

SOCIAL PROBLEM SOLVING, LIFE STRESS AND EXPERIENTIAL AVOIDANCE
AS PREDICTORS OF ANGER AND AGGRESSION

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A dissertation submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

Department of Psychology

Central Michigan University
Mount Pleasant, Michigan
August 2011

Accepted by the Faculty of the College of Graduate Studies,
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This project is dedicated to Jack Gerhart.

ACKNOWLEDGEMENTS

I thank Dr. George Ronan for his continued guidance as my primary advisor in the clinical psychology program at CMU. He has consistently modeled critical thinking and effective problem-solving throughout my clinical and research training. I thank Dr. Mark Reilly for helping me understand the role of sound methods and conceptual clarity in advancing the behavioral sciences. I thank Dr. David Acevedo-Polakovich for his instruction in the ways that psychology can assist in the understanding and resolution of social problems such as discrimination, and violence. All three have made a considerable impact on my learning and development in psychology. I thank them all for their guidance on this project.

ABSTRACT

SOCIAL PROBLEM SOLVING, LIFE STRESS AND EXPERIENTIAL AVOIDANCE AS PREDICTORS OF ANGER AND AGGRESSION

by James Gerhart

This study evaluated the relationships between basic psychological processes and the development of anger and aggression over a two month period. Participants from a local university completed measures of social problem-solving, experiential avoidance, life stress, anger, and aggression. It was hypothesized that measures of social problem solving and experiential avoidance would moderate the relationships between life stress, anger and aggression. It was further hypothesized that experiential avoidance and social problem-solving deficits would predict future problems and frustrations. Finally, it was hypothesized that acceptance would demonstrate incremental utility in predicting anger and aggression over and above that predicted by social problem solving skills. Results indicated that social problem-solving, experiential avoidance and life stress are associated with concurrent anger and aggression. Stress did not interact with experiential avoidance or social problem-solving to predict anger and aggression. Experiential avoidance accounted for unique variance in anger and aggression controlling for levels of life stress and social problem-solving. These results suggest that acceptance-based behavior therapies could potentially enhance stress management and problem solving therapies for anger and aggression.

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CHAPTER I

INTRODUCTION

Poorly regulated anger and aggression produce negative consequences for psychosocial and physical functioning. Anger tends to be an uncomfortable private experience that many individuals prefer to avoid (Gardner & Moore, 2008). High levels of anger and aggression are also features of severe mental illnesses such as Posttraumatic Stress Disorder (Chemtob, Novaco, Hamada, Gross & Smith, 1997; Taft, Street, Marshall, Dowdall & Riggs, 2007), and Borderline Personality Disorder (Koenigsberg, Harvey, Mitropoulou, Schmeidler, & New, et al., 2002). Anger is also associated with poor health outcomes such as cardiovascular problems and increased pain severity. For instance, the risk of heart attack is doubled in the two hour period following an anger episode (Mittleman, Maclure, Sherwood, MulryTofler, Jacobs, Friedman, & Benson et al., 1995), and prolonged anger is associated with a premature onset of cardiovascular disease (Chang, Ford, Meoni, Wang & Klag, 2002). While anger adversely affects the angry individual, it is also costly to society. Excessive anger is associated with workplace tension (Fitness, 2000), child abuse (Rodriguez & Green, 1997) and interpersonal violence (Gates, Fitzwater, Succup, 2003).

Anger and aggression are complex responses with multiple determinants (Ollendick, 1996; Bushman & Anderson, 2001). Laboratory models have documented that painful stimulation tends to elicit aggression across species (Ulrich, Hutchinson & Azrin, 1965), and this aggression can be responsdently conditioned to occur in the presence of previously neutral stimuli (Gluck, Otto & Beauchamp, 1985; Vernon & Ulrich, 1966). Increased rates of aggression have also been observed during periods of operant extinction, and intermittent reinforcement (Azrin et al., 1966; Kelly & Hake, 1970; Lerman, Iwata & Wallace, 1999; Looney & Cohen, 1981). These

laboratory findings provide well controlled models of the environmental factors in the everyday world such as high temperatures, insults, depression, goal thwarting, and interpersonal stress that can provoke anger and aggression. Berkowitz has argued that persons become angry and aggressive by these conditions because they are experientially unpleasant and aversive (Berkowitz, 1989; Berkowitz & Harmon-Jones, 2004).

Although anger and aggression are associated with aversive and stressful environments, individual subjects differ in their responses to formally similar situations, and ideographic factors modulate the expression of anger and aggression (Berkovitz & Harmon-Jones, 2004). Social cognitive biases such as selective attention to threatening stimuli, and hostile judgments regarding neutral social stimuli may confer vulnerabilities for increased anger and aggression (Huessman,1998). For example exposure to traumatic experiences such as war trauma can play a role in sensitizing some individuals to threatening stimuli (Taft, Street, Marshall, Dowdall, & Riggs, 2007).

Attention and interpretive biases may also contribute to broader deficiencies in general social problem-solving, a cognitive behavioral process whereby individuals identify and implement strategies to resolve problems. (D'Zurilla & Goldfried, 1971; D'Zurilla & Nezu,1999). Social problem-solving can thought of a multicomponent response set with cognitive and overt behavioral components including general positive and negative attitudes about confronting problems, along with problem solving skills such as identifying problems, setting goals, and selecting effective solutions.

Deficits in social problem-solving skills are predictive of man clinical problems including anger and aggression. D'Zurilla, Chang, and Sanna (2003) found that components of poor social problem-solving significantly predicted aggression, and overall social problem-solving mediated

the relationship between self-esteem and subsequent aggression in a sample of 205 college students. More detailed analyses revealed that a negative orientation, impulsive and careless problem-solving, along with avoidance were predictors of later anger and hostility after controlling for self-esteem. Lochman and Dodge (1994) similarly found that violent youth demonstrated poorer social problem-solving skills compared to less aggressive and non aggressive peers. For instance, Lochman and Dodge found that preadolescent and adolescent violent boys generated fewer solutions to interpersonal problems.

There is evidence these social problem-solving skills are targeted in violence reduction training, problem-solving skills improve and ineffective anger decreases (Ronan, Gerhart, Baumesiter & Udell, 2010). Despite improvements in social problem-solving, a large proportion of treated offenders recidivate within a three year period following treatment (Ronan, Gerhart, Dollard & Maurelli, 2010). This pattern of recidivism can be partially explained by the observation that social-problem solving skills account for only a portion of variance in anger and aggression related constructs (D'Zurilla et al., 2003) and other variables should be accounted for.

