# 'Forgiving you is hard, but forgetting seems easy': Can forgiveness facilitate forgetting?

Saima Noreen, Raynette N. Bierman & Malcolm D. MacLeod

University of St Andrews

Word count: 3990 words

Address for correspondence:

Saima Noreen or Malcolm, D. MacLeod,

School of Psychology and Neuroscience,

University of St Andrews,

South Street, Scotland, UK, KY16 9JP.

Tel: +44 (0) 1334 463028  Fax: +44 (0) 1334 463042

Email: sn291@st-andrews.ac.uk  or  mdm@st-andrews.ac.uk

**Abstract**

Forgiveness is considered to play a key role in the maintenance of social relationships, the avoidance of unnecessary conflict, and the ability to move forward with our lives. But why is it that some of us find it easier to forgive and forget than others? The current study explored the supposed relationship between forgiveness and forgetting. In an initial phase, 30 participants were given a series of hypothetical incidents and asked to indicate whether or not they would forgive the transgressor. Following a standard Think/No-Think procedure where participants were trained to think or not to think about some of these incidents, more forgetting was observed for incidents which had previously been forgiven following 'no-think' instructions compared to either 'think' or baseline conditions. In contrast, no such forgetting effects emerged for incidents that had not previously been forgiven. Implications for goal-directed forgetting and the relationship between forgiveness and memory are considered.

Word Count – 150

Key words: forgiveness; motivated forgetting; inhibition

*"To be wronged is nothing, unless you continue to remember it"*

*Confucius (479-551 BC)*

One of the most striking examples in the modern era of the power to forgive is that of the former South African President Nelson Mandela who, in 1963, was sentenced to life imprisonment on charges of attempting to undermine the State of South Africa. On release from prison 27 years later, Mandela did not call for revenge, but for forgiveness. In doing so, he not only forgave those people who had imprisoned him, but also encouraged others who had been the victims of injustice to do the same. Amidst escalating civil discord, his actions proved critical in helping to unify a nation that had been torn asunder through the policies of apartheid.

While Mandela's story is one of extraordinary forgiveness in the face of grave injustice, it nonetheless illustrates the potential importance of forgiveness for social change and reconciliation in society more generally. Yet, despite its assumed role in promoting peace and social order, it is only within the last decade that psychologists have begun to focus on forgiveness as a testable psychological construct (Exline & Baumeister, 2000; Fincham, 2000; McCullough, Fincham & Tsang, 2003). As a consequence, a host of associated benefits have begun to emerge including enhancements to psychological well-being (Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003; Orcutt, 2006; Toussaint & Webb, 2005); physiological health (Harris & Thoresen, 2005; Witvliet, Ludwig & Vander Laan, 2001); and spiritual well-being (Strelan, Acton, & Patrick, 2009).

The act of forgiveness typically involves overcoming strong negative emotions towards a transgressor and replacing these with more positive feelings (Enright, Gassin & Wu, 1992; Yovetich & Rusbult, 1994). On some occasions, forgiveness may even necessitate having to set aside vengeful impulses (DeWall, Pond & Bushman, 2010: Finkel & Campbell, 2001). From a cognitive perspective, this kind of effortful activity - the need to regulate and inhibit inappropriate thoughts and impulses in a goal-directed manner - can be seen to be a function of executive control (Denckla, 1996; Payne, 2005; Borkowski & Burke, 1996; Chan, Shum, Toulopoulou & Chen, 2008; Pronk, Karremans, Overbeek, Vermulst & Wigboldus, 2010).

Beyond this, however, relatively little is understood about the actual cognitive mechanisms which make it possible to set aside upsetting thoughts and vengeful behaviour. As a first step towards addressing this issue, the current article sets out to explore the assumed relationship between forgiveness and forgetting. Like the ability to forgive, the ability to forget – at least, intentionally – would also appear to be dependent upon the efficacy of executive control (see Anderson & Green, 2001; Anderson & Huddleston, 2011; R. A. Bjork, 1972). More specifically, motivated forgetting is thought to be a direct function of an inhibitory control mechanism which can prevent unwanted memories from entering conscious awareness (see Anderson, 2003; Anderson, Green & McCulloch, 2000; Anderson & Spellman, 1995; Levy & Anderson, 2002; Storm and Levy, 2102; but see Bulevitch, Roediger, Balota & Butler, 2006; MacLeod, 2007; MacLeod, Dodd, Sheard, Wilson & Bibi, 2003 for alternative accounts).

