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Vicarious Memories

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Abstract

People not only have vivid memories of their own personal experiences, but also *vicarious memories* of events that happened to other people. To compare the phenomenological and functional qualities of personal and vicarious memories, college students described a specific past event that they had recounted to a parent or friend, and also an event that a friend or parent had recounted to them. Although ratings of memory vividness, emotional intensity, visualization, and physical reactions were higher for personal than for vicarious memories, the overall pattern of ratings was similar. Participants' ratings also indicated that vicarious memories serve many of the same life functions as personal memories, although at lower levels of intensity. The findings suggest that current conceptions of autobiographical memory, which focus on past events that happened directly to the self, should be expanded to include detailed mental representations of specific past events that happened to other people.

1. Introduction

In contemporary psychology, autobiographical memories are defined as recollections of personally experienced past events (Addis, McIntosh, Moscovitch, Crawley, & McAndrews, 2004; Berntsen & Rubin, 2012; Daselaar et al., 2008; Nelson & Fivush, 2004; Smith, Souchay, & Conway, 2010; Williams et al., 2007). The focus on personal experiences leads naturally to the view that autobiographical memory (AM) is directly and centrally tied to conceptions of the self (e.g., Conway, Singer, & Tagini, 2008; Fivush & Haden, 2003; Prebble, Addis, & Tippet, 2013; Singer & Salovey, 1998; St. Jacques, 2012). For example, Conway and Pleydell-Pearce's (2000) widely influential theoretical analysis portrayed AM as constructed within a system where the self-memory connection is elemental: "the primary aim [of autobiographical memories] is to ground the self" (p. 279). Accordingly, empirical studies of autobiographical memory have targeted events that people believe to be part of their own personal pasts—that is, mental representations of episodes experienced by past selves.

Although prior AM research has targeted personally experienced past events, this is not the only or even necessarily the most common or influential component of remembering the episodic past. People form and retain vivid memories of not only their own lived experiences, but also salient past events that are recounted by others. Larsen and Plunkett (1987) first drew attention to the potentially important distinction between "experienced" and "reported" events: "People have two different avenues to knowledge about real events in the world around them, their own personal experience and reports they receive from somebody else" (p. 15). For example, an adult may have a strong and persistent personal memory of being in a serious automobile accident as a teenager, or she may also have a similarly vivid memory of a life-threatening car crash tearfully described by her teenage daughter at the accident site.

The research reported here examines memory for specific episodes recounted by an external source rather than experienced directly. We use the term *vicarious memories* to refer to recollections people have of salient life episodes that were told to them by another person, such as a friend or family member. In the present study, vicarious memories represent particular events that happened to other people, rather than general

knowledge of other people's lives. Although the remembered event was not experienced personally, a vicarious memory may have qualities that closely resemble memories of first-hand events, including vivid imagery, strong emotional and physical reactions, and long-lasting life influence. Vicarious memories are distinct from "disputed memories," where two individuals (oftentimes twins) both claim to be the protagonist in a single past event (e.g., Sheen, Kemp, & Rubin, 2001); adults reporting vicarious memories are fully aware that the episode happened to someone else.

Our theoretical analysis and empirical findings lead to a novel idea: existing definitions of episodic AM should be expanded to include mental representations of specific events that happened to other people. Although the phenomenological properties and adaptive functions served by vicarious memories and memories of firsthand experiences may differ in intensity, we expected vicarious memories to closely resemble personal memories in both form and function. Recent theory and research have stretched the conceptual boundaries of episodic AM to include how people imagine the future (e.g., Schacter, Addis, & Buckner, 2007) and take another person's perspective (Buckner & Carroll, 2007; St. Jacques, 2012). Rubin and Umanath (in press) recently proposed that event memory involves the construction of "scenes" from both the experienced or imagined past or future. The constructive process of imagining an event experienced by a distant future self may closely resemble the process of creating a vicarious memory of an event experienced by another person. Accordingly, comparisons of vicarious and personal memories could reveal parallels in structure, content and functional significance.

Case examples of personal and vicarious memories illustrate several core similarities. In 1929, at the age of 4 years, prominent African American activist Malcolm X personally experienced a terrifying event:

I remember being suddenly snatched awake into a frightening confusion of pistol shots and shouting and smoke and flames. My father had shouted and shot at the two white men who had set the fire and were running away. Our home was burning down around us. We were lunging and bumping and tumbling all over each other trying to escape. My mother, with the baby in her arms, just made it

into the yard before the house crashed in, showering sparks. I remember we were outside in the night in our underwear, crying and yelling our heads off. The white police and firemen came and stood around watching as the house burned down to the ground. (Malcolm X, 1965, pp. 5-6)

This detailed and highly emotional recollection appeared to ground Malcolm's political beliefs; in his public speeches, Malcolm referred back to episodes of racial conflict and harassment.

