TESTING UNDERLYING MECHANISMS OF FORGIVENESS:

NEED FOR CLOSURE AND ACCESSIBILITY

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ABSTRACT

The abundance of forgiveness research has advanced scientific knowledge of the construct. Its multifaceted nature, however, has created specialization and domain-dependent research (e.g., close-relationship vs. non-relationship forgiveness). The current paper argues that a comprehensive framework that could be applied across domains is needed. The general principles perspective (Higgins, 1990, 1999), which identifies mechanisms that explain both chronic and situational variance, was used as a framework for forgiveness, specifically the mechanisms of accessibility and need for closure. Two studies tested the principles, a two-part study ($N = 244$ and 78, respectively) and an online survey ($N = 214$). The two-part study tested chronic accessibility for forgiveness (*Accessibility Study One*) within the context of the religiosity-forgiveness relationship (an area that has previously produced complex and contradictory results) and both the chronic and situational influence of need for closure (*Need for Closure Study*). The online survey was designed to test both situational and chronic accessibility (*Accessibility Study Two*) by priming half of the participants with religious words. Students from a large, Mid-Atlantic university participated.

For accessibility, it was proposed that religious individuals would have higher chronic accessibility for forgiveness, because of the emphasis religions place on it; similarly, it was proposed that increasing accessibility for religiosity would increase situational accessibility for forgiveness. Results supported a weak, positive relationship between religiosity and chronic accessibility for forgiveness; however, increased accessibility did not relate to likelihood to forgive future transgressions. For situational accessibility, the religious prime did not

successfully influence accessibility for religiosity; thus, situational accessibility could not be tested.

For need for closure, it was proposed that forgiveness requires some comfort with uncertainty in order to engage in the process. Therefore, chronic need for closure was expected to negatively relate to likelihood to forgive future transgressions. Results replicated this previously found relationship. For situational need for closure, manipulated through perceived time limitations, it was proposed that it would interact with chronic forgiveness to predict likelihood to forgive, because as need for closure increases so too does automaticity. Forgiveness is arguably an automatic response for someone high in chronic forgiveness. Results did not support the interaction effect.

In general, the project supported the chronic influence of the principles but did not support the situational. The limitations of the current project necessitate further inquiry for clarification, though some conclusions are suggested. Results suggest that motivations may be more influential than cognitions in forgiveness, that forgiveness research may require more highly contextualized models, and thus that the potential advantages of a comprehensive framework will require more sophisticated theoretical and empirical work.

ACKNOWLEDGEMENTS

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Introduction

The scientific investigation of forgiveness is surrounded by both enthusiasm and consternation. For a construct that was measured within psychological research by a single item up until 1981, the explosion of forgiveness research points to the surge of interest and resources that researchers and funding agencies alike have dedicated to its pursuit (e.g., A Campaign for Forgiveness Research supported by the Templeton Foundation and the Forgiveness Project). However, the feel-good promise of forgiveness research has been challenged by theoretical and empirical issues that threaten its advancement (McCullough, Worthington, & Rachal, 1997; Strelan & Covic, 2006). Particular difficulties include disagreement on the definition of forgiveness, contradictory results regarding predictors (e.g., McCullough & Worthington, 1999), and questions about the utility and beneficial outcomes of forgiveness (e.g., Lamb, 2002; McNulty, 2008; Wallace, Exline, & Baumeister, 2008). A more fundamental issue is the need for a more encompassing theoretical framework to interpret prior studies and guide future research. The goal of the current project is to test predictions derived from such a framework, Higgins's general principles perspective (Higgins, 1990, 1999), specifically the principles of need for closure and accessibility.

Existing Frameworks in Forgiveness Research

Contemporary forgiveness researchers have recognized the value of guiding frameworks and have successfully applied several influential ones (e.g., evolution-based approaches, McCullough, 2008; Sapolsky & Share, 2004; interdependence approach, Finkel, Rusbult, Kumashiro, & Hannon, 2002; stress and coping approach, Worthington, 2006). These frameworks have informed both predictors and outcomes of forgiveness, but more importantly

have sought to identify underlying mechanisms. Despite their insights, the applicability of these

approaches tend to be domain specific (e.g., applicable for interpersonal forgiveness) or are

limited to a particular aspect of forgiveness (e.g., motivation, McCullough, Rachal, Sandage,

Worthington, Brown, & Hight, 1998; cognition, Gordon, Baucom, & Snyder, 2000) rather than

appreciating the multifaceted nature of the construct (Enright & the Human Development Study

Group, 1991).

Broadly, existing frameworks can be conceived as interpersonal or intrapersonal (Miller,

Worthington, & McDaniel, 2008). Interpersonal models focus on expressing forgiveness to the

transgressor whereas intrapersonal models focus on the process of forgiveness that occurs within

the individual who was transgressed against. Within the interpersonal framework are models

that have an evolutionary perspective (e.g., McCullough, 2001; Sapolsky & Share, 2004) and an

interdependence perspective (e.g., Finkel et al., 2002). Evolution based models understand

forgiveness as an advantageous response after experiencing a transgression. This is because

forgiveness promotes reconciliation and allows individuals to live and work together as a strong

unit, thereby increasing survivorship and encouraging offspring. Interdependence theory as

applied to forgiveness also appreciates reconciliation and understands forgiveness as a process

that will maintain committed relationships between dependent individuals. These models have

been particularly valuable in understanding interpersonal forgiveness, where a prior relationship

exists with the transgressor; however, the models seem ill-equipped for explaining non-

relationship forgiveness, where a prior relationship does not exist with the transgressor (e.g.,

injury during war, crime committed by a stranger), and entity forgiveness (e.g., oppression by a

government).

Within the intrapersonal framework are models with a stress and coping (e.g., Worthington, 2006) and an attachment perspective (e.g., Kachadourian, Fincham, & Davila, 2005). In the stress and coping perspective, transgressions are understood as threats or challenges that require problem-solving and coping strategies; forgiveness is one strategy for dealing with transgressions. Additionally, there are stress and coping models that highlight important components of forgiveness. Some focus on motivations, for example to not avoid or seek revenge on the transgressor (e.g., McCullough et al., 1998). Other models focus on cognitions, such as making a conscious decision to forgive and thereby freeing oneself from past pain (e.g., Diblasio, 1998; Gordon et al., 2000). Intrapersonal forgiveness frameworks have also noted the dynamic, process orientation of forgiveness and have tried to model the movement away from negative energies towards more positive ones (e.g., Enright & Human Development Study Group, 1994; McCullough, Fincham, & Tsang, 2003). In each of these models, forgiveness occurs within the individual in order to cope with a transgression. For the attachment perspective, the attachment styles of the transgressed parties are used to understand the likelihood of forgiveness and how the dyadic relationship influences forgiveness for the hurt partner. In this way, the context of the relationship determines how the transgressed individual is likely to respond; however, forgiveness does not require both parties. Both of these perspectives help to emphasize influential aspects of forgiveness, such as cognitions, emotions, behaviors, motivations, and the dynamic dimension of forgiveness; however, by focusing on a particular aspect the rich, multi-contextual factors of forgiveness are lost. Rather than referencing multiple models to explain various pieces of forgiveness, it would be beneficial to consider a more parsimonious, yet broadly applicable, unitary framework.

Social Cognitive Theories for Understanding Predictors and Consequences

Most forgiveness studies can be categorized as studying either situational forgiveness (state) or trait forgiveness (forgivingness); this division also exists for predictors and consequences of forgiveness (see Fehr, Gelfand, & Nag, 2010). Rarely do studies combine both kinds of variables, though several researchers have noted the worthwhile effort of integrating state and trait forgiveness, specifically McCullough (2001), Mullet, Neto, and Rivière (2005), and Stralen and Covic (2006). The interdisciplinary appeal of forgiveness has spurred cross-disciplinary inquiry that has resulted in hundreds of studies (see Footnote 1). The multitude of studies has produced both an extensive list of state and trait predictors and consequences of forgiveness (see Table 1) and domain-specific understandings of forgiveness (e.g., among intimate partners vs. acquaintances, Fehr et al., 2010). Rather than testing all possible state and trait variables within defined areas of forgiveness, an overarching theoretical guide can predict when and how forgiveness may function across state and trait conditions, and across domains of forgiveness.

A different way of studying forgiveness is by identifying mechanisms grounded in general principles of social and cognitive psychology. The social-cognitive revolution that began in the 1970's changed the way hypothesis testing is approached: away from content toward function. Walter Mischel and Tory Higgins proposed two influential theories: the cognitive-affective processing system (CAPS; Mischel & Shoda, 1995; Shoda & Mischel, 1998) and the general principles perspective (Higgins, 1990, 1999). Although both theories highlight mechanisms, the CAPS and the general principles perspective differ in an important way. The CAPS identifies separate person and situational mechanisms that interact with each other to create "unique and stable profiles of variability…" (Mischel, 2004, p. 11), through *if…then*

behavioral signatures. The general principles perspective identifies mechanisms that explain

both person and situational variance; but unlike the CAPS, the same mechanism can explain both

kinds of variance. Therefore, the principles are general in that they can be applied to situational

and chronic (person) variance.

The parsimony of the general principles perspective makes it appealing for understanding

both the situational and chronic sources of variance for forgiveness. Additionally, the theory has

a history of clarifying other complex concepts, such as the hedonic principle (Higgins, 1997). In

summary, the general principles perspective goes beyond identifying variables that relate to a

given construct to understanding *why* and *how* they affect outcomes (Higgins, 1999). This

deeper understanding serves as a framework to view conditions. Without the framework,

research returns to trial and error testing for each new condition. With the framework, research

is guided by understanding the mechanisms involved in the condition rather than the surface

particulars of the condition itself. Thus, I argue that the general principles perspective would be

beneficial for forgiveness research.

General Principles Relevant for Forgiveness

A number of mechanisms have been identified as general principles, including

accessibility, attentional focus (e.g., private and public self-consciousness), regulatory

anticipation, regulatory focus (i.e., promotion and prevention focus), regulatory reference,

regulatory fit, need for closure, locomotion, goal purpose (i.e., learning goal and performance

goal), and self-control strategies (Higgins, 1997, 2000; Kruglanski, & Webster, 1996). Research

investigating the principles has largely used experimental methods. Through priming and

framing paradigms, general principles have accounted for situational variance. By measuring

chronicity of general principles, the principles have demonstrated their ability to account for person variance.

　　While the general principles perspective has not been used as an overarching framework for forgiveness, mechanisms identified by Higgins as general principles have appeared in the forgiveness literature; some studies have specifically labeled their variables as general principles while others have used synonymous operationalizations without the general principles label. Regulatory fit (Santelli, 2009; Santelli, Struthers, & Eaton, 2009) and accessibility (Karremans & Aarts, 2007; Karremans & Van Lange, 2005) have appeared the most, and to a lesser extent regulatory focus (Molden & Finkel, 2010), need for closure (Brown, Barnes, & Campbell, 2007), and self-control strategies (Wilkowski, Robinson, Troop-Gordon, 2010). However, the implications that the general principles may have for advancing knowledge on forgiveness have been narrow, as studies tend to focus on one source of variance (i.e., either chronic or situational) and do not frame their research as fitting into an overarching, guiding theory. A formal application of the general principles perspective has not been adopted as a framework for understanding forgiveness and, to my knowledge, there has not been an attempt to incorporate the broader perspective into forgiveness research.

　　In applying the general principles perspective, the essential elements of forgiveness were reviewed to identify potential mechanisms. These elements include motivation (e.g., McCullough et al., 1998), cognition (e.g., Gauché & Mullet, 2008), emotion (e.g., Worthington & Scherer, 2004), and behavior (e.g., Enright & Rique, 2004). Therefore, all of the general principles may be applicable to understanding forgiveness, as they can be classified as affecting one of the essential elements involved in forgiveness. Additionally, some of the general principles contain aspects of multiple elements. For example, regulatory focus represents a

motivational general principle that also includes an emotional component (Higgins, Shah, & Friedman, 1997). Many of the motivational principles include behavioral strategies, such as need for closure and self-control, that guide action. In the current project, two general principles were selected to illustrate both the feasibility of applying the general principles perspective to forgiveness and the utility the perspective can have for guiding research and understanding the forgiveness process. As such, two general principles were chosen from different domains: accessibility, a general cognitive principle, and need for closure, a general motivational principle. Accessibility was chosen in order to investigate the mechanism within the religiosity-forgiveness relationship, a complex relationship that has produced contradictory results. It was believed that accessibility may explain inconsistent results and would thus illustrate how the general principles may clarify complex relationships. Need for closure was chosen in order to highlight the dual process orientations that have been purposed for forgiveness: a deliberate, conscious process and an automatic response. The differential predictions proposed in the need for closure study, based on situational and chronic influences, showcase the specificity of predictions that are garnered from the general principles perspective.

Accessibility

Accessibility is a general cognitive principle related to knowledge activation; it is defined as the ease at which stored information can be activated and used if appropriate (Higgins, 1999). Highly accessible schemas and information does not mean that they are currently activated, in use, or even in conscious awareness. Rather, accessibility refers to the ease with which information can be excited, thereby increasing the chance of activation and use. As a general principle, accessibility has both situation and person sources of variance (see Higgins, 1996). Situation variance associated with accessibility is influenced by recently activated schemas,

exposure to environmental triggers that increase the accessibility of a schema, and immediate

goals related to a schema (Higgins, 2000). Manipulations used for increasing accessibility

include subliminal presentations (e.g., Strahan, Spencer, & Zanna, 2002), priming the schema

directly or through a closely associated schema (e.g., Karremans and Aarts, 2007), and framing

of information (e.g., Nelson, Clawson, & Oxley, 1997). Person variance, or chronicity, related to

accessibility is increased by familiarity with the schema, frequency of exposure to environmental

triggers related to the schema, and motivation that emphasizes the schema through socialization,

upbringing, values, and chronic goals (Higgins, 2000).

For forgiveness, accessibility is proposed to be important in considering one's reaction to

a transgression. If accessibility for forgiveness is low, it is likely that forgiveness will not be

pursued as it will not be considered; if accessibility is high, forgiveness may be considered but

not necessarily pursued. It is proposed that accessibility is indirectly, rather than directly, related

to behavior. This may help explain inconsistent relationships between forgiveness and

religiosity (e.g., Berry, Worthington, Parrott, O'Connor, & Wade, 2001; Subkoviak et al., 1995).

While religious individuals often score higher than non-religious individuals on attitudinal

measures of forgiveness, when forgiveness is assessed for a specific transgression the differences

between religious and non-religious individuals is small to nil (McCullough & Worthington,

1999). The current study empirically tested whether religious individuals were higher in chronic

accessibility for forgiveness than non-religious individuals. This is the first known study to test

chronic accessibility for forgiveness. It was hypothesized that religious individuals would have

greater accessibility for forgiveness, due to the emphasis religions place on forgiveness. If the

relationship between religiosity and chronic accessibility is supported, it may explain why

religious individuals consider forgiveness more often, even if it does not necessarily translate into differences in actions.

Three important elements of accessibility that may moderate its influence are cognitive resources, motivation, and meaningfulness of the accessible schema. As a cognitive principle, accessibility is influenced by available cognitive resources. If cognitive resources are limited, for example through limited time or task difficulty, easily accessible schemas that can make sense of information and that are in line with motivations are more likely to be used. For example, under high cognitive load, individuals are more likely to use stereotypes to categorize people if the information fits a prototype and is meaningful (see Spears & Haslam, 1997 for a review). Related to forgiveness, high accessibility for forgiveness may increase forgiveness if it makes sense of the situation and is in agreement with motivations. For individuals in a committed relationship, forgiveness of a transgression may make sense because it is quickly thought of as a strategy for the situation, is in accord with goals, and is consistent with past behavior. In the same way, forgiveness may not make sense, even if it is quickly thought of as a strategy (i.e., high accessibility), if the person continues to engage in harming behaviors (i.e., poor fit) and commitment to the person is weakened (i.e., motivation). Therefore, cognitive load, motivation, and meaningful fit are important variables to consider in predicting when accessibility translates into actual forgiveness.

The usefulness of these elements is highlighted in two forgiveness studies that have investigated accessibility. In Karremans and Van Lange's (2005) study, the relationship between justice and forgiveness was tested. In study one, participants were primed with either thoughts of justice, helpfulness, ambition, or no prime by writing about the topic. Participants who wrote about justice and helpfulness were significantly more forgiving on a scenario-based intention to

forgive future transgressions measure (i.e., Transgression Narrative Test of Forgiveness, TNTF; Berry et al., 2001) than the ambition and no prime conditions. For the justice prime, the researchers found that most participants had a prosocial conceptualization of justice rather than a retributive one. The prosocial conceptualization of justice corresponds to the fit between accessibility of justice and forgiveness. In study two, participants were shown either a picture of Justitia (i.e., justice prime) or a trumpet (i.e., control condition). Participants in the justice prime were more forgiving on the scenario-based intention to forgive future transgressions measure than participants in the control condition. In study three, participants completed the scenario-based intention to forgive future transgressions measure with a watermark on the paper, either a watermark of Justitia, the university logo, or no watermark. Participants in the justice prime condition had significantly higher scores on the forgiveness measure; participants in the university logo and no watermark conditions did not differ from each other on the intention to forgive future transgressions. The study empirically supports the interconnectedness of justice and forgiveness and provides evidence that priming the schema of justice increases the intention to forgive future transgressions, with an emphasis on a prosocial conceptualization of justice. Although not directly tested, it is plausible that justice caused accessibility for forgiveness to increase.

In a second empirical article, Karremans and Aarts (2007) tested whether close relationship transgressions automatically activate the forgiveness schema and, thereby, require fewer cognitive resources for forgiveness. A series of four studies supported the mechanism of accessibility for forgiveness in forgiving close relationship transgressions. In study one, participants were asked to name a person "whom they had a very close relationship with" and a person "whom they did not have a close relationship with" (p. 905). After participants named

the two people, they completed a thirty minute filler task. Next, participants were presented with

fifteen transgressions and were subliminally primed with either the name of the close

relationship person, the non-close relationship person, or a non-word letter prime prior to seeing

each transgression. Participants were asked to rate as quickly as possible how likely they would

be to forgive each transgression. Results indicated that participants in the close person prime

group were more likely to forgive than participants in the non-close person prime group or the

control condition. Motivation to persist in the relationship and the usefulness of using

forgiveness in the situation (i.e., fit) were proposed (but not assessed) as important variables.

In study two, participants again named a close relationship person and a non-close

relationship person. Half of the participants completed the procedure for study one, without the

control condition, while the other half rated the severity of each of the fifteen transgressions

rather than how likely they would be to forgive. Results indicated that participants who were

subliminally primed with a close person were more likely to forgive; however, the rating of

severity for the transgressions did not differ based on the primes. Therefore, the primes did not

affect how severe the transgressions were interpreted, but the primes did affect the likelihood to

forgive. Equivalent severity ratings are important to the study because perceived severity of

transgressions has a strong negative relationship to forgiveness (Boon & Sulsky, 1997; Brown &

Phillips, 2005; Girard & Mullet, 1997).

