Moving On or Deciding to Let Go?

A pathway exploring the effects of emotional and decisional forgiveness on intentional forgetting

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Abstract

We report three empirical studies that represent the first systematic attempt to explore the relationship between emotional and decisional forgiveness, and intentional forgetting. On this basis, we propose a model that provides a credible explanation for the relationship between forgiveness and forgetting. Specifically, we propose that engaging in emotional forgiveness promotes the psychological distancing of an offence - such that victims construe the offence at a higher and more abstract level. This high-level construal, in turn, promotes larger intentional forgetting effects which, in turn, promote increased emotional forgiveness. Our studies found that participants in an emotional forgiveness manipulation reported increased psychological distance and recalled more high-level construals than did participants in either a decisional or no-forgiveness manipulation (Study 1). Using the list-method directed forgetting (LMDF) paradigm, we found that participants in an emotional forgiveness manipulation showed larger forgetting effects for both offence-relevant and -irrelevant information using both hypothetical (Study 2) and real-life (Study 3) moral transgressions, compared to participants in either decisional or no-forgiveness manipulations. The potential implications of these findings for coping with unpleasant episodes in our lives are considered.

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Introduction

Memories for unpleasant events often bring to mind associated emotions and feelings we would rather avoid. In such circumstances, our ability to forget becomes one of our greatest assets. When confronted with unwanted memories, or even reminders of such memories, we often seek to purge them from conscious awareness. But to what extent can we forget upsetting, emotionally-charged memories at will? In some cases, our attempts to forget negative episodes can result in their hyperaccessibility; that is, the things we are trying to forget actually become more available for retrieval than they might otherwise have been (Galinsky & Moskowitz, 2007; Neufeind, Dritschel, Astell & MacLeod, 2009; Wegner & Erber, 1992). The existence of such ironic effects, however, does not mean that all our efforts to forget unwanted memories fall on stony ground. Indeed, a substantial body of psychological research now attests to our ability to selectively impair recall via the deliberate attempt to forget target memories (Anderson & Green, 2001; Anderson, Ochsner, Kuhl, Cooper, Robertson et al, 2004; Bergström, De Fockert, & Richardson-Klavehn, 2009a, 2009b; Bjork, 1989; Depue, Curran & Banich, 2007; Noreen & MacLeod, 2013, 2014; Sahakian & Foster, 2009; van Schie, Geraerts & Anderson, 2013).

Building upon retrieval inhibition accounts derived from studies of list-method directed forgetting (LMDF; R. A. Bjork, 1989; Conway et al., 2000; Conway & Fthenaki, 2003; Pastötter & Bauml, 2007, 2010) and Think-No Think forgetting (TNT; Anderson & Green, 2001; Anderson et al., 2004; Noreen & MacLeod, 2013, 2014 but see Bulevich et al, 2006; Jonker, Seli & MacLeod, 2013; C. M. MacLeod et al., 2003 for alternative interpretations), Anderson and colleagues have sought to identify the neurocognitive pathways responsible for memory inhibition. Specifically, they argue that willful forgetting is a function of the down-regulation of hippocampal activity triggered by right fronto-parietal

activation during our attempts to intentionally forget (Anderson et al., 2004; Depue et al., 2007; Benoit & Anderson, 2012; Castiglione, Wagner, Anderson & Aron, 2019).

This theoretical perspective is valuable because it offers a contrast to the traditionally held view that forgetting is best avoided. Instead, according to this view, active forgetting (i.e., attempting to limit the subsequent recall of a memory) is a critical feature of a healthy, adaptive memory system (R. A. Bjork, 1972, 1975, 1978). Indeed, while the relationship between our *inability* to forget upsetting episodes and other aspects of our behavior such as emotions and mood has long been investigated (Hertel & Gerstle, 2003; Noreen, Cooke & Ridout, 2019; Noreen & Ridout, 2016a, 2016b), it is only recently that we have begun to understand the consequences of successful forgetting for the regulation of emotion. Specifically, Gagnepain, Hulbert and Anderson (2017) have argued that our attempts to forget upsetting memories not only prevents to-be-forgotten memories coming to mind but also inhibits – in parallel - the emotions associated with those memories (see also Engen and Anderson, 2018).

The extent to which we can regulate upsetting memories and their associated emotions has potentially important implications for the development of therapeutic interventions and our understanding of the reconciliation process. For this potential to be fully realized, however, we need to understand not only how intentional forgetting can affect associated emotions but also how the regulation of emotions affects our ability to intentionally forget associated memories. The present article offers a modest contribution in this regard by considering how intentional forgetting is moderated by the cognitions and emotions typically associated with the act of forgiveness.

Forgiveness and forgetting have long been assumed to be inter-related but it is only recently that this relationship has begun to be articulated. Using a variant of the TNT procedure, Noreen, Bierman & MacLeod (2014) showed that ‘no think’ instructions resulted

in poorer memory for those scenarios that had previously been forgiven compared to baseline scenarios (i.e., not subject to 'no think' instructions). In contrast, no such forgetting was observed for details about scenarios that remained unforgiven (see also Sell, 2015). In the current article, we extend this line of enquiry by considering how forgiveness (i.e., the act of consciously absolving someone from the responsibility of having transgressed against self or others) affects the extent to which one can intentionally forget details about a transgression. We also propose that the extent of any such forgetting is dependent upon constructs such as psychological distance (Liberman, Trope & Stephan, 2007; Bar-Anan, Trope, Liberman & Algom, 2007) and construal level (Liberman & Trope, 1998; Bar-Anan, Liberman & Trope, 2006; Trope & Liberman, 2010).

The act of forgiveness is known to be associated with a range of positive benefits for the forgiver including reductions in anxiety, depression, anger, blood pressure, and risk of heart attack (Coyle & Enright, 1997; Freedman & Enright, 1996; McCullough, Fincham & Tsang, 2003; Orcutt, 2006; Toussaint & Webb, 2005). Forgiveness is also recognized as offering particular advantages in maintaining valued relationships that would otherwise be diminished (Karremans et al., 2011; Karremans & Aarts, 2007; McCullough, 2008). We believe that one of the ways in which these various effects are achieved is through a reduction in the available information associated with the transgression.

In order for forgiveness to occur, an individual needs to reframe the context in which the offence occurred so that it is possible to view the offender in a more positive manner (Enright & Fitzgibbons, 2000). We believe an essential element for this reframing process to occur is intentional forgetting. The loss of detail from memory for the transgression will mean that fewer cues associated with negative emotions are available to come to mind. The consequent shift in focus to a more positive recollection would, in turn, facilitate the reframing and re-evaluation of the transgression and the transgressor. It is also likely that this

is a cyclical process whereby intentional forgiving not only facilitates forgiveness through a reframing of the event, but that forgiveness will, in turn, promote successful intentional forgetting.

The act of forgiveness, however, is not a simple process; that is, it is not simply a case that one forgives or one does not. Rather, forgiveness will vary depending on the extent to which the forgiver has engaged in decisional or emotional forgiveness (Baumeister, Exline & Sommer, 1998). Decisional forgiveness refers to the behavioral intention to eliminate revenge (Worthington, Witvliet, Pietrini & Miller, 2007), or to restore positive behavior to maintain a relationship whilst retaining a personal grudge against the transgressor (Huang & Enright, 2000; McCullough, Fincham & Tsang, 2003). Emotional forgiveness, in contrast, is characterized by an emotional intrapersonal process that results in the replacement of negative unforgiving emotions with more positive other-orientated ones (Worthington, 2006; Worthington & Wade, 1999; Worthington, et al., 2007).

These different forms of forgiveness require different levels of mental effort. In particular, emotional forgiveness is considered to be much more effortful because it involves the replacement of negative emotions with more positive ones (Berry et al., 2005; Yovetich & Rusbult, 1994), and involves the re-orientation of thoughts, feelings and behavior towards the offender (Harris, Thoresen & Lopez, 2007; Worthington, 1998; Yovetich & Rusbult, 1994)

Emotional forgiveness is facilitated by increasing the victim's psychological distance from the transgression (Rizvi & Bobocel, 2016). When individuals distance themselves psychologically from the direct experience of the event, the related details surrounding the event become less available. This, in turn, promotes reliance on prototypical information (Fujita, Henderson, Marlone, Eng, Trope, & Liberman, 2006; Trope & Liberman, 2003, 2010). Thus, psychologically distant events tend to be represented as being more abstract and

global (i.e., high-level construal), whereas psychologically closer events tend to be represented as being more concrete and localised (i.e., low-level construal).

In the current article, we make use of construal theory to provide a means of linking the act of emotional forgiveness to intentional forgetting. Based on the premise that emotional forgiveness involves a target event becoming more psychologically distant, we predict that individuals who both emotionally forgive a transgressor and try to forget about the event will show more forgetting for a target incident than those who simply try to forget without any associated emotional forgiveness (see also Lichtenfeld, Buechner, Maier & Fernandez-Capo, 2015).

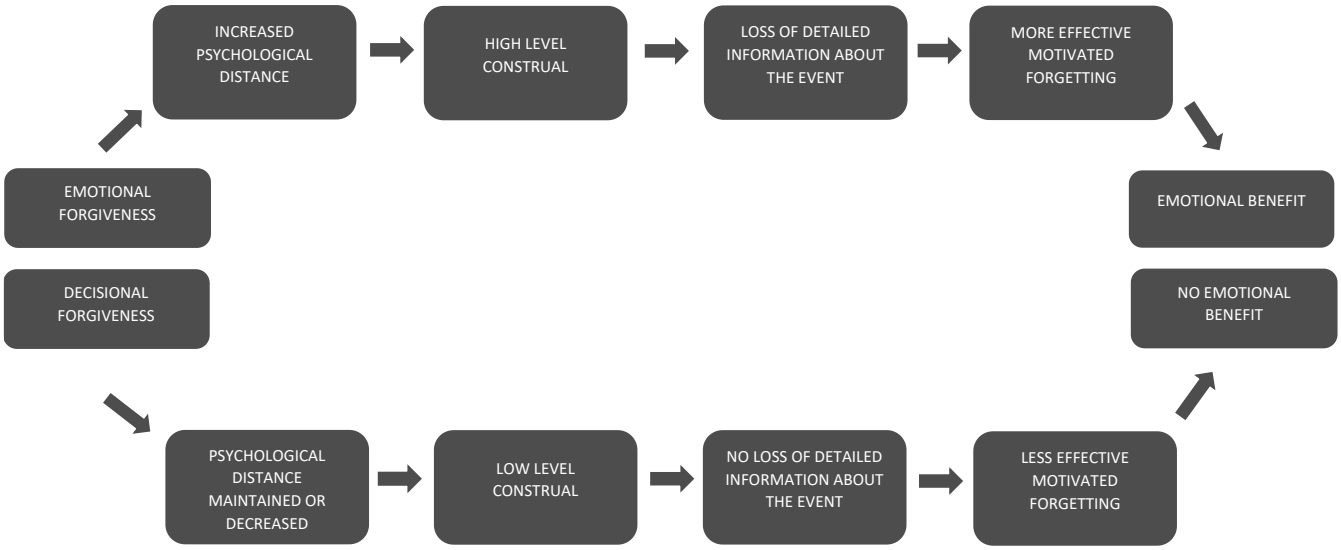

Figure 1. How emotional forgiveness promotes successful intentional forgetting.

Study 1

According to our model (Figure 1), emotional forgiveness allows an individual to distance themselves from the event and thereby reduce one's emotional reactivity when thinking about the event. This, in turn, will lead to an increase in psychological distance and high-level construal. According to construal level theory (Trope & Liberman, 2003, 2010),

the way in which people mentally represent events differs according to psychological distance; that is, the subjective sense of proximity to the event that exists beyond the present and encompasses events that can be psychologically distant in time (near future vs. distant future; Trope & Liberman, 2003), or space (near place vs. distant place; Fujita et al, 2006), probability (high vs. low probability; Todorov, Goren & Trope, 2007), or social distance (decide yourself vs. someone else decides; Williams & Bargh, 2008).

According to construal theory, if an individual adopts a distant vantage point and becomes more removed from the experience of the event, then detailed information about the event will become less clear and more difficult to recall, leading one to rely on more schematic information (Fujita et al, 2006). Thus, greater psychological distance from an event will lead to that event being represented by abstract high level construals whereas less psychological distance will promote concrete, low-level construals (Jia, Hirt & Karpen, 2006). Furthermore, high level construals are associated with abstract global processing (Liberman & Forster, 2009) that allow individuals to extract the gist of an event (Smith & Trope, 2006) and demonstrate greater interpersonal sensitivity (i.e. correctly inferring other people's thoughts and feelings, Schmid Mast, Jonas & Hall, 2009). Low-level construals, are more concrete and unstructured representations that include incidental features of an event which tend to focus on more surface details (Darwent, Fukita, & Warslak, 2010).

