activity" (p. 544), because the self-presentations may be familiar, natural, or highly practiced to the actor. Such self-presentations are said to be "automatic" (Schlenker, 2012, p. 544). Given that the current set of studies gave participants considerable freedom (with the exception of the non-volitional condition in Study 2) to self-present in their preferred manner, it is plausible that participants' self-presentations were not manifestly distinct from their typical self-presentations on social media. If this were the case, then participants may not have invested sufficient cognitive effort—above and beyond the cognitive effort they typically expended—to commit to their self-presentations.

This interpretation, although speculative, is consistent with research from the identity shift paradigm, where participants were sometimes told to self-present in ways that were vastly different from their typical self-presentations. For example, in identity shift studies that required participants to self-present as either introverts or extroverts (e.g., Gonzales & Hancock, 2008), participants could ironically be more cognitively involved or committed to their "new" identities because the "new" identities were so different from their "old" identities—when introverts self-presented as extroverts and extroverts self-presented as introverts. On the same note, future studies can consider the discrepancy between participants' presented selves (i.e., who participants portray themselves to be in a study) with their actual or ideal selves (i.e., who participants believe themselves to be or who participants aspire to be, respectively; see Higgins, 1987). Perhaps some minimum threshold for discrepancy needs to be crossed before the effects of commitment can be empirically observed. For example, a smoker might publicly self-present as a non-smoker, and as a consequence, grow committed to actually becoming a non-smoker. Conversely, if a smoker

publicly self-presents as a smoker, there may be relatively less motivation to commit to an already-existing self-image (although reinforcement could nonetheless occur).

In this dissertation, ephemerality was theorized to release people from public commitment, as the disappearance of a message from public view means that people no longer have to hold themselves accountable for something they previously said or to a prior self-presentation. Because no support was found for public commitment, it follows that no support was found for the idea that ephemerality releases people from public commitment. However, it may be too soon to dismiss this idea entirely. Future studies should first find evidence for public commitment effects, then test whether ephemerality moderates the relationship between publicness and a relevant outcome. For example, will a smoker who self-presents as a non-smoker via a public and ephemeral medium experience less commitment than a smoker who self-presents as a non-smoker via a public and persistent medium?

Approval motivation was originally theorized to moderate the relationship between publicness and various outcome variables, because the effects of public sharing should be more observable the more that people are motivated to seek social approval. Approval motivation was found to moderate the relationships between publicness and perceived memory vividness (Study 1); between valence and perceived memory vividness, enjoyment, and positive emotion (Study 2); and between ephemerality and perceived recall accuracy (Study 3). However, the interaction patterns (see Figures 2, 3, 4, and 5) did not support what was originally hypothesized. For example, in Study 1, the more participants in the private condition were motivated to garner social approval, the less perceived memory vividness they claimed to have (Figure 2). This was unexpected, as approval motivation was originally

hypothesized (in H6) to affect only people who publicly shared their photos. As such, the logic was changed—based on the empirical results of Study 1 (see motivation for H11, H17, and H22 in earlier chapters)—to posit that the more approval motivation people have, the more potent self-effects are (people have better subjective memory, greater enjoyment of past experiences, and feel more positive emotion) if the messages they send have the potential to garner social rewards for the senders themselves (e.g., messages that are public, persistent, and positively valenced). The revised explanation was that people with higher approval motivation may be more cognitively or affectively involved in messages that can satisfy their need for relational connection, but may be less cognitively or affectively involved in messages that are unlikely to satisfy their need for relational connection. Future research can test this idea again, and see if the results can replicate in other contexts.

Volition, originally thought to have caused method artifacts in past research (see Chapter V: Rationale for Study 2), did not significantly predict any of the outcomes. This is, tentatively, good news for self-effects research, knowing that experimental instructions to behave in a certain way are unlikely to be confounded with volition or lack thereof.

At the retrieval stage, perceived social approval led to better subjective memory, greater enjoyment, more positive emotion, less negative emotion, and better self-esteem across the three studies. This is commensurate with past research on identity shift and capitalization (e.g., Carr & Hayes, 2019; Reis et al., 2010), which found that the positive feedback from others can cause self-effects above and beyond the sending of messages. As Rimé et al. (2020) explained:

> The [audience's] response—and particularly its perception—plays a decisive role in the intrapersonal and interpersonal benefits of sharing. An active and constructive

> response, motivated by the reinforcement of positive feelings and reflecting the needs of the capitalizer for understanding, validation and attention, prolongs positive emotion, reinforces the sense of acceptance and relational links that, as a result, predict future interactions and contributes to the intrapersonal benefits of both actors. (p. 128)

Future studies can delve into how different types of feedback can lead to different levels of perceived social approval. For example, considering that providing active and constructive feedback typically leads to more positive capitalization outcomes than passive support (Gable et al., 2006), would comments left below people's posts foster more profound effects than paralinguistic digital affordances such as likes or reactions? Whereas comments present considerable opportunity for people to show enthusiastic support, paralinguistic digital affordances are far more passive, and open to various interpretations (R. Hayes et al., 2016). From this perspective, the possibility that different types of social media feedback (e.g., comments, paralinguistic digital affordances, direct personal messages, etc.) influence perceptions of social approval deserves further future exploration.

Presumed close audience knowledge—but not presumed general audience knowledge—also played a role in predicting outcomes such as enjoyment (Studies 1 & 3), perceived memory vividness (Study 2), and positive emotion (Study 3), complementing previous findings that feedback provided by relationally close others has greater effect on message senders than feedback provided by non-close others (Carr & Foreman, 2016; Carr et al., 2016). This result was also consistent with past research showing that the audience on social media is differentiated rather than monolithic: Although people sometimes make social media posts for an abstract public (i.e., anyone who happens to see the post), on other

occasions people make social media posts with an imagined target audience in mind, with varying levels of specificity from particular individuals (e.g., a significant other) to groups of people (e.g., co-workers, people with specific hobbies, people who live in certain regions) (Litt & Hargittai, 2016). Considering that presumed close audience knowledge significantly predicted several outcomes but not presumed general audience knowledge, if commitment were indeed a mechanism (although unsupported in the present dissertation) for public sharing, there is a need to ask: for whom do people commit their social media self-presentations? This line of reasoning was stymied by the non-significant results regarding public commitment, but future studies that are able to establish empirical support for public commitment can consider making even finer-grained distinctions between presumed audiences.

Relatedly, the results for perceived close audience knowledge call into question the importance of scalability in self-effects. Scalability is the potential to reach a broad audience, and is a feature, among others, that distinguishes social media from offline, in-person interactions with friends (Boyd, 2011). Valkenburg (2017) argued that scalability is a crucial reason why self-effects are more potent on social media:

> [Scalability] provides message senders with ample forums to commit themselves to imagined audiences, which may, in turn, enhance the public commitment aspect of self-effects. Moreover, by broadcasting self-related messages to sizeable audiences, message creators/senders are more likely to receive self-related feedback from these expanded audiences. (p. 482)

Yet the present results show that the perception of a small group of close friends/family knowing what one has posted is more important for self-effects than a similar

perception regarding a large group of generic others. In other words, if self-effects stem from having a small number of important individuals bearing witness to the things one shares on social media, then scalability may not be as important to self-effects as Valkenburg (2017) theorized.[10] Together, these findings on perceived social approval and presumed close audience knowledge demonstrate that digital technology is more than a mere substitute for people's internal memories, therefore supporting the utility of digital episodic memory as a framework for self-effects research. Social media, in particular, introduce social dynamics that influence people's retrospective evaluation of their past experiences while simultaneously storing snippets of the experiences as photos, videos, or text. It is during the retrieval of digital episodic memory that people's publicly shared memories become enmeshed with the paralinguistic digital affordances (e.g., likes, upvotes, etc.) and comments left by others, giving those memories new meaning that is co-created by multiple individuals. Such social dynamics, combined with various digital affordances, would be absent from the offline *solo* retrieval of memories. They would also be qualitatively different from the offline *group* retrieval of memories, for which the simultaneous recollection and articulation of a target memory by multiple individuals can ironically inhibit memory retrieval (see Basden et al., 1997, 2000 for details). Put differently, the facilitation of unique social dynamics via digital affordances is a crucial factor in justifying the value of the digital episodic memory framework from a distributed cognition perspective. Indeed, if storing photos on social media is a mere alternative to storing photos in a hardcopy album or storing scenes in people's own

[10] Relatedly, it remains to be seen how asynchronicity and cue-manageability—two other affordances that Valkenburg (2017) put forth as critical to why self-effects may be more potent on social media than in offline contexts—will hold up to empirical testing. As (synchronous) live streaming becomes more common on social media, social cues may ironically become more difficult to be strategically managed. It therefore remains an open question if live streaming will weaken the potential for self-effects.

heads, then there is scant basis to claim that digital technology (broadly) or social media (more specifically) make a difference to people's cognitions. The social dynamics demonstrated through perceived social approval and presumed close audience knowledge show that digital episodic memory complements human memory rather than replaces it, and that digital episodic memory—by being qualitatively different from human memory—warrants its own theorizing and research (see Sutton, 2010).

In all, this dissertation explored the psychological and social dynamics that potentially engender the cognitive and affective aspects of self-effects. No support was found for public commitment, which was theorized to be a key mechanism within the self-effects literature. Results—particularly those that show feedback effects—largely supported the capitalization perspective. This dissertation adopted a digital episodic memory framework that segmented the process of creating/sending messages on social media into encoding, storage, and retrieval stages. Results showed that each stage has its own useful predictors and relevant associated mechanisms, theoretically reconceptualizing *self-effects* as a dynamic process rather than an outcome-focused phenomenon of self-induced behavioral, attitudinal, or self-concept change (see also Walther & Lew, 2022). Additionally, the distinction between (a) the encoding and storage factors linked to the effects of sending messages and (b) the retrieval factors linked to the effects of receiving social feedback allowed a delineation of self-effects (i.e., the effects of sending messages) and social feedback effects (that may strengthen or weaken the self-effects in question).

A caveat to this, however, is that the three memory stages may not necessarily be distinct from each other in all situations. When appropriate, future research may consider how factors assigned to one memory stage can bleed over into another stage. For example,

one can obtain some baseline measure of retrieval-stage variables, even at the storage stage. If variables related to retrieval, e.g., presumed audience knowledge, were measured immediately after participants stored their photos on social media, and again after several days, the change in presumed audience knowledge between the storage and retrieval stages could then be accounted for during hypothesis testing. To give another example, encoding- or storage-stage variables could also be included as controls in future models estimating social feedback effects. Doing so would permit testing whether retrieval-stage variables responsible for social feedback effects have influence above and beyond encoding- or storage-stage variables.