One such variable appears to be emotion-focused coping. In a study of child abusing women, Cantos, Neal, O'Leary, and Gains (1997) found that abusive mothers tended to respond to stress with higher levels of avoidance, and emotion-focused coping which precluded their use of effective problem-solving skills. These findings are consistent with the interpretation that some individuals act in ways that allow them to avoid or quickly escape the aversive state of stress regardless of whether or not they effectively solve the problems in their lives.

Individuals use many strategies to avoid and escape stress. One strategy is to suppress or minimize unwanted thoughts and emotions, a process referred to as experiential avoidance (Hayes, Strosahl & Wilson, 1999). Experiential avoidance is the process whereby persons

attempt to reduce, alter or avoid private experiences that cause subjective discomfort. Often times a person will attempt to distract from or disengage from negative emotions in an effort to control impulses and manage their own behavior. Despite these efforts, the desired effects of cognitive and emotional suppression often washout over time and can be followed by increased frequency and salience of the previously suppressed stimuli. This effect is thought to occur, in part, because the person attempting to ignore their private experiences may generate verbal rules which increase their vigilance for thoughts, emotions, and related stimuli they wish to avoid.

To focus more specifically on anger related thought and emotion, experiential avoidance has been shown to predict multiple facets of anger including state and trait levels of anger (Breen & Kashdan, 2010). This finding relates to a much broader literature that documents the paradoxical effects of anger suppression, its consequence of increased pain perception (Quartana, Yoon & Burns, 2007), and its link to increased cardiovascular stress reactivity (Poole, Snieder, Davis, & Trieber, 2006).

Although the construct of experiential avoidance is a promising variable for the prediction and control of anger and aggression, it is unclear as to whether the construct makes a unique contribution after controlling for older constructs such as social problem-solving. Similar questions have been asked with regard to whether experiential avoidance, and its related model of psychotherapy, Acceptance and Commitment Therapy, constitute new contributions to the mental health literature (Gloster, Klotsche, Chaker, Hummel & Hoyer, 2011, Ost, 2008). At present this study offers the first comparison of experiential avoidance to stress and social problem-solving for the prediction of anger and aggression.

Hypotheses

Hypothesis 1: Stress will predict anger and aggression.

Hypothesis 2: Social problem solving skills will moderate the relationship between stress and anger and aggression.

Hypothesis 3: Experiential avoidance will moderate the relationship between stress and anger and aggression.

Hypothesis 4: Experiential avoidance will show incremental utility in the prediction of anger and aggression after controlling for social problem solving.

CHAPTER II

METHOD

Subjects

Subjects were recruited from undergraduate psychology courses at a four year university. On three occasions research assistants visited psychology courses, described requirements of the study and informed consent. Research assistants distributed measures to consenting participants. Depending on time constraints of each course's schedule, measures were either collected at that class period or the next class period. One hundred eighty-seven students gave consent and participated in at least one wave of the study. In total, 182 participants completed at least two waves of the study. Seventy-one completed all three waves of the study. The average age among participants in wave one was 21 years (SD 4). Seventy-three percent were female. Ninety-five percent of those students providing information about their ethnicity identified as Caucasian.

Measures

Social Problem Solving Inventory-Revised (SPSI-R; D'Zurilla, Nezu, Maydeu-Olivares, 2002)

The Social Problem Solving Inventory-Revised-Short Form is a 25 item self report measure of social problem solving. The measure includes subscales for the various aspects of social problem solving including, positive problem orientation, negative problem orientation, rational problem solving, impulsivity/carelessness style, and avoidance style. Respondents were asked to indicate the degree to which statements describe their efforts to manage problems in their lives. Some items read "I feel threatened and afraid when I have an important problem to solve", "I wait to see if a problem will resolve itself first, before trying to solve it myself.", and

“I am too impulsive when it comes to making decisions.” Chang and D’Zurilla (1996) found that constructs of positive problem orientation and negative problem orientation were able to significantly predict functioning after controlling for optimism and pessimism. In wave one of this sample Chronbach’s Alpha was .86.

The Acceptance and Action Questionnaire Version II (AAQ-II: Bond et al, in press) is a self-report measure of acceptance or the willingness to experience private events without making efforts to modify those events as one pursues important life goals and values. The inverse of acceptance, experiential avoidance, refers to the tendency to reduce or eliminate private experiences at the cost of pursuing valued life outcomes. The AAQ-II is a revised version of the AAQ-I (Hayes, 1996), the original measure of experiential acceptance. Hayes and colleagues (2006) reviewed a variety of psychological problems studied using various versions of the AAQ.

Versions of the AAQ have demonstrated convergent validity with other measures of psychopathology. For instance, the correlation between the AAQ and depression as measured with the Beck Depression Inventory ranges from $r = .50$ to $r = .72$. The AAQ’s relation to general distress as measured by the as measured by the Brief Symptoms Index was also high, $r = .70$. The AAQ-II was selected primarily because of the marginal level of internal consistency documented in the AAQ-I. Some items on the AAQ-II include “It’s OK if I remember something unpleasant.”, “I’m afraid of my feelings.”, “My thoughts and feelings do not get in the way of how I want to live my life.” Preliminary data on the AAQ-II suggest adequate reliability (.81-.87) and convergent validity with the BDI-II $r = .75$ and the Beck Anxiety Inventory $r = .59$. In wave one of this sample Chronbach’s Alpha was .86.

The Aggression-Questionnaire (Buss & Perry, 1992) is a 29 item measure that was designed to measure anger, verbal aggression, physical aggression, and hostility. The measure was originally developed with a sample of undergraduate university students (Buss & Perry, 1992). The measure includes items reading “I often find myself disagreeing with people,” “I can’t help getting into arguments when people disagree with me” and “If someone hits me, I hit back.”

The Aggression-Questionnaire is a reliable measure of aggressive behavior with a nine week test-retest reliability of .80, and an alpha coefficient of .89 for the total score. The questionnaire has demonstrated construct validity by converging with related constructs such as impulsivity ($r=.46$), assertiveness ($r=.43$), and competitiveness ($r=.46$) (Buss & Perry, 1992). Scores from the Aggression-Questionnaire converged with the Novaco Anger Scale at $r=.79$.

The Multidimensional Anger Inventory (MAI; Siegel, 1986) is a thirty eight item questionnaire that provides an estimate of both trait and state levels of anger. The measure produces four subscales including Anger Expression-Out; Anger Expression-In; Anger Control-Out; Anger Control-In. Participants provide ratings of their experience and expression of anger using a series of 4 point likert scales. The inventory’s test-retest reliability was $r = .75$. Its alpha ranged from .84 to .89.