In the present study, we used this theoretical perspective to explore the assumed relationship between forgiveness and forgetting. In doing so, we employed the Think/No-

Think (TNT) paradigm in which participants are typically presented with unrelated word pairs to learn to criterion (e.g., 'ordeal-roach'). They are then trained to forget target words associated with previously learned cues. Thus, participants might be presented with the cue 'ordeal' and then asked to keep the associated word from coming to mind (cf., Anderson & Green, 2001). Following this procedure, more forgetting occurs for words in the 'no-think' condition in comparison to 'think' or baseline conditions at final test where participants are encouraged to retrieve all the previously learned target words (e.g., Anderson, Reinholz, Kuhl, & Mayr, 2011; Bergstrom, de Fockert, & Richardson-Klavehn, 2009; Hanslmayer, Leipold & Bauml, 2010). Most recently, this motivated forgetting effect has also been demonstrated to apply to relatively rich autobiographical memories (Noreen & MacLeod, 2013; Stephens, Braid & Hertel, 2013). Specifically, Noreen and MacLeod found that more items of information were systematically forgotten following suppression instructions in comparison to items associated with episodes in either 'think' or baseline conditions.

The present study explores the possibility that this kind of inhibitory mechanism may have relevance for our understanding of how forgiveness may ultimately promote forgetting. Indeed, the presumed association between forgiveness and intentional forgetting has had a long history as evidenced by the well-known idiom 'to forgive and forget' (cf., Corinthians 13:4-7). What remains unclear, however, is whether there is any basis to assume a causal relationship between forgiveness and forgetting. Forgetting, for instance, may play a facilitatory role in promoting forgiveness insofar as it may empower individuals to dismiss transgressions, thereby enabling the forgiver to preserve valued relationships. The process of forgiveness itself, however, may also serve to facilitate forgetting as forgiveness may provide the impetus to forget; that is, forgiveness may provide the basis for goal-directed forgetting.

As an initial step towards untangling this complex nexus of relationships, the current article explores the possible consequences of forgiveness for our ability to intentionally forget. To do so, we asked participants to imagine that they were the victim of a number of hypothetical scenarios and then to decide on whether they would forgive the transgressor or not. In a follow-up session, the same participants were presented with a subset of the scenarios originally presented (half had been forgiven and half were not). Following a standard TNT procedure (cf., Anderson & Green, 2001), participants were required to recall some of the scenarios (i.e., 'think' condition), or to avoid saying or thinking anything about others (i.e., 'no-think' condition). Our rationale was that, if forgiveness affects what we ultimately remember, we might expect intentional forgetting to be facilitated for scenarios which had previously been forgiven, whereas motivated forgetting could be expected to be more difficult to achieve for unforgiven incidents. We also took the opportunity to explore the role of dispositional forgiving and the extent to which motivated forgetting might affect how transgressions are ultimately perceived.

**Method**

*Participants*

A total of 30 students (ages 18-39; 25F, 5M) attending the University of St Andrews participated in this study for payment (£12.50 ~ $19.23). Current levels of depression were measured using the Beck Depression Inventory-II, (Beck, Steer & Brown, 1996), and only participants with BDI II scores of 9 or below (mean BDI II score = 4.5) were invited to take part.

5

*Materials*

In order to assess dispositional forgiveness, we employed the Tendency to Forgive Scale (TTF; Brown, 2004). The TTF consists of four statements (i.e., *"I tend to get over it quickly when someone hurts my feelings"*) and is designed to explore individual differences in people's responses to incidents where they had been hurt by the actions of others. Participants responded by indicating the extent to which they agreed with each statement on a 7-point scale; higher scores indicated a greater dispositional tendency to forgive.

We also devised a forgiveness questionnaire which contained 40 scenarios adapted from the Forgiveness Attitudes Questionnaire (FAQ; Kanz, 2000) and the Forgiveness Likelihood Scale (Rye, 1998; Rye et al, 2001). These scenarios contained fabricated transgressions and were designed to assess a variety of hypothetical wrongdoings such as infidelity, slander, theft, etc. These scenarios were matched for word length and contained information relating to: (i) the offence; (ii) the consequence of the offence; and, (iii) what the transgressor did to make amends. For each scenario, the transgressor was depicted as a friend, parent, partner or supervisor, or a work colleague or boss. For example, *"The offence is that your professor does not believe you when you tell them you have not plagiarised your work. The consequence is that you are expelled from the university. Later your professor realises you were telling the truth and tries to make amends by attempting to get you reinstated"*.