Given that forgiveness is associated with the forgetting of more concrete information (low level details) whilst the gist of the event (high level details) is retained (Noreen, et al., 2014), and that increased psychological distance leads to increased forgiveness (Rizvi & Bobocel, 2016), we need first to establish whether these effects are a function of emotional rather than decisional forgiveness. In our first study, therefore, participants were presented with a hypothetical transgression in one of three forgiveness manipulations (i.e., emotional forgiveness, decisional forgiveness, or no forgiveness). Following appropriate manipulation

checks, participants were asked to rate their subjective experience of psychological distance. Construal level was also assessed.

Based on our model (Figure 1), we predicted that emotional forgiveness, through increased psychological distance, would promote intentional forgetting in comparison to both decisional and no forgiveness manipulations. Furthermore, we also predicted that emotional forgiveness would result in more high-level construals in comparison to decisional and no forgiveness manipulations. Finally, based on our model, we predicted a relationship between the extent of emotional forgiveness and construal level which, in turn, is mediated by the subjective experience of psychological distance.

Method

Participants

One hundred and ninety-four participants (120M & 74F; M_{age}= 36.69, SD_{age}= 13.64) took part in this study. Participants were recruited using the crowd-sourcing site (Amazon Mechanical Turk, AMT), and were reimbursed £3 (~$4) for their time. Following subsequent checks on data quality and the effectiveness of the forgiveness manipulation (see Crump et al., 2013), 14 participants were removed from the original data set (10 participants had failed quality control - by stating they had not paid attention whilst completing the task, or had not complied with the forgiveness manipulation instructions; plus a further 4 participants were removed from the data set because they had failed the manipulation check).

This resulted in a final data set comprising 180 participants (119M & 61F; M_{age}= 36.47, SD_{age}= 13.56). This slightly exceeded the required sample size (N = 159) which was determined using a priori power analyses conducted using G*Power3 (Faul, Erdfelder, Lang & Buchner, 2007) with power (1 - β) set at 0.95 (d= .25) and α = 05. A third of participants underwent the emotional forgiveness manipulation, a third underwent the decisional forgiveness manipulation, and the remainder underwent the control condition (i.e., where no

forgiveness instructions had been presented). There were no significant differences in the makeup of participants across conditions. See Table 1 for a breakdown of participant characteristics for each condition.

Materials

Hypothetical Offence

A hypothetical scenario (written in the first person) that mirrored a real-life moral transgression committed by one's hypothetical partner had been constructed. The scenario comprised 7 sentences (162 words in total) in which the victim discovers that their partner is having an affair at the same time as the victim and partner are planning to move in together (see Appendix 1 for details of the pilot study on the hypothetical scenario).

Self-Report Measures

Self-reported decisional and emotional forgiveness was measured using the Decisional Forgiveness Scale and the Emotional Forgiveness Scale (DFS & EFS, respectively; Worthington et al., 2007). Each scale comprised 8-items that assessed the level of decisional and emotional forgiveness for a specific offence. Specifically, the items on the DFS scale assessed one's current intentions towards the transgressor ($\alpha = 0.74$; e.g., *I will not seek revenge upon him or her*), whilst items on the EFS scale assessed one's current emotions towards the transgressor ($\alpha = 0.81$; e.g., *I feel sympathy towards him or her*). Participants were asked to read each item and indicate their level of agreement using a 5-point Likert-type scale (with 1=*strongly disagree*, to 5= *strongly agree*). The 8 scores on each scale were then aggregated (overall scores ranged from 8-40, with higher scores on each scale indicating either greater emotional or decisional forgiveness, respectively).

Construal level was assessed using the Behavioral Identification Form (BIF: Vallacher & Wegner, 1989) which has previously been employed to explore the effect of psychological distance on construal level (Alter et al, 2010; Fujita et al, 2006; Smith &

Trope, 2006; Rizvi & Bobocel, 2016). The BIF comprises 25 items and assesses the level at which individuals represent actions. Participants are presented with an act (e.g., reading) followed by two alternative actions. One act represents a concrete or low-level construal (e.g., following lines of print), and the other act represents an abstract or high-level construal (e.g., gaining knowledge). Low level construals were scored as 0 and high level construals were scored as 1. Scores were aggregated and overall scores ranged from 0-25, with higher scores indicating greater higher-level abstract representation ($\alpha = 0.67$).

To assess the subjective experience of psychological distance, participants were asked "….if the offence happened to you, how distant do you perceive the offence to be from you". Participants were asked to respond on a 10-point Likert-type scale (with 1= *Feels like yesterday* and, *10 = Feels like a very long time ago*). Higher scores indicated greater psychological distance[1].

Forgiveness Manipulation

The forgiveness manipulation employed in the current study was derived from Lichtenfeld and colleagues (2015). Specifically, in the decisional forgiveness condition, participants were instructed to *"think of the offender as someone who has behaved badly and that you have resolved not to pay her/him back and to treat her/him in a positive, rather than a negative way."* For the emotional forgiveness condition, participants were instructed to *"wish that the offender experiences something positive or healing and to focus their thoughts and feelings on empathy."* Participants in the control condition were given no explicit instructions to forgive and were simply asked to *"think about their own thoughts, feelings,*

[1] In line with previous research (Rizvi & Bobocel, 2016), we only used one question to assess psychological distance. Although there are four dimensions of psychological distance (e.g., time, space, probability, and social distance), previous studies have established that these dimensions are closely interrelated and have a common meaning that reflects psychological distancing (Bar-Anan, Liberman, Trope & Algom, 2007; Trope & Liberman, 2010). Furthermore, people also tend to traverse psychological distances by using similar mental construal processes that are not only cognitively related but also affect construal level in a similar manner (Trope & Liberman, 2010; Stephan, Liberman & Trope, 2010).

and physical reactions in this situation and what they would think or do in such an instance". To ensure that participants complied with the forgiveness instructions and that they did not spontaneously engage in a different forgiveness processes, participants were also asked to indicate how well they felt they had complied with the instructions on a 5-point Likert-type scale (with *1= followed instructions to forgive completely*, and, *5= did not follow instructions to forgive at all*).

Procedure

Our study was conducted online using Qualtrics software (Qualtrics, Provo, UT). After providing informed consent online, participants were given up to 5mins to read the scenario. Having read the scenario, participants were randomly assigned to either the decisional, emotional, or control forgiveness manipulation. Participants were given 3mins in which to comply.

In order to check the effectiveness of the forgiveness manipulations, participants were asked to complete the DFS and EFS (Worthington et al., 2007). Participants were also asked to complete BIF (Vallacher & Wegner, 1989). Finally, participants answered a series of questions regarding the scenario (e.g., "What was an indicator that the ex-partner was seeing someone else?") and the extent to which they felt they had complied with the forgiveness instructions. These questions were included to check whether participants had complied with the forgiveness instructions and had paid sufficient attention to the task.

Results & Discussion

Participant Demographics

Participant characteristics of age and gender did not differ significantly across forgiveness manipulations; all tests $p > 0.05$ (see Table 1).

Table 1. Mean and SD for participants demographic characteristics and questionnaire scores across conditions

	Gender	Age	DFS score	EFS score
Emotional	37M; 23F	37.87 (14.38)	22.85 (6.31)	31.45 (7.49)
Decisional	41M; 19F	34.75 (13.97)	29.63 (4.69)	22.27 (6.30)
Control	41M; 19F	36.80 (12.29)	23.77 (3.93)	23.10 (5.94)
Total	***119M;61F***	***36.47 (13.56)***	***25.42 (5.88)***	***25.61 (7.78)***

Note: DFS = Decisional Forgiveness scale; EFS= Emotional Forgiveness Scale.

Forgiveness Manipulation Check

In order to determine the effectiveness of the forgiveness manipulations, one-way ANOVAs (Forgiveness: Decisional forgiveness, or Emotional forgiveness, or No Forgiveness Control) were conducted on DFS and EFS scores. For DFS, we found a main effect of Forgiveness, F (2,177) = 31.54, p <.001, $\eta^2 p$ = .26, with significantly higher scores for participants in the decisional forgiveness manipulation than for participants in the emotional forgiveness (M = 29.63, SD = 4.69 vs. M = 22.85, SD = 6.31; t (109) = 6.68, p <.001, d = .15), or no forgiveness control manipulation (M = 29.63, SD = 4.69 vs. M = 23.77, SD = 3.93; t (114) = 7.42, p <.001, d = 1.35). There was no difference, however, between scores for participants in the emotional forgiveness and no forgiveness manipulations (M = 22.85, SD = 6.31 vs. M = 23.77, SD = 3.93; t (99) = .96, p = .34, d = .18).

For EFS, our analysis revealed a main effect of Forgiveness, F (2,177) = 35.44, p < .001, $\eta^2 p$ = .29, with scores for participants in the emotional forgiveness manipulation significantly higher than for participants in both the decisional (M = 31.45, SD = 7.49 vs. M = 22.27, SD = 6.30; t (115) = 7.27, p < .001, d = 1.33), and no forgiveness manipulations (M = 31.45, SD = 7.49 vs. M = 23.10, SD = 5.94; t (112) = 6.77, p <.001, d = 1.24). There was no difference between EFS scores for participants in the decisional forgiveness and no-

forgiveness manipulations (M = 22.27, SD = 6.30 vs. M = 23.10, SD = 5.94; t (118) = .75, p = .46, d = .14).

Impact of Forgiveness on Construal Level & Psychological Distance

Two separate one-way ANOVAs (Forgiveness: Decisional forgiveness, or Emotional forgiveness, or No Forgiveness Control) looking at the impact of forgiveness on construal level and psychological distance were conducted. For construal level, a main effect of forgiveness was found, F (2,177) = 26.18, p < .001, $\eta^2 p$ = .23, with participants recalling significantly more high-level construals in the emotional forgiveness manipulation condition than in either the decisional, (M = 20.32, SD = 4.08 vs. M = 14.05, SD = 5.98; t (104) = 6.71, p <.001, d = 1.22), or the no forgiveness manipulation conditions, (M = 20.32, SD = 4.08 vs. M = 14.17, SD = 6.0; t (104) = 6.56, p <.001, d = 1.20). There was no difference, however, between the number of high-level construals recalled in the decisional and the no forgiveness manipulation conditions, (M = 14.05, SD = 5.98 vs. M = 14.17, SD = 6.0; t (118) = .11, p =.92, d = .02).

For psychological distance, a main effect of forgiveness was also present, F (2,177) = 38.79, p < .001, $\eta^2 p$ = .31, with participants in the emotional forgiveness manipulation condition having reported feeling more removed from the offence than were participants in either the decisional, (M = 8.08, SD = 1.90 vs. M = 5.25, SD = 2.54; t (109) = 6.93, p <.001, d = 1.26), or no forgiveness manipulation conditions, (M = 8.08, SD = 1.90 vs. M = 4.43, SD = 2.64; t (107) = 8.68, p <.001, d = 1.59). There was, however, no difference in psychological distance between participants in the decisional and no forgiveness manipulation conditions, (M = 5.25, SD = 2.54 vs. M = 4.43, SD = 2.64; t (118) = 1.73, p =.09, d = .32). See Figure 2. Taken together, these findings are consistent with our model and suggest that the act of emotional forgiveness increases psychological distance from the transgression, which, in turn, results in higher level construals. Our findings are also broadly consistent with Rizvi

and Bobocel (2016) who found that increasing the psychological distance from an interpersonal transgression resulted in increased forgiveness.