The Undergraduate Stress Questionnaire (Crandall, Preissler & Aussprung, 1992) is a stressor checklist that was designed to measure the occurrence of stressful events in the lives of undergraduate college students. Some sample items include “Problem getting home from bar when drunk”, “Stayed up late writing a paper”, “Can't finish everything you needed to do”, and “Having roommate conflicts.” The measure is predictive of poor mood and physical symptoms

(Crandall, Preissler & Aussprung, 1992). The measure has also been used to measure distress in military recruits (Clemson, 1996). A modified version was used investigate coping in undergraduate students (Eshun, 2006).

Procedure

Participants were recruited from undergraduate classes at Central Michigan University during the Fall 2010 semester. Participants were informed of the voluntary nature of the study along with the benefits (extra credit; monetary compensation) and risks of their participation in the study. Consenting students were provided with a packet of the measures described above and asked to complete the measures during that individual class period. Research assistants returned one and two months later to readminister the same set of measures during an individual class period.

Data Preparation and Analysis

Box and whisker plots were used to identify and remove outliers. Table one contains means and standard deviations for all variables measured at T1, T2, and T3 with outliers excluded. Means and standard deviations were generally stable across all three waves of the study. In order to meet assumptions for correlation and regression analyses, data were also screened for normality. When appropriate, square root and log 10 transformations were applied to reduce excessive skew and kurtosis. Square root transformations were applied to the AAQ-II at T1 and T2, the anger at T1, and the AQ at T3. Because Hierarchical Linear Models are less susceptible to bias from outliers and non-normal distributions, an uncleaned dataset was retained for analysis with hierarchical growth models.

Pearson product correlations were computed to determine zero-order relationships among the study variables. Hierarchical regression was used to test moderation, and to compare the roles abilities of stress, problem-solving, and AAQ-II avoidance in the prediction of anger and aggression. Cross-panel correlations were used to explore the temporal relations between independent and dependent variables.

Given the complexity of the data set, and the nature of prospective research, hierarchical linear modeling (HLM) was determined to be the most efficient and parsimonious analysis for summarizing the overall results of the study. HLM has several advantages for the analysis of longitudinal data. HLM growth curves are robust in the presence of missing data, a common occurrence in longitudinal research, because estimations of individual growth curves can be estimated from data at two time points, and estimates are less influenced by outliers. An additional strength of HLMs, unlike hierarchical regression models, is that the models do not make the assumption of uncorrelated errors. This allows for more effective modeling of longitudinal data as errors are expected to correlate over repeated measurements within the same individuals (Willette & Singer, 2003). For the present analyses, models began with the specification of a Level one model for overall growth across the population. Next a Level two model was specified as individual deviations from the population parameters. Level 1 and 2 models are specified as:

Level 1: Anger/Aggression=Population Intercept + Population Slope (Wave) + Error.

Level 2: Individual Intercept = Population Intercept +/- Individual Deviation Term
Individual Slope = Population Slope +/-Individual Deviation Term

Next cross-panel correlations submitted to path analysis to estimate the flow of variance over time. Approximately 2% of the data was missing for 71 participants who provided data at

all three waves of the study. Missing data was replaced using the multiple imputation function in *Lisrel 8.8 student version*. Initial cross-panels and path diagrams included within wave correlations, and test-retest reliabilities to control for the presence of baseline relationships. Non significant paths were removed from the models in an iterative fashion.

Table 1. *Means and Standard Deviations of Study Variables*

	Time 1			Time 2			Time 3		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
AAQ-II	28.72	10.13	176	27.78	9.99	104	27.97	10.23	94
SPSI-R-SF	63.39	11.88	170	64.33	12.35	103	63.87	12.29	93
MAI	96.94	18.94	172	95.24	19.50	100	95.90	18.88	94
AQ	60.39	12.52	177	59.16	11.37	103	56.97	11.56	94
USQ	193.02	115.83	177	192.10	127.68	105	206.28	136.18	94

CHAPTER III

RESULTS

Tables two, three, and four contain correlation matrices for the measured variables at T1, T2, and T3, respectively. At T1, all relationships between variables reached statistical significance at the $p < .01$ level. Social problem-solving was moderately correlated with aggression ($r = -.365$), and anger ($r = -.482$) at T1. Experiential avoidance was also moderately correlated with aggression ($r = .458$), and anger ($r = .566$) at T1. Although the magnitude of correlations varied across the three waves of the study, these relationships remained in the moderate range for correlation effect sizes. Experiential avoidance also correlated with the stress at all three measurement periods ($r = .248 - .404$). The moderate relationships between the social problem-solving and experiential avoidance ($r = -.306$ to $-.521$) suggested some overlap between the constructs. Further analyses revealed that the experiential avoidance was negatively related to Positive Problem Orientation ($r = -.289$). Experiential avoidance was positively related to Negative Problem Orientation ($r = .607$), Avoidant Style ($r = -.333$), and Impulsive/Carelessness Style ($r = .227$). Experiential avoidance was unrelated to Rational Problem-Solving ($r = -.072$).

Table 2. *Correlations between Study Variables at time 1*

	AAQ2	AQ	MAI	SPSI	USQ
AAQ2		.458**	.566**	-.474**	.250**
AQ			.779**	-.365**	.258**
MAI				-.482**	.283**
SPSI					-.164*
USQ					

** $p < 0.01$, * $p < .05$ AAQ2=Experiential Avoidance, AQ = Aggression, MAI= Anger, SPSI=Social Problem-Solving, USQ = Stress

Table 3. *Correlations between Study Variables at time 2*

	AAQ2	AQ	MAI	SPSI	USQ
AAQ2		.267**	.346**	-.521**	.248**
AQ			.723**	-.295**	.289**
MAI				-.450**	.273**
SPSI					-.154*
USQ					

**p < 0.01, *p < .05 AAQ2=Experiential Avoidance, AQ = Aggression, MAI= Anger, SPSI=Social Problem-Solving, USQ = Stress

Table 4. *Correlations between Study Variables at time 3*

	AAQ2	AQ	MAI	SPSI	USQ
AAQ2		.431**	.505**	-.306**	.404**
AQ			.733**	-.248*	.386**
MAI				-.299**	.365**
SPSI					-.176
USQ					

**p < 0.01, *p < .05 AAQ2=Experiential Avoidance, AQ = Aggression, MAI= Anger, SPSI=Social Problem-Solving, USQ = Stress

Tests of Interaction

It was hypothesized that experiential avoidance and social problem-solving would moderate the relationships between stress and anger and aggression. These hypotheses were tested using hierarchical regression. First, T1 data for stress, experiential avoidance, and social problem-solving were centered around their means. Stress, and experiential were entered in the first model, and an interaction term of stress and experiential avoidance was entered in the second models. In the final model a significant main effect of the experiential avoidance on anger was observed, $\beta=.542$, $t = 8.501$, $p < .01$. There was no significant effect of stress on anger. Likewise, there was no interactive effect of stress and experiential avoidance on anger. Controlling for the stress, a significant main effect of experiential avoidance on aggression was observed, $\beta=.442$, $t = 6.272$, $p < .01$. After controlling for the effect of the experiential avoidance

and the main effect for the stress, the interaction of the stress and experiential avoidance did not reach significance.