Participants were instructed to read the scenario and were then asked whether they would forgive the transgressor or not by circling one of two responses ('yes' or 'no'). Participants were then given a series of 7-point Likert-type scales and asked how confident they were in their decision to forgive or not to forgive the transgressor; how serious they considered the offence to be; how motivated they would be to forgive the transgressor; how

hurtful they found the offence to be; how sympathetic they were towards the victim; and how sympathetic they were towards the transgressor.

*Procedure*

In the initial session, participants completed the screening questionnaire, BDI II, the TTF, and the forgiveness questionnaire. Responses to the hypothetical scenarios generated at least 12 forgiven and 12 unforgiven scenarios for each participant. Also, no participants indicated they had previously experienced similar incidents to any of the hypothetical scenarios depicted (either as a victim or as an offender) and therefore no one was excluded from the study on this basis. The screening and incident rating session took place 7-14 days before the second phase (TNT) of the study.

In the second phase, each of the scenarios was paired with an unrelated neutral cue word. This resulted in 24 cue-scenario pairings which were subsequently divided into six sets, with three sets containing four 'forgiven' cue-scenario pairs and three sets containing four 'unforgiven' cue-scenario pairs. Subsequently, one forgiven and one unforgiven set were assigned at random to each of the 'think', 'no-think', and baseline conditions in the TNT procedure. These pairings were fully counterbalanced. Furthermore, two forgiven and two unforgiven scenarios were paired with an additional four neutral words to act as fillers.

*Learning Phase* – Participants were presented with each cue-scenario pair on a computer screen for a period of 60s and told to try to remember the pairings. Participants were told that each scenario contained information concerning: (i) the offence; (ii) the consequence of the offence; and, (ii) how the transgressor tried to make amends. Their task

was to try to remember all three details about each scenario. A 500msec inter-trial interval preceded the presentation of the next pair. All pairs were presented in a pre-specified order.

*Recall Phase* – Participants were presented with each cue word for a maximum of 30s and instructed to press the space bar as soon as the associated scenario came to mind. Participants were given one minute in which to recall the scenario in as much detail as possible. In order to help participants achieve this, they were prompted to recall each of the three detail types (see above). Following a 500ms delay, feedback was provided on the accuracy of recall for each scenario. A correct response was recorded if participants retrieved all three descriptions correctly. Regardless of accuracy, participants were again presented with the cue-scenario pairings to study. This was followed by an inter-trial interval of 300ms. All participants were required to achieve a minimum of 50% on this assessment before continuing with the procedure.

*Think/No-Think Phase* – Participants were told they would be presented with cues in either green or red font. Green cues were accompanied by a prompt word related to the offence. Participants were asked to briefly summarise the associated offence, the consequence of the offence, and what the transgressor did to make amends (i.e., 'think' condition). For the red cues, participants were simply presented with the cue word and instructed to avoid thinking or saying anything about the associated scenario (i.e., 'no-think' condition). Each trial began with a small cross appearing on the screen for 200ms. Subsequently, a cue word (and a prompt word for the green cues) appeared on the screen for 4s. This was followed by an inter-trial interval of 400ms before the next trial began. Participants were presented with 16 of the 24 cue words. Each of the cue words were

presented 16 times, resulting in 256 trials in total. Cue words were presented in a pre-specified order.

*Final Recall Phase* – Participants were presented with all the cue words originally presented and asked to recall the scenarios associated with each cue. Participants were initially presented with a cue word for 30s and asked to press the space bar as soon as the associated scenario came to mind. Participants were then given 60s in which to recall the scenario in as much detail as possible. Again, participants were prompted to recall all three details concerned with each scenario (cf. Noreen & MacLeod, 2013). All scenarios were recorded. This was followed by an inter-trial interval of 400ms before the next trial began. Finally, participants were given a questionnaire containing all the scenarios and asked to indicate whether they would forgive the transgressor; how confident they were of their decision; how serious the offence was; how motivated they would be to forgive the transgressor; how hurtful the offence was; how sympathetic they were towards the victim; and how sympathetic they were towards the transgressor.