As a whole, the studies described herein have laid the foundations for a broad, overarching theoretical framework from which future, more focused studies can be branched off. In a field known for studying the effects of messages on audiences, asking what effects the sending of messages have on message senders themselves presents a fertile opportunity for theoretical exploration, expansion, and creativity.

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Appendix A: List of Hypotheses and Research Questions

See Figure A1, at the end of Appendix A, for a graphical representation of the various predictors and outcomes tested in each study.

Study 1 and Study 2

Hypothesis or Research Question		Study 1 Results	Study 2 Results
H1:	Self-relevance is positively related to (a) subjective memory, (b) enjoyment, and (c) positive emotion, and (d) inversely related to negative emotion.	Supported: 1a for perceived memory vividness, 1b, 1c, 1d Unsupported: 1a for memory consistency	Supported: 1a, 1b, 1c Unsupported: 1d
H2:	Engagement is positively related to (a) subjective memory, (b) enjoyment, and (c) positive emotion, and inversely related to (d) negative emotion.	Supported: H2a for memory consistency, H2b, H2d. Unsupported: H2a for perceived memory vividness, H2c	All supported
H3:	People who share their digital episodic memories publicly have better subjective memory than people who store their digital episodic memories privately.	Unsupported	Not tested
RQ1:	Do people who share their digital episodic memories publicly have (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion than people who store their digital episodic memories privately?	All unsupported	Not tested
H4:	People who store their digital episodic memories on persistent media have better subjective memory than people who store their digital episodic memories on ephemeral media.	Unsupported	Unsupported

RQ2:	Do people who store their digital episodic memories on persistent media have (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion than people who store their digital episodic memories on ephemeral media?	All unsupported	All unsupported
H5:	There is an interaction between publicness and ephemerality such that people who store digital episodic memories on public + persistent media have better subjective memory than people who store digital episodic memories on media that are (i) public + ephemeral, (ii) private + persistent, or (iii) private + ephemeral.	Unsupported	Not tested
RQ3:	Do publicness and ephemerality interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?	All unsupported	Not tested
H6:	There is an interaction between publicness and approval motivation such that people who store their digital episodic memories publicly (vs. privately) have better subjective memory, and this effect is stronger as people have higher approval motivation.	Qualified support: interaction was significant but not in the predicted pattern (see main text)	Not tested
RQ4:	Do publicness and approval motivation interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?	All unsupported	Not tested
H7:	Perceived social approval is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.	Supported: H7b, H7c Unsupported: H7a, H7d	Supported: H7a, H7b, H7c, H7e Unsupported: H7d

H8.1:	Presumed general audience knowledge is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.	All unsupported	All unsupported
H8.2:	Presumed close audience knowledge is positively related to (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but inversely related to (d) negative emotion.	Supported: H8.2b Unsupported: H8.2a, H8.2c, H8.2d, H8.2e	Supported: H8.2a Unsupported: H8.2b, H8.2c, H8.2d, H8.2e
H9:	There is an interaction between ephemerality and time such that over time, people who store digital episodic memories on persistent media have better subjective memory than people who store digital episodic memories on ephemeral media.	Unsupported	Unsupported
RQ5:	Do ephemerality and time interact to influence (b) enjoyment, (c) positive emotion, (d) negative emotion, and (e) self-esteem?	All unsupported	All unsupported
H10:	People who share positive digital episodic memories have greater (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but (d) less negative emotion than people who share neutral digital episodic memories.	Not tested	All unsupported
H11:	There is an interaction between valence and approval motivation such that people who share positive digital episodic memories have better subjective memory as approval motivation increases, but people who share neutral digital episodic memories have weaker subjective memory as approval motivation increases.	Not tested	Supported

RQ6:	Do valence and approval motivation interact to influence (b) enjoyment, (c) positive emotion, and (d) negative emotion?	Not tested	Supported: RQ6b, RQ6c Unsupported: RQ6d
RQ7:	Do valence and ephemerality interact to influence (a) subjective memory, (b) enjoyment, (c) positive emotion, (d) negative emotion, and (e) self-esteem?	Not tested	All unsupported
H12:	People who volitionally encode digital episodic memories have greater (a) subjective memory, (b) enjoyment, (c) positive emotion, and (e) self-esteem, but (d) less negative emotion than people who do so non-volitionally.	Not tested	All unsupported

Study 3

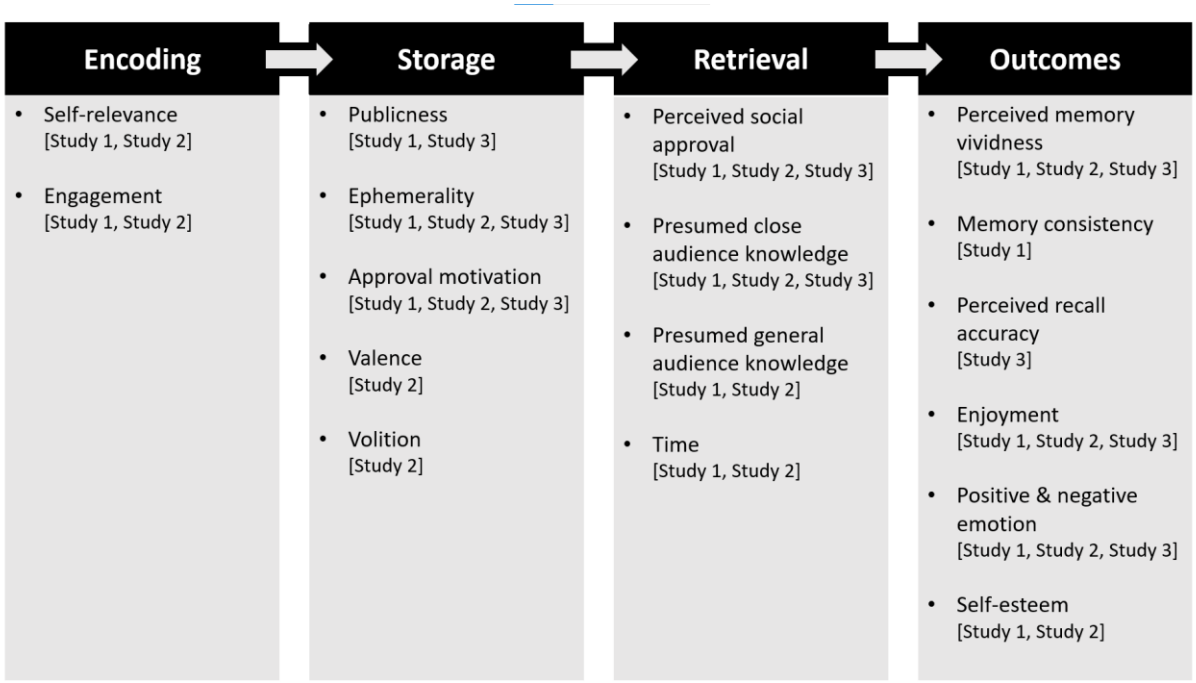
	Hypothesis or Research Question	Study 3 Results
Publicness		
H13:	People who share their digital episodic memories publicly have better subjective memory than people who store their digital episodic memories privately, and the relationship between publicness and subjective memory is mediated by (a) commitment, (b) perceived social approval, and (c) presumed close audience knowledge.	Supported: H13b, H13c (perceived memory vividness) Unsupported: H13a, H13c (perceived recall accuracy)
H14:	People who share their digital episodic memories publicly have greater enjoyment than people who store their digital episodic memories privately, and the relationship between publicness and enjoyment is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	Supported: H14b Unsupported: H14c
RQ8:	Is the relationship between publicness and enjoyment mediated by commitment?	Unsupported
H15:	People who share their digital episodic memories publicly have more positive emotion than people who store their digital episodic memories privately, and the relationship between publicness and positive emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	All supported
RQ9:	Is the relationship between publicness and positive emotion mediated by commitment?	Unsupported
H16:	People who share their digital episodic memories publicly have less negative emotion than people who store their digital episodic memories privately, and the relationship between publicness and negative emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	Supported: H16b Unsupported: H16c
RQ10:	Is the relationship between publicness and negative emotion mediated by commitment?	Unsupported

H17:	There is an interaction between publicness and approval motivation such that people who publicly share digital episodic memories have (a) better subjective memory, (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion as approval motivation increases, but people who privately store digital episodic memories have (a) worse subjective memory, (b) less enjoyment, (c) less positive emotion, and (d) more negative emotion as approval motivation increases.	All unsupported
Ephemerality		
H18:	People who share their digital episodic memories on persistent media have better subjective memory than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and subjective memory is mediated by (a) commitment, (b) perceived social approval, and (c) presumed close audience knowledge.	All unsupported
H19:	People who share their digital episodic memories on persistent media have greater enjoyment than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and enjoyment is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	All unsupported
RQ11:	Is the relationship between ephemerality and enjoyment mediated by commitment?	Unsupported
H20:	People who share their digital episodic memories on persistent media have more positive emotion than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and positive emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	
RQ12:	Is the relationship between ephemerality and positive emotion mediated by commitment?	Unsupported
H21:	People who share their digital episodic memories on persistent media have less negative emotion than people who share their digital episodic memories on ephemeral media, and the relationship between ephemerality and negative emotion is mediated by (b) perceived social approval and (c) presumed close audience knowledge.	All unsupported

RQ13:	Is the relationship between ephemerality and negative emotion mediated by commitment?	Unsupported
H22:	There is an interaction between ephemerality and approval motivation such that people who share digital episodic memories on persistent media have (a) better subjective memory, (b) greater enjoyment, (c) more positive emotion, and (d) less negative emotion as approval motivation increases, but people who share digital episodic memories on ephemeral media have (a) worse subjective memory, (b) less enjoyment, (c) less positive emotion, and (d) more negative emotion as approval motivation increases.	Supported: H22a (perceived recall accuracy) Unsupported: H22a (perceived memory vividness), H22b, H22c, H22d

Figure A1.

Summary of Predictors and Outcomes



Note. The distinction between storage and retrieval was (methodologically) collapsed in Study 3.

Appendix B: Instructions for Participants in Study 1

All participants

The next time you leave your home, your task is to take 3 photos of anything of your choice while engaged in one activity that you find interesting. There are no restrictions on the type of activity—you could be walking your dog, going on a hike, etc. However, the activity must be done solo, that is, you should not be accompanied by another person. Try to make your photos interesting and unique.