Tests of moderation were also conducted with stress and social problem-solving data at T1. Stress, and social problem-solving were entered in the first model, and an interaction term for stress and social problem-solving was entered in the second models. After controlling for stress, a significant main effect of social problem-solving on anger was observed, $\beta = -.449$, $t = -6.629$, $p < .01$. Controlling for the social problem-solving, the effect of stress on anger reached significance, $\beta = .228$, $t = 3.371$, $p < .01$. The interaction of the stress and social problem-solving did not reach significance. Tests of moderation were also conducted for effects on aggression. Significant main effects were observed for social problem-solving, $\beta = -.335$, $t = -4.619$, $p < .01$, and the stress, $\beta = .202$, $t = 2.800$, $p < .01$. The interaction of stress and social problem-solving did not predict aggression.

Comparative Effects of Social Problem Solving and Experiential Avoidance

A focal point of the current study was whether levels of experiential avoidance made a significant contribution to the prediction of anger and aggression over and above that accounted for by social problem-solving skills and general distress. A series of hierarchical regression analyses were conducted to test this hypothesis. Table five contains model parameters for the regression of anger scores on the stress, SPSI-R-SF, and experiential avoidance collected at Time 1. Predictors were entered in a stepwise fashion. In model one, the entry of the stress accounted for nine percent of the variance in anger, $p < .01$. The addition of the SPSI accounted for an additional 20 percent of the variance in anger, $p < .01$. Finally, the addition of the experiential avoidance in Model 3 accounted for an additional 14 percent of the variance in

anger, $p < .01$. Experiential avoidance was the strongest predictor of anger among the three predictors, $\beta = .44$, $p < .01$.

Table 5. Summary of Hierarchical Regression Analysis for Variables Predicting Anger

Variable	Model 1		Model 2			Model 3		β	
	B	SE B	B	B	SE B	B	SE B		
USQ	0.00	0.00	.30**	0.00	0.00	.23**	0.00	0.00	.15*
SPSI-R-SF				-0.03	0.01	-.45**	-0.02	0.01	-.26**
AAQ2							0.42	0.10	.44**
R^2		.09			.29			.43	
F for model		15.87**			32.12**			39.54**	

A similar pattern emerged in the prediction of aggression as measured by aggression. Table six contains model parameters for the regression of aggression scores on the stress, social problem-solving, and experiential avoidance scores collected at Time 1. Predictors were again entered in a stepwise fashion. In model one, the entry of the stress accounted for seven percent of the variance in aggression, $p < .01$. The addition of the SPSI accounted for an additional 11 percent of the variance in aggression, $p < .01$. Finally, the addition of the experiential avoidance in Model 3 accounted for an additional nine percent of the variance in aggression, $p < .01$. The experiential avoidance was the strongest predictor of aggression among the three predictors included in the final model, $\beta = .35$, $p < .01$.

Table 6. Summary of Hierarchical Regression Analysis for Variables Predicting Aggression

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	B	B	SE B	β
UST	0.00	0.00	.26*	0.00	0.00	.20**	0.00	0.00	.15*
SPSI-R-SF				0.00	0.00	-.34**	0.00	0.00	-.18*
AAQ2							0.02	0.01	.35**
R^2		.07			.18			.27	
F for Model		11.37**			17.04**			19.45**	

Prospective Relationships

It was hypothesized that experiential avoidance and social problem-solving would both predict subsequent self-reported anger and aggression. To test this hypothesis a series of cross-panel correlations were tabulated with the data provided by the 71 participants who provided data during all three waves of the study. Figures 1 and 2 contain cross-panel correlations of the experiential avoidance with the anger and aggression, respectively. Figures 3 and 4 contain cross-panel correlations of social problem-solving with anger and aggression, respectively.

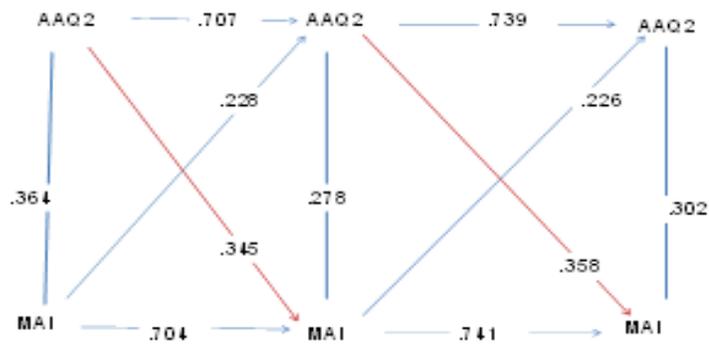


Figure 1. Cross-Panel Correlations between Experiential Avoidance and Anger

As can be seen in Figure 1, The experiential avoidance at T1 and the anger at T2 ($r = .345$) were more highly correlated ($r = .345$) than the experiential avoidance at T2 and the anger at T1 ($r = .228$). Likewise, The experiential avoidance at T2 and the anger at T3 were more highly

correlated ($r = .358$) than the experiential avoidance at T3 and the anger at T2 ($r = .226$). Taken together, these findings suggest that experiential avoidance has a greater influence on future anger, than anger has on future experiential avoidance.

