

# Heroic Memory: Remembering the Details of Others' Heroism in the Aftermath of a Traumatic Public Event Can Foster Our Own Prosocial Response

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*Summary:* Humans, while not wholly altruistic, will often come together to selflessly support and provide aid to others in need. To date, little attention has been paid to how memory for such positive events in the aftermath of a traumatic event can influence subsequent behavior. The current study examined how the way in which people represent and remember helping events immediately following the 2013 Boston Marathon bombing related to their tendency to support Boston-related charities in the following months. People who recalled helping-related events in greater detail reported engaging in more helping behaviors in the following months. The relation between memory narratives and reports of helping behavior six months later has important implications for future work investigating the role of memory-based mechanisms in citizens' decisions to provide aid in times of collective need. Copyright © 2017 John Wiley & Sons, Ltd.

## INTRODUCTION

Humans are not a wholly altruistic species. Not only are there times when people neglect to help others in need (Allport, 1954; Cikara, Bruneau, & Saxe, 2011; Cuddy, Rock, & Norton, 2007; Harris & Fiske, 2006; Latané & Darley, 1968), but there are cases in which individuals commit heinous acts of aggression and terror (Clauset, Young, & Gleditsch, 2007). Yet, malicious behavior in these instances can often be matched or even overshadowed by acts of heroism and an outpouring of solidarity and generosity from the broader public. Such was the case when two bombs exploded at the finish line of the 2013 Boston Marathon. Although the bombing itself and the pain it caused were traumatic, many people performed morally praiseworthy actions in the direct aftermath. Runners, spectators, and first responders rushed to help the injured victims, selflessly placing themselves in harm's way. How do we remember such positive stories in the wake of tragedy? Does the way that we remember those events influence our subsequent generosity? The present study investigated how the way that individuals represent and remember heroic behavior following the Boston Marathon bombing may be related to their subsequent prosocial responses toward victims.

A comprehensive account of memory requires not only identifying its component processes, but also understanding its uses (Baddeley, 1987). Progress has been made carving the functions of autobiographical memory into broad categories (e.g., self, social, and directive; Bluck, Alea, Habermas, & Rubin, 2005; Pillemer, 1992). Indeed, while the importance of memory for developing and strengthening social bonds (i.e., social function) and guiding future behavior (i.e., directive function) is well established (Alea & Bluck, 2003; Alea

& Bluck, 2007; Fivush, Haden, & Reese, 1996; Pasupathi, Lucas, & Coombs, 2002; Pillemer, 1992), the contribution of memory to prosocial action (in some sense, the confluence of social and directive functions) is less understood.

Given that the processing of remembered events and imagined events share many of the same cognitive and neural structures (Atance & O'Neill, 2001; Schacter et al., 2012; Suddendorf & Corballis, 2007), researchers have begun mapping functional similarities and distinctions across remembered and imagined experiences (Rasmussen & Bernsten, 2013). The emphasis has largely been on a link between the abilities to remember and imagine details for a specific place and time and a number of directive functions, such as planning and preparing for future decisions (e.g., Benoit, Gilbert, & Burgess, 2011; Peters & Büchel, 2010) and problem solving (see Schacter, 2012 for review). However, the social functions shared by remembering and imagining episodes have only recently begun to be examined (Merck, Topcu, & Hirst, 2016; Sheldon, McAndrews, & Moscovitch, 2011; Spreng & Mar, 2012; Yi, Pickover, StuppySullivan, Baker, & Landes, 2016).

Indeed, an emerging line of research suggests that remembering or imagining specific examples of helping others in need increases participants' reports of being more likely to engage in prosocial helping behavior in the future (Gaesser, DiBiase, & Kensinger, *in press*; Gaesser, Dodds, & Schacter, *in press*; Gaesser, Horn, & Young, 2015; Gaesser & Schacter, 2014). In particular, the degree of sensory detail and vividness of remembered and imagined helping events predicted willingness to help (Gaesser et al., 2015; Gaesser, DiBiase, & Kensinger, *in press*; Gaesser, Dodds, & Schacter, *in press*; Gaesser & Schacter, 2014). These findings are consistent with previous research related to imagination inflation (Garry & Polaschek, 2000; Hyman & Pentland, 1996; Husnu & Crisp, 2010; Mazzoni & Memon, 2003, see also D'Argembeau & Van der Linden, 2012) and related work showing that directly manipulating vividness can enhance the perceived probability of imagined events occurring in the future (Szpunar & Schacter, 2013). As the remembered