In 1917, African American basketball legend Bill Russell's grandfather stood up to the Ku Klux Klan. Russell heard the story of this momentous episode from his father:

The way my father told it, come the end of the crop season a white farmer refused to pay Grandpa his fair share of crop sales...When Grandpa gave him an earful, the farmer threatened to beat him for his insolence...That night, the dog started barking when a group of Klansmen called Night Raiders drove up in trucks. One of them yelled, "Come on out here, old man, and take your whipping, so you can learn how to treat a white man!" Grandpa yelled back, "Sir, you'll have to come on in this house and get me!" When someone fired a stray shot at the house, Grandpa unloaded his shotgun...the Night Raiders vanished in a hurry; they hadn't bargained for that" (Russell & Steinberg, 2009, p. 5)

This second-hand story made a strong emotional impression on Russell, one that carried an important personal life directive:

Hearing about how Grandpa ran off the "bad guys" thrilled me and made me proud, just like my father felt...Grandpa had a motto, which he told to my father, who told it to me: "A man has to draw a line inside himself that he won't allow any man to cross." I have always been proud of his heroic dignity against forces more powerful than him. And it left a deep impression on me that he would not let himself be oppressed or intimidated by anyone. As a young man, I adopted

Grandpa's motto and drew my line inside, and I have stood strong behind it my whole life (pp. 5-6)

Malcolm X's personal memory and Russell's vicarious memory share several important features. The stories are vivid, with descriptions of people, places, sights, sounds, and feelings, and they informed future attitudes and behaviors. Despite these similarities, current theoretical models place personal and vicarious memories into distinctly different categories of mental representation. Malcolm's recollection clearly qualifies as an episodic autobiographical memory. In contrast, because Russell did not directly experience his grandfather's racially motivated encounter, only a personal memory of his hearing the story from his father—the reception event—would meet the definition of episodic AM; “impersonal” knowledge of his grandfather's heroic activities would be classified as semantic memory.

In this paper we provide a conceptual rationale for an expanded theoretical model of episodic AM that includes vicarious as well as personal memories, and we present new data that reveal important similarities between a person's own autobiographical memories and memories constructed from stories told by others. Prior work in three distinct domains provided the foundation for the present study: research comparing experienced and reported events, clinical studies of vicarious traumatization, and analyses of the adaptive value of remembering specific events that happened to other people.

1.1. Experienced Versus Reported Events

The distinction between memories based on personal experience and memories of remote impersonal events is a focal point of dozens of studies of flashbulb memories (e.g., Brown & Kulik, 1977; Hirst et al., 2009; Pezdek, 2003). For example, with respect to the terrorist attack on the World Trade Center on September 11, 2001, people remember not only impersonal facts about the event (such as its location in New York City), but also their own personal circumstances when receiving the news (Hirst et al., 2009). How one heard the news—the flashbulb memory—is represented in personal AM, whereas the facts of the newsworthy event reside in semantic memory. Like flashbulb

memories, vicarious memories also have a distinctive reception event—the specific occasion when another person shared a salient life episode—but there is a critically important difference. For vicarious memories, the shared story does not focus on impersonal newsworthy information; the recipient hears about and then vividly remembers a specific episode from another person's life.

Larsen (1988; Larsen & Plunkett, 1987) was the first researcher to formalize the distinction between experienced and reported events. He argued that memories based on others' reports are both common and influential: "Most people probably regard autobiographical memory as the typical kind of memory. But memories described in reports are also very common in everyday life—news, gossip, friends' stories, minutes of meetings, and so on. Without such reports, we would be confined to know only that narrow and shallow slice of the world that we are able to observe by our senses" (1988, p. 328). Larsen and Plunkett (1987) compared college students' memories of personally experienced and reported events described in response to word cues; memories of reported events could come from a wide variety of sources, including reading, radio, television, or stories told by others. Results indicated that reported events were harder to retrieve than experienced events. Larsen (1988) reviewed research suggesting that memories of reported events are likely to be "less prominent in memory than experienced ones—less vivid, less remarkable, less consequential, less affectively loaded, more difficult to access" (p. 336).

Larsen and Plunkett's (1987) participants were given an extremely broad definition of reported events, including public news reports on radio and television as well as others' autobiographical stories. In the current study, comparisons focused on life stories that were shared between individuals who have a close interpersonal connection, either parent-child or friend-friend. Using these carefully matched pairings, we expected the same phenomenological qualities and functions that characterize personal memories to be evident in vicarious memories.

