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UNIVERSITY OF CALIFORNIA,
IRVINE

Rumination, Revenge, and Forgiveness:
Associations with Aggression and Life Satisfaction

THESIS

Submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Isaias Marcos Contreras

Thesis Committee:
Professor Raymond W. Novaco, Chair
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Associate Professor Alyson K. Zalta

2021

DEDICATION

To my mother and father, Tami and Lauro,
for providing me with endless love and opportunity.

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ABSTRACT

Anger Rumination vs. Revenge Planning:

Divergent Associations with Aggression and Life Satisfaction

by

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Master of Arts in Social Ecology

University of California, Irvine, 2021

Professor Raymond W. Novaco, Chair

Anger is a strong driver of aggressive behavior. Rumination about anger experiences disrupts recovery to a less angry state and increases the likelihood of aggression. Whether rumination contributes to aggressive behavior beyond its influence on angry affect is unclear. Various measures of anger rumination contain revenge planning as a theme, the relevance of which has received insufficient attention in accounting for aggressive behavior. This study separately analyzed revenge planning from anger rumination that did not contain elements of revenge. Anger rumination (without revenge) was not significantly associated with self-reported physical or verbal aggression, while revenge planning was positively associated, controlling for gender and anger disposition. In contrast, anger rumination, but not revenge planning, was inversely related to life satisfaction, controlling for subjective social status, anxiety, depression, and anger disposition. The disposition to forgive oneself and others are also examined as explanatory variables inversely related to rumination and vengeance seeking. The relevance of these findings for violence risk assessment, anger treatment, and future research on anger rumination are discussed.

INTRODUCTION

Background

The societal impact of aggressive behavior is immense in its human well-being and economic costs. Violence poses a major international public health burden (Krug et al., 2002), and a global estimate by Iqbal et al. (2021) of the economic cost of interpersonal violence, collective violence, and violence containment in 2017 was \$14.8 trillion. Short of homicide, there were over 5.8 million violence victimizations in the United States in 2019 (Morgan & Truman, 2020). While violent behavior causes considerable damage to victims and society, it also adversely impacts perpetrators by police arrest, loss of employment, and damage to relationships. As early as young adulthood, violent behavior is negatively associated with overall life satisfaction (Valois et al., 2001), as it has bidirectional links with depression and peer rejection in adolescence (Beeson et al., 2020), and its reciprocal effects on achievement appear as early as kindergarten or first grade (Stipek & Miles, 2008).

One of the strongest contributors to aggression and violence is anger, long known to activate physiological arousal and propel antagonistic action (Darwin, 1965/1872). Although being neither necessary nor sufficient for aggressive behavior, there is substantial evidence that anger drives violent offending (Novaco, 2011). Anger disposition, the proclivity to experience anger and react in anger, primes aggressive behavior as a response to provocation, particularly when the aroused anger is intense or has not dissipated. Prolongation of anger is engendered by angry rumination, which is perseverative thinking about provocations (Denson, 2013). Such rumination bears not only on anger duration, but also on its ongoing intensity and its expression. Whether angry rumination contributes to aggressive behavior beyond what can be attributed to anger disposition, or to revenge planning, is the present study's primary line of inquiry.

The degree of association between anger disposition and the tendency to ruminate about anger provocations varies across studies (Sukhodolsky et al., 2001; Wang et al., 2018; Takebe et al., 2016). However, even among those who score high in anger disposition, there is considerable variation in the tendency to ruminate on anger experiences (Contreras et al., 2021). Regarding aggressive behavior, the association with anger rumination has been examined in many studies (e.g., Anestis et al., 2009; Smith et al., 2016). Experimental and non-experimental studies have found anger rumination to be associated with higher aggression (Bushman, 2002) and to disrupt physiological (Gerin et al., 2006; Larsen & Christenfeld, 2011) and emotional recovery (Rusting & Nolen-Hoeksema, 1998) to baseline levels.

The disposition to become angry, however, is often not accounted for in aggression research that attends to anger rumination. In addition to this, aggressive behavior is difficult to operationalize in a manner that is fully satisfactory. Experimental studies, which simulate the contexts and enactments of aggressive behavior, are limited in ecological validity. In research concerning anger rumination, aggression has been instantiated by participants' reactions to an aggravating (fictitious or experimental confederate) person, such as choosing to serve the person hot sauce (Vasquez et al., 2013), writing a poor evaluation (Caprara et al., 1987), administering noise blasts (Collins & Bell, 1997), or hitting a punching bag while thinking of the person (Bushman, 2002). Laboratory manipulation of anger rumination can also be problematic, as it is typically manipulated by the experimenter instructing participants to think about a past anger experience. Whether such “rumination” is akin to the type manifested in one’s personal life is undetermined. Non-experimental studies of anger rumination and aggression utilize self-report questionnaires that have merit in capturing the respondent’s stated real-life proclivity toward

aggressive behavior and angry ruminating. The present study adopts this self-reported dispositional approach.

Although Denson (2013), in his masterful review, asserted that the effect of rumination on aggressive behavior is largely through angry affect, it is unclear whether anger rumination contributes to aggression beyond its influence on angry affect. Rumination can prolong or even amplify anger, but whether it has an incremental effect on aggressive behavior needs further examination. In this vein, the *content* of post-provocation ruminative thoughts may become particularly important, to which little conceptual or empirical attention has been given.

An important element of anger ruminative thinking is revenge. The most commonly used measure, the Anger Rumination Scale (*ARS*; Sukhodolsky et al., 2001), includes a subscale for thoughts of revenge. Another frequently used dispositional measure, the Dissipation-Rumination Scale (Caprara, 1986), contains three items that refer specifically to retaliation or revenge. While revenge planning may be considered a notable type or topic of anger rumination, thinking of revenge is conceptually different from dwelling on other aspects of anger episodes. Thinking about revenge focuses attention on retaliatory aggression against a provocateur. Theoretically, revenge planning serves to shape and activate scripts for aggressive behavior, which is a core concept of social information processing (SIP) models of aggression (Huesmann, 1988; 1998). This distinction between ruminative dwelling on an anger experience versus revenge planning is central to understanding precursors of violent behavior. Dwelling on a bothersome event and the affective experience of it need not entail envisioning retaliation or vengeance. In addition to aggressive behavior, life satisfaction is examined as an area of impairment that these components of anger rumination may impact.