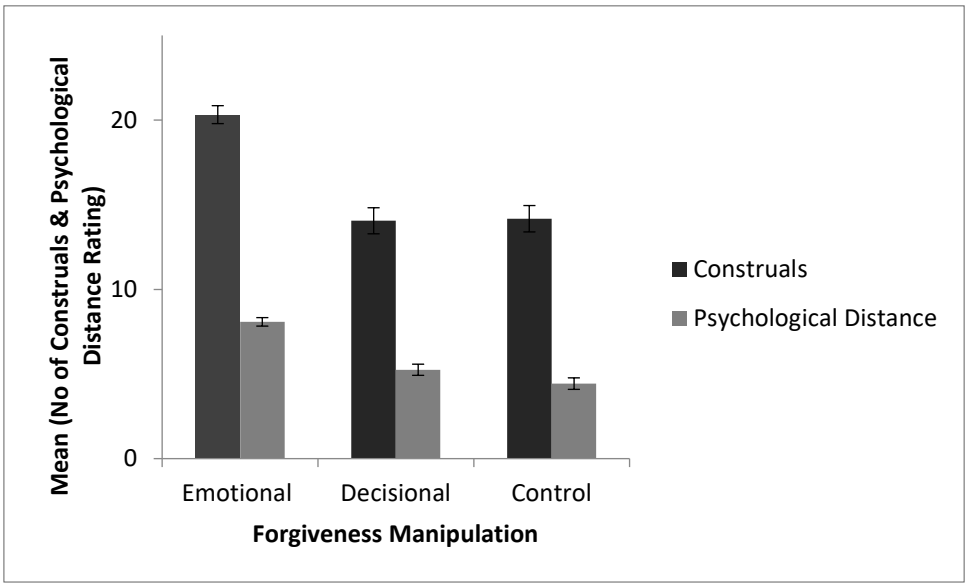

Figure 2. Number of high-level construals and subjective perception of psychological distance recalled as a function of manipulation *(error bars represent ± one standard error of the mean).*

Mediation Analysis

Significant positive relationships between emotional forgiveness and psychological distance (r = .40, p < .01), emotional forgiveness and construal level (r = .34, p < .01), and psychological distance and construal level (r = .62, p < .001) [2] were present. We conducted a mediation analysis to test whether the effect of emotional forgiveness on construal level is mediated by psychological distance. Using the PROCESS macro in SPSS (Model 4; Hayes, 2013, 2017), a bootstrapping procedure was employed to compute the 95% CI around the

[2] We also conducted Pearson correlations between EFS and psychological distance and construal level for the decisional and the no-forgiveness conditions. Our analyses revealed there were no significant relationships between EFS and psychological distance and construal level for both the decisional forgiveness (r = .03, p = .84; r = .07, p = .58) and no-forgiveness manipulation conditions (r = .04, p = .78; r = .02, p = .86), respectively.

indirect effect (i.e., path through the mediator). In the mediation analysis, emotional forgiveness was entered as the independent variable with psychological distance as the mediator. The model found that the path from emotional forgiveness to psychological distance was significant (a; $b = .10$, $p < .01$) as were the paths from psychological distance to construal level (b; $b = 1.23$, $p < .001$), and from emotional forgiveness to construal level (c; $b = .18$, $p < .01$). However, the path from psychological distance to construal level when controlling for psychological distance was not significant (c'; $b = .06$, $p = .35$). Critically, the indirect effect (+ b = .13, p < .01) of emotional forgiveness on construal level via psychological distance was significant, thereby comfirming that psychological distance fully mediated the effect of emotional forgiveness on construal level. See Table 2 & Figure 3. These findings are consistent with our model (Figure 1) and suggest that emotional forgiveness promotes psychological distance which, in turn, results in the production of high-level abstract construals (Liberman, Trope & Stephan, 2007).

Table 2. Path Coefficients and Confidence Intervals from the Mediation Analyses Estimated using PROCESS

Path estimates	Coefficient (SE)	LLCI	ULCI
A	0.10 (0.03)*	0.04	0.16
B	1.23 (0.24)**	0.75	1.72
C	0.18 (0.07)*	0.05	0.32
c'	0.06 (0.06)	-0.07	0.18
Indirect effects	Effect (SE)	LLCI	ULCI
Model	0.13 (0.05)+	0.05	0.25

Note. LLCI = 95% lower-limit confidence interval; ULCI = 95% upper-limit confidence interval.

a = path from emotional forgiveness to psychological distance; b = path from psychological distance to construal level; c = total effect of emotional forgiveness on construal level with psychological distance included; c' = direct effect of emotional forgiveness on construal level when controlling for psychological distance. Model = Construal level. + = significant indirect effect. * $p < 0.01$. ** $p < .001$.

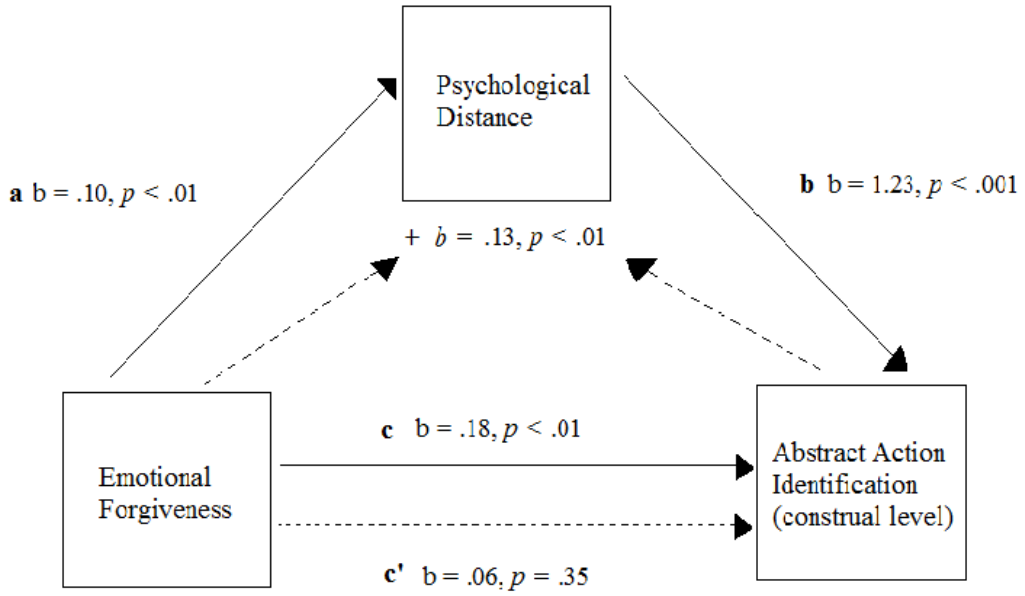

Figure 3. Mediation model for the direct and indirect effects of emotional forgiveness on construal level.

Having established that emotional forgiveness results in more high-level construals and greater psychological distance from the transgression, and that psychological distance fully mediates the effect of emotional forgiveness on construal level, we then set out to test the next part of our model – the extent to which intentional forgetting is differentially affected by emotional and decisional forgiveness.

Study 2

Our model would suggest that emotional forgiveness is associated with larger intentional forgetting effects than either decisional or no forgiveness. This relationship is examined in Study 2 where the LMDF paradigm (Bjork, 1972; Basden, Basden & Gargano, 1993) is employed as a measure of the kind of forgetting critical to the successful navigation

of many everyday situations, ranging from dealing with an embarrassing situation at work to moving on from a difficult breakup (Bjork, E. L., Bjork, R. A., & Anderson, 1998; Bjork, E. L., Bjork, R. A., & MacLeod, 2006). The list-method directed forgetting paradigm reflects the kind of motivated forgetting that occurs as a function of updating our memory system in order to prevent interference from irrelevant information. It also reflects the kind of goal-directed forgetting that occurs when memories of things we have done that we would prefer not to be reminded, come to mind.

Based on our model (Figure 1), Study 1 supports the notion that emotional forgiveness is associated with greater psychological distancing and high-level construals. In addition, we had previously demonstrated that forgiveness influences the extent of intentional forgetting using a TNT paradigm (Noreen et al., 2014). We therefore predicted that, where participants are presented with a hypothetical transgression and then presented with two lists comprising offence-relevant and offence-irrelevant trait words to remember, participants who had been instructed to forget the first word list would show stronger intentional forgetting effects in an emotional forgiveness condition, in comparison to those who received either decisional forgiveness, or no forgiveness instructions.

Our model would suggest that, as participants in the emotional forgiveness condition mentally represent the event at a high construal level (with only basic prototypical features of the event being retained), intentional forgetting would not be limited to specific offence-related details (for a contrasting view see Lichtenfeld et al., 2015). Rather, we would predict that a general memory impairment related to the event will emerge for those participants in the emotional forgiveness condition only.

Methods

Participants

Two hundred and eighty-six participants (127M & 159F; M_{age}= 26.98, SD_{age}= 5.93) originally took part in this study. Participants were recruited using Amazon Mechanical Turk (AMT), and were reimbursed £5 (~$6) for their time. Thirty-two participants were removed from this original data set[3]. This resulted in a final data set comprising 254 participants (111M & 143F; M_{age}= 27.15, SD_{age}= 5.87). An a priori power analyses conducted using G*Power3 (Faul, Erdfelder, Lang & Buchner, 2007) with power (1 - β) set at 0.95 (*d*= .25) and α = 05, indicated a minimum sample size of 204 participants, which has been exceeded.

Half the participants were allocated to the Forget condition and half to the Remember condition. This resulted in the random allocation of 125 participants (56M & 69F; M_{age}= 27.50, SD_{age}= 5.70) to the Forget condition and 129 participants (55M & 74F; M_{age} = 26.80, SD_{age}= 6.02) to the Remember condition.

Furthermore, participants in each of the Forget and Remember conditions were divided between the two forgiveness conditions and the control. This resulted in 44 participants in the Forget-Emotional condition, 46 participants in the Forget-Decisional condition, 35 participants in the Forget-No Forgiveness condition, 48 participants in the Remember-Emotional condition, 46 participants in the Remember-Decisional condition, and 35 participants in the Remember-No Forgiveness condition. There were no significant differences in the makeup of participants across conditions. See Table 3 for a breakdown of participant characteristics for each condition.

Materials

Relevant and Irrelevant Words

[3] 20 participants were eliminated from the data set because they had failed quality control – either by stating they had not paid attention whilst completing the task, or had not complied with the forgiveness manipulation instructions. A further 12 participants were eliminated because they had failed the manipulation check (see Crump et al, 2013)

Twenty trait words relevant to describing the offender in the hypothetical scenario (e.g., rude, selfish, disrespectful, cowardly) and 20 trait words that were not relevant to describing the offender (e.g., emotional, easy-going, wasteful, immature), matched in overall relevance, word length and memorability, were selected (see Appendix 2 for details on the pilot study). All of the trait words used in this study were derived from Anderson (1968). Relevant and irrelevant trait words were assigned at random to two lists, with 10 relevant and 10 irrelevant trait words in each list. The order of the lists was fully counterbalanced across participants in each of the conditions.

Self-Report Measures and Forgiveness Manipulation

As in the previous study, decisional and emotional forgiveness were measured using the Decisional Forgiveness Scale and the Emotional Forgiveness Scale (DFS & EFS, respectively; Worthington et al., 2007). The forgiveness manipulation previously employed in Study 1 was also employed here (see Lichtenfeld and colleagues, 2015 for details).

Procedure

Our study was conducted online using Qualtrics software (Qualtrics, Provo, UT). After providing informed consent online, participants were given up to 5mins to read the scenario and were then told that they would see a number of trait words that were either relevant or irrelevant to the offender in the scenario. Each of the 20 words were presented in a pre-randomised order on the screen for 5s. Following the standard LMDF paradigm (Bjork, 1972; Basden et al., 1993), participants were told that they should try to remember the words as they would be tested on them later. Once participants had been presented with all the words, they were randomly assigned to either the decisional, emotional, or control forgiveness manipulation. Participants were given 3 minutes in which to comply with the manipulation (which was identical to the forgiveness manipulation in Study 1). Participants in the control conditions did not receive any instruction about whether to forgive or not.

Participants were then randomly allocated to either the Remember, or Forget condition (i.e., for words in List 1). Participants in the Remember condition were told they were halfway through the study and that their task was to try to remember the trait words that had just been presented. Participants in the Forget condition, in contrast, were told that the list of trait words had, in fact, been a practice list and that they should forget those words and instead focus and remember a new list of trait words with which they were about to be presented.

Following the presentation of words in List 2, participants were given an unrelated distractor task for 5mins in which they were required to find up to 15 themed words within a word search puzzle. The words in the search puzzle were unrelated to any of the words in the scenario or the word lists[4]. Participants were then given a free recall test, which involved recalling all the words from List 1 first followed by List 2. Participants were given 5mins to recall as many words as possible from both lists. They were also asked to complete the DFS and EFS scales. Finally, participants were given the same questions as in Study 1 to see if they had complied with the instructions and attended to the task.

Results & Discussion

Participant characteristics

Participant characteristics such as age and gender did not differ significantly across instruction conditions, or forgiveness manipulations (see Table 3).

[4] It is important to mention here that we also investigated whether any of the words in the distractor task were recalled by participants in the final recall test, thus creating a confound. None of the words in the distractor task, however, were found to have been recalled in the final test which would indicate that our distractor task was unlikely to have affected performance.