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or imagined helping episode is more vividly experienced, the helping event becomes more accessible (Anderson, 1983; Koehler, 1991; Tversky & Kahneman, 1973), providing ‘evidentiary value’ (Kappes & Morewedge, 2016) that one is willing to help in that situation. In other words, when deciding whether to help in a situation, being able to vividly remember or imagine related helping episodes informs one’s judgment of whether one would help in that situation. Interestingly, the prosocial effect of episodic processes appears to be largely independent of who is imagined to be doing the helping—the self or someone else. Regardless of the imagined agent, the more vividly the helping event is represented, the more willing participants were to help someone in need (Gaesser *et al.*, 2015).

This link between imagined helping behavior and prosocial tendencies has implications for memory of events in the wake of traumatic antisocial acts (Berntsen & Rubin, 2006; Hirst *et al.*, 2015), as it makes the prediction that the more detailed memory is for helping events, the more likely one is to engage in prosocial behavior. Because stories of heroism were so prevalent and public in the aftermath of the Boston Marathon bombing, the incident is well suited to test whether the detail associated with these memories would influence subsequent reports of contributing to Boston-related philanthropies. Thus, the current project examined whether findings based on manipulations in the lab (Gaesser *et al.*, 2015; Gaesser, DiBiase, & Kensinger, *in press*; Gaesser, Dodds, & Schacter, *in press*; Gaesser & Schacter, 2014) would extend to memory for highly emotional public events. The current project has two aims: First, this study primarily serves as an initial step toward understanding how remembering helping behaviors may promote prosocial behavior following a significant emotionally charged public event, while controlling for baseline levels of memory detail for unrelated events as well as baseline levels of prosocial responses. A secondary goal of the current analysis was to further explore whether this effect was independent of other factors that may contribute to prosocial responses such as retrieval frequency and affective perspective taking (Batson, 2012; Coke, Batson, & McDavis, 1978; Decety, 2005; Rameson, Morelli, & Lieberman, 2012; Singer & Lamm, 2009; Waytz, Zaki, & Mitchell, 2012; Zaki & Ochsner, 2012).

## METHODS

### Participants

All individuals who had previously participated in a research study in our laboratory and who were interested in future research were sent the current survey. Although the survey was sent to participants of all ages, the current study focused on young adults only to eliminate potential confounds of age on variables of interest. Participants who successfully completed the first survey (267 participants, 89 young adults [ages 19–31]) were sent a follow-up survey 6 months after the bombings. Of the 89 young adults, 42 individuals

completed and returned the second survey.<sup>1</sup> Data from these 42 young adults are reported in the current analysis (*Mage* = 23.07, *SD* = 3.10, 19–31; *Medu* = 16.12, *SD* = 1.96; 32 female<sup>2</sup>). Participants were compensated \$20 (\$10 per survey) for their participation and gave written informed consent in accordance with the requirements of the Institutional Review Board at Boston College.

### Procedure and materials

A one-hour, 20-page survey, asking participants about their memories for and emotional reactions to the Marathon bombings, was mailed to participants 1–2 weeks following the bombings. In the first half, the survey asked participants to think about their memory for events pertaining to the bombings and their aftermath. From these questions, the current analysis focused on narrative responses to a question asking participants to report memories for acts of heroism and helping surrounding the marathon bombings [i.e., ‘What were some of the stories of heroism and helping that you remember from the day of the bombing (give a brief description of any you remember)?’].

In the second half of this survey, participants were instructed to think of an event that happened within 1 month of the marathon (e.g., an event during school vacation week or during Easter or Passover) that occurred at a specific time, in a specific place, and lasted for a day or less. Responses to this question were used in the current analysis to control for individual differences in the level of detail in participant memories and narratives from this time period. In other words, these narratives allowed us to capture differences in how people tend to report events and to control for these differences in narrative style when examining memory for the bombings.