Public + Ephemeral condition

After you get back home, post all 3 photos to either Snapchat or Instagram stories—so keep this in mind as you go about taking photos. Please complete a survey at [link] immediately after making your post.

Public + Persistent condition

After you get back home, post all 3 photos to Instagram (not Instagram Stories!)—so keep this in mind as you go about taking photos. Please complete a survey at [link] immediately after making your post.

Private + Ephemeral condition

After you get back home, use either Snapchat or Instagram Stories to craft a post with all 3 photos, but instead of actually posting, save the "post" as screenshots on your phone. Please do not upload the photos to any social media or show them to anybody. Please complete a survey at [link] immediately after making your simulated “post.”

Private + Persistent

After you get back home, use Instagram (not Instagram Stories!) to craft a post with all 3 photos, but instead of actually posting, save the "post" as screenshots on your

phone. Please do not upload the photos to any social media or show them to anybody. Please complete a survey at [link] immediately after making your simulated "post."

Subsequent Instructions

After participants created their real/fictitious post, they filled the T1 questionnaire. At the end of the T1 questionnaire, participants in the private + ephemeral condition saw one additional instruction: "Finally, to simulate the temporary nature of Snapchat/Instagram Stories, please delete the 'posts' from your phone right now." Three days later, the T2 questionnaire was emailed to participants.

Appendix C: Confirmatory and Exploratory Factor Analyses for Emotions Measure

A confirmatory factor analysis (CFA) was performed on all 16 items as they were theoretically supposed to load onto the four factors, according to Barrett and Russell (1998). This was done twice, producing one model for the responses at T1 and another model for the responses at T2. All four factors were modeled to correlated with each other. However, the fit statistics and factor loadings were not good, as shown in Tables C1 and C2, below.

Table C1

Fit Statistics for CFA Performed on Items Measuring Emotions, Study 1

Model	χ^2	*df*	*p*-value	RMSEA	90% CI	CFI	SRMR
Time 1	269.18	98	< .001	.10	[.09, .12]	.78	.10
Time 2	192.41	98	< .001	.08	[.06, .10]	.89	.08

Note. χ^2 = chi-square test of model fit; RMSEA = root-mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual.

Table C2

Factor Loadings for CFA Performed on Items Measuring Emotions, Study 1

Latent Factor (Dependent Variable) / Item	Factor Loading, Time 1	Factor Loading, Time 2
Positive + High Activation		
1. Alert	.11	.25
2. Excited	.62	.74
3. Elated	.53	.69
4. Happy	.93	.87
Positive + Low Activation		
1. Contented	.57	.53
2. Serene	.59	.67
3. Relaxed	.76	.85
4. Calm	.60	.79
Negative + High Activation		
1. Tense	.77	.88
2. Nervous	.75	.78
3. Stressed	.79	.65
4. Upset	.45	.58
Negative + Low Activation		
1. Sad	.53	.54
2. Depressed	.70	.62
3. Bored	.43	.49
4. Fatigued	.57	.49

Given these poor factor loadings, a series of exploratory factor analyses (EFA) were performed using Mplus, with maximum likelihood estimation and Geomin rotation. Results, presented in Table C3, showed that a 4-factor solution was the best for the Time 1 data as well as the Time 2 data.

Table C3

Fit Statistics for EFA Performed on Items Measuring Emotions, Study 1

Model	χ^2	*df*	*p*-value	RMSEA	90% CI	CFI	SRMR
Time 1							
1-factor	505.90	104	< .001	.15	[.14, .17]	.48	.14
2-factor	287.46	89	< .001	.12	[.10, .13]	.74	.08
3-factor	169.41	75	< .001	.09	[.07, .11]	.88	.05
4-factor	94.10	62	< .001	.06	[.03, .08]	.96	.04
Time 2							
1-factor	553.83	104	< .001	.17	[.16, .19]	.46	.15
2-factor	261.62	89	< .001	.12	[.10, .13]	.79	.07
3-factor	112.34	75	.003	.06	[.03, .08]	.96	.04
4-factor	71.37	62	.194	.03	[.00, .06]	.99	.03

Note. χ^2 = chi-square test of model fit; RMSEA = root-mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual.

Upon scrutinizing the factor loadings (see Table C4), however, results were not straightforward. *Alert*, *upset*, and *bored* did not load on any factor. *Happy* cross-loaded on two factors and *elated* borderline cross-loaded. *Fatigued* loaded on a factor other than the one it was theorized to be a part of. As a whole, the EFA results showed that many changes had to be made to Barrett and Russell's (1998) theorized dimensions to get an optimal model fit.

As such, the factor analytic approach was abandoned. A more conventional starting point was chosen: grouping all the positive emotion words into one dimension and all the negative emotion words into another dimension (e.g., Watson et al., 1988). Decisions

whether to include or exclude specific items were subsequently made using the Cronbach's α statistic—specifically the "Cronbach's α if item deleted" function in SPSS.

Table C4

Geomin Rotated Factor Loadings of 4-Factor Solutions

Theorized Factor / Item	Time 1				Time 2			
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 1	Factor 2	Factor 3	Factor 4
Positive + High Activation								
1. Alert	.18	.16	.49	-.02	.35	.02	.10	.20
2. Excited	**.84**	-.03	.04	-.01	**.92**	.00	-.02	.03
3. Elated	.49	.30	-.04	.10	**.57**	.30	-.04	.03
4. Happy	.65	.35	-.02	-.09	.58	.40	.02	-.17
Positive + Low Activation								
1. Contented	.14	**.67**	.20	-.02	.17	**.48**	.07	-.03
2. Serene	.00	**.65**	.05	.06	-.01	**.69**	-.02	.01
3. Relaxed	-.01	**.66**	-.20	.09	.07	**.79**	.02	-.11
4. Calm	-.20	**.61**	-.07	-.10	-.05	**.82**	-.18	.11
Negative + High Activation								
1. Tense	-.07	-.01	**.94**	-.19	-.09	.02	**1.00**	-.01
2. Nervous	.23	-.14	**.63**	.08	.11	-.05	**.59**	.22
3. Stressed	.01	-.04	**.70**	.11	.01	-.10	**.44**	.23
4. Upset	.00	-.02	.27	.33	.10	-.05	.08	.66
Negative + Low Activation								
1. Sad	-.05	.04	.02	**.58**	-.08	-.02	.01	**.60**
2. Depressed	-.01	-.03	.02	**.92**	-.10	.05	.02	**.67**
3. Bored	-.39	-.01	.22	.07	-.39	.05	.21	.18
4. Fatigued	-.06	.08	**.51**	.15	-.01	.08	**.40**	.19

Note. According to Howard's (2016) ".40-.30-.20" criteria, items should load on a primary factor by > .40, load onto a secondary factor by < .30, and have a minimum difference of .20 between the primary and secondary factor loadings. Items that met the criteria were bolded. A very high factor loading, such as that for "tense" in the T2 analysis, can sometimes indicate a negative residual variance, which will suggest the model failed to converge—in this case, the residual variance was positive, at .009.

Parallel analyses for T1 and T2 responses showed that the optimal solution for the EFA had three factors. Results of the parallel analyses are represented in Figures C1 and C2. Due to the inconsistency between the parallel analysis results and the number of theorized factors, the parallel analyses results were not considered. Factor loadings for the 3-factor solutions suggested by the parallel analyses are shown in Table C5.