Forgiveness and vengefulness are closely related psychological constructs. By definition, forgiveness involves the reframing of a transgression in order to reduce negative responses associated with it, such as negative emotion, avoidance, or revenge motivations (Thompson et al., 2005). Forgiveness may also involve an increase in positive responses, such as seeking to restore or improve a relationship; forgiveness can also be applied to oneself, if the self is the transgressor (Thompson et al., 2005). Previous work has identified the disposition to seek revenge as being inversely related with forgiveness and life satisfaction, and positively associated with rumination and negative affect (McCullough et al., 2001). Longitudinal analyses have revealed that increases in rumination precede reductions in forgiveness more consistently than forgiveness precedes rumination, and that this association was mediated by anger (McCullough et al., 2007). While these psychological constructs are analyzed in the present study, it should be noted that they are measured concurrently.

Contreras and colleagues (2021) identified other-forgiveness and self-forgiveness as being associated with anger rumination, controlling for anxiety, depression, and general perseverative thinking. In their investigation, it was found that self-forgiveness was positively associated with anger rumination, while other-forgiveness was negatively associated. They utilized the 4-factor measure of anger rumination constructed by Sukhodolsky's (2001). Using the same measure, Barber et al. (2005) investigated unique associations among the anger rumination subscales with self-forgiveness and other-forgiveness. They found that forgiveness of self was positively associated with anger memories, while forgiveness of others was positively associated with thoughts of revenge, indicating that different aspects of forgiveness might relate differently to aspects of anger rumination. Aside from the forgiveness-anger rumination link, little work has been done examining forgiveness and aggression. In one study, Webb et al.

(2012) found that forgiveness of others was inversely associated with physical and verbal aggression, while forgiveness of self was inversely associated with physical aggression, controlling for demographic factors. One aim of the current study is to extend the Contreras et al. (2021) investigation by examining forgiveness in the context of aggressive behavior, utilizing a different anger rumination measure. The present study will test whether forgiveness can explain additional variation in aggression, beyond gender, anger disposition, anger rumination, and thoughts of revenge, and will also examine whether forgiveness can explain variation in life satisfaction, beyond what can be accounted for by subjective social status (SS), anger disposition, anger rumination, thoughts of revenge, anxiety, and depression.

Present Study Inquiry

Based on what has been outlined above, anger rumination is not expected to be significantly associated with physical or verbal aggression, once anger disposition is accounted for, although that possibility will be examined. The present thesis poses four research questions. First, is revenge planning or is anger rumination more strongly associated with aggression? It is hypothesized that revenge planning, when compared to anger rumination (without revenge), will be more strongly associated with physical and verbal aggression, controlling for gender and anger disposition (H1). Second, does revenge planning explain additional variation in aggression, beyond anger rumination and anger disposition? It is hypothesized that revenge planning will explain a significant proportion of additional variation in physical and verbal aggression, after accounting for gender, anger disposition, and anger rumination (H2). Third, does anger rumination and revenge planning explain additional variation in life satisfaction, beyond psychological distress variables? Life satisfaction is used as a criterion variable complementary to aggression. It is hypothesized that anger rumination and revenge planning

will explain a significant proportion of additional variation in life satisfaction, after accounting for subjective social status (SS), anger disposition, anxiety, and depression (H3). Fourth, does forgiveness explain additional variation in aggression and life satisfaction? Given that forgiveness has been found to be associated with less aggression and greater life satisfaction, it is hypothesized that the two components of forgiveness (self-forgiveness and other-forgiveness) will explain a significant proportion of additional variation in aggression (H4) and life satisfaction measures (H5) – less aggression, greater life satisfaction - after accounting for the variables previously mentioned.

METHOD

Participants

Of 528 undergraduate students recruited for an on-line survey from a large university in southern California, 188 cases were excluded. Reasons for exclusion were: failing one of two attention checks ($n = 101$), entries completed in under 10 minutes ($n = 114$; pilot testing averaged 20 minutes), or self-reported low English fluency ($n = 57$). Because exclusion was based on validity concerns, comparative analyses were not conducted between excluded and retained participants. The final sample consisted of 340 participants ($M_{\text{age}} = 20.98$, $SD_{\text{age}} = 3.27$; 84% female). Their identified ethnicities were 40.6% Asian, 37.7% Hispanic, 20.9% Caucasian, 0.5% Middle Eastern, 0.4% African American, 12.6% biracial or multiracial, 0.2% other, and 0.1% not indicated.

Procedure

Participants were recruited through a human subjects pool in exchange for course credit. Informed consent was obtained online. All participants completed the study online via Qualtrics. After participants entered demographic and health information, the psychometric questionnaires

in the survey were presented in a randomized order. The study protocol was approved by the campus Institutional Review Board.

Measures

Background & Personal Health. Data were obtained on age, gender, race/ethnicity, English fluency, annual household income, and subjective social status (MacArthur Scale of Subjective Social Status; Adler et al., 2000). Personal health data involved several items: exercise (frequency; duration), sleep (hours; quality), and alcohol consumption (how often; how much).

Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). The BPAQ has physical aggression, verbal aggression, anger, and hostility subscales. Its 29 items are rated on a 5-point scale (1 = “extremely uncharacteristic” to 5 “extremely characteristic”). The physical (9 items) and verbal (5 items) aggression scores are used as criteria, and anger (7 items) scores as an alternative predictor. The BPAQ is a well-validated instrument (e.g., Archer & Webb, 2006).

Displaced Aggression Questionnaire (DAQ; Denson et al., 2006). The DAQ is a 31-item measure having three subscales: angry rumination (10 items), revenge planning (11 items) and displaced aggression (10 items). Items are rated on a 7-point scale (1 = “Does not describe me at all” to 7 = “Describes me very well”). Sample items for revenge planning include: “When someone makes me angry, I can’t stop thinking about how to get back at this person”, “The more time that passes, the more satisfaction I get from revenge.” Sample items for angry rumination include: “I think about certain events from a long time ago and they still make me angry”, and “I often find myself thinking over and over about things that have made me angry.” The angry rumination and revenge planning scores served as separate predictors in analyses detailed below. The displaced aggression subscale was not used.