In study three, participants were either asked to name a person "whom they have a very

close relationship, and feel currently strongly committed to" or a person "whom they do not have

a very close relationship, and felt currently not strongly committed to" (p. 908). This directly

tested the motivation of commitment in the relationship. Participants completed filler measures

before reading a scenario transgression where the person who hurt them was the person they

recalled earlier, either a close or non-close relationship person. Next, participants completed a

word fragment completion task (10 times) that contained the first four letters of

forgive/forgiveness in Dutch (i.e., verg____). Results indicated that forgiveness was more

accessible for the close relationship condition compared to the non-close relationship condition.

Thinking about a committed-relationship person situationally caused accessibility for forgiveness

to increase.

       In the final study, participants either named a person with whom they had a close or non-

close relationship. Next, participants read scenario transgressions with the person named as the

transgressor (e.g., "Barbara is not keeping a promise;" p. 911). They either received instructions

to respond as quickly as they could within 4 seconds or were told to take their time responding.

After they completed all scenario transgressions, they were shown the transgressions again and

were asked to rate the severity of each. Results indicated that participants in the close

relationship condition were more likely to forgive (main effect) and that not having a time limit

was associated with more forgiveness (F (1, 119) = 3.47, $p < .07$; main effect). There was also

an interaction effect. For participants in the non-close relationship condition, time pressure was

associated with less forgiveness; however, for participants in the close relationship condition,

there was not an effect for time pressure. Thus, cognitive load did not affect intention to forgive

in the close relationship condition, presumably because accessibility for forgiveness was already

high and matched the situation and motivation of the participants. Cognitive load did affect

intention to forgive in the non-close relationship condition, presumably because accessibility for

forgiveness was low and forgiveness did not match the situation or motivation of the

participants. Again, there were not any between-group differences on severity ratings for the

transgressions.

Through these two articles, preliminary evidence supports the idea that forgiveness can be situationally primed, specifically by thinking about prosocial constructs (e.g., justice and helpfulness) and close relationships. However, chronic accessibility of forgiveness has not been examined. The current project investigated both chronic and situational sources of variance associated with accessibility for forgiveness, specifically in relation to religiosity. It was hypothesized that individuals high in religiosity would have greater chronic accessibility for forgiveness, because of the emphasis that religions place on forgiveness, which is motivational in nature, and the frequency with which individuals high in religiosity come into contact with forgiveness (e.g., through teachings, worship, and prayers). Additionally, it was hypothesized that religious primes would increase the situational accessibility for forgiveness. If the relationship between accessibility for forgiveness and religiosity is supported, the mechanism may help clarify the relationship between forgiveness and religiosity found in the literature (see McCullough & Worthington, 1999).

Need for Closure

Need for closure is a motivational general principle involved in knowledge construction (Kruglanski & Webster, 1996). As a mechanism, it is understood as a continuum flanked by a strong need for closure on one end and a strong need to avoid closure on the other (Kruglanski, 2004). High need for closure represents the necessity of having a finite answer so that mental energy can be saved and reallocated; low need for closure represents the desire to consider all available information and engage in an open, contemplative process. Thus, concepts pertinent to cognitive resources are applicable to this principle, such as automatic processing (e.g., first impressions, stereotypes, recently accessed schemas, and frequently accessed schemas), consideration of alternative explanations, and integration of inconsistent information (Kruglanski

& Webster, 1996; Pierro & Kruglanski, 2008). Motivational concepts are also pertinent for need

for closure including persisting in effortful processing and biases (e.g., perception, attention, and

confirmation biases).

Two factors are influential in determining the strength of need for closure: perceived

costs (e.g., gravity of reaching the *correct* conclusion, ending pleasurable cognitive processes)

and benefits (e.g., ability to make a decision, ability to process new information) of gaining

closure (Kruglanski & Webster, 1996). Since both of these factors can be situationally

manipulated and attention to each varies across individuals, need for closure has multiple sources

of variance (e.g., Heaton & Kruglanski, 1991; Webster & Kruglanski, 1994). When perceived

costs of choosing the correct option are high, individuals are more likely to process information

deeply, generate more alternative explanations, and consider all available information, including

contradictory data. Therefore, need for closure is low. When the benefits of gaining closure are

high, individuals are more likely to use easily accessible schemas, generate fewer alternative

explanations, and ignore inconsistent information (Kruglanski & Webster, 1996; Pierro &

Kruglanski, 2008). Thus, need for closure is high. In general, the principle denotes one's

motivation to tolerate ambiguity.

In applying need for closure to forgiveness, it is important to recognize the dialectic of

forgiveness being a deliberative process, sometimes necessitating a lower need for closure, as

well as a superficial process, sometimes necessitating a higher need for closure. This introduces

possible moderating variables between need for closure and forgiveness, such as automaticity

and personal goals. For automaticity, consider trait forgiveness; arguably forgiveness is an

automatic response for someone high in trait forgiveness. Individuals high in trait forgiveness

are lower in need for structure ($r = -.26$ and $r = -.24$, respectively; see Footnote 2; Brown et al.,

2007; Eaton, Struthers, & Santelli, 2006). However, what about situationally induced need for closure? From the social psychology literature, there is a clear relationship between situationally heightened need for closure and automatic, shallow processing (see Jamieson & Zanna, 1989). Therefore, if one's automatic response is to forgive, heightening need for closure may increase forgiveness. This relationship contrasts with the prior relationship between trait forgiveness and chronic need for closure and highlights the increased clarity possible when using the general principles approach to understanding complex relationships. The relationship between trait forgiveness and situational need for closure has not yet been directly investigated, and is part of the current study.

For personal goals, relationship commitment and religiosity may have moderating effects on the relationship between need for closure and forgiveness, such that an individual may be more inclined to engage in the effortful process of forgiveness (i.e., lower need for closure) or may selectively attend to information (e.g., severity of transgression is low, unintentional, transgressor remorseful) that confirms forgiveness as the appropriate response (i.e., higher need for closure). Research on the strength of commitment between the transgressed party and the transgressor has consistently replicated the importance of commitment in predicting forgiveness (Brown & Phillips, 2005; Finkel et al., 2002; Kachadourian et al., 2005; Koutson, Wertheim, & Kornblum, 2008; McCullough et al., 1998; Neto & Mullet, 2004). Causal evidence for commitment increasing forgiveness was presented by Finkel and colleagues (2002) in three studies. Study one found that priming partner commitment increased forgiveness after a betrayal. Study two demonstrated that positive interpretations of the betrayal mediated the link between commitment and forgiveness, which was replicated in study three. Discussion of these results included the possibility that committed individuals may engage in more cognitive

processing of the transgression, evaluating all relevant information instead of blaming the partner

and deciding that the betrayal is unforgiveable. Perhaps just as plausible, but not presented in the

paper, committed individuals may only attend to information that supports forgiving the

betraying partner and reaffirms the goal of persisting in the relationship. It should be noted that

neither of these conclusions were directly tested, though both could be informed by the

mechanism of need for closure.

　　　Religiosity as a motivational guide also relates to the relationship between need for

closure and forgiveness, though the interaction is complex. Historically, religiosity was thought

to positively relate to forgiveness; the five major religions of the world teach forgiveness (Rye et

al., 2000). Indeed, some studies report this expected relationship (Berry et al., 2001; Edwards et

al., 2002; Fox & Thomas, 2008; Gorsuch & Hao, 1993; Law, 2009; Mullet et al., 2003), though

others do not (Rackley, 1993; Subkoviak et al., 1995). An identified moderating variable is

religious fundamentalism, defined as having rigid religious beliefs, a desire for structure, and

intolerance for ambiguity (Brown et al., 2007). The constructs of religious fundamentalism and

need for closure are distinct, though related ($r = .21, p < .01$, Saroglou, 2002). For individuals

high in religious fundamentalism, a scenario-based forgiveness measure that assesses the

intention to forgive future transgressions (i.e., TNTF) was higher while trait forgiveness was

lower. It has been argued that scenario-based forgiveness measures, such as the TNTF, are

attitudinal measures of forgiveness rather than dispositional (Brown, 2003; Brown & Phillips,

2005). Therefore, scenario-based forgiveness measures and trait forgiveness measures quantify

different constructs, also part of the religiosity-forgiveness conundrum. Further evidence

supports chronic need for structure as a moderator between religiosity and scenario-based

forgiveness (Brown et al., 2007). For individuals high in chronic need for structure, the positive

relationship between religiosity and scenario-based forgiveness is stronger than among individuals low in chronic need for structure. Or stated differently, religiosity moderates the relationship between chronic need for closure and attitudinal forgiveness. Situational need for closure has not yet been investigated in the religiosity-forgiveness relationship, and is also tested in the current study.

While the situational source of variance related to need for closure has not been systematically investigated in forgiveness, some evidence suggests that it is relevant. In a relationship study, Yovetich and Rusbult (1994) presented participants with constructive and destructive scenarios that either a relationship partner, friend, or family member enacted while varying the time permitted to indicate a reaction. Limiting time or requiring a quick decision heightens need for closure (e.g., Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983). Results revealed that destructive scenarios received destructive reactions more often in the limited time condition than in the plenty-of-time condition. Therefore, situationally increasing need for closure led to more non-forgiving behaviors. This relationship was stronger when the transgressor was a friend rather than a relationship partner or a family member. Perhaps this last result relates to the moderating variable of motivation (i.e., commitment), evidencing that the desire to persist weakens the negative relationship between need for closure and forgiveness.

In general, social psychology studies have manipulated need for closure through time pressure (e.g., Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983), making a global judgment (e.g., Freund, Kruglanski & Shpitzajzen, 1985; Kruglanski & Freund, 1983), ambient noise (e.g., Kruglanski & Webster, 1991; Kruglanski, Webster, & Klem, 1993; Webster, Kruglanski, & Pattison, 1995 as cited in Kruglanski & Webster, 1996), task dullness (e.g., Webster, 1993), mental fatigue (Webster, Richter, & Kruglanski, 1996), and emphasizing the

importance of making quick decisions (e.g., Kruglanski & Mayseless, 1987). Experimental

manipulations that lessen need for closure include fear of invalidity and fear of making a mistake

(e.g., Freund et al., 1985; Kruglanski & Freund, 1983; Kruglanski & Mayseless, 1987), making

multifaceted judgments (e.g., Freund et al., 1985), participating in an engaging task (e.g.,

Webster, 1993), and emphasizing the importance of making informed decisions (e.g., Kruglanski

& Mayseless, 1987). For the current study, need for closure was heightened by increasing the

benefits of making a quick decision (i.e., quick decisions meant that there was less time between

the presentation of word pairs and a follow-up memory test). Need for closure was lessened by

increasing fear of invalidity (i.e., justification for responses were required).

General Method

Overview

The purpose of the current studies was to test two general principles, accessibility and

need for closure, in the forgiveness process. To do this, chronic variance associated with each

mechanism was measured, manipulations were crafted that systematically influenced the

situational source of variance associated with each mechanism, and the relationships between

each mechanism and relevant study variables were tested in order to investigate whether the

mechanisms explain complex relationships found in the forgiveness literature (e.g., the

relationship between forgiveness and religiosity). In this way, the study sought to discover

whether accessibility for forgiveness and need for closure meaningfully contribute to the

forgiveness process. The design and procedures for the studies relied heavily on social and

personality studies relevant to the general principles perspective, as well as past forgiveness

studies that utilized the mechanisms in some capacity.

Two major studies were designed; one study tested both mechanisms. To assess the

chronic variance associated with accessibility for forgiveness and need for closure, standard

measures for each were used. Steps were taken to avoid contamination of response styles.

This was done by using a cover story that did not mention forgiveness, and by assessing

chronicity in the first part of the study, prior to any situational manipulations. Situational

variance associated with the mechanisms was assessed immediately following a manipulation.

For accessibility, the manipulation occurred through a priming task. For need for closure, the

manipulation occurred through instructions and expectations about the study.

The following description is offered as a guide for the studies. It explains how the

studies were created, carried out, and offer evidence for the primary goal of applying the general

principles to forgiveness. *Accessibility Study One* and the *Need for Closure Study* occurred

within the same two-part study, an online survey and an in-person experiment. *Accessibility

Study One* tested the chronic source of variance associated with accessibility for forgiveness in

part one of the study. It was predicted that increased chronic accessibility for forgiveness would

relate to greater chronic forgiveness (also known as forgivingness) and religiosity. The *Need for

Closure Study* assessed the chronic source of variance associated with need for closure in part

one of the study and the situational source of variance in part two. For part one, chronic need for

closure was predicted to negatively relate to chronic forgiveness. For part two, two predictions

were made about situational need for closure. A main effect for situational need for closure was

expected such that as situational need for closure decreased, the intention to forgive future

transgressions would increase. An interaction effect between situational need for closure and

chronic forgiveness was expected for predicting the intention to forgive future transgressions. It

was expected that although increased need for closure should be negatively related to intention to

forgive, if chronic forgiveness is high, increased need for closure should not affect the positive relationship between chronic forgiveness and intention to forgive. Increasing need for closure leads to less cognitive processing; thus, increasing need for closure for someone high in forgivingness should lead to a quick endorsement of forgiveness. The final study, *Accessibility Study Two*, occurred as its own, online survey. This study assessed the situational source of variance associated with accessibility for forgiveness, as well as the chronic source of variance. It was predicted that priming the religious schema would increase situational accessibility for forgiveness. Situationally increased accessibility for forgiveness was expected to relate to greater intention to forgive future transgressions. For chronic accessibility for forgiveness, it was predicted that it would positively relate to religiosity, as well as interact with religiosity to predict intention to forgive. For the interaction, it was predicted that combining high chronic accessibility for forgiveness and high religiosity would result in the greatest likelihood to forgive future transgressions.

Accessibility Study One

A study was designed in order to investigate the chronic source of variance associated with the mechanism of accessibility in the forgiveness process. Heretofore, a study has not tested whether chronic accessibility for forgiveness relates to forgiveness. It was proposed that one's accessibility for forgiveness is important in the contemplative stage of deciding how to respond to a transgression and is closely related to automaticity and implicit forgiveness (see Karramans and Aarts, 2007). Therefore, forgiveness may be one of many options considered when faced with a transgression; however, considering forgiveness does not necessitate that it is chosen. Viewed this way, accessibility for forgiveness was expected to relate to one's intention to forgive, though not necessarily to actual forgiveness.

Although it was hypothesized that accessibility for forgiveness would relate more to the intention to forgive than actual forgiveness, the relationship between chronic (trait) forgiveness and accessibility for forgiveness was also considered. For individuals who tend to forgive, it was hypothesized that accessibility for forgiveness would be greater. Thereby, chronic forgiveness was believed to relate to accessibility through familiarity; not only would individuals high in chronic forgiveness be more likely to consider forgiveness, but they would also be more likely to choose it. For the current study, chronic accessibility for forgiveness was operationalized as the frequency and strength of reporting a forgive word (e.g., forgiveness, forgives) when cued with the letters "for____".

In order to support the utility of the general principles perspective in both guiding research and clarifying contradictory relationships in the forgiveness literature, the current study sought to investigate accessibility within the religiosity-forgiveness relationship. In general, religiosity has a stronger relationship to likelihood to forgive and chronic forgiveness than to forgiveness of a personally experienced transgression (see McCullough & Worthington, 1999; Tsang, McCullough, & Hoyt, 2005). It should be noted that the specific characteristics of religiosity are important in understanding the relationship, such as intrinsic religiosity and fundamentalism (Brown et al., 2007; Tsang et al., 2005). Nonetheless, many religions have a common emphasis on forgiveness; forgiveness appears across religious texts and prayers, is preached during worship services, and is taught as a holy, moral action that followers should practice (Rye et al., 2000). The increased frequency with which religious individuals come into contact with forgiveness was hypothesized to increase their chronic accessibility for forgiveness. In this way, perhaps the relationship between religiosity and the likelihood or intention to forgive could be explained by increased accessibility for forgiveness. Importantly, actual forgiveness of

a transgression is more than one's intention to forgive and may be responsible for the smaller

relationship between religiosity and offense-specific forgiveness. Similarly, since chronic

forgiveness measures assess the aggregate response to past, personally experienced

transgressions, it was hypothesized that religiosity would have a weaker relationship to chronic

forgiveness than to the intention to forgive future transgressions (see Brown, 2003). The

proposed rationale for these relationships is one's accessibility for forgiveness.

In summary, the current study sought to understand the influence of accessibility in the

forgiveness process, including considering forgiveness and choosing forgiveness-related

behaviors. The following hypotheses were tested:

1. Chronic accessibility for forgiveness will positively relate to likelihood/intention to forgive future transgressions.

2. Chronic forgiveness will positively relate to chronic accessibility for forgiveness.

3. Religiosity will positively relate to likelihood/intention to forgive future transgressions.

4. Religiosity will positively relate to chronic forgiveness.

5. The relationship between religiosity and likelihood/intention to forgive future transgressions will be stronger than the relationship between religiosity and chronic forgiveness.

6. Religiosity will positively relate to chronic accessibility for forgiveness.

Method

Design. A two-part survey design was used for the study, entitled "Memory and Career

Success." Participants were led to believe that the study was interested in understanding the

relationship between memory and success in a chosen career. This cover story was used to guard

against social desirability for self-reported trait forgiveness and to ensure that participants'

responses on the accessibility for forgiveness measure were not biased. Part one of the study

occurred online and was managed by SurveyMonkey.com with secure sockets layer (SSL)

security. Part two of the study occurred in person, where each participant was individually run

by a research assistant. Note that the "Memory and Career Success" study investigated two

general principles, accessibility and need for closure; the focus of this method section is on

accessibility.

> **Participants.**

> *Part one*. A sample of 252 students from a large, Mid-Atlantic university participated in

part one of the study; eight chose to withdraw. Thus, analyses for part one of the study were

performed on 96.8% of the sample ($N = 244$). The study occurred during the spring ($n = 108$),

summer ($n = 10$), and fall of 2011 ($n = 99$), and the spring of 2012 ($n = 27$). All participants

were enrolled through a psychology experiment website and opted to receive extra credit for

participation. Demographically, the sample was mostly female (74.6%), Caucasian (75.8%), and

single, not in a committed relationship (86.9%). The mean age was 19.38 ± 1.32 years (median

= 19 years, mode = 18 years). Note, the population statistics for undergraduate enrollment at

Virginia Tech for the fall of 2010 were 76% Caucasian, 8% Asian, and 9% other ethnicity

(African-American, Hispanic, and Native American), 2% foreign, and 5% no report of ethnicity

(Virginia Tech Institutional Research, 2011).