Figure C1

Parallel Analysis Result for Items Measuring Emotions, Study 1, Time 1

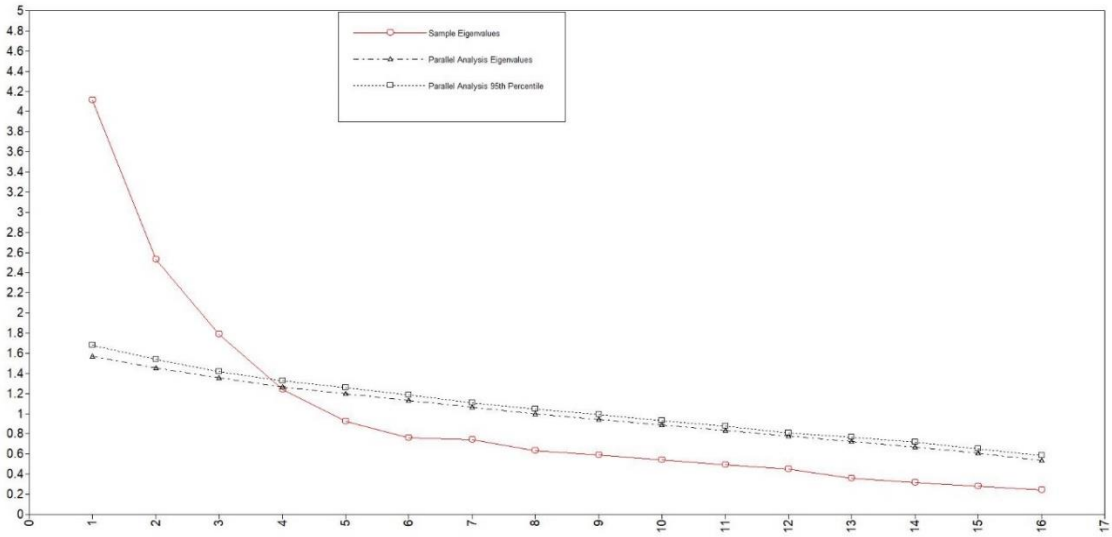


Figure C2

Parallel Analysis Result for Items Measuring Emotions, Study 1, Time 2

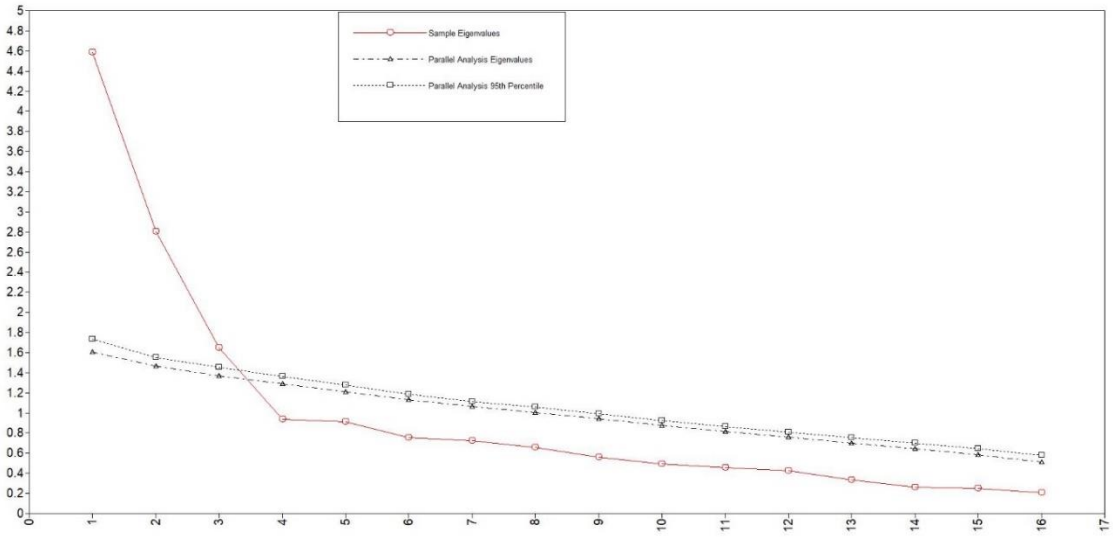


Table C5

Geomin Rotated Factor Loadings of 3-Factor Solutions

Theorized Factor / Item	Time 1			Time 2		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Positive + High Activation						
1. Alert	.18	.06	.46	.34	.02	.28
2. Excited	**.78**	.00	.14	**.89**	.02	.03
3. Elated	.46	.32	.05	.56	.31	.02
4. Happy	.72	.34	-.02	.62	.41	-.06
Positive + Low Activation						
1. Contented	.19	**.58**	.12	.18	**.50**	.10
2. Serene	.05	**.61**	.00	-.01	**.70**	.06
3. Relaxed	.01	**.70**	-.19	.08	**.81**	.00
4. Calm	-.12	**.59**	-.19	-.09	**.83**	-.02
Negative + High Activation						
1. Tense	.00	-.22	**.71**	.00	.01	**.87**
2. Nervous	.19	-.24	**.69**	.13	.04	**.78**
3. Stressed	-.02	-.15	**.75**	.01	.09	**.62**
4. Upset	-.13	-.02	**.45**	-.02	.04	**.57**
Negative + Low Activation						
1. Sad	-.25	.11	.36	-.19	.02	**.44**
2. Depressed	-.27	.04	**.51**	-.22	.05	**.53**
3. Bored	-.44	-.03	.23	-.42	.05	.34
4. Fatigued	-.11	.01	**.58**	-.01	.09	**.56**

Note. According to Howard's (2016) ".40-.30-.20" criteria, items should load on a primary factor by > .40, load onto a secondary factor by < .30, and have a minimum difference of .20 between the primary and secondary factor loadings. Items that met the criteria were bolded.

Appendix D: Memory Consistency/Cosine Similarity

Instructions for Memory Consistency Questions

At Time 1, participants were told:

> Imagine you are going to describe the activity to a friend. Your friend was not with you and has not seen your photos. Write a few sentences on what you would tell your friend. You may use the following prompts as a guide: Where were you and what were you doing? How did you feel? What was memorable or mundane about the activity? How much time did you spend on the activity? During the activity, did you manage to accomplish anything, big or small? Try to elaborate more so that your friend can know what it was like to be there with you.

At Time 2, participants were told:

> Recall that you were previously instructed to imagine you are going to describe the activity to a friend. You were told: "Imagine you are going to describe the activity to a friend. Your friend was not with you and has not seen your photos. Write a few sentences on what you would tell your friend. You may use the following prompts as a guide: Where were you and what were you doing? How did you feel? What was memorable or mundane about the activity? How much time did you spend on the activity? During the activity, did you manage to accomplish anything, big or small? Try to elaborate more so that your friend can know what it was like to be there with you." Now, imagine that you are going to describe the activity to another friend, using the same instructions shown above.

Example of Cosine Similarity Calculation

Table D1, on the next page, presents two sets of texts (Text 1 vs. Text 2) as they were in their original form ("input") and what they became after the removal of inflections and stop words ("processed"). The "processed" versions of Text 1 and Text 2 were compared, and their cosine similarity were calculated.

Table D1

Inputs, Processed Text, and Cosine Similarity Scores

		Text 1	Text 2	Cosine Similarity
1.	Input:	On a dark desert highway, cool wind in my hair. Warm smell of colitas, rising up through the air	On a dark desert highway, cool wind in my hair. Warm smell of colitas, rising up through the air	-
	Processed:	dark desert highway cool wind hair warm smell colita rise air	dark desert highway cool wind hair warm smell colita rise air	1.00
2.	Input:	On a dark desert highway, cool wind in my hair. Warm smell of colitas, rising up through the air	On a dark desert highway, cool wind in my hair.	-
	Processed:	dark desert highway cool wind hair warm smell colita rise air	dark desert highway cool wind hair	.74
3.	Input:	On a dark desert highway, cool wind in my hair. Warm smell of colitas, rising up through the air	On a dark desert highway	-
	Processed:	dark desert highway cool wind hair warm smell colita rise air	dark desert highway	.52
4.	Input:	On a dark desert highway, cool wind in my hair. Warm smell of colitas, rising up through the air	Welcome to the Hotel California	-
	Processed:	dark desert highway cool wind hair warm smell colita rise air	welcome hotel california	.00

Appendix E: Instructions for Participants in Study 2

Part 1, Before Photo-Taking

All Participants

Upon arrival at the lab, participants were seated at a computer, where instructions were presented. All participants saw the following:

> Spend the next 30 mins visiting 3 different locations on campus: the UCSB lagoon, the UCEN, and the Storke (clock) tower. As you visit these 3 locations, your task is to take at least 1 photo at each location. You should not be seen in the photo. Come back to the lab after 30 mins or once you are done.

A map was shown on the screen to all participants. The three photo-taking locations were marked out on the map, together with participants' current location (i.e., the location of the lab).

Neutral + Volitional captions condition

> You will eventually be asked to upload your photos to any social media account of your choice, with neutral captions of your choice. The key idea is to write captions that are neutral, and not come across as too strong in opinion or feelings. But for now, don't upload anything until you have received further instructions from the researcher.

Positive + Volitional captions condition

> You will eventually be asked to upload your photos to any social media account of your choice, with positive captions of your choice. The key idea is to write captions that are uplifting to audiences. But for now, don't upload anything until you have received further instructions from the researcher.

Neutral + Non-Volitional captions condition

You will eventually be asked to upload your photos to any social media account of your choice. You will also need to add neutral captions that describe the location of your photos, e.g., “At the UCSB lagoon.” But for now, don’t upload anything until you have received further instructions from the researcher.

Positive + Non-Volitional captions condition

You will eventually be asked to upload your photos to any social media account of your choice. You will also need to add the following caption to your photos: "[It's a good day to be a Gaucho / Finding joy in the ordinary / Always thriving :) / Do more of what makes you happy / Think happy, stay happy]". But for now, don’t upload anything until you have received further instructions from the researcher.

Out of the five positive captions described within the square brackets, only one was randomly displayed to each participant. In other words, participants in the positive + non-volitional captions condition were further randomized into five sub-conditions, each of which contained a different positive caption.

Part 1, After Photo-Taking

All Participants

After completing the photo-taking tour, participants returned to the lab, where they received further instructions. All participants saw the following:

1. Upload three photos (1 of the Storke tower, 1 of the UCEN, and 1 of the lagoon) to any social media account of your choice.

Neutral + Volitional captions condition

2. Add, to your post/photos, neutral captions of your choice. The key idea is to write captions that are neutral, and not come across as too strong in opinion or feelings.

Positive + Volitional captions condition

2. Add, to your post/photos, positive captions of your choice. The key idea is to write captions that are uplifting to audiences.

Neutral + Non-Volitional captions condition

2. Add, to your post/photos, the following neutral caption that describe the location of your photos: "At UCSB's Storke tower, lagoon, and UCEN" (one caption for all three photos)

Positive + Non-Volitional captions condition

2. Add, to your post/photos, the following caption: "[It's a good day to be a Gaucho / Finding joy in the ordinary / Always thriving :) / Do more of what makes you happy / Think happy, stay happy]" (one caption for all three photos)

Like before, only one of the five possible positive captions were displayed to each participant.

All Participants

All participants were then instructed to take screenshots of the posts they made, and email the screenshots to a researcher-controlled email account. The photos were not analyzed. Lastly, participants answered the Part 1 questionnaire.

Part 2

Three days after completing the Part 1 questionnaire, all participants received an email in their university email accounts containing the link to the Part 2 questionnaire. The

Part 2 questionnaire opened with: “Recall that you were previously instructed to post, to your social media account, 3 photos taken while visiting different locations on campus (i.e., the "campus photography tour"). Without referring to or looking back at the photos you took, answer the following: [list of questions].” Part 2 concluded upon the completion of this questionnaire.

Appendix F: Instructions for Participants in Study 3

Public + Persistent Condition

We would like to know about photos you have recently taken using your phone.

Without searching your phone or looking at the photo, think of the most recent photo you have:

(a) That was taken when you were **personally engaged in an activity** (this could be any activity—such as walking the dog, cooking at home, meeting friends, watching the sunset, etc.)

AND

(b) Was **shared on Instagram as a post** (i.e., on the Instagram grid)

Public + Ephemeral Condition

We would like to know about photos you have recently taken using your phone.

Without searching your phone or looking at the photo, think of the most recent photo you have:

(a) That was taken when you were **personally engaged in an activity** (this could be any activity—such as walking the dog, cooking at home, meeting friends, watching the sunset, etc.)

AND

(b) Was shared on Instagram as an **Instagram Story**

Private Condition

We would like to know about photos you have recently taken using your phone.

Without searching your phone or looking at the photo, think of the most recent photo you have:

(a) That was taken when you were **personally engaged in an activity** (this could be any activity—such as walking the dog, cooking at home, meeting friends, watching the sunset, etc.)

AND

(b) That you **did not share with anyone else through social media**

Open-Ended Questions (for All Conditions)

Still without searching your phone or looking at this photo, please answer the following questions about it.

Thinking about the location where you took the photo:

Where were you? _____

What were you doing? _____

[page break]

Still without searching your phone, think about the photo and imagine you are going to describe the photo to a friend. Imagine that your friend has not seen your photo and was not with you when you took it.

Write a few sentences that describe your photo to your friend.