1.2. Vicarious Traumatization

Clinical research has explored the impact on therapists of hearing stories of traumatic events experienced by others. Vicarious trauma is defined as “personal transformations experienced by trauma workers resulting from a cumulative and empathic engagement with another’s traumatic experiences...that can lead to long-term changes to an individual’s way of experiencing themselves, others, and the world, and symptoms that may parallel those of their client” (Cohen & Collens, 2013, p. 570). Symptoms are evident in people who are exposed to descriptions of others’ trauma in a variety of professional contexts, including domestic violence counselors (Iliffe & Steed, 2000), social workers (Bride, 2007), therapists working with sexually abused children (Pistorius, Eeinuer, Harper, Stahmann, & Miller, 2008), therapists working with sexual offenders (Moulden & Firestone, 2007), criminal lawyers (Vrklevski & Franklin, 2008), jurors who hear testimony of victims (Robertson, Davies, & Nettleingham, 2009), interpreters working with refugees and people seeking asylum (Splevins, Cohen, Joseph, Murray, & Bowley, 2010, and transcribers of trauma narratives (Etherington, 2007). For example, a female transcriber identified a vicarious exposure as the source of her own troubling symptoms: “The thing that distressed me...was the image of her partner assaulting her while she was pregnant...I had a picture of her being a very helpless person, prone, because she said he kicked her and he jumped on her stomach...I don’t feel I’ll ever forget...because it’s so graphic. It’s like watching a particularly horrifying film that you weren’t prepared for...” (p. 88). The Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) includes repeated or extreme indirect exposure to a stressor as a potential contributor to post-traumatic stress disorder (Levin, Kleinman, & Adler, 2014).

Analyses of memories recounted by people who are exposed to others’ trauma stories reveal several common qualities. The trauma is represented by clear visual images (Etherington, 2007; Iliffe & Steed, 2000; McCann & Pearlman, 1990; Pistorius et al., 2008) that are often accompanied by strong emotional reactions (Cohen & Collens, 2013; Etherington, 2007; McCann & Pearlman, 1990; Moulden & Firestone, 2007) and somatic responses (Cohen & Collens, 2013). The images and feelings may be so intense that they

are incorporated into the recipient's identity and, as such, they closely resemble memories of direct personal experience: "The therapist recalls experiencing this as her own memory because the image was so vivid and powerful ... Therapists may experience painful images and emotions associated with their clients' traumatic memories and may, over time, incorporate these memories into their own memory systems" (McCann & Pearlman, 1990, p. 142-144).

Experiencing another person's trauma not only produces vivid sensory and affective reactions, it also alters attitudes and behaviors. For example, afflicted therapists express concerns about their own and family members' safety, leading to hyper-vigilance and overprotectiveness (Cohen & Collens, 2013; Iliffe & Steed, 2000; Pearlman and MacIain, 1995; Pistorius et al., 2008; Vrkleviski & Franklin, 2008). Other symptoms include problems with emotional and physical intimacy in their own lives (Pistorius et al., 2008) and diminished self-esteem (Pearlman & MacIain, 1995; Way, VanDeusen, & Cotrell, 2007), although some victims of secondary trauma also report personal growth, including increases in compassion and sensitivity (Bell, 2003; Pistorius et al., 2008; Schauben & Frazier, 1995).

Taken together, research studies have identified a cluster of perceptions, emotions and attitudes that reflect the psychological impact of remembering trauma stories told by others. Because memories shared by victims in clinical contexts can be extraordinarily painful and troubling, vicarious trauma has been singled out as a distinctive aspect of the therapist's experience. In the following section on adaptive functions of memory, we argue that recalling and reliving another person's trauma provides an extreme example of a much more broadly shared and essential quality of memory—remembering and reacting to personal episodes from other people's life stories.

1.3. Functional Significance

Previous analyses of the adaptive value or functional significance of autobiographical memory have focused on recollections of events that prominently include the self. Proposed memory functions include building self-continuity or promoting self-enhancement, enhancing and maintaining relationships through memory

sharing, and using the lessons contained in remembered episodes to guide present and future behaviors (Bluck, 2003; Bluck & Alea, 2011; Bluck, Alea, Habermas, & Rubin, 2005; Pillemer, 1992, 2003, 2009; Wilson & Ross, 2003). These functions are fulfilled when people draw upon memories of personal past episodes.

In human history, it would have been both efficient and advantageous not only to learn directly from memories of personal experiences, but also to learn vicariously from stories of significant events that happened to other people. When an adult is accosted while walking in a particular neighborhood late at night, the vivid memory of the assault will serve as a warning signal in similar future situations. But it is not necessary to be a victim or even to be a witness to an assault in order to behave in ways that promote future safety; a person who has only heard a friend's detailed account of a violent victimization may change attitudes and behaviors accordingly.

Decades ago, Bandura's (1971) influential social learning theory introduced the concept of vicarious reinforcement, "defined as a change in the behavior of observers as a function of witnessing the consequences accompanying the performances of others" (p. 230). According to Bandura, indirect social learning can and does occur frequently, without the necessity of people receiving direct personal rewards and punishments. More recently, Askew and Field (2008) synthesized research on the "vicarious pathway to fear," by which some people acquire phobias through observing or talking with other people rather than through first-hand experiences (e.g. when a child acquires a dog bite phobia from social interactions with a dog phobic parent).