Heartland Forgiveness Scale (HFS; Thompson et al., 2005). The HFS is an 18-item measure with three subscales: forgiveness of self (6 items), others (6 items), and situations (6 items). Items assess one's typical response to mistakes, transgressions, or situations. Items receive 7-point ratings (1 = "almost always false of me" to 7 = "almost always true of me"). The forgiveness of self and forgiveness of others subscales are used in the present study.

Dimensions of Anger Reactions (DAR-R; Novaco, 1975). The DAR is a 7-item scale assessing anger frequency, intensity, duration, and antagonism, and also impairment of work performance, social relationships, and health. It has a 5-point rating format (0 = "not at all" to 4 = "very much") and has been validated in a cross-cultural sample (Kannis-Dymand et al., 2019). Scale scoring is by summation. Novaco et al. (2012) found the DAR score to have strong concurrent validity, discriminant validity against anxiety and depression measures, and construct validity with multiple measures of psychosocial functioning and harm risk. It also has been found to be substantially correlated ($r = .62$) with anger rumination Contreras et al. (2021).

Satisfaction With Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item measure of subjective satisfaction with life. Items are rated on a 7-point scale (1 = "strongly disagree" to 7 = "strongly agree"). Scores are calculated by summation. Kannis-Dymand et al., 2019) found anger to be inversely correlated with SWLS scores, having a medium effect size.

Patient Health Questionnaire – 4 (PHQ-4; Kroenke et al., 2009). This is a 4-item measure of core depression and anxiety symptoms over the last two weeks, each with two items. PHQ-4 is validated as a two-factor measure with strong construct validity (Löwe et al., 2010). Ratings are on a 4-point scale (0 = "not at all" to 3 = "nearly every day"). The anxiety and depression sum scores are used as covariate controls for the analyses of life satisfaction.

Data Preparation: Statistical Outliers, Model Assumptions, Sensitivity Analyses

Prior to conducting the ordinary least squares (OLS) regression analyses outlined below, statistical outliers were identified using several criteria. Participants with studentized residuals above $|2.5|$, leverage values above 0.3, Cook's distance larger than $4/N$ (0.012), COVRATIO smaller than 0.98, and DFFITS/DFBETAS greater than $|1|$ were flagged as statistical outliers. Sensitivity analyses were conducted on each of the regression analyses outlined below with the inclusion and exclusion of these outliers (ranging from 20 - 73 participants in each model). This approach revealed that the overall pattern of results was unaffected by the absence of participants deemed statistical outliers. For this reason, those participants were retained in the final analyses.

Sensitivity analyses were also conducted by utilizing an alternative measure of anger disposition (BPAQ Anger, as opposed to DAR-R) in the analyses outlined below. A similar pattern of results were found across aggression and life satisfaction analyses, regardless of which anger disposition measure was utilized. Assumptions of OLS regression were assessed. Multicollinearity among predictors was not an issue, with variance inflation factors (VIFs) not surpassing 1.72. Homoscedasticity and normality of errors assumptions were visually assessed and did not appear to be violated. The independence of errors assumption was assessed visually and by using the Durbin-Watson test, producing test statistics of 1.90 - 2.03 across models, indicating little to no correlation among residuals. In summary, assumptions of OLS regression did not appear to be violated.

RESULTS

Descriptive Statistics, Correlations, and Gender Differences

Descriptive statistics, internal consistency coefficients, and correlations between the main study variables ($N = 340$) are reported in Table 1. All measures had good to excellent internal

consistency ($\alpha = .72$ to $.95$). Physical and verbal aggression were positively associated with anger rumination, revenge planning, anger disposition (measured by DAR and BPAQ), anxiety, and depression; they were negatively associated with life satisfaction, and other-forgiveness. Frequency and intensity of alcohol consumption were positively associated physical aggression ($r_{\text{freq}} = .12, p = .03; r_{\text{int}} = .11, p = .04$) and verbal aggression ($r_{\text{freq}} = .11, p = .04; r_{\text{int}} = .14, p = .01$). Physical and verbal aggression were not significantly associated with subjective SS, annual household income, GPA, overall sleep quality, exercise frequency, exercise duration, or self-forgiveness. Life satisfaction was significantly associated with subjective SS ($r = .31, p < .001$), annual household income ($r = .23, p < .001$), sleep quality ($r = .13, p = .02$), and exercise frequency ($r = .13, p = .02$).

Compared to females, male participants scored significantly higher on measures of physical aggression [$t(334) = 3.26, p = .001$] and revenge planning [$t(336) = 3.41, p = .001$]. No significant gender differences were found on measures of verbal aggression, anger rumination, anger disposition (measured by DAR-R and BPAQ), anxiety, depression, self-forgiveness, other-forgiveness, or life satisfaction.

Anger Rumination vs. Revenge Planning: Associations with Aggression

To test the hypotheses regarding anger rumination and revenge planning, two hierarchical linear regression analyses were conducted with physical aggression and verbal aggression (BPAQ) separately as criterion variables. The first variable set contained gender (0 = female, 1 = male) as a covariate. In the second set, anger disposition (DAR-R) was controlled. In the third set, anger rumination was added to the models. In the fourth set, revenge planning was added to the models, allowing us to compare the predictive strength of revenge planning and anger

rumination via their standardized regression coefficients (H1) and to evaluate the additional explanatory strength of revenge planning via the ΔR^2 (H2).

Physical Aggression. Set 1 (gender) produced a significant R^2 , explaining 2.7% of variation in physical aggression. In Set 2, anger disposition was entered and produced a ΔR^2 of 25.6%, explaining a significant proportion of variation in physical aggression. Anger disposition and gender were significantly associated with physical aggression in this set. When anger rumination was added in Set 3, it failed to produce a significant ΔR^2 , explaining only an additional 0.2% of variation in physical aggression. As expected, anger rumination was not a significant predictor of physical aggression with gender and anger disposition controlled. Anger disposition and gender remained significant predictors.

When revenge planning was added in Set 4, it accounted for an additional 12.1% of variation in physical aggression. In this final model ($\text{Adj. } R^2_{\text{total}} = 39.8\%$), only anger disposition and revenge planning emerged as significant variables. As hypothesized, revenge planning was significantly ($p < .001$) more strongly associated with physical aggression ($\beta = .44$) than was anger rumination ($\beta = -.07$), with these standardized regression coefficients being compared using a test of independent correlations. These results for physical aggression are contained in Table 2.