> *Part two*. Of the 244 participants who completed part one, 84 (34.4%) chose to

participate in part two. Six participants in part two were unaware of the manipulation and were

removed from the dataset; thus, analyses for part two of the study were performed on 78

participants (32.0% of part one participants). Demographically, the sample was similar to part

one, mostly female (80.8%) and Caucasian (78.2%), with a mean age of 19.44 ± 1.32 years

(median and mode = 19 years). Related to the study's variables, part one and part two

participants did not differ on chronic forgiveness, t = -1.86, ns, chronic accessibility, $t_{Karremans}$

$_{Method}$ = -.70, ns, $t_{Additive\ Method}$ = -.64, ns, chronic need for closure, t = -.28, ns, personal growth

initiative, t = -.43, ns, or on the following personality factors: extroversion t = .05, ns,

agreeableness t = -1.37, ns, conscientiousness t = -.54, ns, or neuroticism t = 1.11, ns. However,

part one and part two participants differed on religiosity, t = -2.64, $p < .01$ (part one m = 23.79,

part two m = 27.18), and on intellect/openness, t = -2.86, $p < .01$ (part one m = 14.12, part two m

= 15.40).

Measures.

Demographic questionnaire. The questionnaire included information about participants'

gender, age, ethnicity, student status, and relationship status. It also inquired about participants'

college major and anticipated career to increase the face validity of the study's cover story (see

Appendix A).

Accessibility for forgiveness. A word stem completion task (see Appendix B) was

adapted from Karremans and Aarts' (2007) Dutch study. It required participants to create 10

words that began with "for," 10 words that began with "st," and 10 words that began with "re."

Directions for the task asked participants to complete the word stems as quickly and accurately

as possible, as the task was timed. While the task was not actually timed, the directions served to

measure the first reactions of participants (i.e., accessibility). The "for" words assessed

accessibility for forgiveness. Scoring of the word completion task occurred in two ways. The

first scoring method (Karremans Method) is consistent with Karremans and Aarts (2007). If a

forgive word (i.e., forgive, forgives, forgave, forgiven, forgiving, forgiveness) was entered for

the first "for" word stem, then it received a score of 10. If a forgive word was entered for the

second "for" word stem, then it received a score of nine, and so on. If more than one forgive

word was entered, only the first was scored (e.g., fragment one = forgive, fragment two =

forgiving, word fragment score = 10). The second scoring method (Additive) took into account

the primacy of one's forgiveness schema (i.e., sequence of forgive words) as well as its strength

(i.e., frequency of forgive words). For the Additive Method, if multiple forgive words were

entered, they were added together based on their position (e.g., fragment one = forgive, fragment

two = forgiving, word fragment score = 19). The "st" word stems were not scored as they served

as a filler task. The "re" word stems were scored in the same manner as the "for" word stems but

for the following words: retaliate, retaliates, retaliated, retaliating, retaliation, retaliations,

retribution, retributions, retributive, and revenge. The "re" word stems were not evaluated in the

following analyses as only 15 participants entered a non-forgiveness word.

  Chronic need for closure. The Personal Need for Structure questionnaire (PNS; Neuberg

& Newsom, 1993; Thompson, Naccarato, & Parker 1989; see Appendix C) is a 12 item self-

report dispositional measure that assesses desire for structure and one's response to lack of

structure. It is measured using a six-point Likert scale (1=strongly disagree, 6=strongly agree).

Items 2, 5, 6, and 11 are reverse scored and higher scores are associated with a pattern for

wanting simple structure. Individuals high in need for structure are described as orderly, prefer

routines, and dislike "grey" areas. The PNS is an established measure with reported Cronbach's

alphas ranging from .76 to .86 and good convergent and discriminant validity (Neuberg &

Newsom, 1993; Thompson, Naccarato, Parker, & Moskowitz, 2001). For the current study, the

PNS had a Cronbach's alpha of .83.

Chronic/trait forgiveness. The Tendency to Forgive scale (TTF; Brown, 2003; see Appendix D) is a four item, seven-point Likert measure (1=strongly disagree, 7=strongly agree) that assesses dispositional forgiveness. Higher scores on the measure are associated with individuals who have a greater tendency to forgive. In previous studies, the TTF Cronbach's alphas have ranged from .75 to .82 (Brown, 2003). It has demonstrated good convergent and discriminant validity (e.g., strong negative relationship to vengeance, Brown, 2004). Brown (2003) has argued that the TTF is a better dispositional forgiveness measure than the TNTF, because the TNTF has a stronger relationship to the Attitudes Toward Forgiveness scale than the TTF. For the current study, the TTF had a Cronbach's alpha of .82.

Personal growth initiative. The Personal Growth Initiative Scale (PGIS; Robitschek, 1998; Appendix E) is a nine-item measure of self-directed personal growth evaluated on a six-point Likert scale (1=definitely disagree, 6=definitely agree). The measure assesses conscious effort for change and personal improvement. A CFA on the PGIS supported a one factor model with a Cronbach's alpha of .90 and eight-week test-retest $r = .74$ (Robitschek, 1998). Adequate convergent and discriminant validity has also been documented. For the current study, the PGIS had a Cronbach's alpha of .87. The purpose of the PGIS was to strengthen the validity of the study's cover story.

Religiosity. The Santa Clara Strength of Religious Faith Questionnaire (SCSORF; Plante & Boccaccini, 1997b, see Appendix F) is a measure of religiosity and consists of 10 four-point Likert questions. Higher scores on this measure correspond to greater religiosity. The measure has reported Cronbach's alphas ranging from .94 to .97, split-half reliability of .90 to .96, and adequate convergent and discriminant validity (Plante & Boccaccini, 1997a; Plante & Boccaccini, 1997b). For the current study, the SCSORF had a Cronbach's alpha of .98.

Personality. The Mini-International Personality Item Pool questionnaire (Mini-IPIP; Donnellan, Oswald, Baird, & Lucas, 2006; see Appendix G) is a shortened version (20 questions) of the 50 item International Personality Item Pool Five-Factor Model questionnaire (Goldberg, 1999). The measure is assessed using a five-point Likert scale (1=very inaccurate, 5=very accurate). Cronbach's alphas range from .65 to .82 with three week test-retest $r = .87$, .62, .75, .80, and .77, for extraversion, agreeableness, conscientiousness, neuroticism, and intellect/openness, respectively (Donnellan et al., 2006). The Mini-IPIP has demonstrated convergent and discriminant validity. For the current study, the Mini-IPIP had Cronbach's alphas of .82, .72, .73, .69, and .76, respectively. The purpose of the Mini-IPI was to increase the validity of the study's cover story.

Likelihood to forgive. The Transgression Narrative Test of Forgiveness (TNTF, Berry et al., 2001; see Appendix H) is a scenario-based forgiveness measure that assesses the intention to forgive. It consists of five scenarios, where the relationship to the transgressor varies (e.g., family member, acquaintance), and asks responders to imagine that they are the victim of the transgression. Likelihood to forgive is assessed using a five-point Likert scale (1 = definitely not forgive, 5 = definitely forgive), where higher scores are associated with a greater intention to forgive. The TNTF has been a reliable (Cronbach's alphas of .71 to .81, test-retest $r = .69$) and valid measure in previous studies (Berry et al., 2001; Brown & Philips, 2005; Shepherd & Belicki, 2008). For the current study, the TNTF had a Cronbach's alpha of .75.

Procedures. The study, entitled "Memory and Career Success," was advertised as a two-part study on a psychology research website. Participants were given a website link for part one of the study, managed by Surveymonkey.come, after signing up online. Upon entering the site, participants were presented with an information sheet (Appendix I) and consented to participate.

Next participants completed the following measures in order: the demographic questionnaire, the word stem completion task to assess accessibility for forgiveness, the PNS, the TTF scale, the PGIS, the SCSORF, and the Mini-IPIP questionnaire. Note that the PNS was part of the need for closure study.

Next, participants were instructed to email a research assistant in order to schedule an appointment for part two of the study. Since participation was low for part two, reminders and scheduling information were emailed to participants. Part two participants were randomly assigned to one of three conditions to manipulate the situational level of need for closure (relevant for the need for closure study; see p. 49 for further details). Four trained research assistants and this writer ran participants for part two of the study (researcher one $n = 23$, researcher two $n = 11$, researcher three $n = 19$, researcher four $n = 18$, and researcher five $n = 7$ participants) using a scripted procedure (see Appendix J).

Upon beginning part two of the study, participants were given an information sheet (see Appendix K). They were informed that the study would take 50 minutes to complete. In actuality, the study took approximately 12 minutes, but it was important for participants to believe that there would be additional tasks, matching the cover story. For each of the three conditions, participants completed a paired-word memory task, where the researcher read aloud 10 pairs of words and asked participants to remember the word pairs. This was followed by two tests, one free recall test of the pairs and the other paired recall using the first word of the pair as a prompt (see method of need for closure study for further information). The purpose of the memory task was to increase the validity of the cover story and was part of the situational need for closure manipulation.

After the word memory task, directions were given to participants about the sequence of tasks that would follow; the directions corresponded to the conditions used in the need for closure study. For the purposes of explaining the accessibility portion of the study, the control condition will be described. In the control condition, participants were instructed to complete the next task (i.e., the TNTF) about how they would handle depicted wrongs. Next, participants completed a written manipulation check (see Appendix L) that was presented as a mid-point questionnaire; again, this increased the validity of the cover story that the study would last 50 minutes. After the manipulation check was completed, participants were informed that the study was over, were given a debriefing sheet, and were asked follow up qustions by the researcher to ensure that they believed the cover story. All participants agreed to include their data in the study and committed to remaining silent about the true nature of the study; this prevented the participant pool from being contaminated.

Results and Discussion

Descriptive statistics. The sum scores for the study's measures were evaluated for extreme skewness, kurtosis, and ceiling and floor effects. Table 2 displays the minimum, maximum, mean, standard deviation, skewness, and kurtosis statistics for all measures. All study variables were below the cutoff of │2│for skewness and │7│for kurtosis; therefore, the measures' distributions do not warrant concern for non-normality (Curran, West, & Finch, 1996). For accessibility, the Karremans Method mean of 1.92 and the Additive Method mean of 2.32 indicated relatively low chronicity. Note, in Karremans and Aarts (2007) study, the mean of accessibility for forgiveness when primed with a close other was 4.37 ± 3.79 and the unprimed mean of accessibility for forgiveness was 1.93 ± 3.29.

Participants from different semesters did not differ significantly on religiosity, F ($df = 3$, 240) = -.87, ns, or accessibility, $F_{Karremans\ Method}$ ($df = 3$, 240) = .04, ns, $F_{Additive\ Method}$ ($df = 3$, 240) = .91, ns. Significant differences emerged for likelihood to forgive future transgressions, F ($df = 3$, 74) = 2.88, $p < .05$ (spring 11 $m = 15.69$, summer 11 $m = 17.00$, fall 11 $m = 12.75$, spring 12 $m = 15.00$), with fall 2011 scoring lower on the measure than spring 2011 and summer 2001. Fall 2011 and spring 2012 did not differ (see Table 3). Males and females significantly differed on religiosity, t ($df = 242$) = -2.23, $p < .05$ (males $m = 22.58$, females $m = 25.65$), with females endorsing higher religiosity than males. Males and females did not differ on accessibility, $t_{Karremans\ Method}$ ($df = 119.85$) = 1.46, ns, $t_{Additive\ Method}$ ($df = 141.93$) = 1.96, ns, chronic forgiveness, t ($df = 242$) = 1.38, ns, or likelihood to forgive future transgressions, t ($df = 76$) = 1.71, ns. As few differences were evidenced across the study variables based on participants' semester of participation and gender, the following analyses were conducting using the entire dataset.

Relationship between chronic accessibility for forgiveness and forgiveness variables. A series of two-tailed Pearson Product-Moment Correlations were used to investigate the linear relationship between accessibility for forgiveness and the forgiveness variables. Table 4 presents the correlation table. Hypotheses one and two were not supported; accessibility for forgiveness did not relate to likelihood to forgive future transgressions, $r_{Karrenmans\ Method} = .08$, ns, $r_{Additive\ Method} = .03$, ns, or to chronic forgiveness, $r_{Karrenmanss\ Method} = .01$, ns, $r_{Additive\ Method} = .02$, ns (see Footnote 3). Therefore, results of the study do not support chronic accessibility as a mechanism in the forgiveness process.

While the most parsimonious explanation for the null results is that chronic accessibility does not relate to forgiveness, another reason is also plausible. This explanation pertains to the isolated nature of the accessibility assessment in the current study. The procedure of the study

was designed to measure accessibility for forgiveness without any outside influences, and

assessed accessibility early on in the order of measures. This allowed for a clean measure of

accessibility for forgiveness, but failed to take into consideration context, which is important to

the mechanism. Since the context of a transgression or forgiveness was missing, the

measurement of chronic accessibility for forgiveness may have been weakened. The fit between

the schema of forgiveness and personal goals was lacking during the assessment of accessibility

for forgiveness. As previous studies have shown, accessibility is moderated by the fit of the

schema to the current situation and personal goals (e.g., Karremans & Van Lange, 2005). The

low levels across participants on the accessibility for forgive measure (only 31% entered a

"forgive" word) provides some supporting evidence for this explanation.

Relationship between religiosity and forgiveness variables. A series of two-tailed

Pearson Product-Moment Correlations were used to investigate the linear relationship between

religiosity and the forgiveness variables. Table 5 presents the correlation table. As

hypothesized, religiosity positively related to the forgiveness variables, likelihood to forgive

future transgressions $r = .35, p < .01$ and chronic forgiveness $r = .16, p < .05$. Thus, hypotheses

three and four were supported. These results are consistent with and provide further support to

previous studies investigating religiosity and forgiveness variables (e.g., Brown et al., 2007).

In order to test hypothesis five, that religiosity would have a stronger relationship to

likelihood to forgive future transgressions than to chronic forgiveness, a Fisher r to z

transformation was calculated between the two correlations, $z = 1.54, p = .06$, one-tailed.

Hypothesis five was not supported, though the relationship is in the expected direction. Note

that the considerable difference in sample sizes between the two correlations limited the power

for investigating hypothesis five (1 - β = .46, G*Power 3.1.3, Faul, Erdfelder, Lang, & Buchner, 2007).

Relationship between religiosity and accessibility for forgiveness. A two-tailed Pearson Product-Moment Correlation was calculated between religiosity and accessibility for forgiveness, $r_{Karremans\ Method}$ = .09, *ns*, $r_{Additive\ Method}$ = .08, *ns* (see Footnote 3). Hypothesis six was not supported; religiosity did not relate to accessibility for forgiveness. This is counter to the idea that individuals who are more religious are more familiar with forgiveness, due to the increased frequency of forgiveness ideas through religious teachings and perhaps deeper processing of forgiveness. Again, the study's lack of context for assessing accessibility for forgiveness may have contributed to this null result.

Exploratory analyses with personal growth initiative and personality. A series of two-tailed Pearson Product-Moment Correlations were calculated between personal growth initiative and personality with the other study variables. Bonferroni's correction for α = .05 and k = 13 required a significance of p = .0038. Table 6 presents the correlation table without Bonferroni's correction. Relationships to note include the strong negative relationship between neuroticism and chronic forgiveness, r = -.58, $p < .05$, and the lack of a relationship between neuroticism and likelihood to forgive future transgressions, r = -.11, *ns*. This systematic difference would be surprising if likelihood to forgive was classified as a chronic forgiveness measure. However, Brown and Phillips (2005) found similar relationships between neuroticism and forgiveness variables, for chronic forgiveness, r = -.50, $p < .01$, and for likelihood to forgive future transgressions, r = -.19, $p < .01$.

The relationships between religiosity and the forgiveness variables with personal growth initiative demonstrated a similar pattern, using Bonferroni's correction for α = .05 and k = 3

(cutoff $p = .0167$). Personal growth initiative positively related to religiosity, $r = .18$, $p < .05$.

Personal growth initiative also positively related to chronic forgiveness, $r = .20$, $p < .05$, but not

to likelihood to forgive future transgressions $r = .02$, ns. The different relationships between

likelihood to forgive and chronic forgiveness support previous claims that the two measures

assess unique constructs (Brown, 2003; Brown & Phillips, 2005). Future studies should,

therefore, not refer to the likelihood to forgive future transgressions measure, the TNTF, as a

chronic measure of forgiveness.

Accessibility Study Two

In order to further investigate the mechanisms of accessibility in the forgiveness process,

an experiment was designed to retest the influence of chronic accessibility for forgiveness and to

investigate situational accessibility for forgiveness as it relates to forgiveness and religiosity. To

manipulate accessibility for forgiveness (i.e., the situational variance), a word completion task

was used to prime religiosity/spirituality, a hypothesized closely related schema.

Methodologically, a word completion task was chosen to manipulate accessibility for forgiveness

because it is widely used in social psychological studies, is simple to administer in a survey, and

does not require advanced technological or statistical resources (e.g., programming and

algorithmic transformations). This method uses words that are closely related to the desired

construct as a prime, thereby increasing the ease at which the target construct can be called to

mind (i.e., accessibility) without activating it. Previous studies have used similar priming

methods, such as scrambled sentences (e.g., Bargh, Chen, & Burrows, 1996; Epley & Gilovich,

1999), word-search puzzles (Bargh, Lee-Chai, Barndollar, Golliwitzer, & Trötschel, 2001),

repetition (e.g., Higgins & Chaires, 1980; Higgins, Rholes, & Jones, 1977), and subliminal

presentations of key priming words (e.g., Strahan et al., 2002). Religion and spirituality related

words appeared on the word completion task because of the interconnections between religion

and forgiveness (Rye et al., 2000). Thus, the purpose of the priming task was to test the

influence of situational accessibility in forgiveness as it relates to religiosity.

Chronic accessibility for forgiveness was also measured and was operationalized as

unprimed religiosity/spirituality. As in the first study, the consequences related to one's

accessibility for forgiveness, both chronic and situational sources of variance, were evaluated.

The following hypotheses were tested:

1. Priming the religiosity/spirituality schema will increase the situational accessibility for

forgiveness.

2. Situational accessibility for forgiveness will positively relate to the likelihood/

intention to forgive future transgressions.

3. Religiosity will positively relate to the likelihood/intention to forgive future

transgressions.

4. Religiosity will positively relate to chronic accessibility for forgiveness.

5. Chronic accessibility for forgiveness will positively relate to the likelihood/intention

to forgive future transgressions.

6. Chronic accessibility for forgiveness and religiosity will have an interactive effect on

likelihood to forgive, such that individuals who are high on both chronic accessibility for

forgiveness and religiosity will be the most likely to forgive.

Method

Design. An online survey design was chosen for the study, entitled "Language IQ and

Correlates." A cover story that led participants to believe that the study was interested in

investigating how language abilities may relate to personality and behavioral outcomes was used

to guard against contaminating the measure of accessibility for forgiveness. The survey was

managed by SurveyMonkey.com and included secure sockets layer (SSL) security to ensure

confidentiality and anonymity.