Similarly, vicarious memories of other people's experiences provide mental models that can inform present and future decision-making and behaviors. Why is it adaptive to vividly remember other people's descriptions of particular life episodes in addition to, say, verbal rules or factual statements? Although a friend could offer a general warning about the dangers of walking alone in the city at night or even cite relevant crime statistics, these impersonal exchanges lack the power and immediacy of a vivid description of a personal victimization. More generally, specific autobiographical memories convey specific details and high emotions that draw the recipient's focused attention (Pillemer, 1992, 1998, 2009). The memories provide templates for how to think

and act (Pillemer, 2003; Kuwabara & Pillemer, 2010), they contribute to a sense of self continuity or self improvement (Bluck & Alea, 2011; Wilson & Ross, 2003), and they are talked about and thought about to establish and maintain relationships and increase intimacy (Alea & Bluck, 2007; Bluck, 2003; Pillemer, 1992, 1998).

Developmental studies suggest that children learn about the importance of vicarious memories and how to use them in everyday life through interactions with parents and family members. Decades ago, the poet and essayist George Santayana (1906) observed that “parents lend children their experience and a vicarious memory” (p. 36), and recent research has uncovered the dynamics of how parents and children co-construct autobiographical memory (Fivush, Haden, & Reese, 2006). Family conversations frequently include autobiographical memory sharing by both parents and children, and parent-child memory talk fosters children's perspective-taking and social understanding (Bohanek et al., 2009).

Parents' and grandparents' personal stories may be told to children with the intention of providing a lesson that is applicable to the child's life. Miller, Potts, Fung, Hoogstra, & Mintz (1990) presented case examples that illustrate how parents use memory sharing to guide their child's behaviors; for example, one parent accompanied the admonition that her child stop climbing on a chair with a story about how, as a young child, she fell, cut her mouth, and needed a doctor's visit to “fix it” (p. 303). According to the authors, “narrative seems to be functioning as a means by which the child vicariously lives another's experience” (p. 304), so much so that very young children may even appropriate another's story as his or her own. In this way, “experiences that are not otherwise available to the child become available for the first time” (p. 305). Pratt, Norris, Hebblewaite, and Arnold (2008) examined older adolescents' descriptions of how moral values were taught to them by their parents and grandparents. Grandparents' stories in particular often focused on a specific episode in the grandparents' life when the child was not a direct participant: “some aspect of the grandparent's life was treated as a narrative ‘exemplar’ of some value” (p. 192).

Prior research in several different domains suggests that vicarious memories not only are a common and ubiquitous aspect of mental life, they also serve important

adaptive functions. Vicarious memories dramatically increase the number and diversity of remembered past episodes on which to draw for guidance, inspiration, self understanding, and interpersonal connection.

1.4. The Current Study

The present study is the first to systematically compare personal and vicarious memories of specific past episodes. In one set of comparisons, college student participants described both a personal memory that they shared with a parent and a vicarious memory that a parent shared with them. In a second set of comparisons, students described both a personal memory that they shared with a friend and a vicarious memory that the friend shared with them. Rather than target a specific type of event (such as trauma), the request for memories was intentionally open-ended; the goal was to determine the frequency, content, qualities, and functions of vicarious memories as they may occur in everyday life.

We expected to find both similarities and differences between personal and vicarious memories. First, we predicted that most college student participants would be able to describe both shared personal memories and vicarious memories shared by others. Bohanek et al. (2009) observed that families frequently share memories of personal experiences; parents do not focus family conversations solely on their children's experiences, they also recount stories from their own lives. More generally, functional analyses of autobiographical memory have identified memory sharing as a common practice that helps people achieve important communicative and personal goals (Bluck et al., 2005; Bluck & Alea, 2011; Pillemer, 1998). If a difference in the incidence of personal and vicarious memories is apparent, prior research comparing experienced and reported events suggests that vicarious memories will be reported less frequently (Larsen, 1988; Larsen & Plunkett, 1987).

Long-lasting vicarious memories should be accompanied by visual and sensory imagery and emotional reactions, but prior work suggests that they may be less vivid, clear, and emotional than personally experienced episodes (Larsen, 1988; Larsen & Plunkett, 1987). Phenomenological properties of memories accompanying clinical levels

of vicarious traumatization could rival properties of memories of direct experiences (e.g., McCann & Pearlman, 1990), but our open-ended memory prompts did not target trauma. Although differences in memory intensity were predicted, finding similar overall patterns of phenomenological and functional qualities would be consistent with the idea that vicarious and personal memories are components of a shared mental representational system.

We expected personal and vicarious memories to differ with respect to subjective point of view. Autobiographical memories can be “viewed” mentally from either an observer perspective (re-experiencing the episode from an external visual perspective) or through a field perspective (re-experiencing the episode from the original visual perspective) (Nigro & Neisser, 1983). Although one could mentally reconstruct the scene of a vicarious memory from the viewpoint of the protagonist, we expected vicarious memories to be more likely than personal memories to be recalled from an observer perspective.

Comparisons involving memory functions and ratings of event centrality were largely exploratory. Vicarious memories should serve many of the same functions as personal memories, including guiding future behaviors and developing or maintaining social relationships, although these functions were expected to be less prominent for vicarious than for personal memories.