Verbal Aggression. The pattern of results for verbal aggression was somewhat different. Set 1 (gender) was not significant ($R^2 = 0.9\%$). In Set 2, anger disposition was significant ($p < .001$), accounting for an additional 16.2% of variation. When anger rumination was added in Set 3, it produced a ΔR^2 of 1.1% ($p = .04$). In this model, anger rumination, anger disposition, and gender were all significantly associated with verbal aggression. When revenge planning was added in Set 4, it resulted in a significant ΔR^2 of 3.7%, after accounting for gender, anger

disposition, and anger rumination. This final model produced an Adj. R^2_{total} of 20.9%, explaining 20.9% of the variation in verbal aggression.

With the entry of revenge planning in Set 4, anger rumination was no longer a significant predictor of verbal aggression, as anger disposition and revenge planning were the only significant variables ($\beta = .23$ and $.24$, respectively). As hypothesized, revenge planning was more strongly ($p < .001$) associated with verbal aggression ($\beta = .24$) than was anger rumination ($\beta = .07$), with these standardized regression coefficients being compared using a test of independent correlations. These results for verbal aggression are contained in Table 3.

Anger Rumination vs. Revenge Planning: Associations with Life Satisfaction

Anger rumination and revenge planning were investigated for their ability to explain additional variation in life satisfaction (H3). In a hierarchical linear regression analysis, theoretically relevant variables were included in Set 1 (subjective SS) and Set 2 (anger disposition, anxiety, and depression) as covariate controls, before testing anger rumination and revenge planning in Set 3. The results are presented in Table 3. Subjective SS was significantly related to life satisfaction, $\Delta R^2 = 9.5\%$. On the next step of the regression, there was a significant ΔR^2 of 23.1%, with subjective SS, anger disposition, and depression being the significant variables. When anger rumination and revenge planning were added to the model, a $\Delta R^2 = 2.1\%$ resulted, but in this final model, depression and anger rumination were the only significant variables ($\beta = -.39$ and $-.19$, respectively).

Forgiveness of Self and Others: Associations with Aggression

In order to investigate whether forgiveness was able to explain additional variation in aggression, two hierarchical linear regression analyses were conducted with physical aggression and verbal aggression (BPAQ) as criterion variables. The first set of predictors included the

variables in the previous models investigating aggression: gender (0 = female, 1 = male), anger disposition (DAR-R), anger rumination, and revenge planning. The second set of predictors introduced the variables of interest: forgiveness of self, and forgiveness of others. Here, the proposed hypothesis, that the forgiveness variables would explain a significant proportion of additional variation in aggression (H4), is tested.

Physical Aggression. The first variable set reflects the previous analysis (gender, anger disposition, anger rumination, and revenge planning). This set of predictors explained 40.4% of the variation in physical aggression, with anger disposition and revenge planning emerging as the significant predictors. The second set introduced the variables of interest, forgiveness of self and forgiveness of others. This set failed to account for a significant proportion of additional variation in physical aggression. As before, anger disposition and revenge planning were the only significant predictors in this final model ($Adj. R^2_{total} = 39.6\%$). Results for this analysis are included in Table 5.

Verbal Aggression. The first set of predictors (gender, anger disposition, anger rumination, and revenge planning) explained 23.2% of the variation in verbal aggression. Anger disposition and revenge planning emerged as the significant predictors. Set 2 of the model, which introduced self-forgiveness and other-forgiveness, produced a significant ΔR^2 of 2.6%, as hypothesized. The significant predictors in this final model ($Adj. R^2_{total} = 24.4\%$) were anger disposition, revenge planning, and self-forgiveness. Interestingly, self-forgiveness was positively associated with verbal aggression. Results for this analysis are included in Table 6.

Self and Other Forgiveness: Associations with of Life Satisfaction

Continuing the investigation of whether forgiveness explains additional variation in aggression and life satisfaction, a hierarchical linear regression was conducted with life

satisfaction as the criterion variable. Set 1 reflected the previous analysis of life satisfaction: Subjective SS, anger disposition (DAR-R), anxiety, depression, anger rumination, and revenge planning. The second set introduced self-forgiveness and other-forgiveness as predictors. Here, the proposed hypothesis, that the forgiveness variables would explain a significant proportion of additional variation in life satisfaction (H5), is tested.

The first set of predictors (subjective SS, anger disposition, depression, anxiety, anger rumination, and revenge planning) explained 34.7% of variation in life satisfaction. Of these variables, subjective SS, depression, and anger rumination emerged as significant predictors. Set 2 introduced the predictors of interest, forgiveness of self and forgiveness of others. This set produced a significant ΔR^2 of 8.6%, as hypothesized. In this final model (Adj. $R^2_{total} = 41.9\%$), self-forgiveness and other-forgiveness both emerged as significant predictors of life satisfaction, as did depression and subjective SS. Results for this analysis are included in Table 7.

DISCUSSION

Implications

Research on anger rumination and aggressive behavior had not disentangled thoughts of revenge from anger-ruminative thoughts without retaliation-oriented content. The results of the present study indicate that the self-reported disposition for revenge planning versus that for ruminative dwelling on anger experiences are differentially associated with self-reported aggression and life satisfaction. Moreover, the statistical effect of revenge planning on self-reported physical and verbal aggression was incremental, after controlling for age, gender, anger disposition, and anger rumination. Since various measures of anger rumination contain revenge-related items, these findings indicate that those items merit differential attention when aggressive behavior is the criterion. However, as was found in conjunction with life satisfaction ratings,

thoughts of revenge may not be as relevant for other outcomes that might follow from ruminating about anger experiences. Instead, anger rumination without revenge elements may have greater relevance when looking to explain outcomes related to overall distress or satisfaction.

In the tests of the association of revenge planning with physical-verbal aggression, the covariates included gender and anger disposition. Given what is known about anger proclivity and aggressive behavior, it is an important limitation that studies concerned with anger-ruminative thoughts have often missed incorporating anger disposition as a covariate. For both physical and verbal aggression, revenge planning and anger disposition were the two variables most strongly associated in all of the models. Subjective SS, anxiety, anger disposition, and depression were also accounted for in the analysis of life satisfaction, where anger rumination was found to have incremental value. For life satisfaction, however, the most strongly associated variables were anger rumination, depression, and subjective SS.