Table 3. Mean and SD for participants demographic characteristics and questionnaire scores across conditions

	Gender	Age	DFS score	EFS score
Emotional	36M; 56F	26.94 (5.44)	22.61 (5.02)	27.66 (5.91)
Decisional	47M; 45F	27.28 (6.03)	26.35 (6.03)	22.04 (5.06)
Control	28M; 42F	27.24 (6.26)	23.90 (4.92)	22.24 (5.59)
Total	***111M;143F***	***27.15 (5.87)***	***24.32 (5.60)***	***24.13 (6.12)***

Note: EF= Emotional Forgiveness Manipulation; DF= Decisional Forgiveness Manipulation; FN= No-Forgiveness Control; DFS = Decisional Forgiveness scale; EFS= Emotional Forgiveness Scale.

Forgiveness Manipulation Check

In order to check the effectiveness of the forgiveness manipulation, two one-way ANOVAs were conducted with forgiveness as the independent variable (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) and total DFS and EFS scores, respectively, as dependent variables.

For DFS, our analysis revealed a significant forgiveness effect, F (2,251) = 11.38, p <.001, $\eta^2 p$ = .08. Participants who had received the decisional forgiveness manipulation showed significantly higher DFS scores than did those participants who had received either emotional forgiveness (M = 26.35, SD = 6.03 vs. M = 22.61, SD = 5.02; t (176) = 4.57, p <.001, d = .67), or no instructions (M = 26.35, SD = 6.03 vs. M = 23.90, SD = 4.92; t (159) = 2.84, p <.01, d = .45). There was also no significant difference in DFS scores between participants in the emotional forgiveness and the control group (M = 22.61, SD = 5.02 vs. M = 23.90, SD = 4.92; t (150) = 1.64, p = .10, d = .26).

For EFS, our analysis also revealed a significant forgiveness effect, F (2,251) = 29.45, p < .001, $\eta^2 p$ = .19, with participants in the emotional forgiveness manipulation scoring

significantly higher on EFS than did participants in either the decisional (M = 27.66, SD = 5.91 vs. M = 22.04, SD = 5.06; t (177) = 6.93, $p < .001$, d = 1.02), or no forgiveness manipulations (M = 27.66, SD = 5.91 vs. M = 22.24, SD = 5.59; t (153) = 5.96, $p <.001$, d = .94). There was no difference in EFS scores between participants in the decisional forgiveness and no forgiveness conditions (M = 22.04, SD = 5.06 vs. M = 22.24, SD = 5.59; t (140) = .23, p = .82, d = .04). Taken together, these findings suggest that both the emotional and decisional forgiveness manipulations had been successfully implemented.

Recall Accuracy

Our principal dependent measure was the proportion of words correctly recalled in each list. Separate analyses were conducted for recall performance for List 1 and List 2 items.

List 1 Memory Costs

A 2 (Relevance: Relevant vs. Irrelevant) x 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) mixed ANOVA was conducted on recall accuracy for List 1.

Our analysis revealed main effects of Relevance, F (1, 248) = 8.37, $p < .01$, $\eta^2 p$ = .03, with participants recalling more relevant than irrelevant trait words overall (M = 50.79, SD = 22.62 vs. 46.65, SD= 27.05). Our analysis also revealed a main effect of Instruction, F (1,248) = 63.18, $p < .001$, $\eta^2 p$ = .20, with participants recalling more remember than forget words (M = 57.98, SD = 18.02 vs. M 39.16, SD = 19.59). Furthermore, we found a significant Relevance by Forgiveness interaction, F (2, 248) = 9.11, $p <.001$, $\eta^2 p$ = .07 and an Instruction by Forgiveness interaction, F (2, 248) = 4.82, $p <.01$, $\eta^2 p$ = .04. These 2-way interactions were qualified by a 3-way Relevance by Forgiveness by Instruction interaction, F (2, 248) = 3.22, p =.04, $\eta^2 p$ =.03.

In order to calculate the directed forgetting effect, the proportion of relevant and irrelevant words recalled in the forget conditions were subtracted from the proportion of

relevant and irrelevant words recalled in the remember conditions for each of the forgiveness manipulation conditions (see M. C. Anderson, 2005 for a detailed discussion as to how to interpret findings derived from LMDF). Our data revealed that participants in the emotional forgiveness manipulation showed a forgetting effect of 20.17% for relevant words and a forgetting effect of 36.7% for irrelevant words; t (85) = 5.52, $p < .001$, d = 1.14, t (88) = 7.30, $p < .001$, d = 1.53, respectively. Participants in the decisional forgiveness manipulation showed a forgetting effect of 13.91% for relevant words and 11.96% for irrelevant words; t (89) = 2.88, $p < .01$, d = .60; t (90) = 2.45, p = .02, d = .51, respectively. Finally, participants in the no forgiveness control condition showed a forgetting effect of 13.14% for relevant and 15.43% for irrelevant words; t (67) = 2.71, $p < .01$, d = .65; t (68) = 2.53, p = .01, d = .60, respectively. See Table 4.

These findings suggest that participants in the emotional forgiveness manipulation were more successful than were participants in either the decisional or no forgiveness conditions at forgetting both relevant and irrelevant traits words. The findings support our prediction that emotional forgiveness promotes the forgetting of both relevant and irrelevant information about a related transgression, and that decisional forgiveness is less effective in promoting intentional forgetting for both transgression-related relevant and irrelevant information.

Subsequent analyses confirmed that participants in the emotional forgiveness manipulation recalled significantly fewer irrelevant words than did participants in the decisional forgiveness manipulation (t (87) = 2.25, p = .03, d = .47), but there were no differences in the recall of irrelevant words between participants in the emotional and no forgiveness manipulations, or between participants in the decisional and no forgiveness manipulations, t (70) = 1.12, p = .27, d = .25; t (67) = .87, p = .39, d = .20, respectively. Participants in the emotional forgiveness manipulation were also found to have recalled

significantly fewer relevant trait words compared to participants in both the decisional and no forgiveness manipulations, t (78) = 4.11, $p < .001$, $d = .86$; t (57) = 3.27, $p < .01$, $d = .76$, respectively (see Figure 4). No differences were apparent between the recall of relevant traits words across participants in the no forgiveness and decisional forgiveness manipulations, t (74) = .47, $p = .64$, $d = .10$.

The fact that emotional forgiveness leads to poorer recall of both relevant and irrelevant trait words may initially seem at odds with earlier research by Lichtenfeld and colleagues (2015) who found forgetting effects for transgression-related relevant information only following an emotional forgiveness manipulation. One reason for this may be that their study was concerned with incidental forgetting (as measured via a free-recall test) whereas the present study was concerned with intentional forgetting. Thus, it is possible that whilst emotional forgiveness leads to the incidental forgetting of transgression-related relevant information, intentional forgetting may operate more generically on memory for the target incident, thereby promoting enhanced forgetting of both transgression-related relevant and irrelevant information. Events represented at a higher more abstract level will result in only prototypical features or the gist of the event being extracted, thereby leading to the forgetting of lower-level details (both relevant and irrelevant) of the event, consistent with construal level theory (Trope & Liberman, 2003).

Participants in the decisional and no forgiveness condition, in contrast, showed much smaller forgetting effects for transgression-relevant and -irrelevant information compared to participants in the emotional forgiveness manipulation. This would suggest that the decision to grant someone forgiveness is insufficient in itself to promote intentional forgetting of offence-related information. Our finding is also consistent with the notion that, although individuals may decide to forgive, they can sometimes retain a grudge against the offender (Baumeister et al., 1998). These data also lend further support to the distinction drawn

between the emotional and decisional forgiveness (Worthington & Wade, 1999; Exline, Worthington & McCullough 2003; Worthington et al., 2007), and the importance for future research on forgiveness to delineate clearly between the two forms of forgiveness.

Table 4. Mean and SD for recall of relevant and irrelevant words recalled for list 1 and 2 across condition and forgiveness manipulations.

	Remember			***Forget***		
	Emotional	**Decisional**	**Control**	**Emotional**	**Decisional**	**Control**
List1 Relevant	53.13	63.04	60.0	32.96	49.13	46.86
	(20.23)	(24.12)	(18.94)	(14.56)	(22.19)	(21.53)
List1 Irrelevant	66.25	52.83	51.43	29.55	40.87	36.0
	(23.30)	(24.01)	(24.51)	(24.77)	(22.88)	(26.48)
List2 Relevant	45.83	57.39	59.71	52.27	64.13	45.71
	(26.08)	(23.42)	(22.42)	(30.18)	(19.73)	(20.62)
List2 Irrelevant	55.63	45.44	63.43	63.18	53.48	53.14
	(20.52)	(23.07)	(22.35)	(27.0)	(21.31)	(25.29)

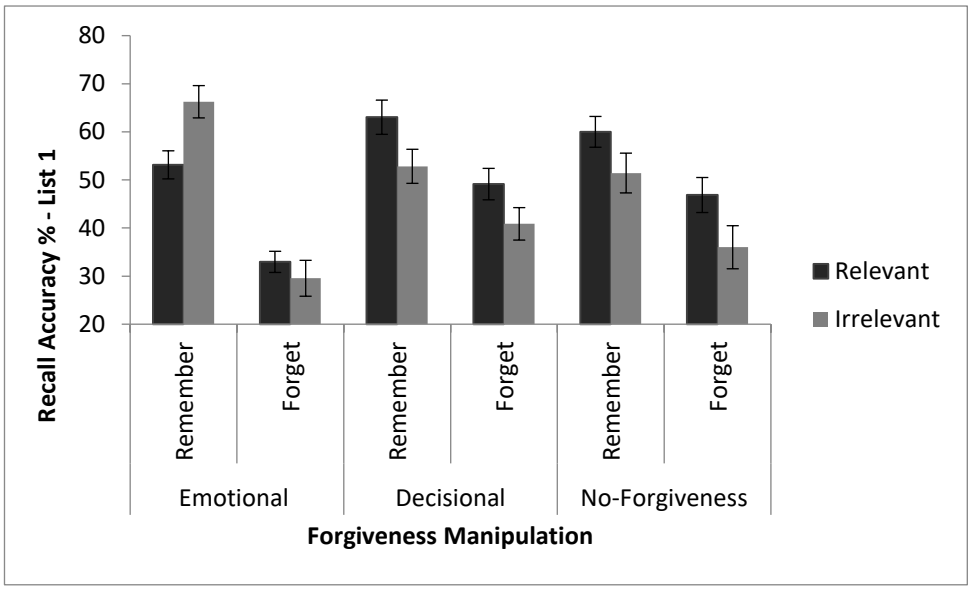

Figure 4. Recall accuracy for relevant and irrelevant trait words in List 1 as a function of condition and forgiveness manipulation *(error bars represent ± one standard error of the mean).*

List 2 – Memory benefits

A 2 (Relevance: Relevant vs. Irrelevant) x 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) mixed ANOVA was conducted on recall performance for List 2 items. This analysis revealed a main effect of Instruction, F (1,248) = 7.75, p = .006, $\eta^2 p$ = .03, with participants in the Forget condition having recalled significantly more trait words from List 2 than did participants in the Remember condition (M = 58.28, SD = 19.19 vs. M = 51.51, SD = 18.13). There was also found a main effect of Relevance, F (1,248) = 5.77, p =.02, $\eta^2 p$ =.02, with participants overall recalling more relevant than irrelevant words (M = 56.69, SD = 25.02 vs. M = 52.99, SD = 23.62). Our analyses, however, failed to find a significant Forgiveness by Instruction interaction, F (2,248) =.05, p = .95, $\eta^2 p$ <.001.

The fact that we found enhanced memory for List 2 items overall in the Forget condition in comparison to List 1 but failed to find any significant differences in recall between forgiveness conditions may seem surprising. Given that memory benefits for List 2 items (in the Forget condition) are considered to be a function of reduced proactive interference from items in List 1 as items have effectively been forgotten (Bjork, 1972; C. M. MacLeod, 1998), we could have expected a greater benefit in recall for List 2 items. Similarly, as participants in the emotional forgiveness condition were particularly successful at forgetting both relevant and irrelevant trait words, we could have expected the forgiveness tasks to have had a greater subsequent impact on List 2 recall.

Recent LMDF research on the issue of memory costs and benefits, however, would suggest that List 2 memory benefits are not related to List 1 memory costs because the two arise from different processes (see Pastötter & Baüml, 2010; Sahakyan & Delaney, 2003; Pastötter, Kliegl & Baüml, 2016). Specifically, Pastötter and Baüml (2010) found experimental dissociations between the two effects of the forget cue, suggesting that the forgetting of List 1 items is due to inhibition of List 1 and that enhanced recall of List 2 is due to improved encoding of List 2 items. This is consistent with the reset of encoding hypothesis, which suggests that encoding efficiency decreases when there is an increase in study materials, but the presence of a forget cue can reset encoding efficiency by enabling the encoding of List 2 items to be comparable to the encoding of List 1 items. Thus, List 1 forgetting may reflect impaired retrieval whilst List 2 enhancement may, in part, reflect improved encoding of List 2 items (Pastötter, Kliegl & Baüml, 2016). Our results indicate that, whilst participants in the emotional forgiveness condition were impaired in their retrieval of List 1 items, they failed to show an enhanced recall of List 2 items.