Six months after the bombings, a follow-up survey was sent to all participants who successfully completed the first survey and who indicated interest in future studies. The follow-up survey (time 2) contained the same marathon-related questions as time 1, but also asked participants questions about prosocial behavior related to Boston and Boston charities. Specifically, participants were asked to respond whether or not they had engaged in three prosocial behaviors—donating to a Boston-based charity, volunteering for a Boston-based charity, and donating blood. To provide a baseline for helping (as well as a baseline for individual tendency to endorse helping), participants were first asked about their helping behaviors prior to the bombings. Then participants were asked whether they had engaged in these behaviors since the bombings. Finally, as 6 months had passed between the bombings and this follow-up survey, it was important to obtain an estimation for *when* in this six-month period helping behavior had occurred. To this end, participants were also asked whether they had engaged in these helping behaviors in the past 3 months (i.e., in the second half of this six-month interval). For each of these three time

<sup>1</sup> Subsequent participation in the second survey was not significantly related to participant ratings (at time 1) of their subjective experiences of the bombings ( $p > .2$  for ratings of vividness, emotionality, and significance), making it unlikely that those who completed the second survey differed from those who did not in how they initially experienced the event.

<sup>2</sup> Sex was not related to any differences in helping behavior since the marathon ( $p = 0.84$ ) or in the number of details reported in helping narratives ( $p = 0.87$ ). Further, the direction of the relation between these two variables is in the same direction for males and females. The small number of males ( $n = 10$ ) makes a formal investigation of sex effects difficult in this case, but these findings suggest that sex effects are not a major factor in our data.

windows (i.e., before the bombings, at any point in the 6 months since the bombings, and in the most recent 3 months since the bombing), the answers to the three helping behavior questions were combined to provide a binary measure (helping versus no helping) at each time point. Specifically, a response of 'yes' to any of these three helping behavior questions was considered as 'helping' and a response of 'no' to all three was coded as 'no helping'.<sup>3</sup>

In this second survey, participants were also asked to respond to the following questions (on a scale from 1 to 7) in an effort to capture elements related to the subjective experience of the following:

- Overall detail of events pertaining to the marathon bombing (though not specific to marathon helping events): How well do you remember the details of the marathon bombing?
- Retrieval frequency: Over the last 6 months, how often have you thought about the events surrounding the marathon bombings?
- Affective perspective taking: Imagine yourself as a runner in this past year's marathon. Think about the hours leading up to the race and how the runner was feeling before it began. How well are you able to imagine how they felt at the beginning of the race?

These measures were included in analyses conducted to determine whether detail-related shifts in prosocial behaviors could be explained by differences in subjective experience.

### Data analysis

Narrative responses to questions asking about (i) heroism and helping and (ii) the non-marathon personal event were coded for level of detail. Four raters were trained to score memory narratives using a modified version of the autobiographical interview protocol that scored for internal and external details consistent with previous research (Addis, Wong, & Schacter, 2008; Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002; Madore & Schacter, 2015; Sheldon et al., 2011). The conventional AI asks participants to remember a single event per trial (e.g., memory for a particular dinner at an Italian restaurant), and classifies details for the central event as internal (e.g., a description of the red and white tablecloths). Any semantic information (e.g., when that restaurant opened) or details not related to the central event (e.g., a description of the tablecloths at another restaurant) are coded as external. Here, however, subjects were asked to remember multiple events in response to a single prompt. As this prompt was intentionally vague, giving participants flexibility to respond with however many events came to mind, many narratives included multiple helping events to the prompt (i.e., 'What were some of the stories of heroism and helping that you remember from the day of the bombing (give a brief description of any you remember)?'). To accommodate this variability, any details referring to event information—such as the people, places,

objects, and thoughts—for *any* helping event related to the Boston Marathon bombings were coded as internal. In other words, details related to multiple central events were coded as internal. This modification meant that there were a very small number of external details overall (2% of all memory details) and not enough to separately analyze external and internal details. Primary analyses were conducted on the total number of details recalled (i.e., internal plus external)—recognizing that the effects are predominately driven by internal detail, and the pattern of results hold when internal details are analyzed individually.