We had no formal a priori expectations for analyses involving memories shared with parents versus memories shared with friends. Comparisons of memory sharing involving parents and friends could reveal both similarities and differences. For example, parents may be especially likely to share memories of past experiences in order to try to guide or influence their child's behaviors. When college students were asked to describe memorable statements spoken by a parent and a friend, parents' statements were far more likely than friends' statements to contain rules, advice or directives (Goldsmith & Pillemer, 1988). In contrast, sharing memories with both parents and friends may serve a social function by enhancing feelings of interpersonal connectedness and intimacy.

2. Method

2.1. Participants

Participants were 141 undergraduate psychology students at the University of New Hampshire who completed the study for course credit. Questionnaires were administered in a quiet room on campus. Of the participants who completed the study, 9 were excluded from the analyses for failing to provide a memory and 1 participant was excluded for not following the instructions, for a total of 131 participants, (28 males). The mean age for the sample was 19.48 ($SD = 3.17$, $range = 17-51$). Of the participants, 90.1% self-identified as Caucasian, 4.6% as Hispanic, 2.3% as Asian, 1.5% as African American, and 1.5% as other.

2.2. Materials and Procedure

2.2.1. Test conditions

Participants were assigned in sequential order to one of two test conditions. In one of the conditions, participants were asked to describe one personal memory of a specific event that they shared with a parent and one vicarious memory of a specific event from a parent's life that was shared with the participant. In the other test condition, participants were asked to describe one personal memory of a specific event that they shared with a friend and one vicarious memory of a specific event from a friend's life that was shared with the participant. In both conditions, the order in which participants provided the two memories was counterbalanced. Participants gave ratings and answered questions about the qualities of the first memory before moving on to the second memory. The *vicarious memory prompt* asked participants to identify a specific event recounted to them:

In personal relationships, people often share memories of life events. Sometimes people tell their close friends [parent] about a detailed personal event from their own life. Think back over your past interactions with a close friend [a parent] and try to identify a **memory** you have of a **specific event from your friend's [your mother's or father's] life**. The event can come from **any time** in your friend's [parent's] life and should be something that happened when **you were not**

present. Sometimes an event in your friend's [parent's] life is described so vividly that you remember it almost as if it had happened to you. Other times, events from your friend's [parent's] life are simply shared as stories.

Participants who could identify a vicarious memory were asked to describe it, with the instruction to "be as **specific and detailed** as possible, including descriptions of people, places and feelings." The *personal memory prompt* used the same structure as vicarious memory prompt, but it requested a memory from the participant's own life that was shared with a parent or friend.

2.2.2. *Memory qualities*

Three questions assessed emotional qualities of personal and vicarious memories: how positive the event was, how negative the event was, and how emotional the participants were when they thought about the memory. Responses were given on five-point scales (1 = *Not at all*; 5 = *Extremely*). A fourth question targeted the type of emotion experienced when thinking about the memory (positive, negative, both positive and negative, or neutral). Next, participants answered three questions adapted from Berntsen and Thomsen (2005) that assessed phenomenological properties using five point scales: how vivid the memory was, whether participants could see the remembered event in their mind's eye, and whether participants had a physical reaction to the memory. Participants also indicated whether they remembered the event from an observer's perspective, their own perspective, both perspectives, or they could not visualize the scene.

2.2.3. *Autobiographical memory centrality and functions*

Using 1 to 5 scales, participants answered four questions that were adapted from the Centrality of Events Scale (Berntsen & Rubin, 2006): my memory of this event forms a part of my identity; my memory of this event is a reference point for the way I understand myself and the world; my memory of this event is a part of my own life story; and my memory of this event colors the way I think and feel about other experiences. For

vicarious memories, the wording of the questions was altered to reflect the influence that the friend's or parent's memory had on the participant.

Participants answered five questions addressing self, social, and directive memory functions. The questions for personal memories were: my memory of this event helps me to better understand myself; my memory of this event makes me feel better about myself; my memory of this event influences the relationships I have with others; my memory of this event helps me to solve problems in my life; and my memory of this event impacts my life decisions. Questions for vicarious memories were: my memory of this event in my friend's/parent's life helps me to better understand my friend/parent; my memory of this event in my friend's/parent's life makes me feel closer to my friend/parent; my memory of this event in my friend's/parent's life influences the relationships I have with others; my memory of this event in my friend's/parent's life helps me to solve problems in my own life; and my memory of this event in my friend's/parent's life impacts my life decisions.

Participants also described life circumstances when the personal and vicarious memories came to mind, whether and how the personal and vicarious memories had changed the participants' personal attitudes and behaviors, why the participants had shared that particular memory with their parent/friend, and why they thought the parent/friend chose to share that particular memory with them. Participants indicated how often the memory had been shared and the circumstances under which the memory was first told. For their personal memory, participants gave their age at the time of the event; for the vicarious memory, participants gave their parent's age or friend's age at the time of the event. In the parent conditions, participants also indicated how likely they would be to share the memories with their future children.