Participants. A sample of 215 college students participated in the study during the fall

semester of 2010 ($n = 104$) and the spring semester of 2011 ($n = 111$). Participants were enrolled

through the Sona experiment site at Virginia Tech and received extra credit for their

participation. Inspection of the dataset revealed that one participant chose to withdraw from the

study; otherwise, no missing data existed. Thus, the analyses and results that follow were

performed on 99.5% of the data ($N = 214$).

Demographically the majority of participants were female (71%), Caucasian (73.8%),

and single, never married (87.9%). The mean age of participants was 19.58 ± 1.19 years

(median = 20, mode = 19).

Measures.

Demographic questionnaire. The questionnaire included information about participants'

gender, age, ethnicity, student status, and relationship status (see Appendix M).

Religious prime for increasing situational accessibility for forgiveness. A word

completion task consisting of 10 incomplete words, each missing a vowel, was designed for the

current study (see Appendix N). Directions for the task asked participants to add a vowel to each

incomplete word in order to make an existing English word as quickly as possible, as the task

was being timed and was a measure of language intelligence (e.g., "hppiness" = "happiness"). In

actuality, the measure was not timed and is not known to measure language intelligence. The

purpose of these statements was to ensure that participants were focused on the task, as it served

to manipulate accessibility for forgiveness. Two forms of the word completion task were

created, one for the religious prime condition ($n = 111$) and one for the no-prime condition ($n =$

103). For the religious prime condition, the word completion task contained five incomplete

words with religious connotations (e.g., "prayr") and five non-religious incomplete words (e.g.,

"hppiness").   For the no-prime condition, the word completion task contained the same five non-

religious incomplete words as the religious prime condition, plus five additional non-religious

incomplete words. Thus, the two word completion tasks differed on five words, which

corresponded to the experimental manipulations; assignment to condition was random.

The purpose of the religious word completion task was to prime the schema of religiosity,

which is associated with forgiveness (Enright, Eastin, Golden, Sarinopoulos, & Freedman, 1992;

Rye et al., 2000). Given that participants believed the purpose of the study was to assess their

language abilities, the primes were implicit and appeared to appropriately match the study's

intention as participants drew on their language abilities to complete the tasks.

Accessibility for forgiveness. The word stem completion task, also used in *Accessibility*

Study One, was adapted from Karremans and Aarts' (2007) Dutch study (see Appendix B). It

required participants to create 10 words that began with "for," ten words that began with "st,"

and ten words that began with "re." The "for" words assessed accessibility for forgiveness; the

"st" words were a filler task; the "re" words assessed non-forgiveness words (for further

information on the measure see p. 24). The "re" word stems were not evaluated in the following

analyses as only eight participants entered a non-forgiveness word.

Likelihood to forgive. The Transgression Narrative Test of Forgiveness (TNTF, Berry et

al., 2001; see Appendix H), also used in *Accessibility Study One*, is a scenario-based forgiveness

measure that assesses the intention to forgive. It consists of five scenarios, where the

relationship to the transgressor varies (e.g., family member, acquaintance), and asks responders

to imagine that they are the victim of the transgression. Likelihood to forgive is assessed using a five-point Likert scale (1 = definitely not forgive, 5 = definitely forgive) where higher scores are associated with a greater tendency to forgive. For the current study, the TNTF had a Cronbach's alpha of .66.

     Religiosity. The Santa Clara Strength of Religious Faith questionnaire (SCSORF, Plante & Boccaccini, 1997b, see Appendix F), also used in *Accessibility Study One*, is a measure of religiosity and consists of 10 four-point Likert questions. Higher scores on the measure correspond to greater religiosity. For the current study, the SCSORF had a Cronbach's alpha of .97.

     Procedure. The "Language IQ and Correlates" study was advertised on the Sona experiment website as a study interested in the relationships between language abilities and other unspecified personality and life variables. Upon signing up, participants were required to email this author in order to receive the online link for the study. Participants were randomly assigned to either the religious prime or no-prime condition based on flipping a coin; regardless of the assigned condition, participants received the study measures in the same order.

     Upon beginning the study, participants were presented with an information sheet (see Appendix O), followed by a demographic questionnaire to help describe the sample. Next, participants either received the religious prime word completion task or the no-prime word completion task. Then they completed the forgiveness word stem completion task used in *Accessibility Study One*; this measured accessibility for forgiveness, either situational for the religious prime condition or chronic for the no-prime condition. The last two measures in the survey were the TNTF and the SCSORF. Finally, participants were asked to enter their school

email address if they would like to receive credit for their participation; all participants received credit.

Results and Discussion

Descriptive statistics. The sum scores for the study's measures were evaluated for extreme skewness, kurtosis, and ceiling and floor effects. Table 7 displays the minimum, maximum, mean, standard deviation, skewness, and kurtosis statistics for all measures. All variables were below the cutoff of │2│ for skewness and │7│ for kurtosis; therefore, the measures' distributions do not warrant concern for non-normality (Curran et al., 1996). For accessibility, as in *Accessibility Study One*, the Karremans Method mean of 1.86 and Additive Method mean of 2.22 indicated a generally low accessibility. Note in Karremans and Aarts (2007) study the mean of accessibility for forgiveness when primed with a close other was 4.37 ± 3.79 and the unprimed mean of accessibility for forgiveness was 1.93 ± 3.29.

Participants from different semesters did not significantly differ on likelihood to forgive, t ($df = 212$) = -.267, ns, religiosity, t ($df = 212$) = -.87, ns, or accessibility, $t_{Karremans\ Method}$ ($df = 212$) = .15, ns, $t_{Additive\ Method}$ ($df = 212$) = .69, ns. Differences did emerge based on gender for religiosity, t ($df = 100.92$) = -2.67, $p < .01$ (males $m = 23.02$, females $m = 26.74$), and accessibility, $t_{Karremans\ Method}$ ($df = 161.78$) = -3.27 $p < .01$ (males $m = .90$, females $m = 2.26$), $t_{Additive\ Method}$ ($df = 165.42$) = -3.21, $p < .01$ (males $m = 1.05$, females $m = 2.71$), with female participants endorsing more religiosity and greater accessibility for forgiveness. There were not any differences among males and females on likelihood to forgive, t ($df = 212$) = 1.02, ns.

Manipulation check. Across the sample, 27% ($n = 58$) of participants entered a forgive word for the "for____" word fragment completion task. For the religious prime condition, 29% ($n = 32$) entered a forgive word; for the no-prime condition, 25% ($n = 26$) entered a forgive

word. In order to test hypothesis one, that religious words would prime the schema of

forgiveness and thereby increase accessibility for forgiveness, an independent t-test was used to

compare the two groups. Analyses revealed that accessibility for forgiveness did not differ

among the two groups, $t_{Karremans\ Method}$ ($df = 212$) = .29, ns, $t_{Additive\ Method}$ ($df = 212$) = .14, ns.

Hypothesis one was not supported.

The sample was then divided based on gender in order to test whether female participants

from each group differed on accessibility for forgiveness, since religiosity and accessibility for

forgiveness were higher for females. Results were similar, with no differences between the

religious prime and no-prime conditions, $t_{Karremans\ Method}$ ($df = 150$) = .22, ns, $t_{Additive\ Method}$ ($df =$

150) = .13, ns. Therefore, this study is better classified as a chronic accessibility for forgiveness

study, rather than a situational one. The religious priming task did not affect accessibility for

forgiveness. Hypothesis two, that situational accessibility for forgiveness would relate to

likelihood to forgive future transgressions, could not be tested since the manipulation failed to

increase accessibility for forgiveness.

In reviewing the responses to the "re" word stems, only eight participants entered the

word "religion" or "religious." This suggests that the priming task was not strong enough to

prime the religious schema; thus, the task did not prime the forgiveness schema either. Perhaps

including a higher count of religious words in the prime would increase the accessibility of

religiosity. It should also be noted that the religiosity and forgiveness schemas may not be as

closely connected as was hypothesized. *Accessibility Study Two* was actually completed before

Accessibility One; so the lack of a relationship between religiosity and accessibility for

forgiveness was unknown. Therefore, it is likely that even if accessibility for religiosity

increased, it would not increase accessibility for forgiveness or relate to forgiveness. Although

most major religions emphasize forgiveness and teach its practice, there is also a competing

retaliation influence (e.g., an eye for an eye). Values do not necessarily translate into behavior,

particularly when one feels threatened or slighted, which is the case in transgressions. Tsang and

colleagues (2005) tested compassionate versus retributive religious beliefs and found support for

rationalization of unforgiving responses by religious individuals; religious individuals who were

low on forgiveness for a specific transgression were less likely to identify with forgiveness

scriptures and forgiving images of God. Further testing of a religious priming task is needed to

fully understand the relationship between the schemas of religiosity and forgiveness; though, this

pursuit may not be the most fruitful given the weak to nil relationship between religiosity and

accessibility for forgiveness.

       Religiosity and forgiveness variables. Since the priming manipulation did not influence

accessibility for forgiveness, the two conditions were combined and represented as a chronic

accessibility for forgiveness variable. To test hypotheses three and four, that religiosity would

positively relate to likelihood to forgive future transgressions as well as chronic accessibility for

forgiveness, a series of Pearson Product-Moment Correlations were calculated. Hypothesis three

was supported, as religiosity significantly related to likelihood to forgive, $r = .32, p < .01$.

Hypothesis four was also supported, as religiosity positively related to chronic accessibility for

forgiveness, but only for the Additive Method, $r_{Additive\ Method} = .14, p < .05, r_{Karremans\ Method} = .13$,

ns (see Footnote 3).

       The relationship evidenced between religiosity and likelihood to forgive is similar to

previous studies (including *Accessibility Study One*) and is consistent with the premise of the

current study: explain the relationship between religiosity and forgiveness (through

accessibility). The next necessary relationship to establish was between religiosity and

accessibility for forgiveness. The results support this relationship and provide evidence that religious individuals can more readily think about forgiveness, perhaps because of their increased familiarity with the concept. The magnitude of the relationship, however, was small, which provides further evidence for why the priming task did not affect situational accessibility for forgiveness.

Chronic accessibility for forgiveness and likelihood to forgive. A Pearson Product-Moment Correlation was used to test hypothesis five, that chronic accessibility for forgiveness would positively relate to likelihood to forgive future transgression. Hypothesis five was not supported, $r_{Karremans\ Method} = .01$, *ns*, $r_{Additive\ Method} = .02$, *ns* (see Table 8 for a correlation table of all study variables, see Footnote 3). Since female participants had a greater chronic accessibility for forgiveness, the sample was divided so that only females would be included in the relationship. Similar to the prior analyses, chronic accessibility for forgiveness did not significantly relate to likelihood to forgive for female participants, $r_{Karremans\ Method} = .01$, *ns*, $r_{Additive\ Method} = .05$, *ns* (see Table 9 for a complete correlation table for female participants).

Overall, the study failed to link accessibility for forgiveness, situational and chronic, to likelihood to forgive. While results supported the expected relationship between religiosity and forgiveness and religiosity and chronic accessibility for forgiveness, accessibility did not explain participants' intention to forgive future transgressions. The ability to think of and about forgiveness was not supported as an important mechanism in the forgiveness process. This suggests that purely cognitive conceptualizations of forgiveness are not sufficient for understanding the direct process of forgiveness. Perhaps accessibility for forgiveness has a moderated relationship to likelihood to forgive; whether the relationship was moderated by religiosity was tested next.

Interaction between religiosity and chronic accessibility for forgiveness on

likelihood to forgive. A regression analysis was used to investigate the influence of religiosity

and chronic accessibility for forgiveness on likelihood to forgive. The model was run by

entering the predictor variables first, using the Additive Method for accessibility for forgiveness,

and then adding the interaction term (see Footnote 4; see Table 10). To limit problems related to

multicollinearity, the predictor variables were centered at their means (Cohen, Cohen, West, &

Aiken, 2003). The overall model was significant, F ($df = 3, 210) = 9.59, p < .01$. Both a main

effect for religiosity, $b = .11, t = 4.94, p < .01$, and an interaction effect, $b = .01, t = 2.19, p < .05$,

were evidenced; the main effect for chronic accessibility for forgiveness was not significant, $b =$

$-.06, t = -1.11, ns$.

To understand the interaction between chronic accessibility for forgiveness and

religiosity, the interaction was probed at one standard deviation above and below the mean of

religiosity. Two new variables were created: high religiosity (i.e., centered religiosity + 1SD)

and low religiosity (i.e., centered religiosity - 1 SD). With these variables, two additional

regression models were run, one with chronic accessibility, high religiosity, and the

corresponding interaction term and the other with chronic accessibility, low religiosity, and the

corresponding interaction term. Results of the regression models indicated that for individuals a

standard deviation above the mean and at the mean of religiosity, chronic accessibility for

forgiveness was not a significant predictor of likelihood to forgive, $b = .06, t = .88, ns, b = -.06$,

$t = -1.11, ns$, respectively; however, for individuals a standard deviation below the mean on

religiosity, chronic accessibility for forgiveness was a significant predictor for likelihood to

forgive, $b = -.18, t = -1.99, p < .05$ (see Table 11). Regression lines for the analyses are plotted

in Figure 1 (see Table 12 for the simple slope equations). The interaction is thus interpreted as

follows: for individuals low in religiosity, chronic accessibility for forgiveness negatively

related to likelihood to forgive; for individuals high and at the mean of religiosity, chronic

accessibility for forgiveness did not affect likelihood to forgive. For individuals low in

religiosity, being able to easily think of forgiveness decreased their willingness to forgive future

transgressions. This does not support the multiplicative hypothesis that religiosity and

accessibility for forgiveness would increase likelihood to forgive.

A corresponding set of regression analyses was run just for female participants. Similar

to the complete sample, the overall model of likelihood to forgive regressed on chronic

accessibility for forgiveness, religiosity, and the interaction between chronic accessibility for

forgiveness and religiosity was significant, F ($df = 3$, 148) $= 6.88$, $p < .01$ (see Table 13). The

predictor variable religiosity, $b = .11$, $t = 4.08$, $p < .01$, and the interaction term, $b = .01$, $t = 1.97$,

$p = .05$, were significant; chronic accessibility for forgiveness was not a significant predictor, $b =$

-.03, $t = -.43$, ns. Again, the interaction was probed at one standard deviation above and below

the mean of religiosity. The relationship evidenced by the interaction of religiosity and chronic

accessibility for forgiveness was consistent with the prior analysis using all data; however, none

of the simple slopes were significant, one standard deviation above the mean of religiosity $b =$

.09, $t = 1.32$, ns, at the mean of religiosity $b = -.03$, $t = -.43$, ns, one standard deviation below the

mean of religiosity $b = -.14$, $t = -.90$, ns (see Table 14 and 15 and Figure 2). Although the

relationship between highly religious female participants and accessibility for forgiveness did not

reach statistical significance, the direction of the relationship is as hypothesized; at one standard

deviation above the mean of accessibility for forgiveness, the predicted score for likelihood to

forgive for highly religious $= 14.15$, mean religious $= 13.05$, and low religious $= 11.93$. Power

for the interaction effect was $1 - \beta = .50$ (G*Power 3.1.3, Faul et al., 2007).

As predicted, religiosity positively related to likelihood to forgive future transgressions, which is consistent with *Accessibility Study One* and previous studies. Also consistent with *Accessibility Study One*, the relationship between religiosity and likelihood to forgive could not be explained directly by chronic accessibility; chronic accessibility did not relate to likelihood to forgive. However, an indirect relationship between chronic accessibility and forgiveness was supported by the results, as chronic accessibility moderated the relationship between religiosity and likelihood to forgive for individuals low in religiosity. Although not tested in the current study, results suggest that there might be a more influential mechanism involved in forgiveness, motivation. While individuals low in religiosity may be able to think about forgiveness, it may not appropriately match their understanding of an effective response or match their motivations. Future studies may want to investigate how one's beliefs about forgiveness relate to accessibility for forgiveness and likelihood to forgive.

Need for Closure Study

To investigate the second general principle, need for closure, a study was designed that would test both its chronic and situational sources of variance in the forgiveness process. It was proposed that need for closure would be influential in motivating forgiveness, since forgiveness can be perceived as either a goal that will meet closure needs (e.g., resolution reached) or meet avoidance of closure needs (e.g., thoroughly process transgression in context). Therefore, the tendency to use forgiveness as a resolution, automaticity, and belief in the usefulness of forgiveness may be important considerations in understanding the relationship between need for closure and forgiveness. It was proposed that a certain level of comfort related to ambiguity is necessary for forgiveness, because it is a process (Enright, 2001; Worthington, 2001). Need for closure is directly related to one's comfort with ambiguity. Based on this understanding,

individuals who have a chronic need for closure should be less forgiving because they do not like

ambiguity, do not want to allocate the cognitive resources needed to engage in perspective taking

or deeper processing of the transgression, and do not like to be unsure about their decisions.

For situational variance associated with need for closure, it was hypothesized that in

general greater need for closure would relate to less forgiveness. However, automaticity was

thought to moderate the relationship, such that individuals with a high tendency to forgive would

be more likely to forgive, even when need for closure was high. For individuals without a high

tendency to forgive, they were expected to be less likely to forgive when need for closure was

high. Thus, need for closure decreases thinking; and the least cognitively taxing choice will be

chosen (i.e., the automatic and implicit choice).

The following specific hypotheses were tested:

1. Chronic need for closure will negatively relate to chronic forgiveness.

2. Situationally increasing need for closure will negatively relate to likelihood/intention

to forgive future transgressions.

3. Situationally manipulating need for closure will interact with chronic forgiveness,

such that if situational need for closure is high and chronic forgiveness is high,

likelihood/intention to forgive future transgressions is more likely. Also, if situational

need for closure is high and chronic forgiveness is low, likelihood/intention to forgive is

less likely.

Method

Design. A two-part survey design was used for the study, entitled "Memory and Career

Success." This is the same study as described in *Accessibility Study One*. Participants were led

to believe that the study was interested in understanding the relationship between memory and

success in a chosen career in order to guard against social desirability for self-reported trait

forgiveness and to ensure that participants' responses on the accessibility for forgiveness

measure were not biased. Part one of the study occurred online and was managed by

SurveyMonkey.com with secure sockets layer (SSL) security. Part two of the study occurred in

person, where each participant was individually run by a research assistant. Note that the

"Memory and Career Success" study investigated two general principles, accessibility and need

for closure; the focus of this method section is on need for closure.

Participants.