Our data also revealed a significant Relevance by Forgiveness interaction, F (2,248) = 17.25, $p < .001$, $\eta^2 p = .12$. Subsequent analyses indicated that participants in the decisional

and no forgiveness manipulation conditions recalled significantly more relevant than irrelevant trait words (decisional, M = 60.76, SD = 21.80 vs. M = 49.46, SD = 22.45, t (91) = 4.16 $p < .001$, d = .51; no forgiveness control, M = 61.57, SD = 22.30 vs. M = 49.43, SD = 23.21, t (59) = 3.69, $p < .001$, d = .53). Participants in the emotional forgiveness manipulation condition, however, recalled significantly more irrelevant than relevant trait words (M = 59.24, SD = 24.01 vs. M = 48.91, SD = 28.15, t (91) = 3.14, $p < .01$, d = .39). See Figure 5. Our analyses found neither a Relevance by Instruction, F (1,248) = .32, p = .57, $\eta^2 p$ =.001, nor a Relevance by Instruction by Forgiveness interaction, F (2,248) = .05, p = .95, $\eta^2 p$ <.001[5].

One reason that participants in the emotional forgiveness condition remembered significantly more irrelevant words compared to participants in either the decisional or no-forgiveness manipulation conditions may be due to the particular remembering/forgetting strategy employed. Indeed, it is possible that participants in the emotional forgiveness condition had focused less of their attention on the relevant information because they had already reframed the event (via engaging in emotional forgiveness) which, in turn, led to a shift in attention away from incident relevant words that would otherwise have challenged this reframing. Instead participants' attention may have been drawn to incident irrelevant words that did not create any such challenge. The reframing of the incident that follows emotional forgiveness may, in turn, contribute to the increase in psychological distance and high level construals that typically accompany emotional forgiveness (Study 1). As this explanation is post-hoc and not concerned with the primary purpose of this study, future research should seek to explore how emotional forgiveness and the consequent reframing of a transgression affects the subsequent encoding and retrieval strategies employed.

[5] We also conducted the same analyses for both List 1 and List 2 with the inclusion of those participants who had originally been excluded for failing the manipulation check. A similar pattern of effects emerged as above, notably a three-way Relevance by Forgiveness by Instruction interaction remained significant for list 1 (F (2,260) = 3.07, p < 0.05, $\eta^2 p$ = *.02).*

We have established that emotional forgiveness promotes the intentional forgetting of information about a target event, and that this may be mediated by the level of construal associated with a particular transgression. Such that, events that had been emotionally forgiven tend to be associated with high level construals (gist) and those that had not been forgiven or had only been decisionally forgiven retain low level construals. Our final study seeks to explore whether this pattern holds for events that had been personally experienced by participants.

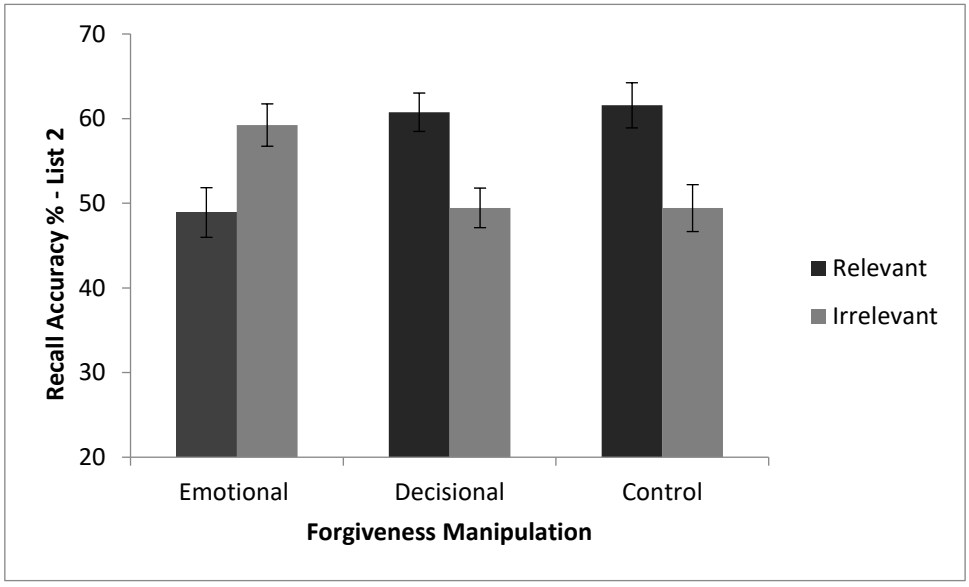

Figure 5. Recall accuracy for relevant and irrelevant trait words in List 2 as a function of condition and forgiveness manipulation *(error bars represent ± one standard error of the mean).*

Study 3

When forgiveness is evoked in real-life, it tends to include some element of emotional involvement on the victim's part. Given that we used hypothetical transgressions in Studies 1 and 2 that had not been directly experienced by the participants, it is possible they may not have engendered the same level of emotional engagement as a personally-experienced transgression, and thereby failed to capture the forgiveness process as it occurs in real life.

Instead, participants' responses to hypothetical transgressions may simply reflect the morally ideal response or some notion of normative behavior in terms of what society would expect them to do rather than their actual tendency to forgive. Additionally, the effects of some variables such as religiosity, commitment, attributions and negative emotions have been found to be stronger for the forgiveness of hypothetical offences than for those directly experienced (see Riek and Mania, 2012, for a meta-analysis). Thus, while studies on forgiveness using hypothetical transgressions allow for a high degree of control over stimulus materials, they may also limit our understanding of what actually happens in real-life.

Furthermore, although Study 2 explored the impact of emotional and decisional forgiveness on one's memory for offence-relevant and -irrelevant information, our study did not allow us to explore how forgiveness may be affected by the memorability of the incident. Particularly distinctive or memorable transgressions may ultimately prove more difficult to forget, irrespective of whether the victim has engaged in emotional forgiveness or not. Given that our proposed pathway suggests that emotional forgiveness increases psychological distance between the forgiver and the offence, and that the offence is consequently represented with high-level construals, we could predict that emotional forgiveness will result in more forgetting of details about the event itself, irrespective of the distinctive nature or inherent memorability of the event experienced.

In our final study, we also seek to explore the extent to which a bi-directional relationship exists between forgiveness and intentional forgetting. Given that we have already established that emotional forgiveness promotes the extent of intentional forgetting, there is the possibility of a 'virtuous circle' in which intentional forgetting also further promotes forgiveness. Indeed, it is possible that over time, the loss of detail about the transgression from memory maintains the reframing of the event and promotes emotional forgiveness. This leads to further psychological distancing, higher level construal and a subsequent loss of

detailed memory for the event. Given that in real life, forgiveness and forgetting are unlikely to be discrete events, it is possible that this cyclical pathway represents an important element of the reconciliation process.

In this study, participants took part in two sessions. In the first session, participants were asked to recall a personally experienced moral transgression, and then to rate the transgression on a number of characteristics (such as the perceived severity of the offence, motivation to forgive the offender, etc.). Participants were also asked to generate 20 words that described the offender (relevant words), and 20 words that did not describe the offender (irrelevant words). In a second session, participants were presented with the moral transgression they had generated previously in session 1 plus two lists comprised of offence-relevant and offence-irrelevant trait words. As in Study 2, half the participants were allocated to the Forget condition and half were allocated to the Remember condition. Furthermore, participants from both conditions received either the emotional, or decisional, or no forgiveness (control) manipulations. In a final test of memory, participants were asked to recall the trait words presented in both lists as well as their memory for the transgression. Finally, participants were asked to rate the transgression on the characteristics presented in session 1.

Based on our model (Figure 1) and our findings from Studies 1 and 2, we predicted that participants in the emotional forgiveness condition would show stronger intentional forgetting effects for both offence-related relevant and irrelevant words, in comparison to participants in either decisional or no forgiveness conditions. Furthermore, we predicted that participants in the emotional forgiveness condition would show stronger forgetting effects for lower-level details, but not for the gist of the transgression in comparison to participants in either decisional or no forgiveness conditions. Finally, we predicted that participants in the emotional forgiveness condition would show increased forgiveness in session 2 relative to

session 1, and that there would be no significant differences between forgiveness in session 1 and 2 for participants in the decisional or no forgiveness conditions.

Method

Participants

Four hundred and fifty-nine participants (207M & 252F; M_{age}= 33.96, SD_{age}= 9.72) were recruited using Amazon Mechanical Turk to take part in both sessions (7-11 days apart (M= 9.34; SD= 1.27). Participants were reimbursed for their participation ($5 per session). The minimum sample size (N = 318) was determined using an a priori power analyses conducted Using G*Power3 (Faul, Erdfelder, Lang & Buchner, 2007) with power (1 - β) set at 0.95 (d= .20) and α = 05. Of the 459 participants who took part in our study, 99 participants were excluded[6]. This resulted in a total of 360 participants who took part in both sessions. One hundred and eighty participants were randomly allocated to the Remember condition (82M & 98F; M age= 32.15, SD= 7.65), and 180 participants were allocated to the Forget condition (71M & 109F; M age= 33.37, SD= 8.93). Participants were then randomly allocated to one of the three forgiveness conditions (as in Study 2). This resulted in 60 participants in each of six conditions (i.e., Forget-Emotional, Forget-Decisional, Forget-No Forgiveness, Remember-Emotional, Remember-Decisional, and Remember-No Forgiveness condition). See Table 5 for a breakdown of participant characteristics in each condition.

Materials

In line with Studies 1 and 2, we employed the forgiveness manipulation instructions derived from Lichtenfeld and colleagues (2015). Furthermore, we used the Decisional and the Emotional Forgiveness Scales (DFS & EFS, respectively; Worthington et al., 2007) to assess the effectiveness of the forgiveness manipulation.

[6] 36 participants were excluded for quality control purposes (Crump et al., 2013), 5 participants failed the manipulation checks and 58 participants were excluded as they had either failed to generate the required number of trait words in session 1, had repeated trait words or had failed to complete the second session within the appropriate time allowed.

Procedure

Both sessions were conducted online using Qualtrics software (Qualtrics, Provo, UT). In the first session, participants were asked to think of a specific event in their life where someone close to them had done something that deeply offended, harmed or hurt them, and that they still retained some degree of anger or resentment about the experience. Participants were given unlimited time to think of the specific event. Once an event came to mind, participants were told to press the space bar and to write down the memory in as much detail as possible on the blank screen. In order to help them do this, participants were prompted to recall: i) what the offence was; ii) what the consequence of the offence was; iii) how the offender tried to make amends (if the offender did not try to make amends, they were asked to explicitly state this); and iv) how the offence made them feel at the time.

Participants were given up to 5mins to write down the details of the event and had unlimited time to rate the offence regarding the extent to which they forgave the offender (*with 1= completely forgive them, and, 7 = do not forgive them at all*), their motivation to forgive the offender (*with 1=very motivated to forgive them, and, 7 = not motivated to forgive them at all*), the perceived seriousness of the offence (*with 1= not serious at all, and, 7 = very serious*), the hurtfulness of the offence (*with 1= not hurtful at all, and, 7 = very hurtful*), and its perceived valence (*with 1= very positive, and, 7 = very negative*). Participants were also asked to state how long ago the event had occurred. Finally, participants were given up to 5mins to generate 20 personality words that were relevant to describing the offender (e.g., nasty, superior, surly, spoilt, vain) and 5mins to generate 20 personality words that were irrelevant and did not describe the offender (e.g., disciplined, caring, beautiful, determined, clever). Participants were told not to use offensive or profane words and to avoid using the same words or using different words with the same meaning (e.g., annoying and irritating).

In the second session, participants were initially given up to 5mins to read their written account of the event recalled in session 1. Participants were then told they would see some of the personality words generated in the first session that were relevant and irrelevant to describing the offender. Each of the 20 words were presented on a screen for 5s and participants were told that they should try to remember the words as they would be tested on them later. Once all the words had been presented, participants were randomly assigned to either the decisional, or emotional, or no forgiveness (control) conditions. Participants were given 5min to comply with the forgiveness instructions. Subsequently, participants were randomly allocated to either the Remember, or the Forget condition. In line with our previous study, participants were given a distractor task for 5mins which involved finding a number of words in a word search puzzle[7]. Participants were then given 5mins in which to recall all the words from both lists (List 1 followed by List 2 words).