2.3. Content Coding

A primary coder read through all of the personal and vicarious memories and created a list of content categories reflecting major themes. Then, two additional researchers examined 20 questionnaires to finalize the coding rules for the content categories. Next, the primary coder and a researcher coded all of the questionnaires for

content and resolved any disagreements via discussion. Memories were assigned to the one category that best reflected the main theme of the remembered episode; themes that were present in at least 10% of the entire sample of memories were retained as individual content categories, and all other themes were folded into an “other” category

Seven content categories were identified. The Psychological/Physical Discomfort category included memories that focused on physical injuries, illnesses, or accidents that resulted in discomfort or bodily harm, as well as on emotionally distressing experiences. The Social Relationships category included memories that focused on family relationships and dynamics, relationships and activities with friends, or interactions with roommates, peers, or co-workers. The Romantic Relationships category included memories that focused on romantic interactions such as getting engaged, breaking up, or going on a first date. The Achievement category included memories that focused on performance in school, work, or extracurricular activities. The Travel category included memories that focused on experiences while on vacation, traveling for work or community service, or studying abroad. The Mistakes category included memories that focused on mistakes, pranks, or misunderstandings. The Other category included memories that could not be assigned to any of the other content categories.

Two researchers also independently coded the specificity of all personal and vicarious memories. Memories were coded as specific if they contained an explicit reference to a one-time event. Memories were coded as general if they contained a non-specific description of events or feelings, or if they referred to a series of repeated events. Any disagreements were resolved via discussion. A naïve coder who was blind to hypotheses then coded 30% of the questionnaires; ten questionnaires from each condition were chosen using a computer-generated list of random numbers. Inter-rater agreement was 81% for memory content and 91% for memory specificity. Recent research has indicated that memories of repeated events share key properties of specific memories (Peterson, Baker-Ward, & Grovenstein, in press; Rubin & Umanath, in press). Accordingly, general memories were recoded to identify memories of repeated events; inter-rater agreement was 85%.

3. Results

3.1. Preliminary Analyses

Task order effects (personal memory first or vicarious memory first) on ratings of memory qualities and functions were examined. When sharing memories with parents or with friends, ratings of some phenomenological qualities of personal memories (seeing the event in one's mind's eye, experiencing physical reactions, emotional intensity, memory vividness) were rated more highly when a vicarious memory was described prior to a personal memory than when a vicarious memory was described following a personal memory. Significant order effects for ratings of memory centrality and functions were rare and inconsistent. Because task order was counterbalanced across conditions, this variable was collapsed in reported analyses.

When separate analyses were conducted for the small number ($N = 28$) of male participants, the pattern of results was similar to the total sample; main analyses included all participants.

3.2. Memory Incidence

Consistent with predictions, almost all participants were able to remember both a vicarious memory and a personal memory in response to the parent probes (personal: 96%; vicarious: 99%) and the friend probes (personal: 99%; vicarious: 94%). Coding of memory specificity confirmed that participants' vicarious memories shared by parents (84%) and friends (83%) were as likely to describe a specific episode as personal memories told to parents (90%) and friends (81%). With respect to memories coded as general, 44% involved repeated events; the total number of general memories ($n = 41$) was too small to make meaningful between-condition comparisons.

3.3. Memory Ratings

3.3.1. Memory qualities

Memory ratings were analyzed with 2 (memory type) x 2 (relationship) ANOVAs; memory type (personal versus vicarious) was a repeated factor and relationship (parent versus friend) was a between subjects factor. Memory qualities

included 5-point ratings of how positive the event was, how negative the event was, how emotional the participants were when they thought about the memory, how vivid the memory was, whether participants could see the remembered event in the mind's eye, and whether participants had a physical reaction to the memory. Across all analyses, the main effect of relationship and the memory type x relationship interaction were not statistically significant at the $p < .05$ level. In contrast, significant main effects of memory type were evident for emotional intensity when thinking about the memory (personal $M = 2.98$, vicarious $M = 2.37$, $F(1, 129) = 20.05$, $p < .001$), memory vividness (personal $M = 4.23$, vicarious $M = 3.40$, $F(1, 129) = 53.90$, $p < .001$), seeing the remembered event in the mind's eye (personal $M = 4.37$, vicarious $M = 3.48$, $F(1, 129) = 95.38$, $p < .001$), and experiencing a physical reaction to the memory (personal $M = 2.88$, vicarious $M = 2.28$, $F(1, 129) = 27.73$, $p < .001$). Ratings of memory qualities for the friend and parent conditions are displayed in Figure 1 and Figure 2. Although ratings are consistently higher for personal than for vicarious memories, the pattern of ratings is strikingly similar.

Fig 1: Mean ratings of phenomenological qualities of memories in the friend condition

Fig 2: Mean ratings of phenomenological qualities of memories in the parent condition

Another way to assess similarities between personal and vicarious memories involves examining interrelationships between phenomenological qualities. Similar patterns of positive correlations are evident for personal and vicarious memories involving a friend (Table 1) and a parent (Table 2).

Table 1

Intercorrelations between phenomenological qualities (emotional intensity, experiencing physical reactions, vividness, and seeing the event in the mind's eye) of personal and vicarious memories in the *friend* condition.