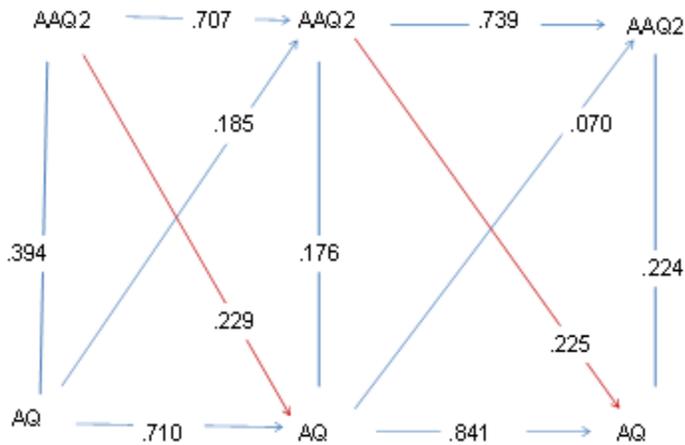


Figure 2. *Cross-Panel Correlations between Experiential Avoidance and Aggression*

In Figure 2, The experiential avoidance at T1 and the aggression at T2 were more highly correlated ($r = .229$) than the experiential avoidance at T2 and the anger at T1 ($r = .185$). In addition, the experiential avoidance at T2 and the anger at T3 were more highly correlated ($r = .225$) than the experiential avoidance at T3 and the anger at T2 ($r = .070$). Together this set of cross panels suggests that experiential avoidance has a greater influence on future aggression, than aggression has on future experiential avoidance. Again it is noted that the cross-panel correlations do not control for within wave correlations, and pre-existing relationships between the constructs.

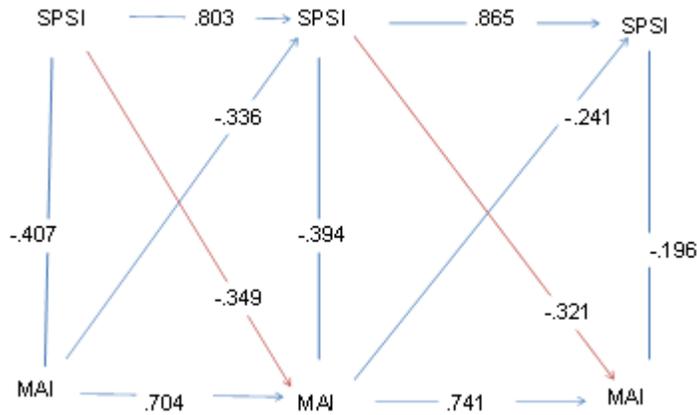


Figure 3. *Cross-Panel Correlations between Social Problem-solving and Anger*

In Figure 3, The SPSI at T1 and anger at T2 were more highly correlated ($r = -.349$) than the SPSI at T2 and the anger at T1 ($r = -.336$). In addition, the SPSI at T2 and anger at T3 were more highly correlated ($r = -.321$) than the at SPSI T3 and anger at T2 ($r = -.241$).

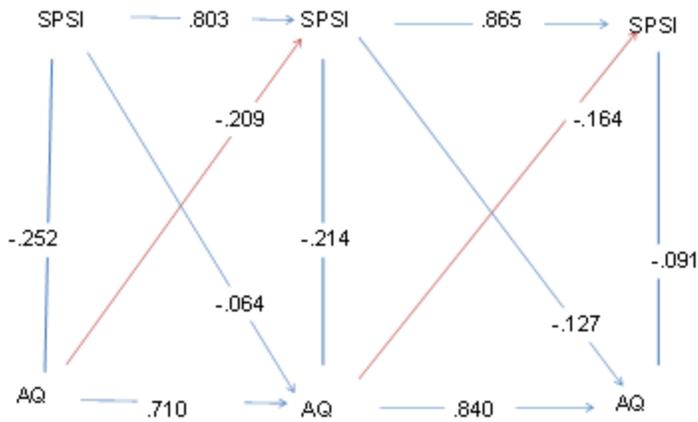


Figure 4. *Cross-Panel Correlations between Social Problem-Solving and Aggression*

In Figure 4, The aggression at T1 and the SPSI at T2 were more highly correlated ($r = -.209$) than the SPSI at T1 and the aggression at T2 ($r = -.064$). In addition, the aggression at T2

and the SPSI at T3 were more highly correlated ($r = -.164$) than the anger at T3 and the SPSI at T2 ($r = -.127$).

Growth Curve Analyses

HLM growth curves were fitted to anger and aggression data; however neither model converged, and model parameters should be interpreted with caution.

Table 7. Growth Curve Parameter Estimates for Anger

Parameter	Estimate	SE	Df	T	Wald Z	Significance	95% Confidence Interval	
							Lower Bound	Upper Bound
<i>Estimates of Fixed Effects</i>								
INTERCEPT	97.21	1.51	180.77	64.27		.00	94.23	100.20
TIME	.09	.67	186.11	.136		.89	-1.22	1.40
SPSI-R-SF	-.42	.13	172.60	-3.96		.00	-.64	-.21
AAQ2	.84	.11	176.66	6.66		.00	.59	1.09
<i>Estimates of Covariance Parameters</i>								
Residual	81.90	8.67			9.45	.00	66.56	100.77
<i>Intercept + Time (Subject = ID)</i>								
UN (1,1)	139.89	38.04			3.68	.00	82.10	238.36
UN (2,1)	6.65	9.44			.71	.48	-11.85	25.15
UN (2,2)	.00	.00						

Table seven provides parameter estimates for the level one longitudinal model for anger. The intercept of 97.21 differed significantly from zero, $t(180.78) = 64.23$, $p < .01$. The fixed parameter for time provided an estimate for the overall growth rate in this sample. Growth rates for the overall sample were negligible at .09 per measurement between periods, $t(186.11) =$

0.136, $p > .05$. The experiential avoidance ($B = .84$) and social problem-solving ($B = -.42$) both significantly predicted overall levels of anger, $p < .01$. A significant amount of unexplained variance remained after accounting for these parameters, residual = 81.90, $Z = 9.45$, $p < .01$. Although significant variability was observed across individual intercepts ($Z = 3.68$, $p < .01$), the variance in slopes, and the covariance between slopes and intercepts were negligible. Because of this lack of covariance, interactive terms between time and the independent variables were not added to the growth model.