All the retrieved scenario details were subsequently transcribed and coded in relation to the offence, the consequence of the offence, and what the transgressor did to make amends. The scenarios were scored as correct if all three descriptions were judged to have corresponded to the original scenarios.  A second independent rater scored all the scenarios for half of the sample (i.e., 360 scenarios in total). Using Holsti's method (Holsti, 1969), the level of agreement between the two scorers was found to be very high: 97.83% agreement overall (agreement: offence = 98%, consequence = 98%, and what the transgressor did to make amends = 97.5%).

<div align="center">**Results**</div>

*Characteristics of Forgiven and Unforgiven Offences*

Mean confidence ratings regarding decisions to 'forgive' or 'not forgive' the transgressor, the seriousness and the hurtfulness of the offence, the motivation to forgive the transgressor, and sympathy towards the victim and the transgressor were each compared using a 2 (forgiveness: forgiven vs. unforgiven) x 3 (instruction: baseline vs. think vs. no-think) mixed design ANOVA. We only report significant effects here (see Table 2 for means). These analyses revealed that unforgiven scenarios were perceived as being more serious and more hurtful than forgiven scenarios (serious: $M = 6.57$, $SD = 0.32$ vs. $M = 4.03$, $SD = 0.85$, respectively; $F(2, 28) = 491.23$, $p < 0.01$, $d = 3.96$; hurtful: $M = 6.47$, $SD = 0.42$ vs. $M = 4.33$, $SD = 0.80$, respectively; $F(2, 28) = 317.32$, $p < 0.01$, $d = 3.35$). Participants were also more sympathetic and more motivated to forgive the transgressor for forgiven than unforgiven scenarios (sympathetic: $M = 4.08$, $SD = 0.77$ vs. $M = 6.22$, $SD = 0.64$, respectively; $F(2, 28) = 392.02$, $p < 0.01$, $d = 3.02$; motivation to forgive: $M = 2.92$, $SD = 0.76$ vs. $M = 5.84$, $SD = 0.76$, respectively; $F(2, 28) = 417.62$, $p < 0.01$, $d = 3.84$). In contrast, participants were more sympathetic towards the victim in unforgiven than forgiven scenarios ($M = 1.43$, $SD = 0.60$ vs. $M = 2.58$, $SD = 0.71$, respectively; $F(2, 28) = 94.52$, $p < 0.01$, $d = 1.75$).

**Recall Accuracy in the Recall Phase**

In order to establish that there were no intrinsic differences in the memorability of forgiven and unforgiven scenarios, we conducted a 2 (forgiveness: forgiven vs. unforgiven) x 3 (instruction: baseline vs. think vs. no-think) mixed design ANOVA on participants' recall performance *prior* to the introduction of 'think'/'no-think' instructions. This analysis revealed neither a significant effect of instruction, $F(2, 28) = 0.19$, $p > 0.05$; forgiveness, $F$

(2, 28) = 0.08, $p > 0.05$; nor an instruction by forgiveness interaction, $F$ (2, 28) = 0.09, $p >$ 0.05 (see Table 1 for means). Thus, we can be reasonably confident that any differences in recall performance following the TNT procedure cannot be attributed to inherent differences in the memorability of the scenarios themselves.

Table 1. Mean percentage of scenarios correctly recalled in 'think', baseline and 'no-think' conditions during the recall phase *prior* to the TNT procedure

|  | 'Think' Mean (SD) | Baseline Mean (SD) | 'No-Think' Mean (SD) |
|---|---|---|---|
| **Forgive** | 58.33 (23.97) | 60.83 (24.29) | 62.67 (24.80) |
| **Not Forgive** | 59.17 (22.25) | 60.0 (21.38) | 60.0 (18.10) |
| **TOTAL** | 58.75 (22.93) | 60.42 (22.69) | 61.33 (21.57) |

**Recall Accuracy at Final Test**

A 2 (forgiveness: forgiven vs. unforgiven) x 3 (instruction: baseline vs. think vs. no-think) mixed design ANOVA revealed a main effect of instruction, $F$ (2, 28) = 17.48, $p <$ 0.01; and a significant instruction by forgiveness interaction, $F$ (2, 28) = 8.31, $p < 0.01$. Subsequent pairwise analyses revealed that participants recalled significantly more details for forgiven scenarios in the 'think' than in the baseline condition where no instructions to forget or remember had been given ($M = 77.50$, $SD = 16.54$ vs. $M = 60.83$, $SD = 21.46$, respectively); $t$ (29) = 4.33, $p < 0.001$, $d = 0.87$. Participants also recalled more details for