[participants had to write at least 40 words]

[After the above instructions, participants answered questions that measured the mediators (commitment, perceived social approval, presumed close audience knowledge) and the outcomes (subjective memory, enjoyment, positive emotion, negative emotion). They then answered demographic questions and were redirected back to the Prolific website for payment purposes.]

Appendix G: Tables and Figures

Figure 1

A Two-Dimensional Vector for Illustrative Purposes

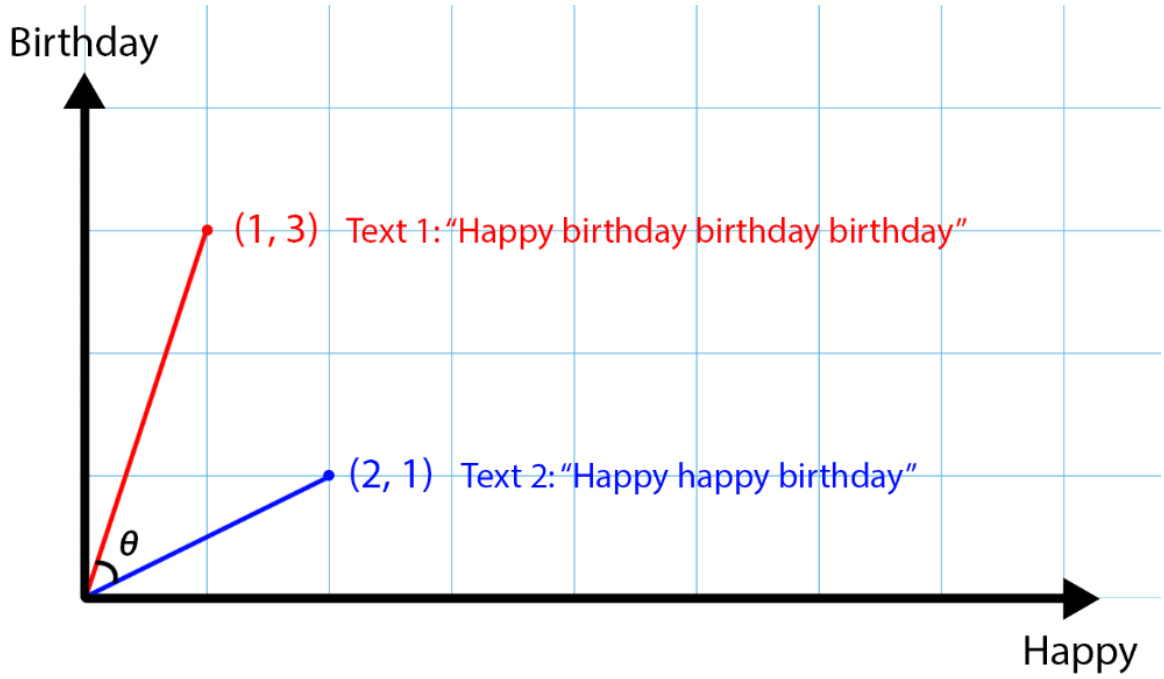


Table 1

Predictors of Perceived Memory Vividness at T1, Study 1

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	6.15	.08	79.06	<.001	
Self-relevance	.11	.04	2.63	.009**	.04
Engagement	-.07	.05	-1.41	.160	
Publicness	.01	.08	.15	.880	
Ephemerality	.10	.08	1.21	.227	
Approval Motivation	-.02	.06	-.26	.795	
Publicness × Ephemerality	.07	.08	.83	.406	
Publicness × Approval Motivation	.14	.06	2.28	.024*	.03

Note. Publicness: private = -1, public = 1; Ephemerality: ephemeral = -1, persistent = 1. *p < .05, **$p \leqslant .01$, ***$p \leqslant .001$.

Figure 2

Effect of Publicness × Approval Motivation on Perceived Memory Vividness at T1

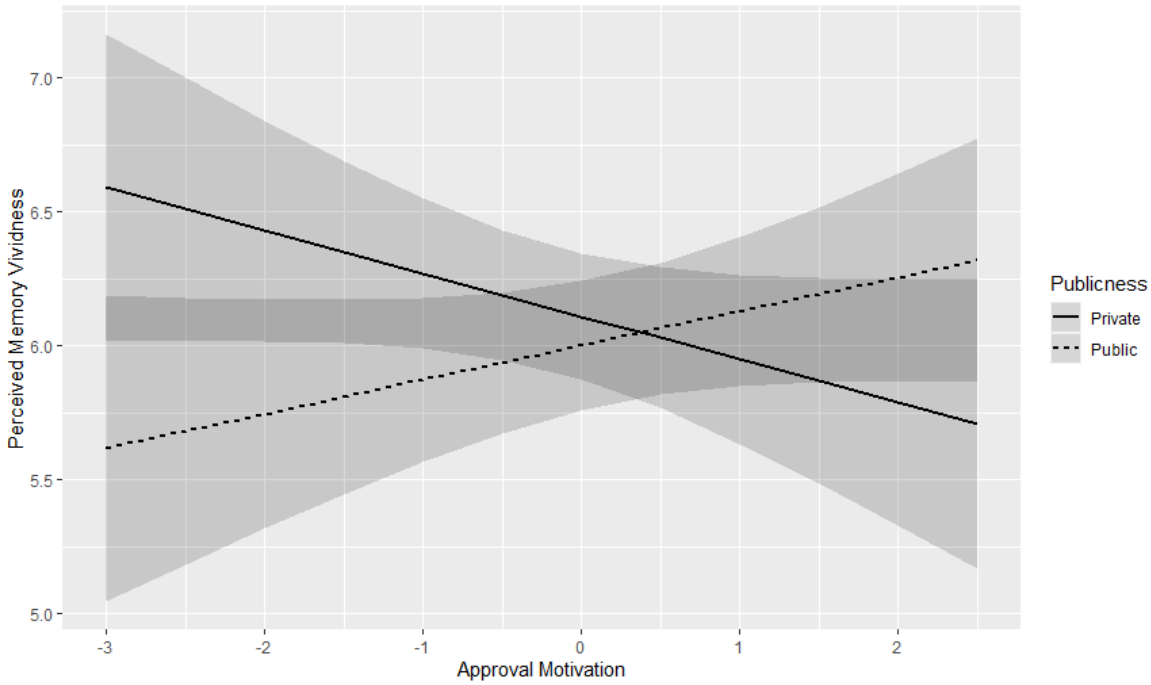


Table 2

Predictors of Memory Consistency at T1, Study 1

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	.50	.01	36.61	<.001	
Self-relevance	.00	.01	.44	.660	
Engagement	.02	.01	2.24	.027*	.03
Publicness	-.05	.01	-3.29	.001***	.06
Ephemerality	-.02	.01	-1.15	.254	
Approval Motivation	.01	.01	.61	.542	
Publicness × Ephemerality	-.02	.01	-1.43	.156	
Publicness × Approval Motivation	.02	.01	1.82	.071	

Note. Publicness: private = -1, public = 1; Ephemerality: ephemeral = -1, persistent = 1. *p < .05, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 3

Predictors of Enjoyment at T1, Study 1

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	6.03	.08	78.58	< .001	
Self-relevance	.29	.04	6.86	< .001***	.24
Engagement	.11	.05	2.36	.019*	.04
Publicness	-.05	.08	-.63	.528	
Ephemerality	.04	.08	.51	.610	
Approval Motivation	.05	.06	.81	.420	
Publicness × Ephemerality	.00	.08	-.06	.956	
Publicness × Approval Motivation	.04	.06	.58	.563	

Note. Publicness: private = -1, public = 1; Ephemerality: ephemeral = -1, persistent = 1. *p < .05, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 4

Predictors of Positive Emotion at T1, Study 1

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	5.08	.08	62.74	< .001	
Self-relevance	.21	.05	4.56	< .001***	.13
Engagement	.06	.05	1.21	.227	
Publicness	-.10	.08	-1.24	.216	
Ephemerality	-.02	.08	-.27	.785	
Approval Motivation	.05	.07	.77	.442	
Publicness × Ephemerality	-.14	.08	-1.66	.099	
Publicness × Approval Motivation	.09	.07	1.37	.174	

Note. Publicness: private = -1, public = 1; Ephemerality: ephemeral = -1, persistent = 1. *p < .05, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 5

Predictors of Negative Emotion at T1, Study 1

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	1.85	.06	29.13	< .001	
Self-relevance	-.11	.04	-2.98	.003**	.07
Engagement	-.10	.04	-2.53	.013*	.05
Publicness	-.01	.06	-.15	.885	
Ephemerality	.00	.07	.01	.993	
Approval Motivation	.09	.05	1.84	.068	
Publicness × Ephemerality	.10	.06	1.55	.124	
Publicness × Approval Motivation	.04	.05	.69	.490	

Note. Publicness: private = -1, public = 1; Ephemerality: ephemeral = -1, persistent = 1. *p < .05, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 6

Predictors of Perceived Memory Vividness at T2, Study 1

	Variance	*SD*			
Random effect	.37	.61			
	b	*SE*	*df*	*t*	*p*
Intercept	5.54	.11	66	49.98	<.001
Presumed close audience knowledge	.09	.10	66	.95	.346
Presumed general audience knowledge	-.03	.09	66	-.32	.748
Perceived social approval	.03	.13	66	.26	.799
Ephemerality	.10	.11	66	.86	.393
Time	-.62	.08	69	-8.04	<.001***
Ephemerality × Time	-.07	.08	69	-.95	.348

Note. Ephemerality: ephemeral = -1, persistent = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 7

Predictors of Enjoyment at T2, Study 1

	Variance	*SD*			
Random effect	.58	.76			
	b	*SE*	*df*	*t*	*p*
Intercept	5.92	.11	66	52.15	<.001
Presumed close audience knowledge	.26	.10	66	2.61	.011*
Presumed general audience knowledge	-.06	.10	66	-.61	.546
Perceived social approval	.37	.14	66	2.68	.009**
Ephemerality	-.03	.11	66	-.24	.811
Time	-.03	.06	69	-.62	.535
Ephemerality × Time	-.07	.06	69	-1.30	.200

Note. Ephemerality: ephemeral = -1, persistent = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 8

Predictors of Positive Emotion at T2, Study 1

	Variance	*SD*			
Random effect	.67	.82			
	b	*SE*	*df*	*t*	*p*
Intercept	4.94	.12	66	41.74	<.001
Presumed close audience knowledge	.02	.11	66	.18	.859
Presumed general audience knowledge	.09	.10	66	.93	.356
Perceived social approval	.36	.14	66	2.52	.014*
Ephemerality	.13	.12	66	-1.06	.291
Time	.01	.05	69	.21	.836
Ephemerality × Time	.07	.05	69	1.33	.187