Three of the four raters<sup>4</sup> separately scored 8 narratives to assess interrater reliability. Interrater reliability was high (standardized Cronbach's alpha .99 for total number of details). The remaining memory narratives were scored independently by the four individual raters. Notably, the total number of details and number of internal details in these narratives did not differ across raters, suggesting that training adequately matched coding performance across all four raters.

## RESULTS

### Descriptive statistics

Twenty-four of the 42 participants (57%) reported engaging in some helping behavior in the 6 months between the two surveys (see supplementary materials for breakdown of different helping behaviors). Of these, 16 participants (67% of helpers) engaged in helping behavior only in the 3 months following the bombings but did not engage in helping behavior in the subsequent 3 months ('early helpers'), while eight participants (33% of helpers) reported engaging in helping behavior in the subsequent 3 months ('recent helpers').

### Relations between helping-related marathon memory detail and subsequently reported prosocial behavior

Binary logistic regression was used to examine the effects of vividly recalling instances of others' helping on subsequent helping behavior. Specifically, a logistic regression analysis was conducted to predict prosocial helping behavior since the bombings (i.e., the binary helping/no helping measure reported at time 2) using memory detail in a helping-related narrative (i.e., the total number of details provided in the helping narrative collected at time 1, see supplementary materials for analyses using time 2 narratives and a non-helping-related narrative). Prior helping behavior (i.e., the binary variable of helping/ no helping prior to the bombings, collected at time 2) was included as a covariate to account for possible individual differences in a subject's tendency to present themselves in an overly positive and prosocial manner that may arise in self-reports, as well as individual differences in baseline helping. Memory detail in a control narrative (i.e., the total number of details provided in the control event narrative collected at time 1) was also included

<sup>3</sup> Notably, the measures selected in the current study focus on more formal prosocial behaviors rather than helping that might occur within the family or smaller community. Future work can be done to determine how these patterns may differ depending on the recipient of the helping behavior.

<sup>4</sup> Unfortunately, due to an experimenter oversight, the individual scores of the fourth rater (a previous RA in the lab) for these eight training narratives were not saved and therefore not available at the time of data analysis.



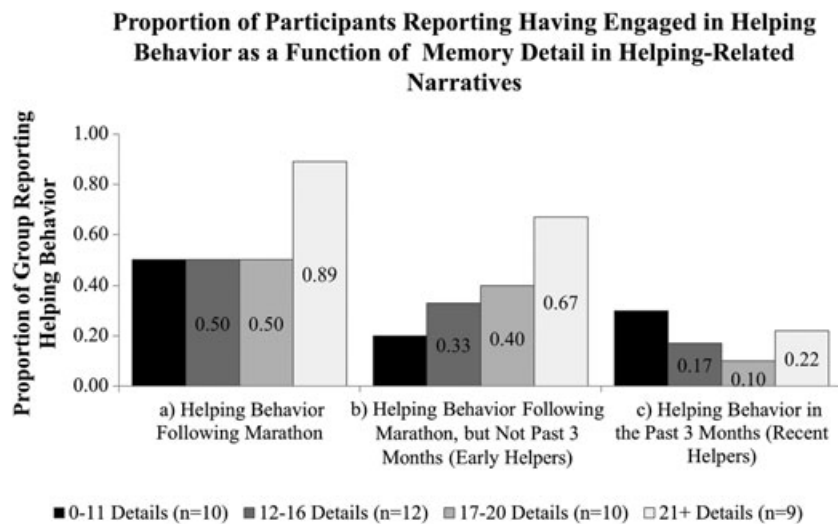


Figure 1. Proportion of participants who reported having engaged in helping behavior after the 2013 Boston Marathon bombings as a function of the number of details included in helping-related narratives. (a) Reports of helping behavior following the marathon (i.e., anytime in the intervening 6 months), (b) reports of helping behavior following the marathon, but *not* helping in the 3 months leading up to the second survey (i.e., ‘early helpers’), and (c) reports of helping behavior following the marathon, including in the 3 months leading up to the second survey (i.e., ‘recent helpers’). People who recalled helping-related events in more detail following the Boston Marathon bombings were more likely to report engaging in helping behaviors in the following months, particularly in the 3 months following the bombings

as a covariate to capture individual differences in the detail with which participants recall and report their memories, in general.