There has been considerable empirical work on different styles of anger rumination (*viz.*, Denson, 2013), such as whether the focus of rumination is on the self or on the provocation (e.g., Pedersen et al., 2011). One feature of provocation-focused rumination is having thoughts of revenge or retaliation, which Caprara (1986) highlighted as having important real-world relevance. Pedersen and colleagues (2011) found that provocation-focused rumination, increased the accessibility of cognitions about aggressive actions. However, angry ruminative focus on a provocation does not necessarily involve thinking about revenge.

In the present study, rumination with revenge thinking had the strongest association with aggression. This may reflect the cognitive accessibility of scripts and schemas that facilitate aggression, which social information processing models of aggression would suggest

(Huesmann, 1988, 1998). Vengeful thinking can also entail imagined violence, which is prospectively associated with violent behavior among psychiatric patients (Grisso et al., 2000; Moeller et al., 2017).

The present findings regarding forgiveness indicated that self-forgiveness and other-forgiveness did not meaningfully contribute to explaining physical aggression, once anger disposition, revenge planning, and anger rumination was accounted for. Here one should bear in mind the statistical and conceptual overlap between revenge planning and forgiveness of others. Interestingly, self-forgiveness did emerge as a significant predictor of verbal aggression, but the findings are not intuitive and were disconfirming of our study hypotheses. At the zero-order level, self-forgiveness was not significantly associated with verbal aggression ($r = -.07, p = .22$). However, in the multivariate analysis, greater self-forgiveness was associated with *more* verbal aggression. A similar finding was reported in Contreras et al. (2021), with anger rumination as the criterion variable. One possible explanation for this finding is alluded to in work by Strelan (2007), who found positive associations with self-forgiveness, narcissism, and self-esteem. This association with verbal aggression may reflect the fact that very high levels of self-forgiveness may be associated with narcissism and inflated self-esteem, which are both factors that can contribute to aggressive behavior (Baumeister et al., 2000).

Self-forgiveness and other-forgiveness were positively associated with life satisfaction in the present analyses, controlling for psychological distress variables and ultimately rendering anger rumination and revenge planning nonsignificant. Pervious work has identified that self-unforgiveness was associated with life satisfaction, while other-unforgiveness was not (Macaskill, 2012). The present study adds to this literature in showing the dispositions to forgive

oneself and others was independently related to life satisfaction, controlling for subjective SS, anger disposition, anxiety, depression, anger rumination, and revenge planning.

Limitations

This study utilized a cross-sectional design with measurement at a single time point, which does not allow for inferences regarding causality or directionality. Secondly, all data were gathered through self-report questionnaires in an online format, which may be susceptible to social desirability biases. The aggressive behavior data here are reports of inclinations, and not of perpetrated actions. Selection of participants in this study was not random, and roughly a third of participants (188) were excluded from analyses in order to maximize the validity of responses gathered. Thus, the study results may not generalize to other populations or to all college students, as only college students who chose to participate in this research and who met the inclusion criteria were examined. Lastly, the sample consisted of young college students, most of whom identified as female. As such, these results may not generalize to populations with clinical levels of impairment, older populations, or to populations in less westernized societies.

Future Directions

To better understand the experience and impact of anger rumination and its various elements, there would seem to be merit in a more ideographically oriented qualitative investigation, particularly concerning people who are prone to anger. For example, how often do people who are prone to anger ruminate, and might there be a useful typology of anger-ruminative themes? Might typological forms of anger rumination have unique associations with emotional distress, behavior, somatic states, as well as physical and psychological well-being?

The malleability of various types of anger rumination might also be investigated, as that would be relevant to anger treatment.

Future studies ought to give attention to the multivariate positive association found between self-forgiveness and verbal aggression. While this association was not identified at the zero-order level of analysis ($r = -.07$) this may be due to the fact that other-forgiveness is also moderately associated with self-forgiveness ($r = .32, p < .001$). Self-forgiveness is generally viewed as a beneficial psychological trait, being related to better physical health, greater levels of mindfulness, less psychological distress, and fewer somatic symptoms (Webb et al., 2013). Understanding under what circumstances this beneficial effect operates (potential moderators) is an important line of inquiry, as is whether this relationship is a function of other variables not accounted for (third variables).

Lastly, revenge-oriented anger rumination has high relevance for assessments of violence risk, particularly as it may involve planning and rehearsal. From an intervention standpoint, ways of abating revenge motivations would seem to have substantial merit. One promising form of therapy relevant in this context is forgiveness therapy, which focuses on resolving anger and fostering forgiveness of others (Enright and the Human Development Study Group, 1996; Worthington, 2001). Other-forgiveness is negatively associated with anger rumination levels, even among those who score high on dispositional anger (Contreras et al., 2021). Meta-analyses on the efficacy of forgiveness therapy are promising, with significant reductions observed for a number of negative psychological outcomes and the significant promotion of positive outcomes (Baskin & Enright, 2004; Akhtar & Barlow, 2018; Wade et al., 2014).

REFERENCES

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health Psychology, 19*, 586-592.
- Akhtar, S., & Barlow, J. (2018). Forgiveness therapy for the promotion of mental well-being: A systematic review and meta-analysis. *Trauma, Violence, & Abuse, 19*, 107-122.
- Archer, J., & Webb, I. A. (2006). The relation between scores on the Buss–Perry Aggression Questionnaire and aggressive acts, impulsiveness, competitiveness, dominance, and sexual jealousy. *Aggressive Behavior, 32*, 464-473.
- Anestis, M. D., Anestis, J. C., Selby, E. A., & Joiner, T. E. (2009). Anger rumination across forms of aggression. *Personality and Individual Differences, 46*, 192-196.
- Barber, L., Maltby, J., & Macaskill, A. (2005). Angry memories and thoughts of revenge: The relationship between forgiveness and anger rumination. *Personality and Individual Differences, 39*, 253-262.
- Baskin, T. W., & Enright, R. D. (2004). Intervention studies on forgiveness: A meta-analysis. *Journal of Counseling & Development, 82*, 79-90.
- Baumeister, R. F., Bushman, B. J., & Campbell, W. K. (2000). Self-esteem, narcissism, and aggression: Does violence result from low self-esteem or from threatened egotism? *Current Directions in Psychological Science, 9*, 26-29.
- Beeson, C. M., Brittain, H., & Vaillancourt, T. (2020). The temporal precedence of peer rejection, rejection sensitivity, depression, and aggression across adolescence. *Child Psychiatry & Human Development, 51*, 781-791.