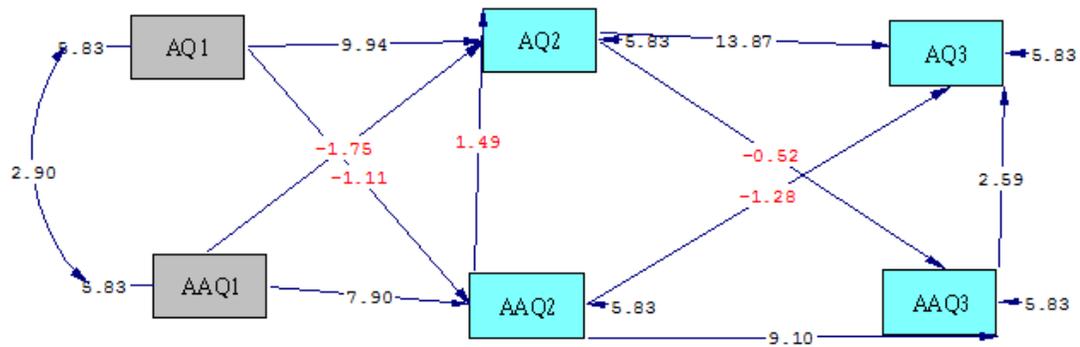
Table 8. *Growth Curve Parameter Estimates for Aggression*

Parameter	Estimate	SE	Df	T	Wald Z	Significance	95% Confidence Interval	
							Lower Bound	Upper Bound
<i>Estimates of Fixed Effects</i>								
INTERCEPT	61.89	1.04	156.33	59.46		.000	59.85	63.95
TIME	-.80	.37	177.85	-2.15		.03	-1.53	-.06
SPSI-R-SF	-.18	.08	159.69	-2.29		.02	-.34	-.63
AAQ2	.44	.09	161.92	4.70		.00	.26	.63
<i>Estimates of Covariance Parameters</i>								
Residual	25.68	2.76			9.30	.00	20.79	31.70
<i>Intercept + Time (Subject = ID)</i>								
UN (1,1)	106.70	19.91			5.36	.00	74.01	153.83
UN (2,1)	-9.78	8.16			-.18	.86	-9.78	8.16
UN (2,2)	.00	.00						

Table eight provides parameter estimates for the level one longitudinal model for aggression. The intercept of 61.89 differed significantly from zero, $t(156.33) = 59.46$, $p < .01$. Aggression growth rates for the overall sample were small but significant, with an estimate of -.80 per measurement period, $t(177.85) = -2.15$, $p < .05$. As with the level one growth model for

anger, a significant amount of unexplained variance in aggression remained after accounting for these parameters, residual = 25.68, $Z = 9.30$, $p < .01$. Again significant variability was observed across individual intercepts ($Z = 5.36$, $p < .01$), but the variance in slopes, and the covariance between slopes and intercepts were both negligible. Overall levels of aggression were significantly predicted by the experiential avoidance ($B = .44$) and social problem-solving ($B = -.18$), $p < .05$. As with the previous model for anger, slopes were not associated with individual differences present at baseline. Therefore, interaction terms for time and the IVs were not entered into the growth curve model.

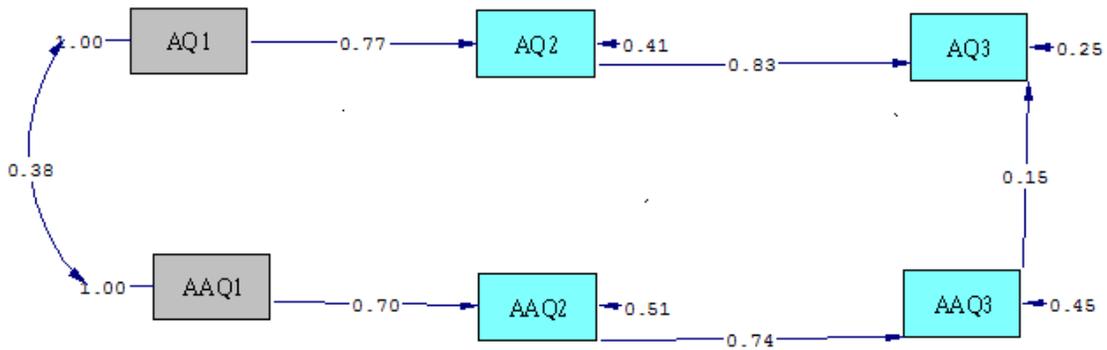
Path Analyses



Chi-Square=24.69, df=4, P-value=0.00006, RMSEA=0.276

Figure 5. Initial Cross-Panel Path Diagram of Experiential Avoidance and Aggression

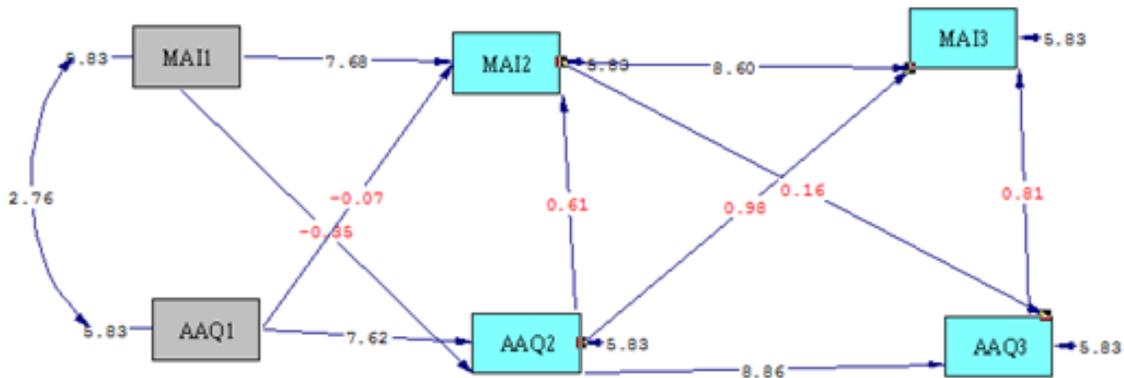
Figure 5 depicts a cross-panel path diagram of the experiential avoidance and aggression over three waves of the study. Paths are marked with their respective t -values. Overall the model provided a poor fit to the data, $RMSEA = .276$, $Chi-Square (4) = 24.69$, $p < .01$. The t – values indicate that within wave relationships at T1 and T3 were significant, as were the paths for test-retest reliabilities.