A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between participants who would and would not report subsequently engaging in helping behavior since the bombings ( $\chi^2 = 9.28$ ,  $p = 0.03$ ,  $df = 3$ ). The Wald criterion demonstrated that memory detail in the helping-specific narrative was driving this effect, making a significant contribution to prediction ( $p = 0.05$ ), while memory detail in the control narrative ( $p = 0.25$ ) and prior behavior ( $p = 0.11$ ) were not significant predictors. For visualization purposes, participants were divided into four groups of approximately equal size (10, 12, 10, and nine participants) as a function of the number of details reported in their helping related narrative. The proportion of each of these groups who reported engaging in helping behavior in the past 6 months is depicted in Figure 1a.<sup>5</sup>

A second analysis was conducted to predict prosocial helping behavior in the 3 months following the bombings *only* (i.e., ‘yes’ responses for helping since the bombings, but ‘no’ responses for helping in the past 3 months), with the same predictor variables. A test of the full model was statistically significant, indicating that the predictors reliably distinguished between participants who would and would not report engaging in helping behavior in the 3 months after the bombings ( $\chi^2 = 8.66$ ,  $p = 0.03$ ,  $df = 3$ ). The Wald criterion demonstrated that memory detail in the helping-related narrative made a significant contribution to prediction ( $p = 0.03$ ), while memory detail in the control narrative

( $p = 0.29$ ) and prior behavior ( $p = 0.72$ ) were not significant predictors. As with the analysis discussed above, participants were divided into four groups of approximately equal size (10, 12, 10, and nine participants) as a function of the number of details reported in their helping related narrative (Figure 1b).

Although the small number of individuals reporting helping behaviors in the 3 months prior to the second survey (i.e., participants providing ‘yes’ responses both for helping since the bombings and for helping in the past 3 months; eight participants) makes this analysis less reliable and difficult to interpret, it was conducted for the sake of completeness. This model was not significant ( $\chi^2 = 4.65$ ,  $p = 0.20$ ,  $df = 3$ ), suggesting that memory detail at time 1 could not reliably predict helping behavior 3–6 months later (Figure 1c).

#### Contributing effects of subjective experience on the relation between helping-related marathon memory detail and subsequently reported prosocial behavior

In the second survey, participants were asked to rate their subjective experience (on a scale of 1–7) of overall memory detail for events pertaining to the marathon bombing, retrieval frequency, or affective perspective taking. Participant responses to these questions were included in separate binary logistic regression analyses as covariates of interest to examine whether detail-related shifts in helping behaviors could be explained by any of these measures. Regression models with the three measures as predictors of memory detail for helping events, controlling for detail in control narratives, were all insignificant ( $p > 0.05$  for all ANOVAs testing model fit), as were correlations between memory detail in helping narratives and each measure ( $p > 0.05$  for all correlations). Thus, detail-related shifts in helping behaviors do not appear to be explained through the three measures tested.

<sup>5</sup> A linear regression analysis was conducted to predict the number of reported helping behaviors rather than a binary measure of helping. This analysis bore the same key findings as reported here and is presented in Supplementary Materials.

## DISCUSSION

A growing line of research has provided evidence that memory and imagination can be used to enhance hypothetical intentions to help someone in need (Gaesser et al., 2015; Gaesser & Schacter, 2014), raising the intriguing possibility that how helping events are remembered following a public trauma may influence subsequent prosocial behavior. Building on and extending past work, the current study was the first to apply this theory to a significant emotionally charged public event, demonstrating that the extent to which participants recalled helping-related details following the Boston Marathon bombings significantly predicted self-reports of engaging in helping behaviors, collected 6 months later. This effect was seen after controlling for individual differences in the tendency to retrieve and report memory details in a non-marathon control event, suggesting that it was specific to memory details related directly to the marathon bombings.