- Bushman, B. J. (2002). Does venting anger feed or extinguish the flame? Catharsis, rumination, distraction, anger, and aggressive responding. *Personality and Social Psychology Bulletin*, 28, 724-731.
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63, 452-459.
- Caprara, G. V. (1986). Indicators of aggression: The Dissipation-Rumination Scale. *Personality and Individual Differences*, 7, 763–769.
- Caprara, G. V., Gargaro, T., Pastorelli, C., Prezza, M., Renzi, P., & Zelli, A. (1987). Individual differences and measures of aggression in laboratory studies. *Personality and Individual Differences*, 8, 885-893.
- Collins, K., & Bell, R. (1997). Personality and aggression: The dissipation-rumination scale. *Personality and Individual Differences*, 22(5), 751-755.
- Contreras, I. M., Kosiak, K., Hardin, K. M., & Novaco, R. W. (2021). Anger rumination in the context of high anger and forgiveness. *Personality and Individual Differences*, 171, 1-6.
- Darwin, C. (1965). *The expression of the emotions in man and animals*. Chicago: University of Chicago Press. (Original work published 1872).
- Denson, T. F. (2013). The multiple systems model of angry rumination. *Personality and Social Psychology Review*, 17, 103–123.
- Denson, T. F., Pedersen, W. C., & Miller, N. (2006). The Displaced Aggression Questionnaire. *Journal of Personality and Social Psychology*, 90, 1032–1051.
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75.

- Enright, R. D., & The Human Development Study Group (1996). Counseling within the forgiveness triad: On forgiving, receiving forgiveness, and self-forgiveness. *Counseling and Values, 40*, 107-126.
- Gerin, W., Davidson, K. W., Christenfeld, N. J., Goyal, T., & Schwartz, J. E. (2006). The role of angry rumination and distraction in blood pressure recovery from emotional arousal. *Psychosomatic Medicine, 68*, 64-72.
- Grisso, T., Davis, J., Vesselinov, R., Appelbaum, P. S., & Monahan, J. (2000). Violent thoughts and violent behavior following hospitalization for mental disorder. *Journal of Consulting and Clinical Psychology, 68*, 388–398.
- Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior, 14*, 13-24.
- Huesmann, L. R. (1998). The role of social information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In R. G. Geen & E. D. Donnerstein (Eds.), *Human Aggression* (pp. 73–109). Academic Press.
- Iqbal, M., Bardwell, H., & Hammond, D. (2021). Estimating the global economic cost of violence: Methodology improvement and estimate updates. *Defence and Peace Economics, 32*, 403-426.
- Kannis-Dymand, L., Salguero, M., Cejudo, J. R., & Novaco, R. W. (2019). Dimensions of Anger Reactions-Revised (DAR-R): Validation in Australia and Spain. *Journal of Clinical Psychology, 75*, 1233–1248.
- Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: the PHQ–4. *Psychosomatics, 50*, 613-621.

- Krug, E. G., Mercy, J. A., Dahlberg, L. L., & Zwi, A. B. (2002). The world report on violence and health. *Lancet*, *360*, 1083-1088.
- Larsen, B. A., & Christenfeld, N. J. (2011). Cognitive distancing, cognitive restructuring, and cardiovascular recovery from stress. *Biological Psychology*, *86*, 143-148.
- Löwe, B., Wahl, I., Rose, M., Spitzer, C., Glaesmer, H., Wingenfeld, K., Schneider, A., & Brähler, E. (2010). A 4-item measure of depression and anxiety: validation and standardization of the Patient Health Questionnaire-4 (PHQ-4) in the general population. *Journal of Affective Disorders*, *122*, 86-95.
- Macaskill, A. (2012). Differentiating dispositional self-forgiveness from other-forgiveness: Associations with mental health and life satisfaction. *Journal of Social and Clinical Psychology*, *31*, 28-50.
- McCullough, M. E., Bellah, C. G., Kilpatrick, S. D., & Johnson, J. L. (2001). Vengefulness: Relationships with forgiveness, rumination, well-being, and the Big Five. *Personality and Social Psychology Bulletin*, *27*, 601-610.
- McCullough, M. E., Bono, G., & Root, L. M. (2007). Rumination, emotion, and forgiveness: three longitudinal studies. *Journal of Personality and Social Psychology*, *92*, 490.
- Moeller, S. B., Gondan, M., & Novaco, R. W. (2017). Violent images, anger and physical aggression among male forensic inpatients. *Personality and Individual Differences*, *105*, 268-274.
- Morgan, R. E., Truman, J. L. (2020). Criminal Victimization, 2019. Report NCJ 255113, U.S. Department of Justice, Bureau of Justice Statistics.
- Novaco, R. W. (1975). *Dimensions of Anger Reactions*. Irvine, CA: University of California.

- Novaco, R. W. (2011). Anger dysregulation: Driver of violent offending. *Journal of Forensic Psychiatry & Psychology, 22*, 650-668.
- Novaco, R. W., Swanson, R. D., Gonzalez, O. I., Gahm, G. A., & Reger, M. D. (2012). Anger and postcombat mental health: Validation of a brief anger measure with US soldiers postdeployed from Iraq and Afghanistan. *Psychological Assessment, 24*, 661–675.
- Pedersen, W. C., Denson, T. F., Goss, R. J., Vasquez, E. A., Kelley, N. J., & Miller, N. (2011). The impact of rumination on aggressive thoughts, feelings, arousal, and behaviour. *British Journal of Social Psychology, 50*, 281-301.
- Rusting, C. L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology, 74*, 790–803.
- Smith, S. D., Stephens, H. F., Repper, K., & Kistner, J. A. (2016). The relationship between anger rumination and aggression in typically developing children and high-risk adolescents. *Journal of Psychopathology and Behavioral Assessment, 38*(4), 515-527.
- Stipek, D., & Miles, S. (2008). Effects of aggression on achievement: Does conflict with the teacher make it worse? *Child Development, 79*, 1721-1735.
- Strelan, P. (2007). Who forgives others, themselves, and situations? The roles of narcissism, guilt, self-esteem, and agreeableness. *Personality and Individual Differences, 42*, 259-269.
- Sukhodolsky, D. G., Golub, A., & Cromwell, E. N. (2001). Development and validation of the Anger Rumination Scale. *Personality and Individual Differences, 31*, 689–700.