Part one. A sample of 252 college students from a large, Mid-Atlantic university

participated in part one of the study; eight chose to withdraw. Thus, analyses for part one of the

study were performed on 96.8% of the sample ($N = 244$). The study occurred during the spring

($n = 108$), summer ($n = 10$), and fall of 2011 ($n = 99$), and the spring of 2012 ($n = 27$). All

participants were enrolled through a psychology experiment site and opted to receive extra credit

for their participation. Demographically, the sample was mostly female (74.6%), Caucasian

(75.8%), and single, not in a committed relationship (86.9%). The mean age was 19.38± 1.32

years (median = 19 years, mode = 18 years).

Part two. Of the 244 participants who completed part one, 84 chose to participate in part

two (34.4%; spring 2011 $n = 53$, summer 2001 $n = 5$, fall 2011 $n = 21$, spring 2012 $n = 5$). Six

participants in part two were unaware of the manipulation and were removed from the dataset;

thus, analyses for part two of the study were performed on 78 participants (32.0% of part one

participants). Two groups of 27 participants each were part of the *low need for closure condition*

and *control condition*; 24 participants were part of the *high need for closure condition*.

Demographically, the sample was similar to part one, mostly female (80.8%), Caucasian

(78.2%), with a mean age of 19.44 ± 1.32 years (median and mode = 19 years). As reported in

Accessibility Study One, part one and part two participants did not differ on chronic forgiveness,

t = -1.86, *ns*, chronic accessibility, $t_{Karremans\ Method}$ = -.70, *ns*, $t_{Additive\ Method}$ = -.64, *ns*, chronic need

for closure, t = -.28, *ns*, personal growth initiative, t = -.43, *ns*, or on the following personality

factors: extroversion t = .05, *ns*, agreeableness t = -1.37, *ns,* conscientiousness t = -.54, *ns*, or

neuroticism t = 1.11, *ns*. However, part one and part two participants differed on religiosity, t = -

2.64, $p < .01$ (part one m = 23.79, part two m = 27.18), and on intellect/openness, t = -2.86, $p <$

.01 (part one m = 14.12, part two m = 15.40).

     Measures.

     Demographic questionnaire. The questionnaire included information about participants'

gender, age, ethnicity, student status, and relationship status. It also inquired about participants'

college major and anticipated career to increase the face validity of the study's cover story (see

Appendix A).

     Accessibility for forgiveness. The word stem completion task (see Appendix B) consisted

of recalling 10 words beginning with "for," 10 words beginning with "st," and 10 words

beginning with "re." This measure was part of *Accessibility Study One* (see p. 24) and is not part

of the current study.

     Chronic need for closure. The Personal Need for Structure questionnaire (PNS; Neuberg

& Newsom, 1993; Thompson et al., 1989; see Appendix C) is a 12 item self-report dispositional

measure that assesses desire for structure and response to lack of structure. The PNS is an

established measure of need for closure (see p. 25 for more information and scoring). For the

current study, the PNS had a Cronbach's alpha of .83.

Chronic/trait forgiveness. The Tendency to Forgive scale (TTF; Brown, 2003; see Appendix D) is a four item, Likert measure (1=strongly disagree, 7=strongly agree) that assesses dispositional forgiveness. Previous studies have documented its psychometric quality as well as argued for its purer assessment of trait forgiveness, as compared to the TNTF (see Brown, 2003). For the current study, the TTF had a Cronbach's alpha of .82.

Personal growth initiative. The Personal Growth Initiative Scale (PGIS; Robitschek, 1998; Appendix E) is a nine-item measure of self-directed personal growth evaluated on a six-point Likert scale (1=definitely disagree, 6=definitely agree). The measure assesses conscious effort for change and personal advancement (see p. 26 for more information). The PGIS had a Cronbach's alpha of .87 for the current study.

Religiosity. The Santa Clara Strength of Religious Faith questionnaire (SCSORF; Plante & Boccaccini, 1997b, see Appendix F) is a measure of religiosity and consists of 10 four-point Likert questions. In previous studies, the measure has had strong psychometric properties (see p. 26 for more information). The SCSORF had a Cronbach's alpha of .98 for the current study.

Personality. The Mini-International Personality Item Pool questionnaire (Mini-IPIP; Donnellan et al., 2006; see Appendix G) is a shortened version (20 questions) of the 50 item International Personality Item Pool Five-Factor Model questionnaire (Goldberg, 1999). The Mini-IPIP has demonstrated convergent and discriminant validity (see p. 27 for more information). As reported previously, Cronbach's alpha ranged from .69 to .82 for the current study.

Likelihood to forgive. The Transgression Narrative Test of Forgiveness (TNTF, Berry et al., 2001; see Appendix H) is a scenario-based measure that assesses the tendency to forgive

transgressions. For the current study, the TNTF had a Cronbach's alpha of .75 (see p. 27 for more information).

Manipulation Check. A manipulation check (see Appendix L) was created to ensure that participants were attentive to important condition-specific information (i.e., Which task will you be asked to complete next?) and that the manipulations were strong enough to produce expected differences. The expected differences among participants on the TNTF included: how thoroughly the hurtful situations were read, how carefully the responses to the hurtful situations were considered, how important it was to reach a decision quickly, the amount of anxiety produced by the memory task, and, unknown to participants, the length of time it took to complete the TNTF.

Procedures. Participants were given a link after signing up that directed them to part one of the study "Memory and Career Success" on Surveymonkey.com. Upon entering the site, participants were presented with an information sheet (see Appendix I) and consented to participate. Next, they completed the demographic questionnaire, the word fragment completion task to assess accessibility for forgiveness, the PNS, the TTF, the PGIS, the SCSORF, and the Mini-IPI. The career information, PGIS, and Mini-IPI were included to increase the face validity of the "Memory and Career Success" cover story.

Once participants completed part one of the study, they were instructed to email a research assistant in order to schedule an appointment for part two in the laboratory. They were then randomly assigned to one of three need for closure conditions; a random number chart was used to select conditions in sets of three so that each research assistant would run approximately the same number of participants for each condition. Four trained research assistants and the author ran participants individually for part two (researcher one $n = 23$, researcher two $n = 11$,

researcher three *n* = 19, researcher four *n* = 18, and researcher five *n* = 7 participants) using a

scripted procedure (see Appendix J).

Upon beginning part two of the study, participants were given an information sheet (see

Appendix K) about the study and procedure. They were informed that the study would take

approximately 50 minutes to complete. In actuality, the study took roughly 12 minutes to

complete, but participants needed to believe that there would be additional tasks to align with the

cover story. For each of the three conditions, participants completed a paired word memory task,

where the researcher read aloud 10 pairs of words for participants to remember. This was

followed by two tests, one free recall test of the pairs and the other paired recall using the first

word of the pair as a prompt. Feedback was given during the paired recall where the researcher

informed participants if they were correct in their pair response; if participants were incorrect on

the pair, the researcher reread the word pair (e.g., bell goes with oil).

For the *high need for closure condition*, participants were informed that they would be

retested on the pairs of words after they completed a filler task (i.e., the TNTF), which would

increase the difficulty of recalling the pairs. Thus, the manipulation served to increase

participants' motivation to complete the TNTF quickly so that they could be retested on the

words sooner and decrease the decay of the word pairs in their working memory (i.e., increased

need for closure).

For the *low need for closure condition*, participants were informed that they would

complete a measure about how they handle wrongs (i.e., the TNTF) and once finished would be

meeting with other participants to justify their responses. They were not given any other

information related to the word pair task. Thus, the manipulation served to increase participants'

motivation to pick the best answer and to be able to explain how they came to their decisions (i.e., decreased need for closure).

For the *control condition*, participants were instructed to complete the next task about how they handle wrongs (i.e., the TNTF) and were not given any additional information.

During the TNTF, researchers discretely timed how long it took participants to complete the measure, a manipulation check. Next, all participants completed a written manipulation check (see Appendix L) that was presented as a "Mid-point Questionnaire." After the manipulation check was completed, participants were informed that the study was over, were given a debriefing sheet, and were asked follow up questions by the research assistant to ensure that they believed the cover story (i.e., "If you had to guess which group you were in, what would your guess be?", "Did you have any suspicions that the study was not actually about memory and career success?"). None of the participants suspected the true purpose of the study, all participants agreed to include their data in the study, and all committed to remaining silent about the true nature of the study. In this way, contamination of the participant pool was limited.

Results and Discussion

Descriptive statistics. The sum scores for the study's measures were evaluated for extreme skewness, kurtosis, and ceiling and floor effects. Table 2 displays the minimum, maximum, mean, standard deviation, skewness, and kurtosis statistics for all measures. All study variables relevant for the current study were below the cutoff of │2│ for skewness and │7│ for kurtosis; therefore, the measures' distributions do not warrant concern for non-normality (Curran et al., 1996).

Participants from different semesters did not differ significantly on religiosity, F ($df = 3$, 240) $= .87$, *ns*, chronic need for closure, F ($df = 3$, 240) $= .08$, *ns*, or chronic forgiveness F ($df =$

3, 240) = .24, *ns*. Significant differences existed for likelihood to forgive future transgressions, *F* (*df* = 3, 74) = 2.88, *p* < .05 (spring 11 *m* = 15.69, summer 11 *m* = 17.00, fall 11 *m* = 12.75, spring 12 *m* = 15.00), with fall 2011 scoring lower on the measure than spring 2011 and summer 2011. Fall 2011 and spring 2012 did not differ (see Table 3). On part one of the study, male and female participants significantly differed on religiosity, *t* (*df* = 242) = -2.23, *p* < .05 (males *m* = 22.58, females *m* = 25.65), with females endorsing higher religiosity than males; male and female participants did not differ significantly on chronic need for closure, *t* (*df* = 242) = -.96, *ns*, or chronic forgiveness, *t* (*df* = 242) = 1.38, *ns*. For part two of the study, males and females did not significantly differ on religiosity, *t* (*df* = 76) = -.13, *ns*, chronic need for closure, *t* (*df* = 76) = -.45, *ns*, chronic forgiveness, *t* (*df* =76) = 1.79, *ns*, or likelihood to forgive future transgressions, *t* (*df* = 76) = 1.71, *ns*. As few differences existed across participants based on semester of participation and gender, the entire dataset was used for the following analyses.

Manipulation check. First, an analysis of variance was conducted to investigate whether significant differences existed among participants who were run by different research assistants on likelihood/intention to forgive. The ANOVA was not significant, *F* (*df* = 4, 73) = 1.39, *ns*. Therefore, differences on likelihood to forgive are not attributable to the researcher. Next, an analysis of variance was conducted on the time it took participants to complete the likelihood to forgive measure grouped by condition (i.e., low need for closure, control, high need for closure). The ANOVA was significant, *F* (*df* = 2, 75) = 5.74, *p* < .01. Post hoc comparisons, using the least significant difference correction, indicated that participants in the *low need for closure condition*, as expected, took significantly longer to complete the likelihood to forgive measure, *m* = 225.78 ± 59.25 seconds; the *control condition*, *m* = 184.19 ± 50.78 seconds, and *high need for closure condition*, *m* = 184.17 ± 42.36 seconds, did not differ. Therefore, the manipulation of

having participants believe that they would have to justify their responses on the likelihood to

forgive measure caused them to complete the measure slower; however, the manipulation of

having participants believe that the measure was a filler task that should be completed as quickly

as possible, so that they could take a memory test, did not cause participants to complete the

measure any faster than if they were not given any instructions (i.e., the control condition).

Thus, a relative difference was evidenced among the conditions. Whether the difference

meaningfully related to changes in need for closure is investigated later in the analyses.

The manipulation check questionnaire was also evaluated for differences among

conditions using a series of analysis of variances. There were not any significant differences

based on condition for the questions: How thoroughly did you read each of the hurtful scenarios,

F ($df = 2, 75$) = 1.09, ns, How carefully did you consider how you would respond to each of the

hurtful scenarios, F ($df = 2, 75$) = .03, $ns,$ How important was it for you to reach a decision

quickly regarding your response to the hurtful scenarios F ($df = 2, 75$) = .77, ns, Please rate your

anxiety related to the memory task, F ($df = 2, 75$) = .70, ns. Although participants did not self-

report differences on their approach to the TNTF, the objective measure of time to complete the

TNTF supported significant differences. Therefore, the manipulation seemed to change

participants' behavior in the expected manner, though participants were unaware of any change.

Relationship between chronic need for closure and chronic forgiveness. A two-tailed

Pearson Product-Moment Correlation was calculated between chronic need for closure and

chronic forgiveness, $r = -.31, p < .01$. Hypothesis one was supported; chronic need for closure

negatively related to chronic forgiveness. This mirrors Brown and colleagues (2007) finding and

provides support for the idea that if one is comfortable with uncertainty and ambiguity,

forgiveness is more likely to occur.

Relationship between situational need for closure and forgiveness variables. An analysis of variance was used to investigate whether situational need for closure related to likelihood to forgive. The ANOVA was not significant, F ($df = 2, 75$) = 1.04, *ns*, means: *low need for closure condition* = 15.59, *control condition* = 15.52, *high need for closure condition* = 14.17. Therefore, hypothesis two, that increased situational need for closure would negatively relate to likelihood to forgive was not supported. However, the pattern of means supports the hypothesized relationships. The small sample size limited the statistical power for this analysis, $1 - \beta = .24$, effect size $f = .17$ (G*Power 3.1.3, Faul et al., 2007).

In order to more fully understand the relationship between situational need for closure and likelihood to forgive, hypothesis three was tested using a linear regression with the following variables: situational need for closure (i.e., condition represented by two dummy coded variables, low need for closure and high need for closure, respectively), chronic forgiveness, and two interaction terms made by combining the dummy coded conditions and chronic forgiveness (see Table 16 for the regression statistics). In order to limit problems related to multicollinearity, chronic forgiveness was centered at its mean (Cohen et al., 2003). The overall model was significant, F ($df = 5, 72$) = 4.00, $p < .01$. Both a main effect for chronic forgiveness, $b = .54$, $t = 3.75$, $p < .01$, and a moderation effect between chronic forgiveness and low need for closure, $b = -.46$, $t = -2.41$, $p < .05$, were evidenced; the interaction term chronic forgiveness and high need for closure was not significant, $b = -.33$, $t = -1.71$, *ns*. As reported previously, there was not a main effect for condition, $b = .47$, $t = .48$, *ns*, $b = -.93$, $t = -.92$, *ns*, low need for closure and high need for closure condition, respectively. Separate models of likelihood to forgive regressed on chronic forgiveness for each condition were conducted (see Table 17). Results revealed that chronic forgiveness was only a significant predictor of likelihood to forgive for the *control*

condition, *b* = .54, *t* = 4.15, *p* < .01, not for the *low need for closure condition*, *b* = .09, *t* =.69, *ns*,

or the *high need for closure condition*, *b* = .22, *t* = 1.60, *ns* (see Table 18 for each condition's

regression equation and Figure 3 for the graph of simple slopes). Thus, hypothesis three was not

supported; situationally manipulating need for closure did not interact with chronic forgiveness

to predict likelihood to forgive.

Exploratory analyses related to religiosity. A series of Pearson Product-Moment

correlations were calculated between religiosity, the forgiveness variables, and chronic need for

closure (see Table 19). As reported in *Accessibility Study One*, religiosity positively related to

chronic forgiveness, *r* = .16, *p* < .05, and likelihood to forgive *r* = .35, *p* < .01. Religiosity did

not significantly relate to chronic need for closure, *r* = .04, *ns*. In order to test prior findings that

chronic need for closure and religiosity predict chronic forgiveness (Brown et al., 2007), a

regression model of chronic forgiveness was regressed onto religiosity, chronic need for closure,

and an interaction term of religiosity and chronic need for closure. The continuous predictor

variables were centered at their means to limit multicollinearity (Cohen et al., 2003). The overall

model was significant, *F* (*df* = 3, 240) = 11.78, *p* < .01, with two significant main effects, *b* = .10,

p < .01, *b* = -.19, *p* < .01; the interaction term was not significant, *b* = .002, *ns* (see Table 20).

The regression model results are consistent with Brown and colleges (2007) study. Individuals

who are high in religiosity and low in chronic need for closure were highest on chronic

forgiveness. This highlights two important motivational elements relevant to forgiveness, the

value of forgiveness (i.e., religious influence) and fit with an individual's approach to problem-

solving (i.e., need for closure).

General Discussion

The current studies represent a unique way of investigating forgiveness, through the general principles perspective. This is the first known study to use the general principles perspective as an overarching framework for forgiveness research and to design an integrated study that investigated both situational and chronic influences for the same principles. Many variables in forgiveness research evidence complex relationships, such as religiosity, receiving an apology, and the consequences of forgiveness (e.g., McNulty, 2008; Santelli et al., 2009; Tsang et al., 2005). Previous applications of the general principles framework to other areas of research have offered coherent understandings of complex relationships, by explaining both chronic and situational influences through common mechanisms. Indeed, the relationship between receiving an apology and forgiveness has been greatly advanced by the general principle of regulatory fit (Santelli et al., 2009). While the general principles perspective may hold promise for forgiveness research, the current studies do not support the appliability of accessibility or need for closure, at least as proposed. Although the general principles perspective may not be the uniting framework for guiding forgiveness research, it is clear that one is necessary for strengthening forgiveness' empirical grounding.

In general, the current study found supporting evidence for the chronic source of variance for accessibility for forgiveness and need for closure. Note that this is the first study to investigate chronic accessibility for forgiveness. Among the possible reasons for the unsupported situational relationships are that cognitive mechanisms (at least in isolation) may not be as influential for forgiveness, that the studies lacked sufficient contextual environments for capturing the real-life process(es) of forgiveness, and that the general principles perspective may be too general to appreciate the specificity of factors that affect forgiveness. What follows

is a summary of the current findings with suggestions for future investigations, limitiations of the studies, as well as elaborations on the specific explanations for unsupported results.

In *Accessibility Study One*, chronic accessibility for forgiveness was investigated in the religiosity-forgiveness relationship. Results replicated the positive relationships between religiosity and likelihood to forgive and religiosity and chronic forgiveness (i.e., forgivingness). However, the study failed to relate chronic accessibility for forgiveness to religiosity or to the forgiveness variables (i.e., chronic forgiveness and likelihood to forgive). The results of the study suggest that chronic accessibility at least, and perhaps cognition in general when isolated, is not an important mechanism in the religiosity-forgiveness relationship. Motivation may be more influential for values and behaviors. However, this conclusion is theoretically weak, as many factors beyond the true relationship can contribute to an unsupported relationship (poor measurement, range restriction, inattention of participants, etc.). The current study sought to limit distraction and motivate participants to carefully attend to the accessibility task by linking it to career aptitude (part of the cover story). It is unknown whether this information affected participants' survey-taking behavior. Future studies should design procedures that limit the impact of these competing explanations, such as testing partcipants in a controlled environment (e.g., in lab) to limit distraction and envionmental confounds, investigating the relationship in a more mature sample that may have more experience with transgressions/forgiveness, and considering the ordering of measures and information provided in order to appropriately contextualize forgiveness.