The marathon bombings served as a suitable event to examine the relation between memory detail and helping behavior because of the saliency of heroism and helping-related actions in the moments immediately following the explosions. The accessibility of these actions allowed individuals to reflect on how members of their community helped one another in their time of need. In addition, although some of the reported helping events were too subject-specific to allow for systematic confirmation of accuracy, it seems that many of these memories accurately reflect documented helping events in aftermath of the bombing (e.g., the frequently reported 'hero in a cowboy hat').

In the current study, the extent to which individuals were able to recall these details in the weeks following the bombings significantly predicted reports, collected 6 months later, of engaging in related helping behaviors. Importantly, these effects could not be explained by an increased subjective richness of the bombings more generally, as evidenced by an insignificant relation between helping-related memory detail and self-report ratings of memory vividness, retrieval frequency, and affective perspective taking in the current dataset. Notably, the number of details in helping-related narratives predicted helping behaviors in the 3 months following the bombings (0–3 months), but not in later months (3–6 months). The small number of participants that could be included in the latter (i.e., 3–6 months) analysis makes this dissociation less reliable and difficult to interpret. However, it suggests that thinking about helping events has a temporally limited influence on behavior. One possibility is that the enhancement is reduced as helping-related details decay and become less available over time. A second possibility is that detail retrieval no longer predicts helping-related behavior several months following a major event because of a change in how people think about helping over time (e.g., reduced perceived need for help). Future research could examine these two possibilities by introducing an intervention at the mid-point between asking for the participants' initial helping narratives and inquiring about helping behaviors where half of the participants would be asked to recall their helping narratives a second time, thus making these details available once again.

While the current project was motivated by studies that systematically manipulated remembered and imagined helping events generated in the lab (Gaesser et al., 2015; Gaesser, DiBiase, & Kensinger, *in press*; Gaesser, Dodds, & Schacter, *in press*; Gaesser & Schacter, 2014), a limitation of the current study is that it relies on correlational analyses rather than experimental manipulation to establish a link between detail in memories for others helping and helping behavior. However, the opposite interpretation—that people who are more likely to engage in helpful behavior tend to better encode the heroic behavior of others—is unlikely given that prior helping behavior was controlled for in our analyses. Although it may be arduous to fully control and manipulate memory for public events, future research could attempt to encourage vivid recall of helping events in a subsample of individuals following a traumatic public event and subsequently examine their helping behavior over time to better capture causality. Related work on autobiographical memory has demonstrated that manipulating recall of everyday emotional experiences during college (e.g., a satisfactory advising experience) has been shown to predict decisions to donate to that college (Kuwabara & Pillemer, 2010). It is difficult to directly map these results onto the present study, as there are likely important differences in content, phenomenology, and retrieval frequency between recalling everyday events (Kuwabara & Pillemer, 2010) and helping-specific actions related to highly emotional public events (examined here), but these findings suggest a similar memory-behavior link across contexts.

A second potential limitation stems from the demand characteristics inherent to studies of socially desirable decision making. In order to appear prosocial, participants may inaccurately report having engaged in helping behavior following the marathon bombings, making this measure unreliable. This possibility is somewhat less likely given the different pattern of results for reports of helping in the past 6 months relative to the past 3 months, as one would expect similar demand characteristics for these two measures. Further, our analyses examined reports of marathon-related helping controlling for reports of prior helping behavior in an attempt to remove individual differences in the tendency to endorse helping.

As noted previously, it was not possible to systematically confirm the accuracy of helping, non-helping, and control memories reported by participants, as many of the events were subject-specific and personal. Memory is rarely, if ever, 100% veridical, suggesting that participants in the current study were likely reporting some inaccurate details in their narratives. Regardless of veracity, the detail with which events are remembered can meaningfully inform decision-making and behavior. Indeed, there are some examples of a link between memory and behavior in the broader literature on autobiographical memory, where the critical feature is the memory representation rather than the truthfulness of the memory (e.g., memories of getting sick from egg salad leads to a decrease in egg salad preference and consumption; Geraerts et al., 2008; see also Pezdek & Salim, 2011; Scoboria, Mazzoni, & Jarry, 2008). Future research is necessary to determine whether and how a memory-behavior link scales to significantly emotionally charged public events and

costly action with important implications for promoting collective welfare in the aftermath of disaster.