11

forgiven scenarios in the 'think' condition than in the 'no-think' condition ($M = 77.50$, $SD = 16.54$ vs. $M = 38.33$, $SD = 29.16$, respectively); $t(29) = 7.56$, $p < 0.001$, $d = 1.65$. Importantly, our analysis also revealed that participants showed more forgetting for forgiven scenarios in the 'no-think' condition in comparison to forgiven scenarios in the baseline condition ($M = 38.33$, $SD = 29.16$ vs. $M = 60.83$, $SD = 21.46$, respectively); $t(29) = 4.51$, $p < 0.001$, $d = 0.88$. Post-hoc power analysis (G*Power 3.1.7; Faul, Erdfelder, Lang & Buchner, 2007) revealed high statistical power for detecting group differences ($1 - \beta = 0.97$; $p = 0.008$, n = 30 and $d = 0.88$).

In contrast, no difference in recall performance was apparent at final test between 'think' and baseline conditions for unforgiven scenarios ($M = 69.17$, $SD = 19.35$ vs. $M = 63.33$, $SD = 25.20$, respectively), $t(29) = 1.16$, $p > 0.05$, $d = 0.26$); or between 'think' and 'no think' conditions for unforgiven scenarios ($M = 69.17$, $SD = 19.35$ vs. $M = 61.67$, $SD = 28.42$, respectively), $t(29) = 1.20$, $p > 0.05$, $d = 0.31$. Furthermore, there was no difference in recall performance between 'no-think' and baseline conditions for unforgiven scenarios ($M = 61.67$, $SD = 28.42$ vs. $M = 63.33$, $SD = 25.20$, respectively); $t(29) = 1.41$, $p > 0.05$, $d = 0.06$ (see Figure 1). Given that these null findings are pivotal to how these data are interpreted, we conducted a post-hoc power analysis to ensure that the null effects could not be attributed to lack of statistical power (G*Power 3.1.7; Faul et al., 2007). A two-tailed test revealed that a sample size in excess of 15,000 would have been required in order for group differences to have reached statistical significance at the 0.05 level (power ($1 - \beta$) = 0.80, p = 0.008).

We also explored whether there were any differences in overall recall performance for forgiven and unforgiven scenarios across 'think', 'no-think', and baseline conditions. Subsequent pairwise analyses revealed that there were no significant differences in recall

performance between forgiven and unforgiven scenarios in either the 'think' ($t$ (29) = 1.79, $p$ > 0.05), or baseline conditions, $t$ (29) = 0.41, $p$ > 0.05. Participants, however, recalled significantly fewer details when prompted to recall forgiven than unforgiven scenarios in the 'no-think' condition, $t$ (29) = 3.14, $p$ < 0.03.
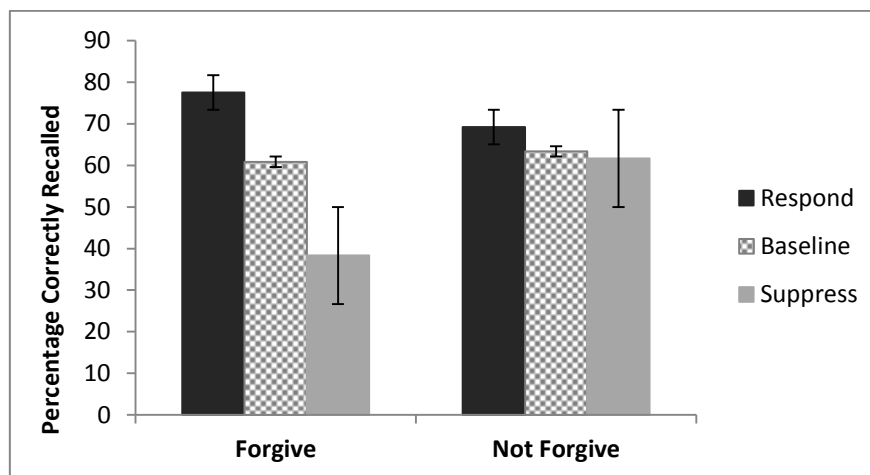