Related to information provided, the current study may have failed to provide an appropriate context for assessing accessibility for forgiveness. In order for highly accessibile schemas to be activated and used, there must be an appropriate situation for applying the schema.

By measuring accessibility for forgiveness without first providing a transgression scenario, as occurred in the procedure of Karremans and Aarts (2007) study three, a highly accessible forgiveness schema may not have been captured in the current assessment. The low rate of "forgive" words, as well as nonforgiveness words for the "re" word stems, points to the lack of an appropriate context to apply the forgiveness schema. A suggestion for future studies investigating chronic accessibility for forgiveness is that they need to first provide a context where the forgiveness schema could be applied. For example, presenting an article on international conflict, a community coming together after a tragedy, or common relationship arguments. Whichever context is chosen, forgiveness should be one of a number of possible responses and not activated directly, otherwise this would be situational accessibility. In this way, chronic accessibility may be accurately reflected in the word fragment task according to chronic influence.

In *Accessibility Study Two*, the study's procedure intended to test both the situational and chronic sources of variance related to accessibility in the religiosity-forgiveness relationship. (The results from *Accessibility Study One*, which indicated that accessiblity was not influential in the religiosity-forgiveness relationship, were unknown at the time, as *Accessibility Study Two* was actually the first study completed chronologically.) Despite the design of *Accessibility Study Two*, the study was only able to test the chronic source of variance associated with accessibility for forgiveness; the priming task for situational accessibility for forgiveness was ineffective. The religiosity schema was not primed, as only eight participants entered the word "religion" or "religious" for the "re" word stems. This suggests that the priming task was not strong enough to prime the religious schema; thus, the task did not prime the forgiveness schema either. Perhaps having more than five religious words in the word fragment completion task would strengthen

the prime; however, the link between the schemas of religiosity and forgiveness is likely low

given the lack of a relationship found in *Accessibility Study One*. Future studies interested in

situational accessibility for forgiveness will likely not find a relationship with religiosity.

However, accessibility may explain other relationships in forgivness, such as the relationship

between justice and forgiveness (see Karremans & Van Lange, 2005).

As *Accessibility Study Two* failed to successfully manipulate situational accessibility for

forgiveness, the study is better considered a chronic accessibility study within the context of the

religioisty-forgiveness relationship. Once again, results supported the positive relationship

between religiosity and likelihood to forgive; but unlike *Accessibility Study One*, religiosity

positively related to chronic accessibility for forgiveness. The small relationship evidenced

between religiosity and chronic accessibility for forgiveness may point to increased error

variance, for example competing religious ideas related to forgiveness such as compassionate

versus retributive beliefs. Nonetheless, the study found supporting evidence for increased

accessibility for forgiveness among religious individuals. There was also a significant

interaction effect between religiosity and chronic accessibility for forgiveness for predicting

likelihood to forgive. For most participants in the study, religiosity was the strongest predictor

of likelihood to forgive. However, for individuals low in religiosity, accessibility for forgiveness

negatively predicted likelihood to forgive. This result suggests that beliefs and motivations

related to forgiveness, such as its usefullness and desirability, may be more influential on

likelihood to forgive than accessibility. Future studies could test this hypothesis by using an

implicit association test (IAT) to investigate attitudes related to forgiveness, for example sorting

categories could include good vs. bad, positive vs. negative, and beneficial vs. wasteful. The

IAT is an ideal attitude measure given the link between forgiveness and social desirability

(McCullough et al., 1998; Rye et al., 2001). Therefore, participants' responses about the

goodness of forgiveness would arguably be unbiased. An IAT for forgiveness was developed by

Goldring (2011) in Australia.

A final point about *Accessibility Study Two* relates to the lack of context when assessing

accessibility. The low frequency of "forgive" words entered in the word fragment task suggests

that chronic accessibility for forgiveness was not adequately assessed. As in *Accessiblity Study*

One, future research should provide a transgression scenario prior to assessing accessibility for

forgiveness. This could be presented in a written account, in the form of a video clip, or self-

generated by participants thinking about how they handle conflict.

For the *Need for Closure Study*, results replicated the negative relationship between

chronic need for closure and chronic forgiveness (or forgivingness). The negative relationship

points to the process orientation of forgiveness; a level of comfort with ambiguity is helpful as

fluctuations occur between negative energies and positive energies toward the transgressor.

Rather than being a decisive action, forgiveness often requires deeper processing of competing

and inconsistent information (e.g., past prosocial behavior vs. a recent violation). If one is not

comfortable with ambiguity, it is unlikely that forgiveness will occur. Accounting for the role of

chronic need for closure is important in understanding forgiveness and may assist in clarifying

future studies, such as forgiveness in committed relationships.

For situational need for closure, the study's manipulation changed participants' relative

response style, as predicted, on the likelihood to forgive measure; the *low need for closure*

condition took the longest amount of time to complete the measure. However, the manipulation

did not produce differences in likelihood to forgive, nor did it lead to a meaningful change in

participants' response style on the likelihood to forgive measure. The artificiality of responding

to scenario transgressions likely failed to tap into the personal relevancy of forgiveness and did

not accurately capture one's typical engagement in the forgiveness process. As a motivational

principle, personal relevancy is likely important in measuring situational need for closure.

Future situational need for closure studies could have participants generate current, personally-

experienced transgressions or stage a mild transgression that occurs as part of the study (e.g.,

have the participant wait for a significant amount of time before beginning the study). The

creativity of experimental designs is a strength of the general principles perspective that could

also be applied to testing other frameworks.

The final analysis in the *Need for Closure Study* was the interaction model between

situational need for closure and chronic forgiveness on likelihood to forgive. The pattern of the

interaction effect was interesting. Statistically, chronic forgiveness was a significant predictor

only for the *control condition*. For the *low need for closure* and *high need for closure*

conditions, chronic forgiveness was not a significant predictor. The study's manipulation

removed the influence of chronic forgiveness on predicting likelihood to forgive, which for the

control condition was quite strong, $\beta = .64$. Additionally, for the *high need for closure*

condition, the interaction effect size was in the predicted direction, $\beta = .32$, but was not

significant, $p = .12$. Based on this study, the interpretation of situational need for closure is

unclear. Further evidence and more power are necessary to understand the relationship between

situational need for closure and forgiveness.

In sum, the overall purpose of the current research was to provide evidence for the

general principles of accessiblity and need for closure in the forgiveness process. Results from

the three studies provide unclear evidence on whether accessibility for forgiveness and need for

closure can accurately be applied to forgiveness.

Although many of the hypothesized relationships between accessibility for forgiveness and need for closure were not supported in the current research, primarily the situational hypotheses, the study displays the logic and specificity of predictions that is offered by a guiding framework, even if the framework is not the general principles perspective. This is a critical transition point for forgiveness research; a comprehensive guiding framework is important for the sustainability of empirical investigations and legitimacy of forgiveness research. Given the lack of evidence for the general principles perspective in the current study, future studies may want to evaluate other broad frameworks that might guide forgiveness research, such as Mischel's CAPS. The parsimony of a broad framework is advantageous because it unities findings from separate areas, for example forgiveness among close relationships and forgiveness within the context of war, by understanding the function of mechanisms, whether chronic or situational. However, the complexity and multifaceted nature of forgiveness may require specialized models to explain important components of forgiveness, as is the current state of forgiveness research. It is suggested, however, that before resigning to a multitude of models, further inquire into a broad framework be pursued. The potential benefits of a unifying framework are worth further attention and investigation.

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Footnotes

[1] A Psycinfo search using "forgiveness" as a keyword returned 763 peer reviewed journal articles from the years 2000-2011 on February 18, 2012.

[2] Need for structure and need for closure are conceptualized as the same construct, with need for structure coming from a multifactor theoretical model and need for closure coming from a unidementional model (Kruglanski, Atash, DeGrada, Mannetti, Pierro, &Webster, 1997; Thompson, Naccarato, Parker, & Moskowitz, 2001). Empirically, it has been argued that both measures are mulidementional and that the Personal Need for Structure scale (Thompson, Naccarato, & Parker, 1989) is a cleaner measure of the construct than the Need for Closure Scale (Kruglanski, Webster, & Klem, 1993; Neuberg, Judice, & West, 1997).

[3] Accessibility for forgiveness was also analyzed as a dichotomous variable (i.e., any "forgive" word vs. no "forgive" word). This is based on the premise that a schema is either accessible or not accessible. For *Accessibility Study One*, accessibility for forgiveness did not relate to the forgiveness variables ($r_{TTF} = .03$, *ns*; $r_{TNTF} = .04$, *ns*) or to religiosity ($r = .09$, *ns*). For *Accessibility Study Two*, accessibility for forgiveness did not relate to likelihood to forgive ($r = .01$, *ns*) or to religiosity ($r = .01$, *ns*).

[4] The Additive Method was used for accessibility for forgiveness because it correlated with religiosity. The Karremans Method did not correlate with religiosity.

Appendix A

Demographic Questionnaire for Memory and Career Success Study

Please select the answer that best describes you and remember to be careful and answer each question. Thank you.

What is your gender?
                    Male   Female

What is your age?
            _____

What is your ethnic background?
                    White – non-Hispanic
                    African-American
                    Asian
                    Hispanic
                    Other

What is your current student status?
                    Freshman
                    Sophomore
                    Junior
                    Senior
                    Graduate Student
                    Other: _____

What is your current or anticipated major?
                    _____

What profession do you see yourself going into after college?
                    _____

What is your current marital status?
                    Single – never married
                    Engaged / Committed relationship
                    Married
                    Divorced
                    Separated

Appendix B

Word Stem Completion Task
Adapted from Karremans and Aarts (2007)

Directions: For this task, you will be given the first two to three letters of words. Your job is to fill in the blanks with other letters so that a complete word is formed. There is no correct answer, as multiple words can be formed from the letters. However, you must create an existing word that would be found in an English dictionary. This is a timed task, so work quickly and be sure to complete all the words.

Practice: To be sure that you understand the task and are able to work as quickly as possible on the real task, the following examples are provided for you practice.

For example: thr_____ → through

Fill in the following examples:

br_____

pl_____

Here are some potential answers for the practice items:
break, brake, brick, brittle, bright, bring, brought, brail, brass, broom, brute, breed, brew, broil, broken, braid

please, plus, plume, plat, plum, plump, plural, plausible, plaque, pled, pleasure, plead, plight, plow, plot, pluck, plumber

Directions: Below are a list of letters that are the beginnings of words. Please fill in the blanks as quickly as you can, so that a complete word is formed. **Do not repeat the same word twice and make sure that the word you form is an actual word**. You will be timed on this task, so do your best.

For example: thr_____ → through

1. for _____

2. for _____

3. for _____

4. for _____

5. for _____

Appendix B (cont.)

6. for _____

7. for _____

8. for _____

9. for _____

10. for _____

Directions: Below are a list of letters that are the beginnings of words. Please fill in the blanks as quickly as you can, so that a complete word is formed. **Do not repeat the same word twice and make sure that the word you form is an actual word**. You will be timed on this task, so do your best.

For example: thr_____ → through

1. st_____

2. st_____

3. st_____

4. st_____

5. st_____

6. st_____

7. st_____

8. st_____

9. st_____

10. st_____

Directions: Below are a list of letters that are the beginnings of words. Please fill in the blanks as quickly as you can, so that a complete word is formed. **Do not repeat the same word twice and make sure that the word you form is an actual word**. You will be timed on this task, so do your best.

For example: thr_____ → through

Appendix B (cont.)

1. re_____

2. re_____

3. re_____

4. re_____

5. re_____

6. re_____

7. re_____

8. re_____

9. re_____

10. re_____

Appendix C

Personal Need for Structure Scale (PNS; Neuberg & Newsom, 1993)

Directions: Read each of the following statements and decide how much you agree with each according to your attitudes, beliefs, and experiences. It is important for you to realize that there are no "right" or "wrong" answers to these questions. People are different, and we are interested in how you feel. Please respond according to the following 6-point scale:

1 = *strongly disagree*
2 = *moderately disagree*
3 = *slightly disagree*
4 = *slightly agree*
5 = *moderately agree*
6 = *strongly agree*

1. It upsets me to go into a situation without knowing what I can expect from it.

2. I'm not bothered by things that interrupt my daily routine.*

3. I enjoy having a clear and structured mode of life.

4. I like to have a place for everything and everything in its place.

5. I enjoy being spontaneous.*

6. I find that a well-ordered life with regular hours makes my life tedious.*

7. I don't like situations that are uncertain.

8. I hate to change my plans at the last minute.

9. I hate to be with people who are unpredictable.

10. I find that a consistent routine enables me to enjoy life more.

11. I enjoy the exhilaration of being in unpredictable situations.*

12. I become uncomfortable when the rules in a situation are not clear.

Appendix D

Tendency to Forgive Scale (TTF; Brown, 2003)

Directions: Using the scale below, choose the number which best describes the extent to which you agree or disagree with each statement.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Disagree Somewhat	Undecided	Agree Somewhat	Agree	Strongly Agree

1. I tend to get over it quickly when someone hurts my feelings.

2. If someone wrongs me, I often think about it a lot afterward.*

3. I have a tendency to harbor grudges.*

4. When people wrong me, my approach is just to forgive and forget.

Appendix E

Personal Growth Initiative Scale (PGIS; Robitschek, 1998)

Directions: Using the scale below, choose the number which best describes the extent to which you agree or disagree with each statement.

1 = Definitely disagree
2 = Mostly disagree
3 = Somewhat disagree
4 = Somewhat agree
5 = Mostly agree
6 = Definitely agree

1. I know how to change specific things that I want to change in my life.

2. I have a good sense of where I am headed in my life.

3. If I want to change something in my life, I initiate the transition process.

4. I can choose the role that I want to have in a group.

5. I know what I need to do to get started toward reaching my goals.

6. I have a specific action plan to help me reach my goals.

7. I take charge of my life.

8. I know what my unique contribution to the world might be.

9. I have a plan for making my life more balanced.

Appendix F

Santa Clara Strength of Religious Faith Questionnaire (SCORF; Plante & Boccaccini, 1997b)

Directions: Please answer the following questions about religious faith using the scale below.
Indicate the level of agreement (or disagreement) for each statement.
1 = strongly disagree 2 = disagree 3 = agree 4 = strongly agree

1. My religious faith is extremely important to me.
      1   2   3   4

2. I pray daily.
      1   2   3   4

3. I look to my faith as a source of inspiration.
      1   2   3   4

4. I look to my faith as providing meaning and purpose in my life.
      1   2   3   4

5. I consider myself active in my faith or church.
      1   2   3   4

6. My faith is an important part of who I am as a person.
      1   2   3   4

7. My relationship with God is extremely important to me.
      1   2   3   4

8. I enjoy being around others who share my faith.
      1   2   3   4

9. I look to my faith as a source of comfort.
      1   2   3   4

10. My faith impacts many of my decisions.
      1   2   3   4

Appendix G

Mini-International Personality Item Pool (Mini-IPI; Donnellan, Oswald, Baird, & Lucas, 2006)

Directions: Below are phrases describing people's behaviors. Please use the rating scale to describe how accurately each statement describes *you*. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully and choose the appropriate response.

Response Options
1: Very Inaccurate
2: Moderately Inaccurate
3: Neither Inaccurate nor Accurate
4: Moderately Accurate
5: Very Accurate

1. Am the life of the party
2. Sympathize with others' feelings
3. Get chores done right away
4. Have frequent mood swings
5. Have a vivid imagination
6. Don't talk a lot
7. Am not interested in other people's problems
8. Often forget to put things back in their proper place
9. Am relaxed most of the time
10. Am not interested in abstract ideas
11. Talk to a lot of different people at parties
12. Feel others' emotions
13. Like order
14. Get upset easily
15. Have difficulty understanding abstract ideas
16. Keep in the background
17. Am not really interested in others
18. Make a mess of things
19. Seldom feel blue
20. Do not have a good imagination

Appendix H

Transgression Narrative Test of Forgiveness (TNTF; Berry et al., 2001)

Directions: Below are a number of situations in which people might find themselves. People respond in different ways to these situations in terms of what things they will forgive. We would like you to read each situation and imagine it has happened to you.

Then we would like you to use the scale below to indicate how you think you would respond to the situation:

1 = *definitely not forgive*,
2 = *not likely to forgive*,
3 = *just as likely to forgive as not*,
4 = *likely to forgive*, and
5 = *definitely forgive*.

1. Someone you occasionally see in a class has a paper due at the end of the week. You have already completed the paper for the class and this person says he or she is under a lot of time pressure and asks you to lend him or her your paper for some ideas. You agree, and this person simply retypes the paper and hands it in. The professor recognizes the paper, calls both of you to her office, scolds you, and says you are lucky she doesn't put you both on academic probation. Imagine yourself in such a situation and mark how likely you are to forgive the person who borrowed your paper.
1   2   3   4   5

2. A fairly close friend tells you that he or she needs some extra money for an upcoming holiday. You know a married couple who needs a babysitter for their 3-year-old for a couple of nights and you recommend your friend. Your friend is grateful and takes the job. On the first night, the child gets out of bed and, while your friend has fallen asleep watching television, drinks cleaning fluid from beneath the kitchen sink. The child is taken by an ambulance to the hospital and stays there for 2 days for observation and treatment. The married couple will not speak to you. Imagine yourself in such a situation and mark how likely you are to forgive your friend.
1   2   3   4   5

3. A friend offers to drop off a job application for you at the post office by the deadline for submission. A week later, you get a letter from the potential employer saying that your application could not be considered because it was postmarked after the deadline and they had a very strict policy about this. Your friend said that he or she met an old friend, went to lunch, and lost track of time. When he or she remembered the package, it was close to closing time at the post office and he or she would have to have rushed frantically to get there; he or she decided that deadlines usually aren't that strictly enforced so he or she waited until the next morning to deliver the package. Imagine yourself in such a situation and mark how likely you are to forgive your friend for not delivering the application on time.
1   2   3   4   5

Appendix H (cont.)