- Takebe, M., Takahashi, F., & Sato, H. (2016). Anger rumination as a risk factor for trait anger and anger-in: A longitudinal study. *Personality and Individual Differences, 101*, 451–455.
- Thompson, L. Y., Snyder, C. R., Hoffman, L., Michael, S. T., Rasmussen, H. N., Billings, L. S., Heinze, L., Neufeld, J. E., Shorey, H. S., Roberts, J. C., & Roberts, D. E. (2005). Dispositional forgiveness of self, others, and situations. *Journal of Personality, 73*, 313-359
- Valois, R. F., Zullig, K. J., Huebner, E. S., & Drane, J. W. (2001). Relationship between life satisfaction and violent behaviors among adolescents. *American Journal of Health Behavior, 25*, 353-366.
- Vasquez, E. A., Pedersen, W. C., Bushman, B. J., Kelley, N. J., Demeestere, P., & Miller, N. (2013). Lashing out after stewing over public insults: The effects of public provocation, provocation intensity, and rumination on triggered displaced aggression. *Aggressive Behavior, 39*, 13-29.
- Wade, N. G., Hoyt, W. T., Kidwell, J. E. M., & Worthington, E. L. (2014). Efficacy of psychotherapeutic interventions to promote forgiveness: A meta-analysis. *Journal of Consulting and Clinical Psychology, 82*, 154–170.
- Wang, X., Yang, L., Yang, J., Gao, L., Zhao, F., Xie, X., & Lei, L. (2018). Trait anger and aggression: A moderated mediation model of anger rumination and moral disengagement. *Personality and Individual Differences, 125*, 44–49.
- Webb, J. R., Dula, C. S., & Brewer, K. (2012). Forgiveness and aggression among college students. *Journal of Spirituality in Mental Health, 14*, 38-58.

Webb, J. R., Phillips, T. D., Bumgarner, D., & Conway-Williams, E. (2013). Forgiveness, mindfulness, and health. *Mindfulness*, 4, 235-245.

Worthington, E. L. Jr. (2001). *Five steps to forgiveness: The art and science of forgiving*. New York, NY: Crown.

TABLES

Table 1
Descriptive Statistics, Correlations, and Reliability for Study Variables

	<i>Mean</i>	<i>SD</i>	<i>Range</i>	1	2	3	4	5	6	7	8	9	10	11
1. Physical Agg.	16.8	6.0	9 – 45	.79	.49*	.36*	.59*	-.12	-.34*	.50*	.59*	.19	.16	-.22*
2. Verbal Agg.	12.7	4.0	5 – 25	.49*	.72	.34*	.41*	-.07	-.30*	.40*	.51*	.12	.12	-.14
3. Anger Rum.	34.5	15.7	10 - 70	.36*	.35*	.95	.51*	-.47*	-.51*	.66*	.54*	.43*	.31*	-.38*
4. Revenge Pl.	22.7	12.0	11 - 77	.58*	.41*	.53*	.92	-.19*	-.50*	.54*	.55*	.19*	.15*	-.23*
5. HFS Self	27.4	6.9	6 - 42	-.13	-.07	-.48*	-.22*	.80	.32*	-.33*	-.30*	-.41*	-.40*	.50*
6. HFS Others	29.4	6.4	6 - 42	-.33*	-.30*	-.49*	-.50*	.30*	.77	-.46*	-.39*	-.22*	-.17	.35*
7. DAR Anger	6.6	5.4	0 – 28	.52*	.41*	.66*	.55*	-.35*	-.46*	.85	.66*	.36*	.25*	-.32*
8. BPAQ Anger	15.2	5.3	7 – 35	.60*	.53*	.55*	.56*	-.32*	-.39*	.66*	.78	.34*	.22*	-.29*
9. Anxiety	4.6	1.9	2 – 8	.17	.16	.41*	.21*	-.41*	-.19	.35*	.34*	.85	.65*	-.37*
10. Depression	4.0	1.7	2 – 8	.11	.12	.29*	.12	-.39*	-.13	.24*	.22*	.64*	.86	-.48*
11. Life Satis.	21.8	6.9	5 - 35	-.20*	-.17	-.40*	-.23*	.49*	.34*	-.34*	-.32*	-.33*	-.45*	.89

Note. * $p < .001$. Cronbach's alpha coefficients for each scale are along diagonal in bold; upper right quadrant contains zero-order correlation coefficients; lower left quadrant (shaded) contains correlation coefficients partialling out demographic and health variables: age, gender, income, subjective SS, sleep quality, alcohol consumption, and exercise habits. Analyzed sample size ranged from 338 to 340 for the listed variables: Physical Aggression subscale (BPAQ); Verbal Aggression subscale (BPAQ); Anger Rumination subscale (DAQ), Revenge Planning subscale (DAQ); Forgiveness of Self subscale (HFS); Forgiveness of Others subscale (HFS); Anger Disposition (DAR-R); Anger subscale (BPAQ); Anxiety: two items (PHQ-4); Depression: two items (PHQ-4); Satisfaction With Life Scale (SWLS).

Table 2

Anger Rumination and Revenge Planning: Associations with Physical Aggression.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Gender	2.70**	.002	(.97, 4.44)	.17**	.027**
2	Gender	2.70***	< .001	(1.21, 4.19)	.17***	.256***
	DAR Anger	.56***	< .001	(.46, .66)	.51***	
3	Gender	2.74***	< .001	(1.24, 4.23)	.17***	.002
	DAR Anger	.52***	< .001	(.39, .65)	.47***	
	Anger Rumination	.02	.403	(-.03, .07)	.05	
4	Gender	1.34	.062	(-.07, 2.74)	.08	.121***
	DAR Anger	.35***	< .001	(.22, .48)	.32***	
	Anger Rumination	-.03	.210	(-.07, .02)	-.07	
	Revenge Planning	.22***	< .001	(.17, .27)	.44***	

Note. (Adj. $R^2_{total} = .398$, $N = 336$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Physical Aggression subscale of the BPAQ. Gender: (female = 0, male = 1); Dimensions of Anger Reactions (DAR); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ).