Chi-Square=36.04, df=9, P-value=0.00004, RMSEA=0.210

Figure 6. *Revised Cross-Panel Path Diagram of Experiential Avoidance and Aggression*

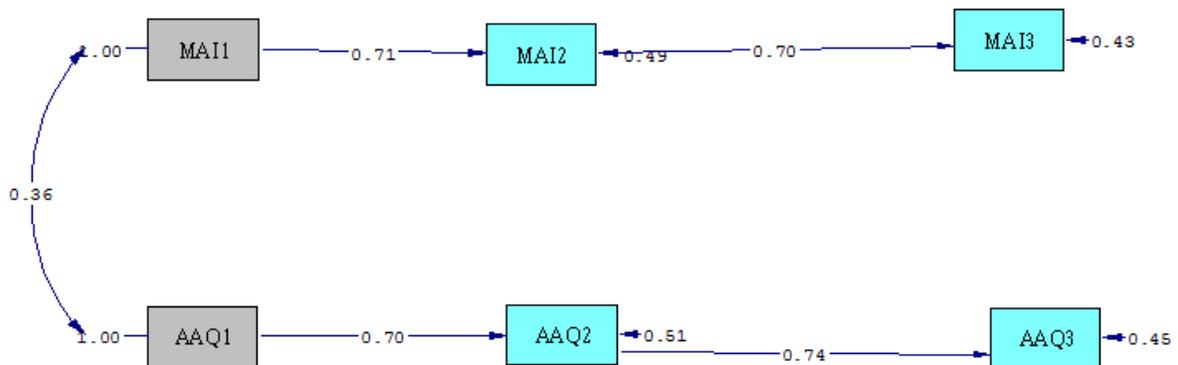
Figure 6 depicts the path diagram with non-significant cross-panel paths removed. Numerical values represent standardized estimates for path values. Overall the model provided a poor fit to the data, RMSEA = .210, Chi-Square (9) = 36.04, $p < .01$, but offered a small improvement in RMSEA (.280 - .210 = .070) compared to the previous model. Controlling for test-retest reliabilities, the experiential avoidance has direct effects on the aggression at T1 and T3. The AAQ also have indirect effects on the aggression at T2 and T3, suggesting fairly stable relationships between the experiential avoidance and aggression.



Chi-Square=22.22, df=4, P-value=0.00018, RMSEA=0.259

Figure 7. Initial Cross-Panel Path Diagram of Experiential Avoidance and Anger

Figure 7 depicts a cross-panel path diagram of the experiential avoidance and anger over three waves of the study. Paths are again marked with their respective t -values. Overall the model provided a poor fit to the data, RMSEA = .259, Chi-Square (4) = 22.22, $p < .01$. The t -values indicate that within wave relationship between the AAQ and anger was T1 significant, as were the paths for test-retest reliabilities.



Chi-Square=22.97, df=8, P-value=0.00341, RMSEA=0.166

Figure 8. Revised Cross-panel Path Diagram of Experiential Avoidance and Anger

Figure 8 depicts the path diagram with non-significant cross-panel paths removed. Numerical values represent standardized estimates for path values. Overall the model provided a poor fit to the data, RMSEA = .166, Chi-Square (8) = 22.91, $p < .01$, but offered a small improvement in RMSEA (.259 - .166 = .093) compared to the previous model. Controlling for test-retest reliabilities, the experiential avoidance is significantly correlated with the aggression at T1. Future relationships between the aggression and experiential avoidance are explained by this pre-existing relationship.

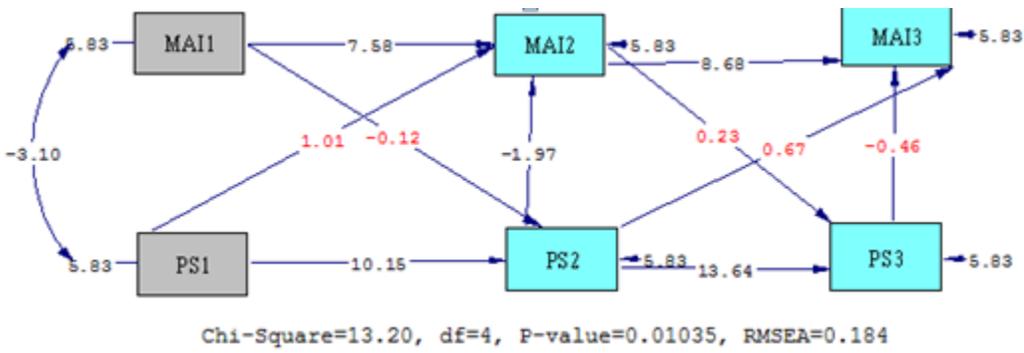


Figure 9. Initial Cross-Panel Path Diagram of Social Problem-solving and Anger

Figure 9 depicts a cross-panel path diagram of the social problem-solving and anger over three waves of the study. Paths are again marked with their respective t -values. Overall the model provided a poor fit to the data, RMSEA = .184, Chi-Square (4) = 13.20, $p < .05$. The t - values indicate that within wave relationship between the social problem-solving and anger at T1 was significant, as were the paths for test-retest reliabilities.

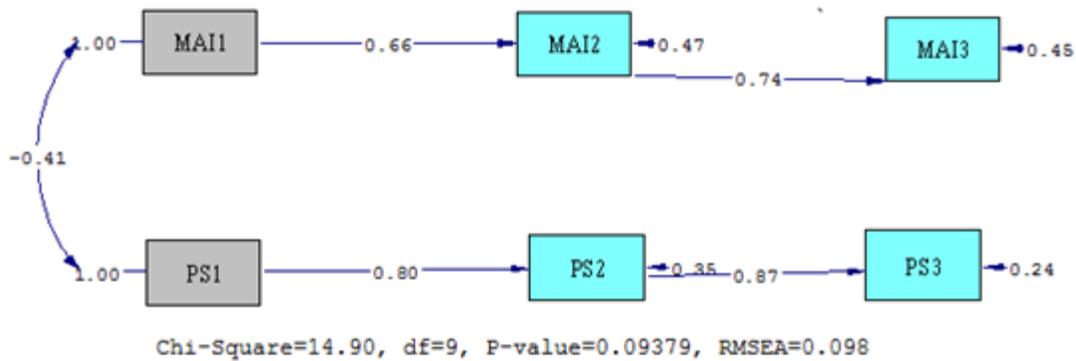


Figure 10. *Revised Cross-Panel Path Diagram of Social Problem-solving and Anger*

Figure 10 depicts the path diagram with non-significant cross-panel paths removed. Numerical values represent standardized estimates for path values. Overall the model provided a poor fit to the data, RMSEA = .098, Chi-Square (9) = 14.90, $p < .10$, but offered a small improvement in RMSEA (.184 - .098 = .096) compared to the previous model. Controlling for test-retest reliabilities, the social problem-solving are significantly related T1. According to this model the later relationships between the SPSI and anger are explained by the pre-existing and stable relationship between social problem-solving and anger.