4. You just started a new job and it turns out that a classmate from high school works there, too. You think this is great; now you don't feel like such a stranger. Even though the classmate wasn't part of your crowd, there's at least a face you recognize. You two hit it off right away and talk about old times. A few weeks later, you are having lunch in the cafeteria and you overhear several of your coworkers, who do not realize you are nearby, talking about you and laughing; one even sounds snide and hostile toward you. You discover that your old classmate has told them about something you did back in school that you are deeply ashamed of and did not want anyone to know about. Imagine yourself in such a situation and mark how likely you are to forgive your old classmate for telling others your secret.
1   2   3   4   5

5. A distant cousin you haven't seen since childhood calls you one day and asks if he can stay with you while he looks for work and an apartment. You say it will be fine. He asks you to pick him up from the bus station that night and you do so. Your cousin is just like you fondly remember him; you reminisce for several hours. The next morning you give him some advice on job and apartment hunting in the area, then you go about your own business. That night you come home and witness an angry argument in front of your residence between your cousin and a neighbor. Your cousin is obviously very drunk, cursing, and out of control. You ask what's happening and without really taking the time to recognize you, your cousin throws a bottle at you, cutting the side of your head. The police arrive and, with some scuffling, take your cousin away and take you to the emergency room where you have stitches put on your cut. The next afternoon, your cousin calls from the police station. He says he is really sorry about the whole scene and that it was not like him but he was upset about being turned down for three jobs that day. Imagine yourself in such a situation and mark how likely you are to forgive your cousin.
1   2   3   4   5

Appendix I

Information Sheet "Memory and Career Success" Part One

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Information Sheet for Participants
in Research Projects Involving Human Subjects

Title of Project: Memory and Career Success
Investigator(s): Mary Kate Law   &   Danny Axsom
                    (mklaw@vt.edu)   (axsom@vt.edu)

Institutional Review Board Contact: David Moore, moored@vt.edu, 540-231-4991;
Dr. David Harrison, dwh@vt.edu, 540-231-4422

I. Purpose of this Research/Project
This study looks at how personality variables and memory might relate to career choices.

A total of 400 students are needed for the study. All students who are signed-up through the
SONA research site at Virginia Tech can participate. Students must be 18 years of age or older.

II. Procedures
This is a two part study. Part one will ask you to complete several online surveys that ask about
your feelings, thoughts, and behaviors. It will also include a memory task. Part one should take
approximately 30 minutes and is the only part that you will complete now.

Part two of the study will occur in Williams Hall. You will be required to email a research
assistant (ccheshire@vt.edu) after completing part one who will give you a time and date to
come into Williams Hall. Part two of the study will take you approximately 50 minutes to
complete.

III. Risks
There is no more than minimal risk associated with this study. This means that the tasks require
as much stress or less stress than everyday tasks you are used to performing. However, if you
decide at any time that you do not want to participate, you are allowed to leave without any
consequences.

IV. Benefits
There are not any tangible rewards for your participation in the study; however, your
participation will increase your awareness of how research in psychology works. Your
participation also has the potential to increase scientific knowledge in this area.

V. Extent of Anonymity and Confidentiality
Your participation in the study is completely anonymous and confidential. Your answers to
questions will in no way be linked to your name or identifying information. When you end the

Appendix I (cont.)

study you will be asked to enter your Virginia Tech PID; however, your PID will not be linked to your responses and is only to make sure that you receive research credit.

VI. Compensation
You will receive one hour of study credit for your participation in part one of the study, as outlined in your course syllabus. Participation in part two of the study will result in another hour of research credit.

VII. Freedom to Withdraw
You are free to withdraw from the study at any time without penalty. If you choose to withdraw, you can contact the researcher (mklaw@vt.edu) in order to receive credit for your participation.

VIII. Subject's Permission
I have read and understand the Consent Form and conditions of this project. I acknowledge that I am 18 years of age or older.

If you would like to participate in this study, please indicate it by clicking the submit button below.

SUBMIT

If you have any questions or concerns regarding this project, you may contact any or all of the following individuals:

> Dr. David Moore, Chair of the Institutional Review Board, moored@vt.edu, 540-231-4991
> Dr. David Harrison, Departmental Chair of the Human Subjects Committee, dwh@vt.edu, 540-231-4422
> Dr. Danny Axsom, Principal Investigator, axsom@vt.edu, 540-231-6495

Appendix J

Script for "Memory and Career Success" Part Two

Control Condition
Researcher: "**Hi. Are you here for the *Memory and Career Success* study?**"

Participant: "Yes."

R: "**Nice to meet you. I'm _----------------------. You must be ----------------.**

(Walk participant to the correct room.

May make small talk --- HOW ARE YOU DOING TODAY?)

You can have a seat here (*point to the chair at the* table). **First, I'm going to give you some**

information about the study as well as an information sheet. You can read over this (*hand*

the participant the information sheet). **If you have any questions after reading this, please let**

me know."

>   *Give the participant time to look over the packet. When they have finished and signed the*

>   *form say,*

R: "**I would like to emphasize, as it states on the information sheet, that the information we**

gather about you in this study will be kept confidential. Your involvement in this study is

entirely voluntary and you are free to withdraw at any time. We will be testing your

memory, which may relate to how successful you may be in your career. If you don't have

any questions, let's begin."

>   *Allow a few seconds for any questions and answer any questions to the best of your*

>   *ability without telling the participant anything specific about what is being examined in*

>   *the study.*

R: *(use fingers to emphasize 1, 2, 3 of the tasks. Look directly at participant and make sure*

that they are paying attention.) "**To give you a layout of the study, first you will be asked to**

Appendix J (cont.)

complete a memory performance task that will be scored. Then you will be given a task

related to how you react to hurtful situations. Once you are finished with that task, you

will be asked to fill out some additional measures. All in all, the study will take close to 50

minutes to complete. Ready to begin?"

P: "Yes."

R: "**Okay. I am going to read you ten pairs of words. Listen carefully because when I finish reading the list I will ask you to recall as many pairs as you can. Are you ready?**" (The words should be read with about ½ to 1 second between each word and 2 seconds between each pair.)

ship – apple

pail – robin

jar – block

leaf – mop

pencil – shadow

oil – bell

fence - gut

dress – whelp

soap – cup

hand – lamp

R: **Now tell me as many of the word pairs as you can.** (Write these down as the participant repeats them.)

R: **Now I am going to read the first word of each pair. Tell me which word goes with "ship?"** (If participant replies with "apple" say, "**Right**." If participant does not know or responds with an incorrect word say, "**Actually, Apple goes with ship**."
Which word goes with "pail"? (If participant replies with "robin" say, "**Right**." If participant does not know or responds with an incorrect word say, "**Robin goes with pail**." (This process continues until all words are read.)

Appendix J (cont.)

R: **Your next task is to read five hurtful situations imagining that you are the person wronged. Please respond as accurately as you can and let me know when you are finished.**

Give participant the TNTF to complete. Start timer inconspicuously and note how long it takes them to complete the measure. Record time:

TNTF (record time to complete:_____minutes_____seconds = _____seconds)

Give participant the "Mid-Point Questionnaire"

R: **This is your next task. Please let me know when you are finished.**

Make sure participants responds to all questions on "Mid-Point Questionnaire" (particularly question #1). Give participant the "Information" and tell them:

R: **This is actually the end of the study. You will not be asked to complete any more measures. Thank you for participating and here is some additional information about the study.**

Let participant read the "Information" sheet and when they are done, make sure they sign the bottom of the page. Then say:

R: **I'd like to reiterate that the memory task will not be scored and there is no known link to your performance and later career success. This was part of the cover story to ensure that your responses on the hurtful situations were unbiased. I am sorry that we were not able to tell you everything up front and thank you for understanding. If you would please reread the statement at the bottom of the page and acknowledge that you understand and agree to the statement, I would appreciate it.** *(Give participant time to reread statement and make sure they give some acknowledgment… a head nod will suffice)* **If you had to guess which group you were in** (*point to the graph*) **what would your guess be?** *(You can explain the graph if they don't understand it.)*

_____Group Participant Thought They Were Apart Of

R: **Did you have any suspicions that the study was not actually about memory and career success?** *(Get details if they say "yes.")*

_____ No

_____ Yes, explain:

R: **Thank you again for participating and agreeing not to tell anyone about the true purpose of the study. If you have any questions later on, feel free to contact us.**

Appendix K

Information Sheet "Memory and Career Success" Part Two

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Information Sheet for Participants
in Research Projects Involving Human Subjects

Title of Project: Memory and Career Success
Investigator(s): Mary Kate Law   &   Danny Axsom
                   (mklaw@vt.edu)   (axsom@vt.edu)

Institutional Review Board Contact: David Moore, moored@vt.edu, 540-231-4991;
Dr. David Harrison, dwh@vt.edu, 540-231-4422

I. Purpose of this Research/Project
This study looks at how personality variables and memory might relate to career choices.

A total of 400 students are needed for the study. All students who are signed-up through the
SONA research site at Virginia Tech can participate. Students must be 18 years of age or older.

II. Procedures
This is a two part study. You have already completed part one and will now begin part two. For
this part of the study, you will be asked to complete a memory task as well as other measures that
may relate to career success. This part of the study will take you approximately 50 minutes to
complete.

III. Risks
There is no more than minimal risk associated with this study. This means that the tasks require
as much stress or less stress than everyday tasks you are used to performing. However, if you
decide at any time that you do not want to participate, you are allowed to leave without any
consequences.

IV. Benefits
There are not any tangible rewards for your participation in the study; however, your
participation will increase your awareness of how research in psychology works. Your
participation also has the potential to increase scientific knowledge in this area.

V. Extent of Anonymity and Confidentiality
Your participation in the study is completely anonymous and confidential. Your answers to
questions will in no way be linked to your name or identifying information. When you end the
study you will be asked to enter your Virginia Tech PID; however, your PID will not be linked to
your responses and is only to make sure that you receive research credit.

Appendix K (cont.)

VI. Compensation
Participation in part two of this study will result in another hour of research credit. Therefore, you will receive two research credits total for participating in this study.

VII. Freedom to Withdraw
You are free to withdraw from the study at any time without penalty.

VIII. Subject's Permission
I have read and understand the Consent Form and conditions of this project. I acknowledge that I am 18 years of age or older.

_____   _____
                         Participant Signature   Date

If you have any questions or concerns regarding this project, you may contact any or all of the following individuals:

> Dr. David Moore, Chair of the Institutional Review Board, moored@vt.edu, 540-231-4991
> Dr. David Harrison, Departmental Chair of the Human Subjects Committee, dwh@vt.edu, 540-231-4422
> Dr. Danny Axsom, Principal Investigator, axsom@vt.edu, 540-231-6495

Appendix L

Manipulation Check for Memory and Career Success Study

1.   Which task will you be asked to complete next?

     _____

2.   How thoroughly did you read each of the hurtful scenarios?

1	2	3	4	5	6	7
Not Very	Somewhat			Somewhat		Extremely
Thoroughly	Incompletely			Thoroughly		Thoroughly
At All						

3.   How carefully did you consider how you would response to each of the hurtful scenarios?

1	2	3	4	5	6	7
Not Very	Somewhat			Somewhat		Extremely
Carefully	Carelessly			Carefully		Carefully
At All						

4.   How important was it for you to reach a decision quickly regarding your response to the hurtful scenarios?

1	2	3	4	5	6	7
Not Very	Somewhat			Somewhat		Extremely
Important	Unimportant			Important		Important
At All						

5.   Please rate your anxiety related to the memory task

1	2	3	4	5	6	7
Not Very	Somewhat			Somewhat		Extremely
Anxious	Relaxed			Anxious		Anxious
At All						

Appendix M

Demographic Questionnaire for Language IQ and Correlates

Please select the answer that best describes you and remember to be careful and answer each question. Thank you.

What is your gender?
          Male   Female

What is your age?
          _____

What is your ethnic background?
          White – non-Hispanic
          African-American
          Asian
          Hispanic
          Other

What is your current student status?
          Freshman
          Sophomore
          Junior
          Senior
          Graduate Student
          Other: _____

What is your current marital status?
          Single – never married
          Engaged / Committed relationship
          Married
          Divorced
          Separated

Appendix N

Word Completion Task

Religious Prime Condition

Directions: Each of the words listed below is missing a vowel. Under each string of letters, type a complete word by **adding a vowel** (a, e, i, o, u) to the string. Complete the task as quickly and as accurately as you can. This is a measure of language intelligence.

For example: prodce = produce

Devtion
Intellgence
Prayr
Famly
Relgious
Creer
Insprational
Fortne
Wrship
Hppiness

No Prime Condition

Directions: Each of the words listed below is missing a vowel. Under each string of letters, type a complete word by **adding a vowel** (a, e, i, o, u) to the string. Complete the task as quickly and as accurately as you can. This is a measure of language intelligence.

Sndwich
Intellgence
Campr
Famly
Arctc
Creer
Vehcle
Fortne
Bulding
Hppiness

Appendix O

Information Sheet "Language IQ and Correlates"

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Information Sheet for Participants
in Research Projects Involving Human Subjects

Title of Project: Language IQ and Correlates
Investigator(s): Mary Kate Law   &   Danny Axsom
                   (mklaw@vt.edu)   (axsom@vt.edu)

Institutional Review Board Contact: David Moore, moored@vt.edu
                                        540-231-4991

I. Purpose of this Research/Project
This study looks at how language ability relates to a variety of other variables, such as thoughts, feelings, and behaviors.

A total of 200 students are needed for the study. All students who are signed-up through the SONA research site at Virginia Tech can participate. Students must be 18 years of age or older.

II. Procedures
This study will ask you to complete several online surveys that ask about your feelings, thoughts, and behaviors. It will also include a language ability task. This study should take you approximately 20 minutes to complete.

III. Risks
There is no more than minimal risk associated with this study. This means that the tasks require as much stress or less stress than everyday tasks you are used to performing. However, if you decide at any time that you do not want to participate, you are allowed to leave without any consequences.

IV. Benefits
There are not any tangible rewards for your participation in the study; however, your participation will increase your awareness of how research in psychology works. Your participation also has the potential to increase scientific knowledge in this area.

V. Extent of Anonymity and Confidentiality
Your participation in the study is completely anonymous and confidential. Your answers to questions will in no way be linked to your name or identifying information. When you end the study you will be asked to enter your Virginia Tech PID; however, your PID will not be linked to your responses and is only to make sure that you receive research credit.

VI. Compensation
You will receive one hour of study credit for your participation in the study, as outlined in your course syllabus.

Appendix O (cont.)

VII. Freedom to Withdraw
You are free to withdraw from the study at any time without penalty. If you choose to withdraw, you can contact the researcher (mklaw@vt.edu) in order to receive credit for your participation.

VIII. Subject's Permission
I have read and understand the Consent Form and conditions of this project. I acknowledge that I am 18 years of age or older.

If you would like to participate in this study, please indicate it by clicking the submit button below.

SUBMIT

Table 1

Predictors of Forgiveness Categorized by Situation and Person Influences

Situation	Person
• Transgression perceived to be less severe (Boon & Sulsky, 1997; Brown & Phillips, 2005; Girard & Mullet, 1997	• Victim high on religiosity (Berry et al., 2001; Edwards et al., 2002; Fox & Thomas, 2008; Gordon et al., 2008; Mullet et al., 2003)
• Transgression perceived to be unintentional (Bradfield & Aquino, 1999; Boon & Sulsky, 1997; Fincham, 2000; McCullough et al., 2003; Takaku, Weiner, & Ohbuchi, 2001)	• Victim high on trait agreeableness (e.g., Berry et al., 2005; Koutsos et al., 2008; Symington et al., 2002)
• Transgressor apologizes or compensates for transgression (Brown & Phillips, 2005; Darby & Schlenker, 1982; Koutsos, Wertheim, & Kornblum, 2008; McCullough et al., 1998; Mullet & Girard, 2000; Ristouski & Wertheim, 2005)	• Victim high on trait emotional stability (e.g., Allemand et al., 2008; Gauché & Mullet, 2008; Maltby et al., 2008; McCullough & Hoyt, 2002) • Victim high on trait empathy (Berry et al., 2005) • Victim low on trait anger (Berry et al., 2005; Seybold et al., 2001; Yamhure Thompson et al., 2005)
• Relationship with transgressor is close, committed, and valued (Brown & Phillips, 2005; Finkel, Rusbult, Kumashiro, & Hannon, 2002; Koutsos et al., 2008; McCullough et al., 1998; Rusbult et al., 2005)	• Victim low on trait anxiety (Seybold et al., 2001; Yamhure Thompson et al., 2005) • Victim low on depressive symptomology (Webb et al., 2008; Ysseldyk, Matheson, & Anisman, 2007)
• Negative consequences from transgression ceased (McCullough et al., 1998; Wieselquist, Rusbult, Foster, & Agnew, 1999)	• Victim older in age (Allemand, 2008; Chiaramello et al., 2008; Girard & Mullet, 1997; Lawler-Row & Piferi, 2006; Mullet & Girard, 2000; Subkoviak et al., 1995; Toussaint et al., 2001; Walker & Gorsuch, 2002
• Expectation that transgressor will not commit future transgressions (Koutsos et al., 2008)	• Victim female (see Miller et al., 2008 for a review) • Victim's role in family (Hoyt et al., 2005)
• Past behavior of transgressor positive (Fincham, Harold, & Gano-Phillips, 2000)	• Victim psychologically maltreated as child (Webb et al., 2008)
• Recent behavior of transgressor positive (Markey, Funder, & Ozer, 2003)	
• Family and friends pressure victim to forgive (Enright, Santos, & Al-Mabuk, 1989; Gordon et al., 2008)	

Table 2

Descriptive Statistics for Accessibility Study One and Need for Closure Study Variables

	Descriptive Statistics							
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Accessibility (Karremans Method)	244	0	10	1.91	3.36	1.37	.16	.22	.31
Accessibility (Additive Method)	244	0	21	2.31	4.21	1.69	.16	2.01	.31
PNS	244	17	65	43.44	8.61	-.23	.16	-.24	.31
TTF	244	4	28	15.83	5.28	-.12	.16	-.49	.31
PGIS	244	12	54	39.49	6.91	-.36	.16	.65	.31
SCSORF	244	10	40	24.87	9.46	-.17	.16	-1.03	.31
Extroversion	244	4	20	13.84	3.53	-.40	.16	-.22	.31
Agreeableness	244	7	20	16.59	2.80	-.97	.16	.68	.31
Conscientious	244	6	20	14.03	3.39	-.32	.16	-.55	.31
Neuroticism	244	4	20	10.78	3.30	.16	.16	-.34	.31
Intellect	244	4	20	14.53	3.30	-.46	.16	-.11	.31
TNTF	78	7	25	15.13	3.93	.38	.27	.10	.54
Time on TNTF	78	25	347	198.58	54.67	.06	.27	.93	.54

Table 3

Semester Differences on Liklihood to Forgive for Memory and Career Success Study

Semester	
Spring 2011	**B**
Summer 2011	**B**
Fall 2011	**A**
Spring 2012	**A, B**

Note. Groups with the same letter are not significantly different.

Table 4

Correlation Table for Chronic Accessibility for Forgiveness and Forgiveness Variables, Accessibility Study One

	1	2	3	4
1. Accessibility (Karremans Method)	−			
2. Accessibility (Additive Method)	.95**	−		
3. Likelihood to Forgive	.08[++]	.03[++]	−	
4. Chronic Forgiveness	.01	.02	.36**	−

Note. $N = 244$. [++]$N = 78$. ** $p < .01$. * $p < .05$.

Table 5

Correlation Table for Religiosity and Forgiveness Variables for Accessibility Study One

	1	2	3
1. Religiosity	−		
2. Likelihood to Forgive	.35++**	−	
3. Chronic Forgiveness	.16*	.36++**	−

Note. $N = 244$. ++$N = 78$. ** $p < .01$. * $p < .05$.