Figure 1. Mean percentage of forgiven and unforgiven scenarios correctly recalled in 'think', baseline and 'no-think' conditions *(error bars represent + one standard error of the mean).*

**Effect of forgetting on forgiveness**

We initially compared participants' ratings for forgiven and unforgiven scenarios on the forgiveness questionnaires in the first session (pre-TNT) with those in the second session (post-TNT) in order to determine whether there was any effect of no-think instructions on subsequent forgiveness. Mean ratings for how confident participants were about their decision to forgive or not forgive the transgressor, the seriousness and the hurtfulness of the offence, the motivation to forgive the transgressor, and sympathy towards the victim and the transgressor were each compared using a 2 (time of rating: session 1 vs. session 2) x 2

(forgiveness: forgiven vs. unforgiven) x 3 (instruction: baseline vs. think vs. no-think) mixed

design ANOVA. These analyses revealed that there was neither an effect of time, nor a time

by forgiveness by instruction interaction for any of these dimensions; all tests, $p > 0.05$. See

Table 2. Furthermore, in order to determine whether participants were more forgiving of

offences following the instruction to suppress, a 2 (time of rating: session 1 vs. session 2) x 2

(forgiveness: forgive vs. not forgive) chi square analysis was also conducted. This analysis

revealed that there was no significant difference in participants' tendency to forgive

following suppression instructions, $\chi = 6.0$, $p > 0.05$.

Table 2. Mean ratings for scenarios at Time 1 (pre-TNT) and Time 2 (post-TNT)

|  | Time 1 (SD) | Time 2 (SD) |
| --- | --- | --- |
| Confidence in the decision to forgive | 5.55 (0.79) | 5.43 (0.81) |
| Seriousness of the offence | 5.30 (1.43) | 5.09 (1.03) |
| Harmfulness of the offence | 5.40 (1.25) | 5.26 (1.26) |
| Motivation to forgive the offender | 4.38 (1.65) | 4.11 (1.58) |
| Sympathy towards the victim | 2.00 (0.88) | 1.95 (0.78) |
| Sympathy towards the offender | 5.15 (1.28) | 5.01 (1.28) |

*Dispositional Forgiveness and Forgetting*

We also explored whether there was a relationship between dispositional forgiveness

(as indexed by the TTF scale) and the extent of forgetting observed for both forgiven and

unforgiven scenarios. Forgetting effect size was calculated by subtracting baseline scores

from suppression scores, with higher positive scores reflecting larger forgetting effects (cf., Levy & Anderson, 2008; Noreen & MacLeod, 2013). No relationship was found between the extent of forgetting and dispositional forgiveness for either forgiven scenarios, $r (30) = 0.22$, $p > 0.05$; or for unforgiven scenarios, $r (30) = 0.22$, $p > 0.05$. This would suggest that one's inherent tendencies to forgive - at least, as measured in the current study - are unrelated to one's ability to forget.

### Discussion

Despite the fact that the virtues of being able to 'forgive and forget' have been extolled for centuries (McCullough et al., 1998), the current study represents the first empirical evidence that a link exists between forgiveness and intentional forgetting. Our findings suggest that, when individuals have already forgiven a transgressor, memories related to the forgiven offence are more susceptible to subsequent motivated forgetting. When individuals have not forgiven the transgressor, however, participants are less successful in suppressing details related to unforgiven incidents. Importantly, these differences in final recall performance cannot be ascribed to inherent differences in the memorability of forgiven and unforgiven scenarios in our study; recall performance prior to the TNT procedure was shown to be equivalent for both types of scenarios across 'think', 'no-think', and baseline conditions.

Our study also raises the intriguing possibility that the relationship between forgiving and forgetting may be less dependent upon one's inherent disposition to forgive and more reliant upon whether one has actually forgiven the transgressor. This, in turn, may be a function of the characteristics of the transgression (e.g., seriousness) and/or the effectiveness of inhibitory control. The fact that there exists considerable variation in the ability to inhibit

unwanted memories (Levy & Anderson, 2008) raises the possibility that there may also be variability in the extent to which vengeful thoughts and deeds can be inhibited. It is important to acknowledge here, however, that, as independent cues were not employed at final test (cf., Anderson & Spellman, 1995), we cannot be certain that the observed forgetting effects were a function of inhibition per se – only that the forgetting effects were consistent with an inhibitory account. While we recognise the need to address this important question, it is equally important to have established a link between forgiveness and subsequent memory performance.