Variables	Personal Memory				Vicarious Memory			
	1	2	3	4	1	2	3	4
1. Emotional Intensity	---				---			
2. Physical Reaction	.435***	---			.515***	---		
3. Vividness	.332**	.319**	---		.411***	.329**	---	
4. Seeing the Event	.338**	.371**	.752***	---	.160	.318**	.545***	---

* p < .05
 ** p < .01
 *** p < .001

Table 2

Intercorrelations between phenomenological qualities (emotional intensity, experiencing physical reactions, vividness, and seeing the event in the mind's eye) of personal and vicarious memories in the *parent* condition.

Variables	Personal Memory				Vicarious Memory			
	1	2	3	4	1	2	3	4
1. Emotional Intensity	---				---			
2. Physical Reaction	.327**	---			.216	---		
3. Vividness	.195	.114	---		.173	.280*	---	
4. Seeing the Event	.350**	.232	.515***	---	.102	.343**	.369**	---

* p < .05

** p < .01

*** p < .001

In addition to providing quantitative ratings, participants identified the perspective from which they mentally viewed the memory (Figure 3 and Figure 4). As predicted, personal memories shared with parents or friends were likely to be viewed from the participant's own perspective but rarely from strictly an observer's perspective. In contrast, vicarious memories of events shared by parents and friends were frequently seen from an observer's perspective, although it is notable that approximately one-half of vicarious memories were viewed from either the participant's own perspective or from both perspectives.

Fig 3: Percentage of participants in the friend condition reporting from what perspective they viewed the memories.

Fig 4: Percentage of participants in the parent condition reporting from what perspective they viewed the memories.

Participants also indicated what emotions they felt when thinking about the memory. A range of emotions were evident for personal memories shared with parents (37% positive, 28% negative, 19% mixed, 15% neutral), vicarious memories shared by parents (43% positive, 16% negative, 25% mixed, 15% neutral), personal memories shared with friends (38% positive, 25% negative, 31% mixed, 6% neutral) and vicarious memories shared by friends (23% positive, 34% negative, 20% mixed, 22% neutral).

3.3.2. Memory functions and event centrality

Seven of the nine questions assessed memory functions and event centrality in a similar format for personal and vicarious memories: participants rated on 5-point scales how the memory forms a part of my identity, is a reference point for the way I understand myself and the world, is a part of my own life story, colors the way I think and feel about other experiences, influences the relationships I have with others, helps me to solve problems in my own life, and impacts my life decisions (Figure 5 and Figure 6).

Fig 5: Mean ratings of event centrality and memory functions for participants in the friend condition.

Fig 6: Mean ratings of event centrality and memory functions for participants in the parent condition.

These ratings were analyzed with 2 (memory type) x 2 (relationship) ANOVAs; memory type (personal versus vicarious) was a repeated factor and relationship (parent versus friend) was a between subjects factor. Across all analyses, the main effect of relationship was not statistically significant at $p < .05$. In contrast, significant effects of memory type favoring personal memories were evident for memory of the event forms part of my identity (personal $M = 3.28$, vicarious $M = 2.25$, $F(1, 128) = 58.84$, $p < .001$), colors the way I think and feel (personal $M = 3.27$, vicarious $M = 2.83$, $F(1, 129) = 13.00$, $p < .001$), influences my relationships with others (personal $M = 2.88$, vicarious $M = 2.50$, $F(1, 128) = 7.14$, $p = .009$), and helps me to solve problems (personal $M = 2.57$, vicarious $M = 2.24$, $F(1, 128) = 6.52$, $p = .012$). The main effect of memory type was qualified by a memory type x relationship interaction for two variables: the memory forms a part of my life story (personal-parent $M = 3.88$, personal-friend $M = 3.97$, vicarious-parent $M = 2.70$, vicarious-friend $M = 2.23$, $F(1, 129) = 5.00$, $p = .027$) and is a

reference point for understanding the self (personal-parent $M = 2.82$, personal-friend $M = 3.02$, vicarious-parent $M = 2.42$, vicarious-friend $M = 2.06$, $F(1, 128) = 4.77$, $p = .031$); in both instances, differences between ratings of personal and vicarious memories were greater for memories involving friends than for memories involving parents.

Four additional questions did not permit a direct comparison of personal and vicarious memory functions. Two questions about personal memory functions were 1) the memory helps me to better understand myself (parent $M = 3.18$; friend $M = 3.08$) and 2) the memory makes me feel better about myself (parent $M = 2.91$; friend $M = 3.08$). Two questions about vicarious memory functions were 1) the memory helps me to better understand my friend/ parent (parent $M = 3.78$; friend $M = 3.70$) and 2) the memory makes me feel closer to my friend/parent (parent $M = 3.87$; friend $M = 3.83$). The ratings suggest that a prominent function of vicarious memories is enhancing intimacy and personal connection.