Note. Ephemerality: ephemeral = -1, persistent = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 9

Predictors of Negative Emotion at T2, Study 1

	Variance	*SD*			
Random effect	.20	.45			
	b	*SE*	*df*	*t*	*p*
Intercept	1.84	.08	66	23.97	<.001
Presumed close audience knowledge	.09	.07	66	1.34	.185
Presumed general audience knowledge	.02	.07	66	.26	.793
Perceived social approval	-.08	.09	66	-.82	.414
Ephemerality	.03	.08	66	.43	.667
Time	.00	.05	69	-.07	.941
Ephemerality × Time	-.05	.05	69	-1.01	.318

Note. Ephemerality: ephemeral = -1, persistent = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 10

Predictors of Self-Esteem at T2, Study 1

	Variance	*SD*			
Random effect	.67	.82			
	b	*SE*	*df*	*t*	*p*
Intercept	5.33	.11	65	47.08	<.001
Presumed close audience knowledge	.19	.10	65	1.86	.068
Presumed general audience knowledge	-.02	.10	65	-.23	.816
Perceived social approval	.15	.14	65	1.10	.277
Ephemerality	.21	.11	65	1.85	.069
Time	.00	.04	69	.01	.990
Ephemerality × Time	-.02	.04	69	-.49	.624

Note. Ephemerality: ephemeral = -1, persistent = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 11

Predictors of Perceived Memory Vividness at T1, Study 2

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	6.40	.05	120.18	<.001	
Self-relevance	.07	.03	2.12	.035*	.02
Engagement	.08	.03	2.45	.015*	.03
Valence	.03	.05	.63	.531	
Approval Motivation	-.06	.05	-1.25	.214	
Ephemerality	.01	.05	.11	.916	
Volition	.01	.05	0.14	.893	
Valence × Approval Motivation	.10	.05	2.14	.033*	.02
Valence × Ephemerality	.06	.05	1.13	.261	

Note. Ephemerality: ephemeral = -1, persistent = 1; Valence: neutral captions = -1, positive captions = 1; Volition: non-volitional = -1, volitional = 1. *p < .05, **p ⩽.01, ***p ⩽ .001.

Figure 3

Effect of Valence × Approval Motivation on Perceived Memory Vividness at T1, Study 2

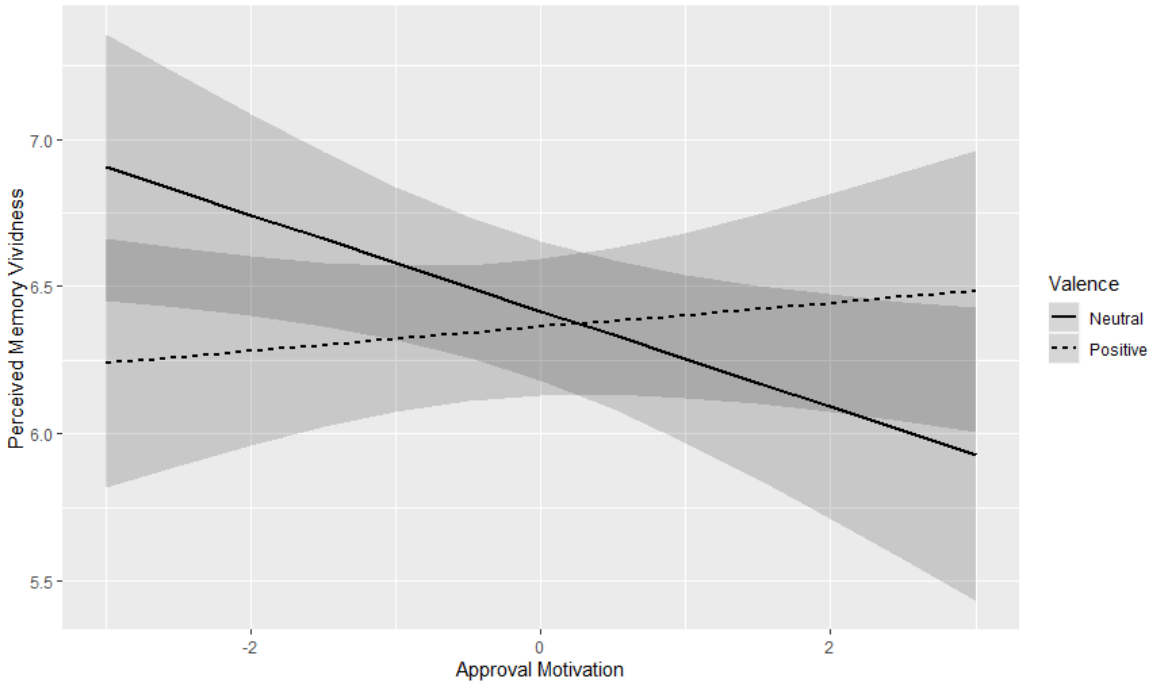


Table 12

Predictors of Enjoyment at T1, Study 2

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	5.90	.06	105.35	<.001	
Self-relevance	.31	.03	9.33	<.001***	.22
Engagement	.08	.04	2.14	.034*	.02
Valence	.01	.06	.12	.906	
Approval Motivation	-.07	.05	-1.30	.195	
Ephemerality	.06	.06	1.09	.278	
Volition	.10	.06	1.74	.084	
Valence × Approval Motivation	.16	.05	3.22	.001***	.03
Valence × Ephemerality	-.04	.06	-.67	.504	

Note. Ephemerality: ephemeral = -1, persistent = 1; Valence: neutral captions = -1, positive captions = 1; Volition: non-volitional = -1, volitional = 1. *p < .05, **p ⩽.01, ***p ⩽ .001.

Figure 4

Effect of Valence × Approval Motivation on Enjoyment at T1, Study 2

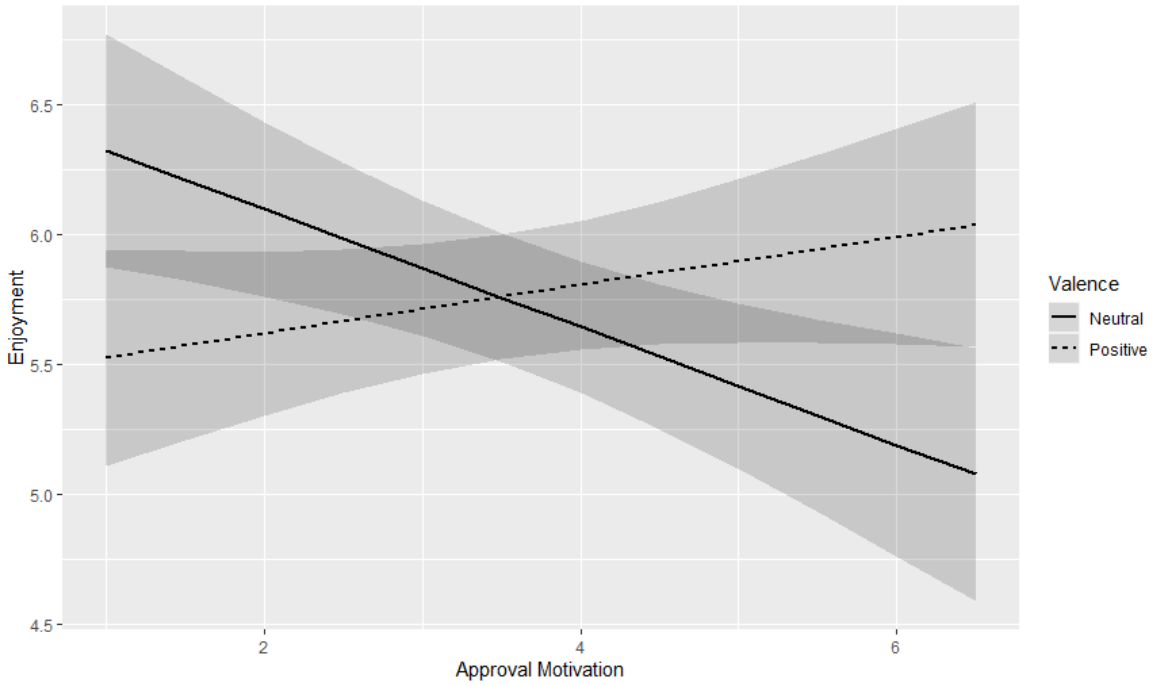


Table 13

Predictors of Positive Emotion at T1, Study 2

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	4.65	.06	80.99	<.001	
Self-relevance	.25	.03	7.37	<.001***	.16
Engagement	.10	.04	2.81	.005**	.02
Valence	.06	.06	1.00	.320	
Approval Motivation	.04	.05	.85	.398	
Ephemerality	.07	.06	1.12	.263	
Volition	.04	.06	.66	.513	
Valence × Approval Motivation	.13	.05	2.49	.013*	.02
Valence × Ephemerality	.04	.06	.73	.465	

Note. Ephemerality: ephemeral = -1, persistent = 1; Valence: neutral captions = -1, positive captions = 1; Volition: non-volitional = -1, volitional = 1. *p < .05, **p ⩽.01, ***p ⩽ .001.