Finally, there is the possibility that motivational factors may have contributed to the absence of forgetting for unforgiven scenarios following instructions to suppress. One could surmise that, if one is not prepared to forgive, one may be less willing to forget the details of the incident as such details may serve as justification for future retaliatory actions. It is worth noting here, however, that there was no evidence of enhanced recall performance for unforgiven scenarios in comparison to baseline. Thus, while the motivation to remember wrongs perpetrated by others remains a possibility, there is little evidence from the present study to suggest that such factors can account for the absence of forgetting for unforgiven incidents.

In conclusion, our findings would indicate that forgiveness facilitates forgetting insofar as, once individuals have forgiven a transgressor, the forgiver is more successful at suppressing the details concerned with the offence. The ability to forget such upsetting memories may, in turn, provide an effective coping strategy which ultimately enables people to move on with their lives. In time, research in this new field of enquiry may be able to combine forgetting- and forgiveness-based interventions which, in turn, may give rise to

powerful therapeutic tools that will enable us to 'forgive and forget' more effectively. In the

meantime, it would seem that, while forgiving remains an effortful process, forgetting may

actually become easier as a result.

## References

Anderson, M. C. (2003). Rethinking interference theory: Executive control and the mechanisms of forgetting. *Journal of Memory and Language, 49,* 415-445.

Anderson, M. C., & Green, C. (2001). Suppressing unwanted memories by executive control. *Nature, 410,* 366-369.

Anderson, M. C., Green, C., & McCulloch, K. C. (2000). Similarity and inhibition in long-term memory: Evidence for a two-factor model. *Journal of Experimental Psychology: Learning, Memory and Cognition, 26*, 1141-1159.

Anderson, M.C., & Huddleston, E. (2011). Towards a Cognitive and Neurobiological Model of Motivated Forgetting. In Belli, R. F. (Ed.), *True and false recovered memories: Toward a reconciliation of the debate. Vol. 58: Nebraska Symposium on Motivation.* New York: Springer.

Anderson, M. C., & Spellman, B. A. (1995). On the status of inhibitory mechanisms in cognition: memory retrieval as a model case. *Psychological Review, 102,* 68-100.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II.* San Antonio, TX: Psychological Corporation.

Bjork, R. A. (1972). Theoretical implications of directed forgetting. In A. W. Melton & E. Martin (Eds.), *Coding processes in human memory* (pp. 217-235). Washington, D.C.: Winston.

Borkowski, J. G., & Burke, J. E. (1996). Theories, models, and measurements of executive functioning: An information processing perspective. In G. R. Lyon & N. A. Krasnegor. *Attention, memory, and executive function* (pp. 235-261). Baltimore, MD: Paul H. Brookes.

Brown, R. P. (2004). Vengeance is mine: Narcissism, vengeance, and the tendency to forgive. *Journal of Research in Personality, 38,* 576-584.

Chan, R.C.K., Shum, D., Toulopoulou, T., & Chen, E.Y.H. (2008). Assessment of executive
functions: review of instruments and identification of critical issues. *Archives of
Clinical Neuropsychology, 23,* 201-216.

Denckla, M. (1996). A theory and model of executive function: A neuropsychological
perspective. In G. R. Lyon & N. A. Krasnegor, *Attention, memory, and executive
function* (pp. 263-278). Baltimore, MD: Paul H. Brookes.

DeWall, C. N., Pond, R. S., Jr., & Bushman, B. J. (2010). Sweet revenge: Diabetic symptoms
predict less forgiveness. *Personality and Individual Differences, 49,* 823-826.

Enright, R. D., Gassin, E. A., & Wu, C. (1992). Forgiveness: A developmental view. *Journal
of Moral Education, **21,*** 99-114.

Exline, J. J., & Baumeister, R. F. (2000). Expressing forgiveness and repentance. Benefits
and barriers. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.),
*Forgiveness: Theory, research, and practice* (pp. 133–155). New York: Guilford
Press.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical
power analysis program for the social, behavioral, and biomedical sciences. *Behavior
Research Methods, 39*, 175-191.

Fincham, F. D. (2000). The kiss of the porcupines: From attributing responsibility to
forgiving. *Personal Relationships, 7,* 1-23.