Although the current manuscript investigated how remembering helping events can be used to facilitate *prosocial* responses, research on imagination inflation and related effects (Garry & Polaschek, 2000; Hyman & Pentland, 1996; Husnu & Crisp, 2010; Mazzoni & Memon, 2003, see also D'Argembeau & Van der Linden, 2012) suggests that activated episodes increase perceived likelihood that the event will occur *regardless* of event type or content. Therefore, how one remembers and represents harming events may under some circumstances actually increase *antisocial* behavior. Thus, the current study makes the claim that memory *can* be used to facilitate prosocial responses, rather than that it *always or exclusively* will. Although this issue remains unaddressed in the present study, it is notable that the helping events examined in the present study arose in the context of great harming.

Finally, another aspect for future research to consider is the possible contribution (or lack thereof) of self-referential processing. The current study asked participants to report stories of others' heroic actions rather than their own. The finding that memories for the heroic actions of *others* influences one's prosocial decisions is consistent with findings on social identity (Gino & Galinsky, 2012; Goldstein, Cialdini, & Griskevicius, 2008) and contagious generosity (Nook, Ong, Morelli, Mitchell, & Zaki, 2016) that show when people *observe* others engage in moral behavior they are more motivated to behave morally themselves in the present. Moreover, this finding extends previous work demonstrating that *imagining* episodes involving someone else as the helping agent can increase prosocial responses (Gaesser *et al.*, 2015) to the domain of memory, suggesting that *remembering* episodes of others helping likewise increases prosocial responses. Indeed, 'vicarious memories' of events that happened to other people have been recently shown to contain similar content and phenomenology as personally experienced events, albeit with lower levels of intensity (Pillemer, Steiner, Kuwabara, Thomsen, & Svob, 2015). Thus, vicarious memories as compared with personal memories of helping may have a similar but perhaps less potent impact of prosocial responses.

## Conclusions

The results of the current study support a growing literature revealing social functions of episodic memory (Kuwabara & Pillemer, 2010) and episodic simulation (Gaesser, 2013; Gaesser *et al.*, 2015; Gaesser & Schacter, 2014; Hassabis *et al.*, 2013; Madore & Schacter, 2014; Sheldon *et al.*, 2011; Spreng & Mar, 2012), extending this research to show enhancement of prosocial behavior following a significant emotionally charged public event. The study also adds to work in moral psychology, which has found that people make more generous donations after recalling past good deeds compared with bad deeds (Tasimi & Young, 2016; Young, Chakroff, & Tom, 2012).

From disasters (Neisser & Harsch, 1992) and high profile deaths (Brown & Kulik, 1977) to the end of a war (Berntsen & Thomsen, 2005) and World Cup victory (Tinti, Schmidt,

Testa, & Levine, 2014), memory researchers have vigorously studied how people remember details for emotionally charged public events for almost a half-century following from seminal work on flashbulb memories (Brown & Kulik, 1977; Neisser, 1982). After 9/11, there was a flurry of research on how people remembered terror attacks (e.g., Budson *et al.*, 2007; Conway, Skitka, Hemmerich, & Kershaw, 2009; Hirst *et al.*, 2009; Luminet *et al.*, 2004; Talarico & Rubin, 2003). The focus in much of this work has been on how phenomenology (e.g., emotional intensity and sensory details), confidence, and consistency of these memories change over time. And, while great progress has been made in understanding these characteristics of memories for emotionally charged public events (e.g., Hirst *et al.*, 2015), no study on emotionally charged public events—the events exceptionally tragic, joyous, or an emotional mixture—to our knowledge has examined how these memories subsequently predict decision-making or behavior. There is a great deal left to explore, but the present study takes an important step toward revealing these connections.

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