Table 6

Correlation Table for Exploratory Analyses, Accessibility Study One

	1	2	3	4	5	6	7	8	9	10
1. Personal Growth Initiative	–									
2. Extroversion	.32**	–								
3. Agreeableness	.24**	.15*	–							
4. Conscientious-Ness	.38**	-.05	.15*	–						
5. Neuroticism	-.29**	-.22**	-.09	-.04	–					
6. Intellect	.20**	.27**	.31**	-.01	-.19**	–				
7. Likelihood to Forgive	$.02^{++}$	$-.09^{++}$	$.15^{++}$	$.03^{++}$	$-.11^{++}$	$-.06^{++}$	–			
8. Chronic Forgiveness	.20**	.15*	.12	.04	-.58**	.12	$.36^{++}$**	–		
9. Religiosity	.18**	.004	.10	.12	-.05	-.11	$.35^{++}$**	.16*	–	
10. Accessibility (Karremans Method)	-.07	.04	-.09	-.03	.10	-.03	$.06^{++}$	.01	.09	–
11. Accessibility (Additive Method)	-.08	.03	-.08	-.05	.10	-.02	$.01^{++}$	.02	.08	.95**

Note. $N = 244$. $^{++}N = 78$. ** $p < .01$. * $p < .05$.

Table 7

Descriptive Statistics for Accessibility Study Two

	Descriptive Statistics								
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Accessibility (Karremans Method)	214	0	10	1.86	3.28	1.38	.17	.21	.33
Accessibility (Additive Method)	214	0	19	2.22	4.10	1.77	.17	2.38	.33
SCSORF	214	10	40	25.67	9.31	-.16	.17	-.97	.33
TNTF	214	5	23	13.28	3.29	.22	.17	.17	.33

Table 8

Correlation Table for Accessibility Study Two

	1	2	3	4
1. Religiosity	−			
2. Likelihood to Forgive	.32**	−		
3. Accessibility (Karremans Method)	.13	.01	−	
4. Accessibility (Additive Method)	.14*	.02	.94**	−

Note. N = 214. ** p < .01. * p < .05.

Table 9

Correlation Table for Accessibility Study Two, Female Participants

	1	2	3	4
1. Religiosity	−			
2. Likelihood to Forgive	.32**	−		
3. Accessibility (Karremans Method)	.10	.01	−	
4. Accessibility (Additive Method)	.13	.05	.94**	−

Note. $N = 152$. ** $p < .01$. * $p < .05$.

Table 10

Regression Model Predicting Likelihood to Forgive, Accessibility Study Two

	b	*SE*	*β*	*t*	*p*
Constant	13.21	.22		61.48	<.01
1. Accessibility for Forgiveness (Additive Method)	-.06	.06	-.08	-1.11	.27
2. Religiosity	.11	.02	.32	4.94	< .01
3. Access*Religiosity	.01	.01	.15	2.19	.03

Note. $df = 3, 210$; Adjusted $R^2 = 0.11$.

Table 11

Regression Statistics for Likelihood to Forgive Regressed on Chronic Accessibility for Forgiveness at Three Levels of Religiosity

	b	*SE*	*t*	*P*
1. Low Religiosity	-.18	.09	-1.99	<.05
2. Mean Religiosity	-.06	.06	-1.11	.27
3. High Religiosity	.06	.07	.88	.38

Note. df = 3, 210.

Table 12

Regression Equations for Likelihood to Forgive Regressed on Interaction between Chronic Accessibility for Forgiveness and Religiosity

Simple Slopes	
Low Religiosity Equation	TNTF = 12.14 - .18*cAccessibility
Mean Religiosity Equation	TNTF = 13.21 - .06*cAccessibility
High Religiosity Equation	TNTF = 14.27 + .06*cAccessibility

Note. cAccessibility = Accessibility for Forgiveness, Additive Method centered at the mean.

Table 13

Regression Model Predicting Likelihood to Forgive, Female Participants

	b	*SE*	*β*	*T*	*p*
Constant	13.07	.24		53.68	<.01
1. Accessibility for Forgiveness (Additive Method)	-.03	.06	-.04	-.43	.67
2. Religiosity	.11	.03	.32	4.08	< .01
3. Access*Religiosity	.01	.01	.16	1.97	.05

Note. df = 3, 148; Adjusted R^2 = 0.11.

Table 14

Regression Statistics for Likelihood to Forgive Regressed on Chronic Accessibility for Forgiveness at Three Levels of Religiosity, Female Participants

	b	*SE*	*t*	*P*
1. Low Religiosity	-.14	.16	-.90	.37
2. Mean Religiosity	-.03	.06	-.43	.67
3. High Religiosity	.09	.07	1.32	.19

Note. df = 3, 148.

Table 15

Regression Equations for Likelihood to Forgive Regressed on Interaction between Chronic Accessibility for Forgiveness and Religiosity, Female Participants

Simple Slopes	
Low Religiosity Equation	TNTF = 12.07 - .14*cAccessibility
Mean Religiosity Equation	TNTF = 13.07 - .03*cAccessibility
High Religiosity Equation	TNTF = 14.06 + .09*cAccessibility

Note. cAccessibility = Accessibility for Forgiveness, Additive Method centered at the mean.

Table 16

Regression Model Predicting Likelihood to Forgive, Need for Closure Study

	b	*SE*	*β*	*t*	*p*
Constant	15.16	.70		21.69	<.01
1. Chronic Forgiveness Centered	.54	.14	.76	3.75	<.01
2. Low Need for Closure	.47	.99	.06	.48	.64
3. High Need for Closure	-.93	1.01	-.11	-.92	.36
4. Chronic Forgiveness *Low Need for Closure	-.46	.19	-.39	-2.41	.02
5. Chronic Forgiveness *High Need for Closure	-.33	.19	-.27	-1.71	.09

Note. df = 5, 72; Adjusted R^2 = 0.16.

Table 17

Regression Statistics for Likelihood to Forgive Regressed on Chronic Forgiveness at Three Conditions of Situational Need for Closure

	b	*SE*	*t*	*P*
1. Low Need for Closure	.09	.13	.69	.49
2. Control	.54	.13	4.15	<.01
3. High Need for Closure	.22	.13	1.60	.12

Note. df = 5, 72.

Table 18

Regression Equations for Likelihood to Forgive Regressed on Chronic Forgiveness at Three Conditions of Situational Need for Closure

Simple Slopes	
Low Need for Closure Equation	TNTF = 15.63 + .09*cTTF
Control Condition Equation	TNTF = 15.16 + .54*cTTF
High Need for Closure Equation	TNTF = 14.23 + .22*cTTF

Note. cTTF = Tendency to Forgive score centered at the mean.

Table 19

Correlation Table for Religiosity, Forgiveness Variables, and Chronic Need for Closure

	1	2	3	4
1. Religiosity	–			
2. Likelihood to Forgive	$.35^{++}$**	–		
3. Chronic Forgiveness	$.16^{+}$*	$.36^{++}$**	–	
4. Chronic Need for Closure	$.04^{+}$	–	$-.31^{+}$**	–

Note. $^{+}N = 244$. $^{++}N = 78$. ** $p < .01$. * $p < .05$.

Table 20

Regression Model Predicting Chronic Forgiveness

	b	*SE*	*β*	*t*	*p*
Constant	15.83	.32		49.78	<.01
1. Religiosity	.10	.03	.18	2.95	<.01
2. Chronic Need for Closure	-.19	.04	-.32	-5.23	< .01
3. Religiosity* Chronic Need for Closure	.002	.004	.03	.55	.58

Note. df = 3, 240; Adjusted R^2 = 0.12.

Likelihood to Forgive on Accessibility for Forgiveness at Three Levels of Religiosity
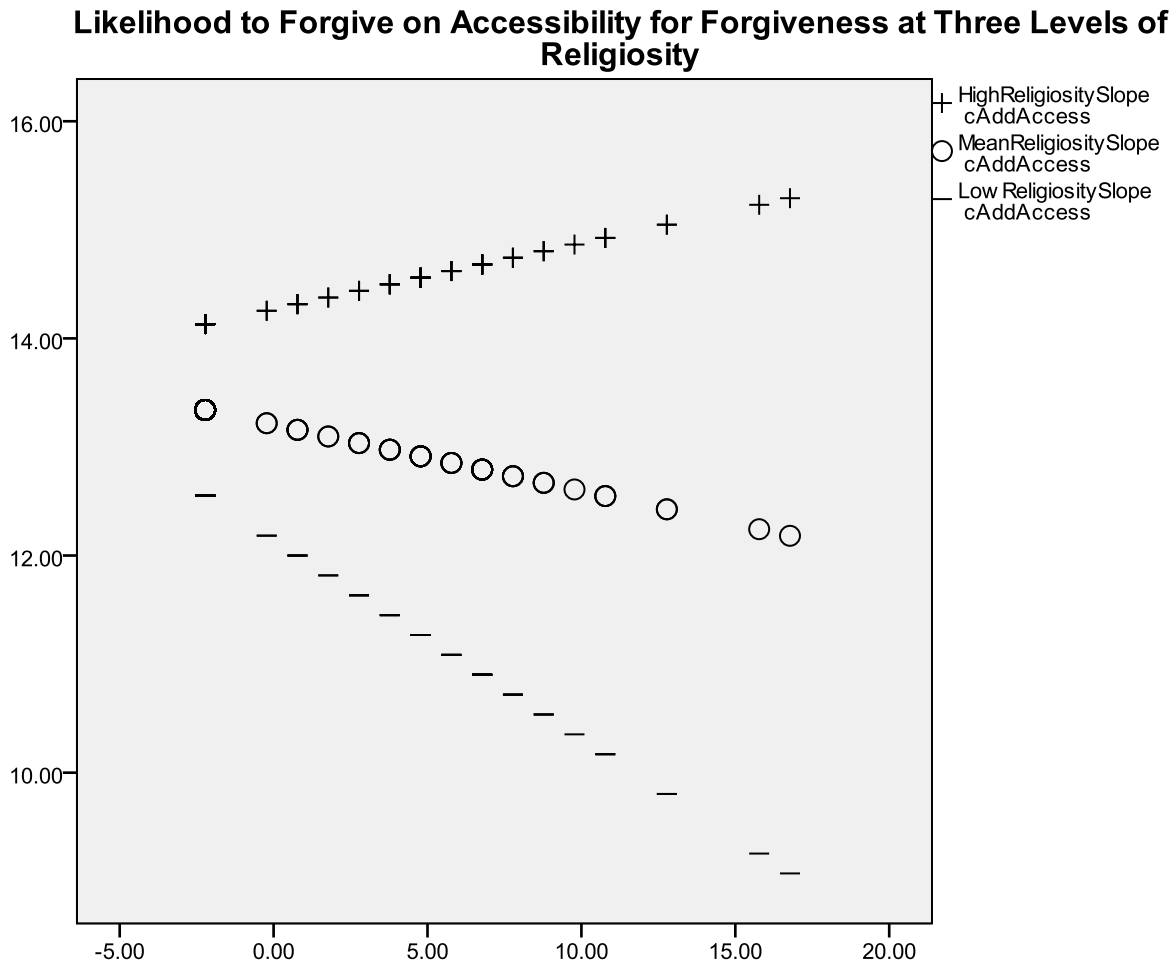
Figure 1. Simple slopes of likelihood to forgive regressed on three groups (high, mean, and low religiosity) at the mean of chronic accessibility for forgiveness.
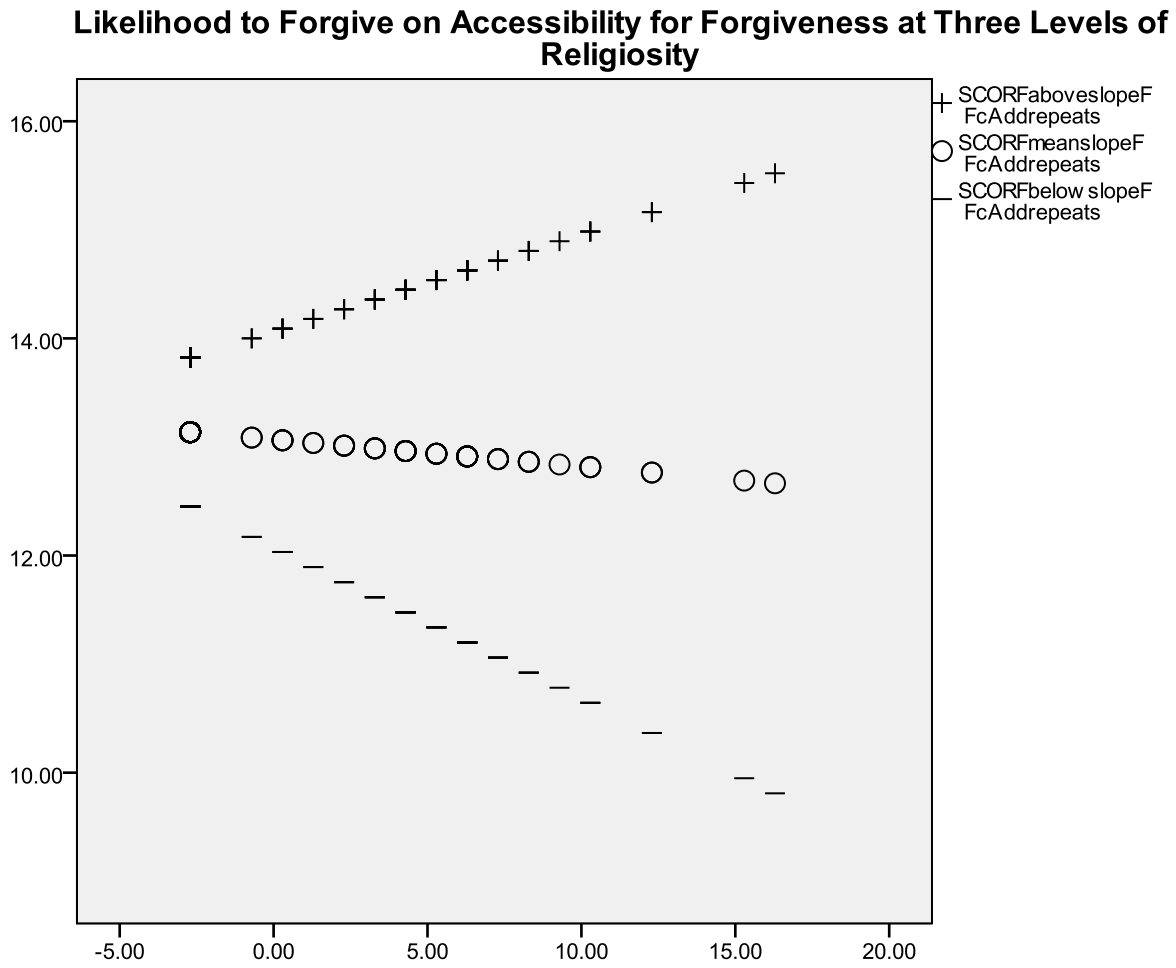
Figure 2. For female participants only, simple slopes of likelihood to forgive regressed on three

groups (high, mean, and low religiosity) at the mean of chronic accessibility for forgiveness.

Likelihood to Forgive on Chronic Forgiveness at Three Conditions of Need for Closure

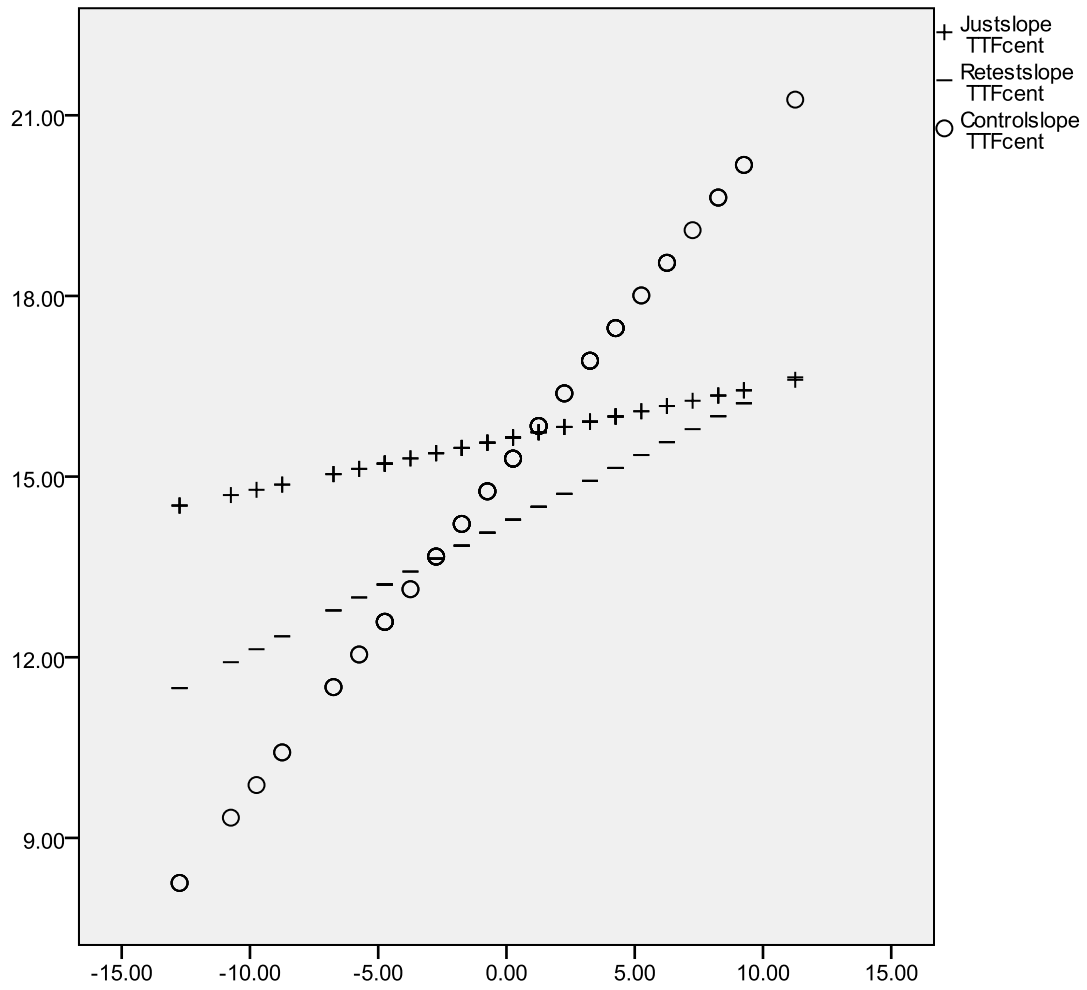*Figure 3*. Simple slopes of likelihood to forgive regressed on three groups (high, mean, and low

need for closure) at the mean of chronic forgiveness.