3.4. Memory Content

Content analyses were conducted for personal and vicarious memories involving friends and parents. Across memory types, discomfort/trauma themes, social relationship themes, and idiosyncratic ("other") themes were frequently represented. Themes evident in at least 15% of memories were as follows: personal memory-friend (discomfort/trauma 30%, social relationships 34%); vicarious memory-friend (discomfort/trauma 33%, other 22%, social relationships 17%); personal memory-parent (discomfort/trauma 28%, other 22%, social relationships 21%); vicarious memory-parent (discomfort/trauma 33%, social relationships 19%, other 16%).

4. Discussion

This study is the first to systematically examine the concept of vicarious memories in everyday, non-clinical contexts. Consistent with expectations, almost all college student participants were able to describe a specific memory not only of a personal episode that they shared with a parent or friend, but also an episode that a parent or friend shared with them. Patterns of ratings of phenomenological qualities (emotion,

vividness, seeing the memory image, experiencing a physical reaction) were similar across memory types although, as predicted, personal memory ratings were higher than vicarious memory ratings. Similar patterns of intercorrelations between memory qualities for vicarious and personal memories also were evident. In addition, participant ratings indicated that vicarious memories serve many of the same functions as personal memories, although at lower levels of intensity. Finally, content analyses identified similar major themes in vicarious and personal memories. One expected difference concerned point of view: vicarious memories were more often seen in the mind's eye from an observer perspective than were personal memories. Nevertheless, it is notable that about one-half of participants reported taking their own perspective in vicarious memories at least some of the time.

Vicarious memories of specific episodes that happened to other people share basic phenomenological and functional properties of memories of events experienced firsthand. As such, our findings are consistent with the idea that current models of episodic memory, which include only past events that happened directly to the self, are too restrictive. In a different domain, research has identified parallels between memories of past events and imagined future episodes, which led to the proposal that remembering the past and imagining the future rely on common brain networks (Addis, Wong, & Schacter, 2008; Rubin, 2014; Schacter & Addis, 2007; Schacter, Addis, & Buckner, 2007; Szpunar, 2010). Like the vicarious memories described by participants in the present study, imagined future episodes are rated as less vivid than personal memories but share other important qualities (Szpunar, 2010). In a closely related vein, research supports the idea that remembering the past and taking another person's viewpoint, usually thought of as distinct mental activities, may in fact "reflect the workings of the same core brain network" (Buckner & Carroll, 2007, p. 49; also see Hassabis & Maguire, 2007; Spreng, Mar, & Kim, 2008; St. Jacques, 2012). New brain imaging studies could ascertain if vicarious and personal memories also show overlapping neurophysiological patterns.

Observed similarities between vicarious and personal memories also are consistent with Rubin and Umanath's (in press) novel theory of event memory, defined as "the mental construction of a scene, real or imagined, for the past or future. The scene

can be experienced as happening to the person recalling it or imagined as happening to another person.” Rubin and Umanath point to the potential role of the hippocampus in “scene construction,” which includes not only images of personal past events but also of future and imagined scenarios (Hassabis & Maguire, 2007). The present study suggests that vicarious memories of specific events from other people’s lives are a key component of this broader conceptualization of event memory. When a parent is troubled by a persistent memory of her child’s account of a bullying episode, or a child has a vivid image created from his parent’s cautionary tale of being caught cheating in a college classroom, or a psychotherapist visualizes an episode from a veteran’s war trauma story, these scene constructions may engage the same neural systems as remembering one’s own first-hand experiences with bullying, cheating, or trauma.

Research on vicarious memories could inform diverse areas of scholarship that include a focus on people’s knowledge of others’ lives. In clinical psychology, Duke, Lazarus, and Fivush (2008) discovered that children’s scores on an index of family history positively predicted their well-being; some of the family knowledge items appear to tap children’s vicarious memories of events in their parents’ lives (e.g., “Do you know some of the lessons that your parents learned from good or bad experiences?”). In historical studies, Young’s (2000) analysis of the enduring legacy of the Holocaust focused on the idea of a vicarious past: the “memory of history...becomes memory of the witness’s memory, a vicarious past...the postwar generation...cannot remember the Holocaust as it occurred. All they remember...is what the victims have passed down to them” (p. 1). In social psychology, Aron, Aron, Tudor, and Nelson (1991) introduced the idea that close relationships involve including another person in one’s conception of self by “vicariously sharing other’s characteristics”; this can involve “cognition in which the other is treated as self or confused with self—the underlying reason being a self/other merging” (p. 242). In cultural studies, Schug, Yuki, and Maddux (2010) examined self-disclosure in U.S. and Japanese university students. American students were more likely to tell their best friend and closest family member about personal events such as their most embarrassing experience, suggesting that cultural differences may exist in the incidence and interpersonal functions of vicarious memories.

Vicarious memories appear to be much more common and influential in everyday life than studies of vicarious trauma would suggest. Like imagining the future or taking another person's perspective, vicarious memories are not anchored in direct personal experience, yet they resemble personal memories in phenomenology and they serve some of the same basic functions. Future research should continue to explore the cognitive, behavioral, functional and neurophysiological overlap between memories of past episodes that were experienced first-hand and memories based on accounts of episodes that happened to others.

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