In order to investigate whether the forgiveness manipulation had any impact on memory for the offence, participants were also asked to recall the memory of the offence in as much detail as possible. Participants were again prompted to recall: i) what the offence was; ii) what the consequence of the offence was; iii) how the offender tried to make offends; and, iv) how the offence made them feel at the time. Participants were given up to 5mins to recall the event. Furthermore, participants were given unlimited time to rate the offence regarding the extent to which they forgave the offender, their motivation to forgive the offender, the perceived seriousness, hurtfulness and valence of the offence.

In order to check the effectiveness of the manipulations, participants were also asked to complete the DFS and the EFS (as in Studies 1 & 2). Finally, participants answered a series of questions regarding how well they felt they had complied with the forgiveness instructions, and their experience of having completed the study. These questions provided an

[7] None of the words presented in the distractor word search task were recalled in the final retrieval stage.

additional check as to whether participants had complied with the forgiveness instructions and that sufficient attention had been paid to the task.

Data Collation

All the memories of the events recalled in the first and second session were scored using both strict and gist criteria (see Noreen & MacLeod, 2013 for details). Correct memories were scored as 1 and incorrect memories were scored as 0. For strict criteria, the memory for the event was scored as correct if all four descriptions concerning the event were judged to correspond to the descriptions generated by participants in the first session. These 4 descriptions were (i) cause of the offence, (ii) consequence of the offence, (iii) how the offender tried to make amends, and (iv) how the offence made them feel. For gist criteria, the memory for the event was scored as correct if the recollection could be identified as referring to the same event generated in the first session. An independent coder, blind to the forgiveness conditions, was employed to validate the codings from the first and second sessions. The independent coder read the memories produced by all participants. The experimenter's coding was then compared with the independent coder using Holsti's method (Holsti, 1969). Overall, there was 96.3% agreement for the strict criteria and 100% agreement for the gist criteria across both coders.

Results & Discussion

Participant Demographics

Participants' age and gender did not differ significantly across instruction conditions, or forgiveness manipulations; all tests $p > 0.05$. See Table 5.

Table 5. Mean and SD for participants demographics, memory characteristics and questionnaire scores across forgiveness manipulations.

	Gender	Age	DFS score	EFS score	Age of Memory*
Emotional	59M; 61F	32.68 (7.18)	19.68 (6.47)	28.23 (6.93)	156.60 (144.31)
Decisional	43M; 77F	32.89 (9.37)	28.49 (6.0)	20.39 (6.82)	174.91 (174.08)
Control	51M; 69F	32.71 (8.36)	20.70 (7.83)	21.29 (7.66)	132.54 (154.02)
Total	***153M;207F***	***32.76 (8.33)***	***22.96 (7.85)***	***23.30 (7.94)***	***154.68 (158.47)***

Note: *= Months; EF= Emotional Forgiveness Manipulation; DF= Decisional Forgiveness Manipulation; FN= No- Forgiveness Control; DFS = Decisional Forgiveness scale; EFS= Emotional Forgiveness Scale.

Characteristics of Moral Transgression

The mean age (i.e., how recently the transgression had occurred) of the memories recalled by participants was assessed using a 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) ANOVA. There were no significant effects of instruction, forgiveness, or an instruction by forgiveness interaction; all tests, $p > 0.05$.

Mean ratings regarding the perceived seriousness of the offence, hurtfulness of the offence, emotionality of the offence, level of forgiveness and motivation to forgive the transgressor, were each compared using a 2 (Time: Session 1 vs. Session 2) x 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) ANOVA. We only report significant main effects here or higher order interactions. See Table 6.

Table 6. Ratings of Moral transgression characteristics during session 1 and session 2 across Conditions.

	Level of Forgiveness		**Motivation to Forgive Offender**		**Emotionality of Offence**		**Severity of Offence**		**Hurtfulness of Offence**	
	Time 1	**Time 2**	**Time 1**	**Time 2**	**Time 1**	**Time 2**	**Time 1**	**Time 2**	**Time 1**	**Time 2**
EF Remember	5.02	4.63	5.85	5.83	6.40	4.27	5.57	4.65	5.88	5.32
	(1.88)	(1.94)	(1.15)	(1.21)	(.85)	(2.0)	(1.64)	(2.11)	(1.47)	(1.53)
EF Forget	5.02	2.85	5.92	5.50	6.43	5.03	5.68	4.60	6.12	5.47
	(1.81)	(1.57)	(1.21)	(1.44)	(.87)	(1.84)	(1.61)	(2.13)	(1.37)	(1.32)
DF Remember	5.18	4.60	5.85	5.42	6.30	4.78	5.80	4.55	6.13	5.72
	(2.83)	(2.12)	(1.07)	(1.25)	(.92)	(1.83)	(1.25)	(2.11)	(1.03)	(1.11)
DF Forget	5.13	4.95	5.93	5.55	6.48	3.91	5.78	4.15	6.15	5.52
	(2.0)	(1.97)	(1.18)	(1.20)	(1.02)	(1.94)	(1.45)	(2.18)	(1.36)	(1.49)
NF Remember	4.72	4.47	5.68	5.17	6.07	4.85	5.85	4.58	6.05	5.50
	(1.80)	(1.70)	(1.21)	(1.50)	(1.26)	(1.74)	(1.36)	(1.80)	(1.16)	(1.44)
NF Forget	4.37	4.35	5.87	5.62	6.23	4.30	6.22	4.22	6.30	5.92
	(1.98)	(2.08)	(1.46)	(1.42)	(1.32)	(2.10)	(1.08)	(1.96)	(1.01)	(1.11)
Total	***4.91***	***4.31***	***5.85***	***5.51***	***6.32***	***4.53***	***5.82***	***4.46***	***6.11***	***5.57***
	(2.09)	***(2.01)***	***(1.21)***	***(1.35)***	***(1.06)***	***(1.94)***	***(1.42)***	***(2.05)***	***(1.24)***	***(1.35)***

These analyses revealed that transgressions were perceived as being more serious, hurtful and more negative in session 1 than in session 2, (Serious M = 5.82, SD = 1.42 vs. M = 4.46, SD = 2.05, respectively; F (1, 359) = 126.28, $p < .001$, $\eta^2 p$ = .26; Hurtful M = 6.11, SD = 1.24 vs. M = 5.57, SD = 1.35, respectively; F (1, 359) = 74.29, $p < .001$, $\eta^2 p$ = .17; Emotionality M = 6.32, SD = 1.06 vs. M = 4.53, SD = 1.94, respectively; F (1, 354) = 247.36, $p < .001$, $\eta^2 p$ = .41). We also found that participants were more motivated to forgive the offender in session 2 than in session 1, (M = 5.51, SD = 1.35 vs. M = 5.85, SD = 1.21, respectively; F (1, 359) = 23.27, $p < .01$, $\eta^2 p$ = .06). Consistent with this, our analyses also revealed that participants were more forgiving in session 2 than in session 1, (M = 4.91, SD = 2.09 vs. M = 4.31, SD = 2.01, respectively); F (1, 359) = 35.17, $p < .01$, $\eta^2 p$ = .09).

Taken together, these findings are consistent with other studies that have indicated the passage of time to be an intrinsic aspect of forgiveness (Wohl & McGrath, 2007; McCullough, Luna, Berry, Tabak & Bono, 2010). McCullough, Fincham and Tsang (2003) have argued that the act of forgiveness can be seen as an adaptive strategy that provides a temporal release from the past which, in turn, allows individuals to operate in the present and plan for the future. We would further qualify this view in that our studies would indicate that such effects are most likely to be associated with emotional forgiveness only.

We found a significant time by forgiveness by forgetting interaction F (2, 354) = 22.15, $p < .001$, $\eta^2 p$ = .06, with subsequent analyses revealing that participants in the emotional forgiveness condition with forget instructions were more forgiving in session 2 than in session 1, (M = 5.02, SD = 1.81 vs. M = 2.85, SD = 1.57, respectively; t(59) = 7.62, $p < .001$, d= 1.28). However, no significant differences in forgiveness were apparent across the other conditions (Emotional-Remember M = 5.02, SD = 1.88 vs. M = 4.63, SD = 1.94, respectively; t(59)= 1.83, p = .07, d= .20; Decisional-Forget M = 5.13, SD = 2.0 vs. M = 4.95, SD = 1.97, respectively; t(59)= .76, p = .45, d= .09; Decisional-Remember M = 5.18,

SD = 2.83 vs. *M* = 4.60, *SD* = 2.12, respectively; t(59) = 1.77, *p* = .08, *d*= .23; No-Forgiveness Forget *M* = 4.37, *SD* = 1.98 vs. *M* = 4.35, *SD* = 2.08, respectively; t(59)= .08, *p* =.93, *d*= .01; No-Forgiveness Remember *M* = 4.72, *SD* = 1.80 vs. *M* = 4.47, *SD* = 1.70, respectively; t(59) = 1.39, *p* = .17, *d*= .14). Taken together, these findings are consistent with the notion that the intentional forgetting that follows emotional forgiveness contributes to an increase in the level of forgiveness. This provides weight to the existence of a bi-directional relationship between forgiveness and forgetting, in which forgiveness not only accelerates or promotes forgetting but that this forgetting may, in turn, promote further forgiveness.

Forgiveness Manipulation Check

Two one-way (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) ANOVAs on DFS and EFS scores were conducted in order to check the effectiveness of the forgiveness manipulation.

For DFS, a significant effect was found, F (2,357) = 60.07 p <.001, η^2 p = .25, with significantly higher scores for participants in the decisional forgiveness manipulation than in either the emotional forgiveness (*M* = 28.49, *SD* = 6.0 vs. *M* = 19.68, *SD* = 6.47, respectively; *t* (236) = 10.99, *p* <.001, *d* = 1.41), or no forgiveness control manipulation (*M* = 28.49, *SD* = 6.0 vs. *M* = 20.70, *SD* = 7.83, respectively; *t* (223) = 8.65, *p* <.001, *d* = 1.12). There was no difference between scores for participants in the emotional forgiveness and no forgiveness manipulations (*M* = 19.68, *SD* = 6.47 vs. *M* = 20.70, *SD* = 7.83, respectively) *t* (230) = 1.10, *p* = .27, *d* = .14).

For EFS, a main effect was found, F (2,357) = 43.19, p < .001, η^2 p = .20, with scores for participants in the emotional forgiveness manipulation being significantly higher than for participants in either the decisional (*M* = 28.23, *SD* = 6.93 vs. *M* = 20.39, *SD* = 6.82, respectively; *t* (238) = 8.83, *p* < .001, *d* = 1.14), or no-forgiveness conditions (*M* = 28.23, *SD* = 6.93 vs. *M* = 21.29, *SD* = 7.66, respectively; *t* (236) = 7.36, *p* <.001, *d* = .95). There was no

difference, however, between EFS scores for participants in the decisional forgiveness and no forgiveness manipulations (M = 20.39, SD = 6.82 vs. M = 21.29, SD = 7.66, respectively; t (235) = .96, p = .34, d = .12)[8]. These findings suggest that both forgiveness manipulations had been successful.

Recall Accuracy

To analyse the proportion of words recalled correctly, we conducted separate analyses for the recall of List 1 and List 2 items.

List 1- Memory Costs

A 2 (Relevance: Relevant, or Irrelevant) x 2 (Instruction: Remember, or Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) mixed ANOVA was conducted on the recall of List 1 items. Our analysis revealed main effects of Forgiveness, F (2, 354) = 32.97, p < .001, $\eta^2 p$ = .16, and Instruction, F (1,354) = 173.58.18, p < .001, $\eta^2 p$ = .33. Furthermore, we found a significant Forgiveness by Instruction interaction, F (2, 354) = 15.38, p <.001, $\eta^2 p$ = .08, Forgiveness by Relevance interaction, F (2, 354) = 28.13, p < .001, $\eta^2 p$ = .14, and a Relevance by Instruction interaction, F (1, 354) = 39.98, p <.001, $\eta^2 p$ = .10. These two-way interactions were qualified by a 3-way Relevance by Forgiveness by Instruction interaction, F (2, 354) = 5.61, p <.01, $\eta^2 p$ =.03.

Subsequent analyses revealed that participants in the emotional forgiveness manipulation condition showed a forgetting effect of 20.98% for relevant words and a forgetting effect of 29.83% for irrelevant words; t (115) = 7.39, p < .001, d = 1.40, t (116) = 11.19, p < .001, d = 2.04, respectively. Participants in the decisional forgiveness condition showed a forgetting effect of 25.25% for irrelevant words; t (118) = 8.45, p < .001, d = 1.54,

[8] We also conducted a further set of analyses that included the data from those participants who had failed the manipulation checks. A similar pattern of effects emerged to those obtained in the main analyses.

but no significant forgetting effect (~ 3.08%) for relevant words; t (115) = .96, p = .34, d = .18. Furthermore, participants in the no forgiveness control condition showed a forgetting effect of 17.08% for irrelevant words; t (116) = 5.22, p < .001, d = .95; but also failed to show a significant forgetting effect (~ 5.50%) for relevant words; t (117) = 1.67, p = .10, d = .30. These findings suggest that, whilst participants in all three forgiveness conditions showed a forgetting effect for irrelevant words, only participants in the emotional forgiveness condition showed successful forgetting for relevant words.