Figure 5

Effect of Valence × Approval Motivation on Positive Emotion at T1, Study 2

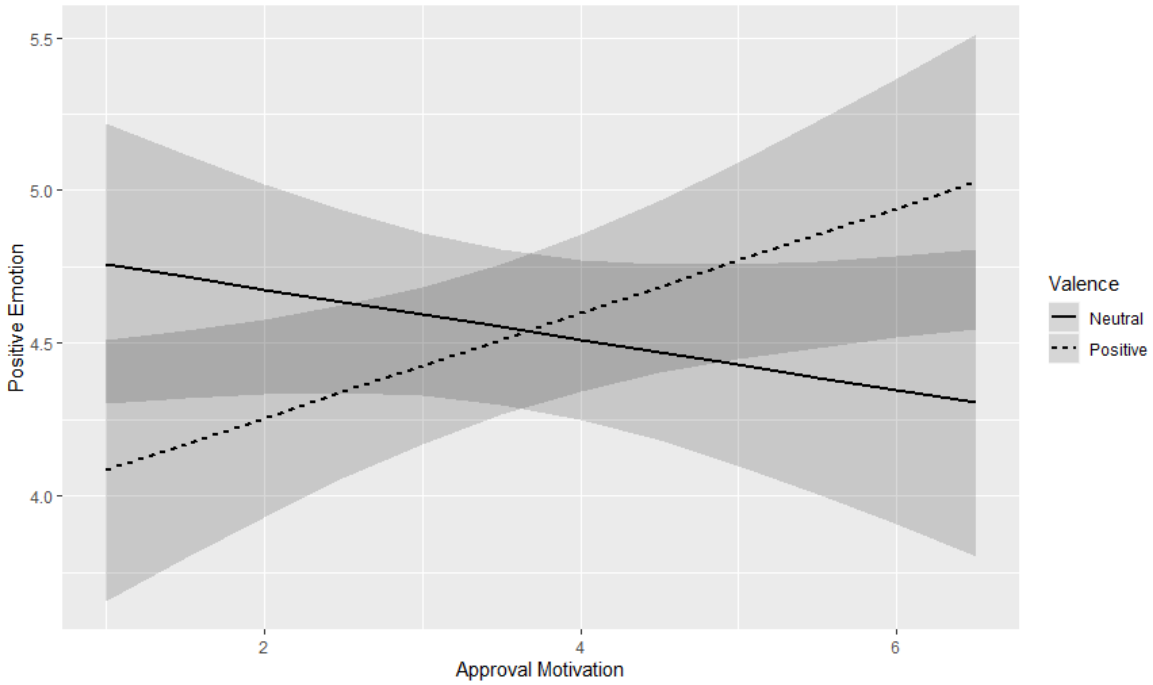


Table 14

Predictors of Negative Emotion at T1, Study 2

	b	*SE*	*t*	*p*	$\eta_{partial}^2$
Intercept	1.62	.04	38.74	<.001	
Self-relevance	-.01	.02	-.49	.627	
Engagement	-.12	.03	-4.33	<.001***	.09
Valence	-.01	.04	-.28	.783	
Approval Motivation	.11	.04	2.75	.006**	.03
Ephemerality	.02	.04	.50	.617	
Volition	-.03	.04	-.82	.413	
Valence × Approval Motivation	-.03	.04	-.68	.499	
Valence × Ephemerality	-.03	.04	-.76	.450	

Note. Ephemerality: ephemeral = -1, persistent = 1; Valence: neutral captions = -1, positive captions = 1; Volition: non-volitional = -1, volitional = 1. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 15

Predictors of Perceived Memory Vividness at T2, Study 2

	Variance	*SD*			
Random effect	.41	.64			
	b	*SE*	*df*	*t*	*p*
Intercept	5.96	.05	253	114.05	<.001
Presumed close audience knowledge	.13	.05	253	2.71	.007**
Presumed general audience knowledge	.00	.05	253	.03	.973
Perceived social approval	.18	.06	253	2.87	.005**
Ephemerality	-.03	.05	253	-.59	.558
Valence	.00	.05	253	-.04	.967
Time	-.45	.03	260	-13.49	<.001***
Volition	-.01	.05	253	-.13	.899
Ephemerality × Valence	.01	.05	253	.24	.808
Ephemerality × Time	-.02	.03	260	-.48	.632

Note. Ephemerality: ephemeral = -1, persistent = 1, Valence: neutral captions = -1, positive captions = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 16

Predictors of Enjoyment at T2, Study 2

	Variance	*SD*			
Random effect	.72	.85			
	b	*SE*	*df*	*t*	*p*
Intercept	5.76	.06	254	97.75	<.001
Presumed close audience knowledge	.07	.05	254	1.22	.225
Presumed general audience knowledge	.10	.05	254	1.92	.056
Perceived social approval	.35	.07	254	4.82	<.001***
Ephemerality	.02	.06	254	.29	.773
Valence	-.02	.06	254	-.40	.687
Time	-.11	.03	260	-4.16	<.001***
Volition	.04	.06	254	.68	.495
Ephemerality × Valence	.03	.06	254	.54	.588
Ephemerality × Time	-.01	.03	260	-.27	.787

Note. Ephemerality: ephemeral = -1, persistent = 1, Valence: neutral captions = -1, positive captions = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 17

Predictors of Positive Emotion at T2, Study 2

	Variance	*SD*			
Random effect	.78	.88			
	b	*SE*	*df*	*t*	*p*
Intercept	4.63	.06	254	75.06	<.001
Presumed close audience knowledge	.07	.06	254	1.26	.210
Presumed general audience knowledge	.03	.05	254	.50	.621
Perceived social approval	.29	.08	254	3.76	<.001***
Ephemerality	.04	.06	254	.59	.557
Valence	.04	.06	254	.63	.530
Time	-.03	.03	260	-1.03	.304
Volition	.04	.06	254	.70	.484
Ephemerality × Valence	.07	.06	254	1.17	.245
Ephemerality × Time	.01	.03	260	.30	.762

Note. Ephemerality: ephemeral = -1, persistent = 1, Valence: neutral captions = -1, positive captions = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 18

Predictors of Negative Emotion at T2, Study 2

	Variance	*SD*			
Random effect	.33	.57			
	b	*SE*	*df*	*t*	*p*
Intercept	1.62	.04	254	37.86	<.001
Presumed close audience knowledge	-.04	.04	254	-1.14	.256
Presumed general audience knowledge	.04	.04	254	1.08	.283
Perceived social approval	-.07	.05	254	-1.29	.198
Ephemerality	.05	.04	254	1.21	.227
Valence	.04	.04	254	1.02	.307
Time	.04	.02	260	1.50	.135
Volition	-.01	.04	254	-.20	.841
Ephemerality × Valence	-.03	.04	254	-.81	.421
Ephemerality × Time	.04	.02	260	1.48	.141

Note. Ephemerality: ephemeral = -1, persistent = 1, Valence: neutral captions = -1, positive captions = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Table 19

Predictors of Self-Esteem at T2, Study 2

	Variance	*SD*			
Random effect	1.03	1.01			
	b	*SE*	*df*	*t*	*p*
Intercept	4.96	.07	254	73.54	<.001
Presumed close audience knowledge	.06	.06	254	1.02	.311
Presumed general audience knowledge	.06	.06	254	.93	.355
Perceived social approval	.25	.08	254	3.00	.003**
Ephemerality	-.09	.07	254	-1.29	.200
Valence	.02	.07	254	.27	.788
Time	.04	.02	260	1.49	.137
Volition	-.01	.07	254	-.11	.910
Ephemerality × Valence	-.05	.07	254	-.69	.494
Ephemerality × Time	.02	.02	260	.87	.383

Note. Ephemerality: ephemeral = -1, persistent = 1, Valence: neutral captions = -1, positive captions = 1. Satterthwaite approximations were used to estimate degrees of freedom and calculate *p*-values. The random effect refers to the random intercepts estimated for each participant. *$p < .05$, **$p \leqslant .01$, ***$p \leqslant .001$.

Figure 6

Model Tested in Study 3

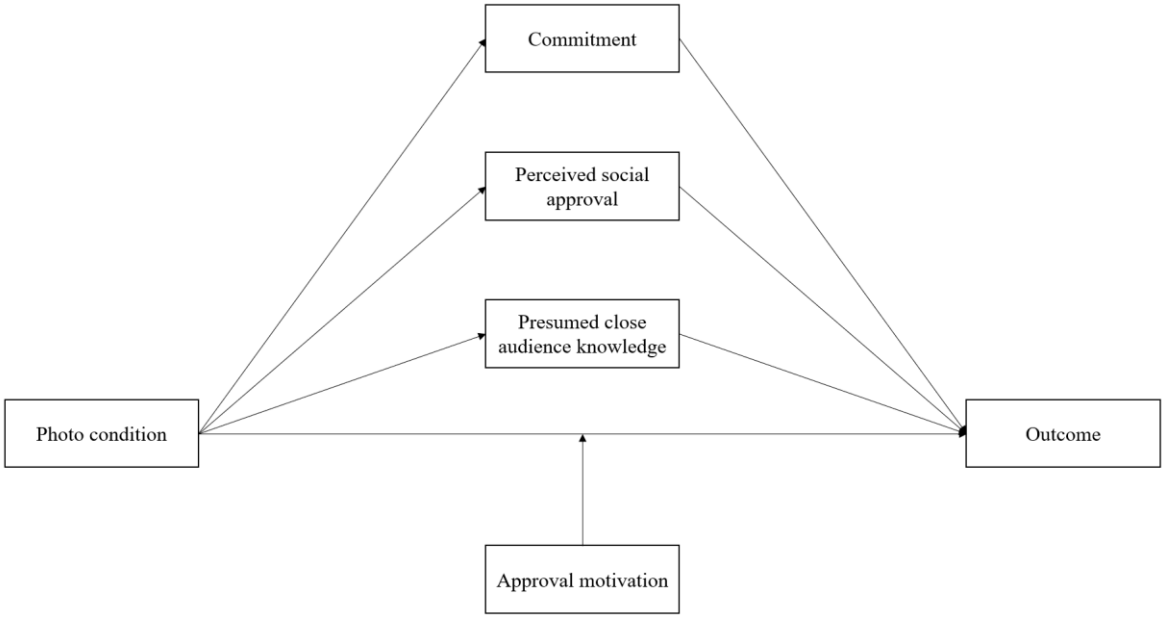


Table 20

Mediation and Moderation Model for Perceived Memory Vividness, Study 3

Commitment: R^2 = .01, F(2, 437) = 1.82, p = .164					
	b	*SE*	*t*	*p*	95% CI
Intercept	5.47	.11	50.75	<.001	[5.26, 5.68]
Public ephemeral	-.26	.15	-1.75	.081	[-.56, .03]
Private	-.23	.15	-1.54	.125	[-.53, .07]
Perceived social approval: R^2 = .01, F(2, 437) = 3.28, p = .039					
	b	*SE*	*t*	*p*	95% CI
Intercept	5.44	.08	69.79	<.001	[5.29, 5.60]
Public ephemeral	-.16	.11	-1.43	.153	[-.37, .06]
Private	-.28	.11	-2.56	.011	[-.50, -.07]
Presumed close audience knowledge: R^2 = .10, F(2, 437) = 24.85, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	5.46	.12	45.46	<.001	[5.22, 5.69]
Public ephemeral	-.15	.17	-.89	.374	[-.48, .18]
Private	-1.10	.17	-6.48	<.001	[-1.44, -.77]
Perceived memory vividness: R^2 = .19, F(8, 431) = 12.56, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	3.86	.27	14.46	<.001	[3.33, 4.38]
Public ephemeral	.16	.10	1.61	.107	[-.03, .35]
Private	.17	.10	1.62	.106	[-.04, .37]
Commitment	.11	.03	3.17	.002	[.04, .18]
Perceived social approval	.22	.05	4.32	<.001	[.12, .32]
Presumed close audience knowl.	.08	.03	2.69	.008	[.02, .14]
Approval motivation	-.02	.05	-.42	.673	[-.13, .08]
Public ephemeral × App. motiv.	-.10	.08	-1.29	.197	[-.26, .05]
Private × App. motiv.	-.14	.08	-1.74	.083	[-.29, .02]

Indirect effects (based on 10,000 bootstrapped samples)			
	Commitment	SE_{boot}	95% CI_{boot}
Public ephemeral	-.03	.02	[-.077, .005]
Private	-.03	.02	[-.072, .008]
	Perceived social approval	SE_{boot}	95% CI_{boot}
Public ephemeral	-.03	.03	[-.090, .010]
Private	-.06	.03	[-.127, -.012]
	Presumed close audience knowledge	SE_{boot}	95% CI_{boot}
Public ephemeral	-.01	.01	[-.040, .011]
Private	-.09	.04	[-.171, -.013]

Note. The "public persistent" condition was set as the reference category.