Table 3

Anger Rumination and Revenge Planning: Associations with Verbal Aggression.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Gender	1.04	.089	(-.16, 2.23)	.09	.009
2	Gender	1.04	.063	(-.06, 2.13)	.09	
	DAR Anger	.30***	< .001	(.23, .38)	.40***	.162***
3	Gender	1.10*	.048	(.01, 2.19)	.10*	
	DAR Anger	.24***	< .001	(.14, .33)	.31***	
	Anger Rumination	.04*	.038	(.00, .07)	.14*	.011*
4	Gender	.57	.305	(-.53, 1.67)	.05	
	DAR Anger	.17**	.001	(.07, .27)	.23**	
	Anger Rumination	.02	.310	(-.02, .05)	.07	
	Revenge Planning	.08***	< .001	(.04, .12)	.24***	.037***

Note. (Adj. $R^2_{\text{total}} = .209$, $N = 336$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Verbal Aggression subscale of the BPAQ. Gender: (female = 0, male = 1); Dimensions of Anger Reactions (DAR); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ).

Table 4

Anger Rumination and Revenge Planning: Associations with Life Satisfaction.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Subj. SS	1.32***	< .001	(.88, 1.76)	.31***	.095**
2	Subj. SS	1.02***	< .001	(.63, 1.4)	.24***	.231**
	DAR Anger	-.26***	< .001	(-.39, -.14)	-.21***	
	Anxiety	.04	.858	(-.40, .48)	.01	
	Depression	-1.65**	< .001	(-2.13, -1.16)	-.40**	
3	Subj. SS	1.02**	< .001	(.64, 1.40)	.24**	.021*
	DAR Anger	-.11	.190	(-.26, .05)	-.08	
	Anxiety	.17	.449	(-.27, .62)	.05	
	Depression	-1.61**	< .001	(-2.09, -1.14)	-.39**	
	Anger Rumination	-.08**	.003	(-.14, -.03)	-.19**	
	Revenge Planning	-.02	.608	(-.08, .05)	-.03	

Note. (Adj. $R^2_{\text{total}} = .355, N = 337$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Satisfaction With Life Scale (SWLS). Subj. SS: MacArthur Scale of Subjective Social Status (ladder 1 – 10); Dimensions of Anger Reactions (DAR-R); Depression: two items (PHQ-4); Anxiety: two items (PHQ-4); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ).

Table 5

Self and Other Forgiveness: Associations with Physical Aggression.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Gender	1.33	.064	(-.08, 2.74)	.08	
	DAR Anger	.35***	< .001	(.22, .48)	.32***	
	Anger Rumination	-.03	.220	(-.07, .02)	-.07	
	Revenge Planning	.22***	< .001	(.16, .27)	.44***	
						.404***
2	Gender	1.31	.069	(-.10, 2.72)	.08	
	DAR Anger	.35***	< .001	(.22, .48)	.32***	
	Anger Rumination	-.02	.434	(-.07, .03)	-.05	
	Revenge Planning	.21***	< .001	(.16, .27))	.43***	
	HFS Self	.05	.225	(-.03, .14)	.06	
	HFS Others	-.02	.722	(-.11, .08)	-.02	
						.003

Note. (Adj. $R^2_{\text{total}} = .396, N = 335$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Physical Aggression subscale of the BPAQ. Gender: (female = 0, male = 1); Dimensions of Anger Reactions (DAR); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ); Forgiveness of Self subscale (HFS); Forgiveness of Others subscale (HFS).

Table 6
Self and Other Forgiveness: Associations with Verbal Aggression.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Gender	.59	.277	(-.48, 1.67)	.05	
	DAR Anger	.17**	.001	(.07, .27)	.23**	
	Anger Rumination	.02	.362	(-.02, .05)	.06	
	Revenge Planning	.09***	< .001	(.05, .13)	.26***	
						.232***
2	Gender	.57	.292	(-.49, 1.64)	.05	
	DAR Anger	.18***	< .001	(.08, .27)	.24***	
	Anger Rumination	.03	.088	(.00, .07)	.12	
	Revenge Planning	.07***	< .001	(.03, .12)	.22***	
	HFS Self	.11**	.001	(.04, .17)	.18**	
	HFS Others	-.05	.208	(-.12, .03)	-.07	
						.026**

Note. (Adj. $R^2_{total} = .244, N = 335$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Verbal Aggression subscale of the BPAQ. Gender: (female = 0, male = 1); Dimensions of Anger Reactions (DAR); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ); Forgiveness of Self subscale (HFS); Forgiveness of Others subscale (HFS).

Table 7
Self and Other Forgiveness: Associations with Life Satisfaction.

Set		<i>b</i>	<i>p</i>	95%CI	β	ΔR^2
1	Subj. SS	1.01 ^{***}	< .001	(.63, 1.39)	.24 ^{***}	.347 ^{***}
	DAR Anger	-.11	.190	(-.26, .05)	-.08	
	Anxiety	.17	.462	(-.28, .61)	.05	
	Depression	-1.61 ^{***}	< .001	(-2.09, -1.13)	-.39 ^{***}	
	Anger Rumination	-.08 ^{**}	.004	(-.14, -.03)	-.19 ^{**}	
	Revenge Planning	-.02	.599	(-.08, .05)	-.03	
2	Subj. SS	1.01 ^{***}	< .001	(.65, 1.37)	.23 ^{***}	.086 ^{***}
	DAR Anger	-.08	.291	(-.23, .07)	-.06	
	Anxiety	.32	.142	(-.11, .74)	.09	
	Depression	-1.34 ^{***}	< .001	(-1.79, -.89)	-.33 ^{***}	
	Anger Rumination	-.02	.559	(-.07, .04)	-.04	
	Revenge Planning	.00	.947	(-.06, .06)	.00	
	HFS Self	.32 ^{***}	< .001	(.22, .42)	.31 ^{***}	
	HFS Others	.15 [*]	.010	(.04, .26)	.13 [*]	

Note. (Adj. $R^2_{total} = .419, N = 336$). * $p < .05$; ** $p < .01$; *** $p < .001$. The criterion variable is the Satisfaction With Life Scale (SWLS). Subj. SS: MacArthur Scale of Subjective Social Status (ladder 1 – 10); Dimensions of Anger Reactions (DAR-R); Depression: two items (PHQ-4); Anxiety: two items (PHQ-4); Anger Rumination subscale (DAQ); Revenge Planning subscale (DAQ); Forgiveness of Self subscale (HFS); Forgiveness of Others subscale (HFS).