These findings are broadly consistent with Study 2. Importantly, the current study provides additional support for the notion that emotional forgiveness promotes intentional forgetting for a transgression and is consistent with earlier research (Noreen et al., 2014). In saying that, however, it is worth noting that, in the present study, both decisional and no forgiveness manipulations failed to demonstrate a forgetting effect for relevant trait words. This is contrary to what we found in Study 2 where forgetting effects emerged for both offence-related relevant and irrelevant words.

One reason for this may relate to the different processes underlying the forgiveness process for real-life transgressions compared to hypothetical offences. Where an individual has personally experienced a transgression, they may simply be less willing to forgive the transgressor. Preoccupation with the episode may result in rumination processes that serve to strengthen the memory representation for the event. This strengthened representation and the generation of associated retrieval cues may serve to inoculate the memory against any attempt to willfully put it out of mind. Consistent with this interpretation, related research has found that increased rumination is associated with deficits in intentional forgetting and decreased forgiveness (Hertel & Gerstel, 2003; Joormann & Tran, 2009; Pronk et al, 2010; Kachadourian, Fincham & Davila, 2005; McCullough et al, 1998; Paleari et al, 2005).

Furthermore, the fact that participants in the decisional and no forgiveness conditions in the present study showed no forgetting of relevant trait words would suggest that the decision to grant someone forgiveness may be insufficient in itself to facilitate intentional forgetting of offence-related information – rather, it requires emotional forgiveness. Our interpretation is also consistent with related research which suggests that, although individuals may decide to forgive, they can still retain a grudge against the offender (Baumeister et al., 1998).

It is important to note here, however, that the trait words generated by participants to describe the offender (i.e., relevant words) were largely negative in valence, whilst the words that did not describe the offender (i.e. irrelevant words) were more positive. Thus, it is possible that the differences observed in memory recall performance can be ascribed – at least, in part - to differences in valence. Indeed, some research has shown that intentional forgetting effects diminish for negative material (Norby, Lange & Larsen, 2010; Payne & Corrigan, 2007), thereby, indicating that emotionally negative material is intrinsically more difficult to forget. While we cannot rule out the possibility that valence may have contributed to the observed effects, it doesn't account for why only the participants undergoing the emotional manipulation condition showed forgetting effects for relevant words. Furthermore, other related research suggests that negative material is actually more susceptible to intentional forgetting (Wessel & Merckelbach, 2006; Noreen & MacLeod, 2013).

In order to explore whether recall of relevant and irrelevant words in the forget condition differed according to forgiveness instructions, subsequent analyses revealed that participants in the emotional forgiveness condition recalled significantly fewer relevant trait words compared to participants in both the decisional and no forgiveness conditions, t (116) = 10.89, $p < .001$, $d = 1.99$; t (109) = 9.77, $p < .001$, $d = 1.78$. See Figure 6. There were no

differences between the recall of relevant traits words across participants in the no forgiveness and decisional forgiveness manipulations, t (115) = .10, p = .92, d = .02.

We found that there were no differences in the recall of irrelevant words between participants in the emotional forgiveness, decisional, and no forgiveness conditions, t (118) = 1.62, p = .11, d = .29; t (114) = 1.68, p = .10, d = .31. Furthermore, there were no differences in the recall of irrelevant words between decisional and no forgiveness manipulations, t (116) = .18, p = .86, d = .03 These patterns of findings would suggest that, whilst emotional forgiveness leads to significantly poorer recall of relevant words compared to the decisional and no forgiveness manipulations, it had no selective impact on the recall of irrelevant words.

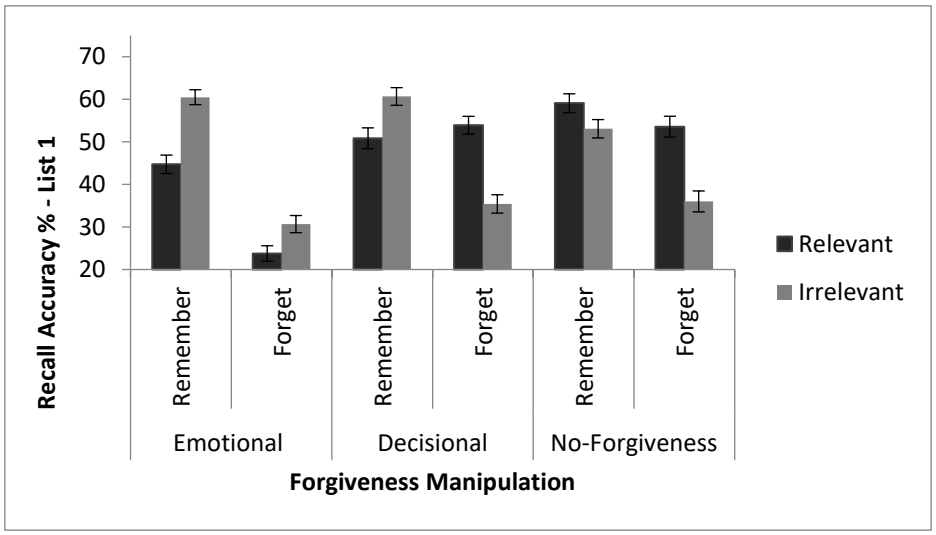

Figure 6. Recall accuracy for relevant and irrelevant trait words in List 1 as a function of condition and forgiveness manipulation *(error bars represent ± one standard error of the mean).*

List 2 – Memory benefits

A 2 (Relevance: Relevant vs. Irrelevant) x 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) mixed ANOVA was conducted on recall for List 2 items. Our analysis revealed a main effect

of Instruction, F (1,354) = 6.36, p = .01, η^2p = .02, with subsequent analyses revealing that participants in the Forget condition recalled significantly more trait words from List 2 than participants in the Remember condition (M = 58.16, SD = 8.0 vs. M = 56.01, SD = 8.49). We also found a significant Relevance by Forgiveness interaction, F (2, 354) = 30.74, p < .001, η^2p = .15, with subsequent follow-up analyses revealing that participants in the decisional and no forgiveness manipulation conditions recalled significantly more relevant than irrelevant trait words (decisional, M = 60.50, SD = 11.92 vs. M = 52.29, SD = 10.84, respectively, t (119) = 5.60 p < .001, d = .72; no forgiveness control, M = 59.13, SD = 12.34 vs. M = 54.44, SD = 12.14, respectively, t (119) = 2.90, p < .01, d = .38). Participants in the emotional forgiveness condition, however, recalled significantly more irrelevant than relevant trait words (M = 61.96, SD = 10.97 vs. M = 54.25, SD = 11.82, respectively, t (119) = 5.44, p < .001, d = .68). See Table 7.

Our analysis, however, failed to find either a Relevance, F (1, 354) = 3.94, p = .05, η^2p = .01, Relevance by Instruction, F (1, 354) = .44, p = .51, η^2p = .001, nor a Relevance by Instruction by Forgiveness interaction, F (2, 354) = .02, p = .98, η^2p < .001[9].

[9] We also conducted an analysis for both List 1 and List 2 including those participants who had originally been excluded for failing the manipulation check. The pattern of results was very similar to those found in the main analysis reported above.

Table 7. Mean and SD for recall of relevant and irrelevant words recalled for list 1 and 2 across condition and forgiveness manipulations.

		Remember			***Forget***	
	Emotional	**Decisional**	**Control**	**Emotional**	**Decisional**	**Control**
List1 Relevant	44.73	50.83	59.08	23.75	53.92	53.58
	(16.82)	(19.05)	(17.11)	(14.16)	(16.13)	(18.96)
List1 Irrelevant	60.50	60.67	53.08	30.67	35.42	36.0
	(13.52)	(16.06)	(16.73)	(15.61)	(16.65)	(19.04)
List2 Relevant	54.50	57.83	57.42	54.0	63.17	60.83
	(11.45)	(11.98)	(13.76)	(12.28)	(11.35)	(10.58)
List2 Irrelevant	62.67	50.08	53.50	61.25	54.50	55.33
	(11.10)	(10.19)	(12.89)	(10.88)	(11.11)	(11.38)

Accuracy of Moral Transgression

Gist Criteria

In order to examine memory accuracy using gist criteria, we conducted a 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) chi square. This analysis revealed no significant differences in the recall of the gist of the memory in either the Remember conditions or Forget conditions, $\chi^2(2, N = 360) = .97$, $p = .62$; $\chi^2(2, N = 360) = .82$, $p = .66$, respectively.

Strict Criteria

In order to examine memory accuracy using the strict criteria, we conducted a 2 (Instruction: Remember vs. Forget) x 3 (Forgiveness: Decisional Forgiveness, or Emotional Forgiveness, or No Forgiveness Control) chi square. This analysis revealed that, whilst in the Remember conditions, participants showed no differences in memory recall, $\chi^2(2, N = 360) = .40$, $p = 0.82$, participants in the Forget conditions showed a significant difference for the

recall of memories, $\chi^2(2, N = 360) = 8.31$, $p = 0.02$. Specifically, our findings indicate that, whilst participants in the decisional and no forgiveness conditions accurately recalled 45.0% and 51.7% of memories, respectively, participants in the emotional forgiveness manipulations recalled only 26.7% of the memories accurately. Taken together, these findings provide further support for our model (Figure 1) and suggest that emotional forgiveness leads to high level construals where participants tend to retain the gist of the offence but forget the details surrounding the transgression. See Figure 7.

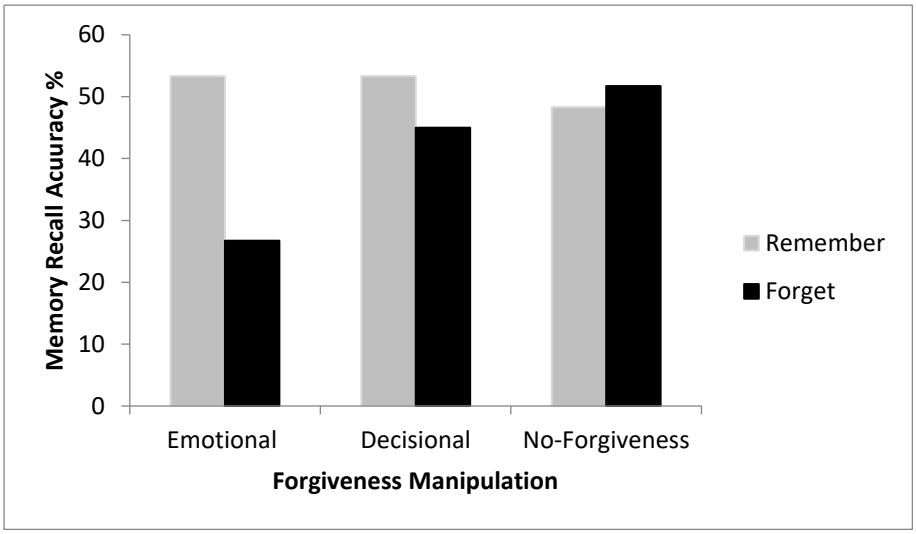

Figure 7. Memory recall accuracy using the strict criteria as a function of condition and forgiveness manipulation *(error bars represent ± one standard error of the mean).*

General Discussion

The current set of studies explored the previously undocumented relationship between forgiveness (emotional and decisional) and its consequences for intentional forgetting. Furthermore, this research explored the possible mechanism underlying such a relationship. In Study 1, we established that emotional forgiveness led to increased psychological distance and significantly more high-level construals than did either decisional forgiveness or no forgiveness. Furthermore, mediation analyses revealed that psychological distance mediated

the relationship between forgiveness and construal level. Specifically, emotional forgiveness was associated with greater psychological distance between the victim and the transgression which, in turn, was associated with high level construal. Decisional forgiveness, in contrast, was associated with less psychological distance between the victim and the transgression which, in turn, was associated with low level construal, similar to participants who had not engaged in forgiveness.