Table 21

Mediation and Moderation Model for Perceived Recall Accuracy, Study 3

Perceived recall accuracy: R^2 = .08, $F(8, 431)$ = 4.66, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	5.32	.29	18.51	<.001	[4.75, 5.88]
Public ephemeral	.04	.10	.37	.715	[-.17, .24]
Private	-.07	.11	-.59	.558	[-.28, .15]
Commitment	.05	.04	1.44	.149	[-.02, .13]
Perceived social approval	.14	.06	2.45	.015	[.03, .24]
Presumed close audience knowl.	.00	.03	.04	.967	[-.06, .06]
Approval motivation	.05	.06	.89	.377	[-.06, .17]
Public ephemeral × App. motiv.	-.26	.08	-3.12	.002	[-.43, -.10]
Private × App. motiv.	-.15	.09	-1.78	.075	[-.32, .02]

Indirect effects (based on 50,000 bootstrapped samples)

	Commitment	SE_{boot}	95% CI_{boot}
Public ephemeral	-.01	.01	[-.048, .007]
Private	-.01	.01	[-.045, .007]
	Perceived social approval	SE_{boot}	95% CI_{boot}
Public ephemeral	-.02	.02	[-.064, .007]
Private	-.04	.02	[-.094, -.0002]
	Presumed close audience knowledge	SE_{boot}	95% CI_{boot}
Public ephemeral	.00	.01	[-.015, .016]
Private	.00	.04	[-.083, .077]

Note. The "public persistent" condition was set as the reference category. Refer to Table 20 for the results of the commitment, perceived social approval, and presumed close audience knowledge regression models (they are the same and therefore not repeated here).

Figure 7

Effect of Ephemerality × Approval Motivation on Perceived Recall Accuracy, Study 3

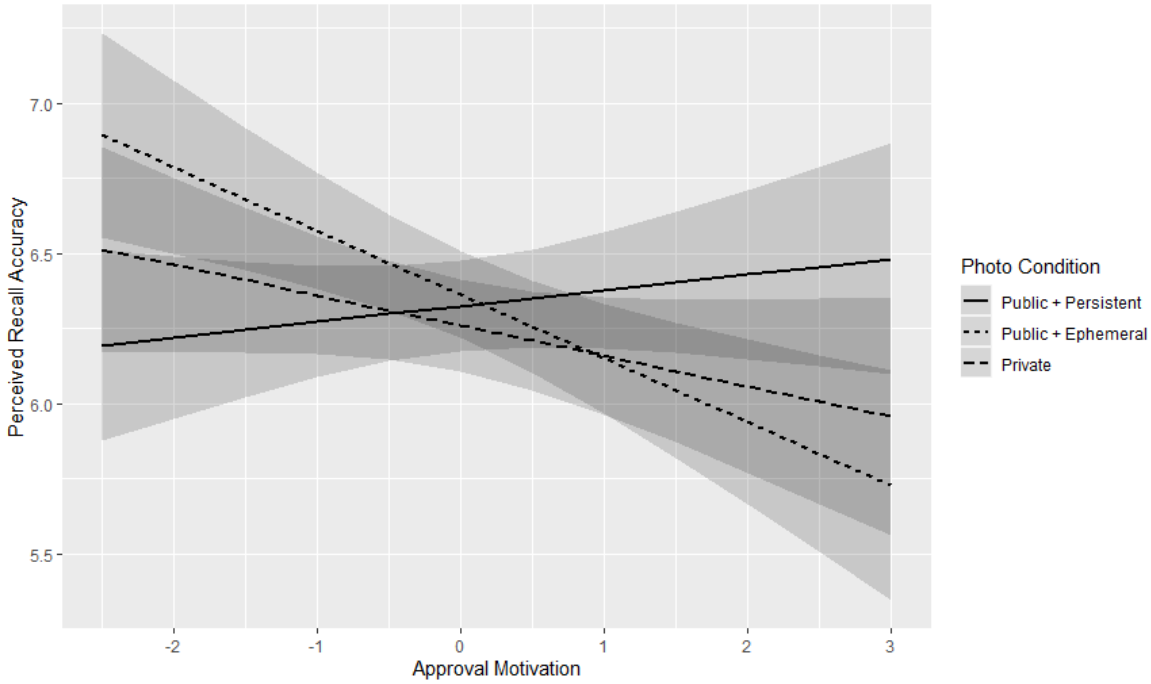


Table 22

Mediation and Moderation Model for Enjoyment, Study 3

Enjoyment: R^2 = .30, $F(8, 431)$ = 23.38, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	3.43	.25	13.78	<.001	[2.94, 3.92]
Public ephemeral	-.01	.09	-.12	.904	[-.19, .17]
Private	-.20	.10	-2.06	.040	[-.39, -.01]
Commitment	.14	.03	4.26	<.001	[.07, .20]
Perceived social approval	.37	.05	7.68	<.001	[.27, .46]
Presumed close audience knowl.	.05	.03	1.74	.082	[-.01, .10]
Approval motivation	.01	.05	.25	.799	[-.09, .11]
Public ephemeral × App. motiv.	-.03	.07	-.35	.725	[-.17, .12]
Private × App. motiv.	.01	.07	.13	.894	[-.14, .16]

Indirect effects (based on 10,000 bootstrapped samples)

	Commitment	SE_{boot}	95% CI_{boot}
Public ephemeral	-.04	.02	[-.092, .005]
Private	-.03	.03	[-.094, .008]
	Perceived social approval	SE_{boot}	95% CI_{boot}
Public ephemeral	-.06	.04	[-.136, .018]
Private	-.10	.05	[-.202, -.022]
	Presumed close audience knowledge	SE_{boot}	95% CI_{boot}
Public ephemeral	-.01	.01	[-.033, .007]
Private	-.05	.04	[-.137, .017]

Note. The "public persistent" condition was set as the reference category. Refer to Table 20 for the results of the commitment, perceived social approval, and presumed close audience knowledge regression models (they are the same and therefore not repeated here).

Table 23

Mediation and Moderation Model for Positive Emotion, Study 3

Positive Emotion: R^2 = .30, F(8, 431) = 23.38, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	.50	.23	2.18	.030	[.05, .96]
Public ephemeral	-.09	.08	-1.04	.300	[-.25, .08]
Private	-.21	.09	-2.39	.018	[-.39, -.04]
Commitment	.16	.03	5.38	<.001	[.10, .22]
Perceived social approval	.30	.04	6.62	<.001	[.21, .38]
Presumed close audience knowl.	.08	.03	3.11	.002	[.03, .13]
Approval motivation	-.06	.05	-1.20	.231	[-.15, .04]
Public ephemeral × App. motiv.	-.04	.07	-.53	.597	[-.17, .10]
Private × App. motiv.	-.02	.07	-.36	.722	[-.16, .11]

Indirect effects (based on 10,000 bootstrapped samples)

	Commitment	SE_{boot}	95% CI_{boot}
Public ephemeral	-.04	.03	[-.094, .008]
Private	-.04	.03	[-.093, .010]
	Perceived social approval	SE_{boot}	95% CI_{boot}
Public ephemeral	-.05	.03	[-.113, .014]
Private	-.08	.03	[-.153, -.018]
	Presumed close audience knowledge	SE_{boot}	95% CI_{boot}
Public ephemeral	-.01	.01	[-.039, .010]
Private	-.09	.03	[-.160, -.029]

Note. The "public persistent" condition was set as the reference category. Refer to Table 20 for the results of the commitment, perceived social approval, and presumed close audience knowledge regression models (they are the same and therefore not repeated here).

Table 24

Mediation and Moderation Model for Negative Emotion, Study 3

Negative Emotion: R^2 = .30, F(8, 431) = 23.38, p < .001					
	b	*SE*	*t*	*p*	95% CI
Intercept	1.45	.09	16.63	<.001	[1.28, 1.62]
Public ephemeral	-.02	.03	-.75	.456	[-.09, .04]
Private	-.01	.03	-.30	.763	[-.08, .06]
Commitment	-.02	.01	-1.48	.139	[-.04, .01]
Perceived social approval	-.06	.02	-3.52	.001	[-.09, -.03]
Presumed close audience knowl.	.01	.01	1.47	.142	[.00, .03]
Approval motivation	.01	.02	.59	.552	[-.02, .05]
Public ephemeral × App. motiv.	-.01	.03	-.32	.747	[-.06, .04]
Private × App. motiv.	-.03	.03	-1.31	.192	[-.09, .02]

Indirect effects (based on 10,000 bootstrapped samples)

	Commitment	SE_{boot}	95% CI_{boot}
Public ephemeral	.004	.005	[-.003, .015]
Private	.004	.005	[-.002, .016]
	Perceived social approval	SE_{boot}	95% CI_{boot}
Public ephemeral	.009	.008	[-.003, .027]
Private	.017	.010	[.002, .039]
	Presumed close audience knowledge	SE_{boot}	95% CI_{boot}
Public ephemeral	-.002	.003	[-.009, .002]
Private	-.016	.010	[-.037, .004]

Note. The "public persistent" condition was set as the reference category. Refer to Table 20 for the results of the commitment, perceived social approval, and presumed close audience knowledge regression models (they are the same and therefore not repeated here).