Finkel, E. J., & Campbell, W. K. (2001). Self-control and accommodation in close
relationships: An interdependence analysis. *Journal of Personality and Social
Psychology, 81,* 263-277.

Harris, A. H. S., Thoresen, C. E. (2005). Forgiveness, unforgiveness, health, and diease. In E.
L. Worthington, Jr. (Ed.), *Handbook of Forgiveness* (pp. 321-334). New York:
Brunner-Routledge.

Kanz, J. E. (2000). How do people conceptualize and use forgiveness? The Forgiveness Attitudes Questionnaire. *Counseling and Values, 44,* 174-188.

Karremans, J. C., Van Lange, P. A. M., Ouwerkerk, J. W., & Kluwer, E. S. (2003). When forgiveness enhances psychological well-being: The influence of interpersonal commitment. *Journal of Personality and Social Psychology*, *84,* 1011-1026.

Levy, B. J., & Anderson, M. C. (2002). Inhibitory processes and the control of memory retrieval, *Trends in Cognitive Sciences, 6,* 299-305.

Levy, B. J., & Anderson, M. C. (2008). Individual differences in suppressing unwanted memories: The executive deficit hypothesis. *Acta Psychologica, 127,* 623-635.

McCullough, M. E., Fincham, F. D., & Tsang, J. (2003). Forgiveness, forbearance, and time: The temporal unfolding of transgression-related interpersonal motivations. *Journal of Personality and Social Psychology, 84,* 540-557.

McCullough, M. E., Rachal, K. C., Sandage, S. J., Worthington, E. L., Jr., Brown, S. W., & Hight, T. L. (1998). Interpersonal forgiving in close relationships: II. Theoretical elaboration and measurement. *Journal of Personality and Social Psychology, 75,* 1586-1603.

Noreen, S., & MacLeod, M. D. (2013). It's all in the detail: Intentional forgetting of autobiographical memories using the autobiographical think/no-think task. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 39,* 375-393

Orcutt, K. (2006). The prospective relationship of interpersonal forgiveness and psychological distress symptoms among college women. *Journal of Counseling Psychology, 53,* 350-361.

Payne, B. K. (2005). Conceptualizing control in social cognition: How Executive Functioning Modulates the Expression of Automatic Stereotyping. *Journal of Personality and Social Psychology, 89,* 488-503.

Pronk, T. M., Karremans, J. C., Overbeek, G., Vermulst, A. A., & Wigboldus, D. H. J. (2010). What it takes to forgive: When and why executive functioning facilitates forgiveness. *Journal of Personality and Social Psychology, 98,* 119-131.

Rye, M. S. (1998). Evaluation of a secular and a religiously integrated forgiveness group therapy program for college students who have been wronged by a romantic partner. Unpublished doctoral dissertation, Bowling Green State University, Bowling Green, OH.

Rye, M. S., Loiacono, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., & Madia, B. (2001). Evaluation of the psychometric properties of two forgiveness scales. *Current Psychology, 20,* 260-277.

Strelan, P., Acton, C., & Patrick, K. (2009). Disappointment with God and well-being: The mediating influence of relationship quality and dispositional forgiveness. *Counseling and Values, 53,* 202-213.

Stephens, E., Braid, A., & Hertel, P. T. (2013). Suppression-induced reduction in the specificity of autobiographical memory. *Clinical Psychological Science, 1, 163-169.*

Toussaint, L., & Webb, J. (2005). Theoretical and empirical connections between forgiveness, mental health, and well-being. In E. L. Worthington (Ed.), *Handbook of forgiveness* (pp. 349–362). New York: Brunner-Routledge.

Witvliet, C. V. O., Ludwig, T. E., & Vander Laan, K. L. (2001). Granting forgiveness or harboring grudges: Implications for emotion, physiology, and health. *Psychological Science, 12,* 117-123.

Yovetich, N. & Rusbult, C. (1994). Accommodative behavior in close relationships: Exploring transformation of motivation. *Journal of Experimental Social Psychology, 30,* 138-164.

**Authorship**

       S. Noreen developed the study concept. S Noreen and M. D. MacLeod contributed to the study design. Testing and data collection were performed by R. N. Bierman and S. Noreen. S. Noreen performed the data analysis and S. Noreen and M. D. MacLeod provided the interpretation. S. Noreen provided the initial draft and M. D. MacLeod provided critical revisions. All authors approved the final version of the paper for submission