In Study 2, we sought to investigate the relationship between forgiveness and intentional forgetting using the LMDF task and found that participants in the emotional forgiveness condition showed larger forgetting effects for relevant and irrelevant trait words than did those participants in either the decisional or no forgiveness conditions. In Study 3, we replicated these forgetting effects for relevant and irrelevant trait words in the emotional forgiveness condition using real-life moral transgressions that had been personally experienced by participants. We also found that emotional forgiveness was associated with impaired memory for low-level details of a transgression whilst high-level details (gist) were retained. This pattern was not observed for participants in the decisional or no forgiveness conditions where forgetting effects were reduced overall.

Our data also indicated that increased forgetting observed in the emotional forgiveness condition was associated with higher levels of forgiveness in a subsequent testing session. This raises the interesting possibility that emotional forgiveness may play a causal role in promoting the forgetting of details about a transgression. The consequent forgetting may, in turn, produce a 'virtuous circle' that promotes further forgiveness. This possibility requires further careful exploration given its potential relevance to the development of therapeutic interventions and for our understanding of the reconciliation process.

Taken together, these findings provide compelling support for our proposed model that sets out the means by which emotional forgiveness affects intentional forgetting.

Collectively, our findings suggest that the act of emotional forgiveness leads to a transgression becoming more psychologically distant, such that victims will construe the event at a higher and more abstract level. This, in turn, leads to greater intentional forgetting for details of a transgression and subsequent increased forgiveness. Indeed, because high-level construals capture the global or essential features of the event, they are simplistic de-contexualised representations that tell us the gist of what had occurred. As a result, high-level construal can lead to major changes in the meaning of the event (Trope & Liberman, 2003). Given that a key feature of emotional forgiveness is the transformation of negative to positive feelings towards the offender, which often relies on reframing the offending event in order to make it more forgivable, the finding that emotional forgiveness leads to increased psychological distance and high-level construal offers an important insight into our understanding of these relationships. Finally, it is worth mentioning that, although we have proposed a model to explain the relationship between forgiveness and intentional forgetting, we recognize that other cognitive processes may also be at work which enable emotional forgiveness to promote high level construals (mediated by psychological distance).

Underpinning both emotional forgiveness and intentional forgetting is executive control (Denkla, 1996; Miyake et al., 2000). Emotional forgiveness requires one to be able to control one's emotions and inhibit impulsive responses to transform negative emotions to more positive ones. Executive control is likely to play a pivotal role in this kind of regulation – especially in terms of the successful inhibition of prepotent responses. The urge to strike out and seek revenge can sometimes only be overcome through the effective executive control of attentional resource (Maier, Rosenaum, Haeussinger, Brune et al., 2019; Pronk et al., 2010; Pronk, Karremans & Wigboldus, 2011). Indeed, individuals have been found to be less forgiving when executive control resources are depleted (see Van der Wal et al., 2014; Maier, Rosenaum, Haeussinger, Brune et al., 2018). Furthermore, we also know that

executive control is linked to intentional forgetting, with those who have higher executive control abilities demonstrating larger forgetting effects (Noreen & MacLeod, 2013; 2014; Huddleston & Anderson, 2012). Moreover, it has recently been proposed that memory control and emotion regulation are related processes that share core components as part of a larger central emotion-regulation mechanism (Engen & Anderson, 2018). This related research suggests that memory control is fundamental to emotion regulation and may prove critical to our understanding of the relationship between forgiveness and forgetting.

It is also possible that executive control plays an important part in how events are represented at a higher and more abstract level. Given that our memories of events are mental reconstructions, abstract level construals represent events that are more remote from the direct experience of the event itself. As a result, these events are less detailed and therefore more open to multiple or alternative abstract representations. These abstract representations may involve changing the meaning of the event and are often aligned to one's goals. Given this goal-directed nature of selecting abstract representations, it is possible that executive control processes may be recruited to suppress specific features of an event (i.e., concrete details) that are inconsistent with the chosen abstract representation. This account is in line with Liberman, Trope & Stephen (2007) who suggest that, in order to move from a concrete to a specific abstract representation of an event, certain details or features of the event must be omitted, whilst retaining the more central features of the event.

Given that forgiveness and intentional forgetting are both goal-directed processes that are dependent upon executive control, it is possible that forgiveness enables an individual to select an abstract representation of the event that is more positive. As moral transgressions are inherently negative events, it is possible to suppress a greater number of specific features which, in turn, promotes more intentional forgetting and, ultimately, greater forgiveness.

It is important to mention that, despite the fact that a relationship between forgiveness and forgetting has now been observed on both LMDF (Studies 2 and 3) and TNT tasks (Noreen et al., 2014), and that the mechanism underlying intentional forgetting is arguably inhibition, it remains possible that these paradigms evoke inhibition in distinct ways. The forgetting effects observed in the TNT paradigm are a function of the repeated suppression of a memory when confronted with a reminder, whereas, in the LMDF paradigm, forgetting effects are a function of a single instruction to forget old information and to replace with new. Each task may place different demands on inhibitory control (see Noreen & MacLeod, 2015 for a discussion). Future research needs to investigate how inhibitory resources are recruited to the relationship between forgiveness and forgetting. What is clear, however, is that despite the differences that exist between the TNT and LMDF paradigms, the act of forgiveness clearly influences intentional forgetting.

Our findings are also of interest because they suggest that authentic or 'true' forgiveness not only leads to changes in one's feelings towards the offender, but also influences the likely extent of any intentional forgetting of transgression-related information. Advocating the act of forgiveness at an emotional level (via a reduction in negative emotions and the replacement of negative with more positive ones) - and not merely in terms of behavioral intentions (i.e., restoring interaction) - may represent an adaptive coping strategy. Forgiveness enables individuals to move on with their lives and promotes the loss of details remembered about a transgression. This forgetting may, in time, promote further forgiveness.

Given the potential for intentional forgetting to be used to treat a range of mental health conditions, including depression (Hertel & Gerstle, 2003; Joormann et al., 2005; Joormann et al., 2009), dysphoria (Noreen & Ridout, 2016a, Noreen & Ridout, 2016b); post-traumatic stress disorder (Baumann, Zwissler, Schalinski, Ruf-Leuschner, Schauer & Kissler, 2013; Zoellner et al, 2003); childhood sexual abuse (McNally et al, 1998; 2001; 2004);

borderline personality disorder (Cloitre et al, 1996; Korfine & Hooley, 2000) and social anxiety disorder (Gomez-Ariza et al, 2013), it is important that this line of enquiry is pursued. Furthermore, doing so opens up the possibility of using clinical applications of intentional forgetting in forgiveness-based interventions.

Recent research has indicated that intentional forgetting may play an important role in emotion regulation (Joormann et al., 2009; Hulbert & Anderson, 2018; Mary, Dayan, Leone, Postel et al., 2020). Some of the cues that trigger negative emotional responses can be forgotten through intentional forgetting interventions. Consistent with this, memory control and emotion regulation have been found to share similar brain regions and driven by a shared frontoparietal inhibition network (Gagnepain, Hulbert & Anderson, 2017). Our studies suggest that this kind of forgetting may be promoted through the act of emotional forgiveness. Future research, therefore, needs to address the link between cues in memory and the triggering of emotional responses. If such cues can be prevented from coming into conscious awareness, and thereby being reminded of the emotions associated with the transgression, this kind of forgetting could promote better psychological adjustment.

An important feature of the current research is that it not only includes hypothetical transgressions but also personally-experienced moral transgressions. Collectively, these studies have enabled us to explore forgiveness whilst being able to control characteristics of the offence and to explore real-life forgiveness, thereby optimizing internal and external validity. The fact that both Studies 2 and 3 demonstrated enhanced intentional forgetting in the emotional forgiveness condition for both hypothetical and real-life moral transgressions provides compelling evidence that emotional forgiveness leads to greater forgetting of offence relevant and irrelevant information.

Finally, although psychological distance was explored by looking at temporal distance, the current research did not examine the effects of all of the possible psychological

distance dimensions and the different ways in which these could be operationalized. It is possible, therefore, that depending on the dimension in consideration, the effects observed in relation to psychological distance may differ. Although related research has found that the different dimensions of psychological distance (e.g., time, space, probability and social distance) are interrelated (Bar-Anan, Liberman, Trope & Algom, 2007; Trope & Liberman, 2010), and that these dimensions affect construal level in a similar manner (Trope & Liberman, 2010; Stephan, Liberman & Trope, 2010), further research needs to establish the consequences of these various dimensions of psychological distancing for forgiveness and intentional forgetting.

To conclude, we believe the research presented here represents the first attempt to explore the relationship between emotional and decisional forgiveness and the extent of intentional forgetting, and that our model presents a credible explanation for such a relationship. Our research has indicated that emotional forgiveness leads to increased psychological distance and high-level construal. We also established that emotional forgiveness leads to greater intentional forgetting effects of offence-relevant and -irrelevant trait words. The fact that we also found intentional forgetting to be associated with subsequent forgiveness opens up the intriguing possibility as to whether the repeated effects of intentional forgetting over time may produce even greater levels of forgiveness. By exploring this issue in more depth, we will begin to better understand how to develop effective interventions that can better support psychological adjustment and reconciliation following conflict and civil unrest.

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Appendix 1: Study 1- Pilot Study for the Hypothetical Offence

A hypothetical scenario (written in the first person) was created in order to mirror a real-life moral transgression committed by one's hypothetical partner. Participants were asked to imagine that the event had happened to them. The scenario comprised 7 sentences (162 words in total). In order to establish the characteristics of the offence, the scenario was pre-tested using a separate set of participants (N= 49, 27M & 22F; M_{age} = 30.61, SD_{age} = 4.68). Participants were given up to 5mins to read through and think about the scenario. They were then asked to rate the incident from the victim's perspective using a series of 7-point Likert-type scales concerning perceived valence (1 = very positive, to 7 = very negative), arousal (1= not arousing at all, to 7 = very arousing), seriousness (1= not serious at all, to 7= very serious), and hurtfulness (1 = not hurtful at all, to 7= very hurtful). Mean scores indicated that the scenario was perceived as being highly negative (M = 6.00, SD = 1.12), moderately arousing (M = 4.39, SD = 1.98), very serious (M = 5.61, SD = 1.54), and very hurtful (M = 6.31, SD = 1.25).

Appendix 2: Study 2- Pilot Study for Relevant and Irrelevant Trait Words

In order to generate relevant and irrelevant word lists for the main study, 62 trait words (e.g., dishonest, superficial, shallow, lazy, grateful, etc.) were pre-selected from a larger list of traits originally compiled by Anderson (1968). Participants (N= 39, 14M & 25F; M_{age} = 270.34, SD_{age} = 3.64) were presented with the hypothetical scenario employed in Study 1 and were required to rate the relevance of each trait word to the actions of the perpetrator in the scenario. Participants were presented with each trait word for 5s each, and asked to rate its perceived relevance using a 7-point Likert-type scale (with 1= very relevant, to 7= not relevant at all). Following the presentation of the trait words, participants were given a 5min unrelated distractor task in which they were required to find up to 13 themed words within a word search puzzle. Finally, participants were given a free recall test for all the trait words presented in order to determine memorability.

Based upon relevance ratings, 20 traits were then selected as the most relevant in describing the offender in the hypothetical scenario (e.g., rude, selfish, disrespectful, cowardly), and a further 20 traits were selected as the least relevant (e.g., emotional, easy-going, wasteful, immature). We also confirmed that the relevant set of words were perceived as being significantly more relevant to the offender in the scenario than the irrelevant set of words (M = 1.96, SD = .31 vs. M = 4.72, SD = .74; t(38) = 15.29, $p < .001$). Furthermore, the two sets of words also differed in their likeability ratings with the relevant set being less likeable than the irrelevant set (M = 120.70, SD = 79.31 vs. M = 348.40, SD = 144.04; t(38) = 6.19, $p < .001$). Care was also taken to ensure that the relevant and irrelevant sets of trait words did not differ significantly either in terms of word length (M = 9.15, SD = 2.92 vs. M = 8.00, SD = 2.18; t(38) = 1.41, $p = .17$), or memorability (M = 49.69, SD = 11.96 vs. M = 46.63, SD = 9.06; t(38) = 0.91, $p = .37$). In doing so, we provided confidence that any differences that might emerge in recall performance in the main study could not be attributed

to any differences in the inherent characteristics of the trait words used. Relevant and irrelevant trait words were assigned at random to two lists, with 10 relevant and 10 irrelevant trait words in each list. The two lists did not differ in terms of overall relevance (List 1 M = 3.20, SD = 1.30 vs. List 2 M = 3.49, SD = 1.71; t(19) = 1.44, p = .17), word length (List 1 M = 8.85, SD = 2.76 vs. List 2 M = 8.25, SD = 2.40; t(19) = .92, p = .37), or memorability (List 1 M = 20.51, SD = 12.41 vs. List 2 M = 15.82, SD = 8.02; t(19) = 1.37, p = .19).