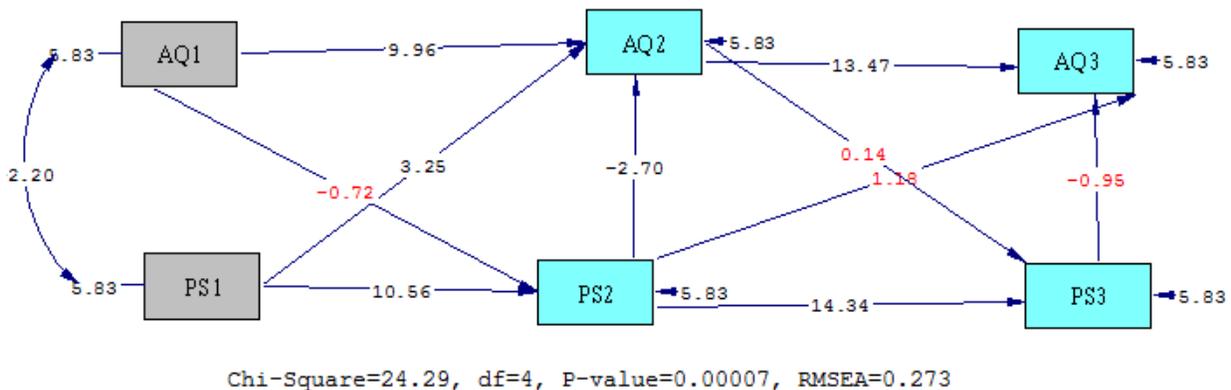


Figure 11. *Initial Cross-Panel Path Diagram of Social Problem-Solving and Aggression*

Figure 11 depicts the path diagram for the three waves of social problem-solving and aggression data. Numerical values represent *t*-value for path estimates. Overall the model provided a poor fit to the data, RMSEA = .273, Chi-Square (4) = 24.29, $p < .01$.

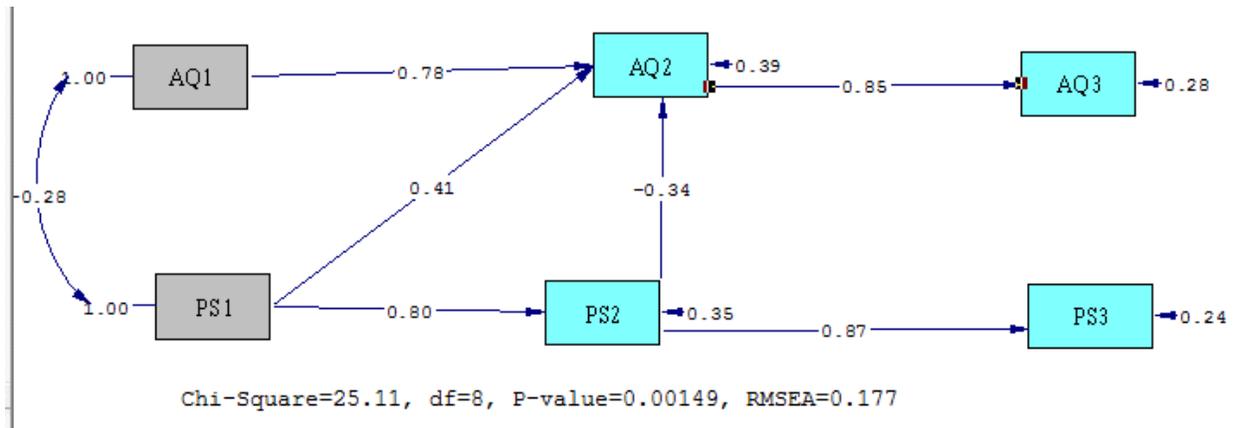


Figure 12. Revised Cross-Panel Path Diagram of Social Problem-Solving and Aggression

Figure 12 depicts the path diagram for the three waves of social problem-solving and aggression 2 data with the non significant paths removed. Numerical values represent standardized estimates for path values. Overall the model provided a poor fit to the data, RMSEA = .177, Chi-Square (8) = 25.11, $p < .01$, but offered a small improvement in RMSEA (.273- .177 = .096) compared to the previous model. Controlling for test-retest reliabilities, the social problem-solving at T1 shares a pre-existing relationship with the aggression at T1. The social problem-solving at had a direct effect on the aggression at T2 but in the direction opposite of what would be expected. However, this relationship would be largely negated by an negative indirect path mediated by social problem-solving at T2. As with previous models, it appears that the relationships between the social problem-solving and the aggression are accounted for by stable and pre-existing relationships.

Finally, a logistic regression analysis was conducted to determine whether study completers differed from noncompleters on demographic characteristics, stress, experiential avoidance, social problem-solving, anger, or aggression. Results indicated that those who completed all three waves of the study were in lower grades, $p < .05$, and reported less anger, $p < .05$.

CHAPTER IV

DISCUSSION

Overall, anger levels were stable throughout the study, and levels of aggression decreased slightly over the two month study period. Although significant individual variation in slopes was not witnessed across anger and aggression, subjects' self-reported stress, experiential avoidance, and social problem-solving skills were predictive of overall levels of anger and aggression at baseline. Cross-panel analyses from a subset of data suggested that experiential avoidance may have causal effects on later anger and aggression, and anger and aggression may have causal effects on later problem-solving.

When these baseline relationships and score reliabilities were controlled for in path analyses, cross-panel relationships between the predictor and criterion variables were not significant. These findings suggest that experiential avoidance and social-problem solving operate on a trait level to predict anger and aggression. Tests of moderation revealed that stress did not interact with experiential avoidance or social problem-solving deficits to predict anger or aggression. Although these null findings could be partially accounted for by the size of the sample, and some shared variance between stress, experiential avoidance, and social problem-solving, it appears that each predictor functions relatively independently of stress levels to predict anger and aggression in this sample.

This study also documented a significant and stable relationship between experiential avoidance and social problem-solving that was replicated across all three measurement periods. Further analyses indicate that participants who tend to be experientially avoidant are more likely to view problems in a negative manner, avoid them if possible, and resolve problems in an impulsive manner. Despite these relationships between experiential avoidance and social

problem-solving deficits, experiential avoidance accounted for a significant proportion of variance in anger and aggression after controlling for stress and social problem-solving skills.

These findings are consistent with contemporary cognitive behavioral theories and interventions for anger. For instance, Gardner and Moore (2008) have argued that angry and aggressive individuals may engage in angry rumination and aggressive behavior in an effort to minimize, escape, and avoid the aversive private experiences of anger and frustration. The current study suggests that these individuals may also avoid external problems that evoke internal experiences of anger and frustration, and may also act quickly and impulsively to escape these external problems and private experiences.

Cognitive behavioral treatments for anxiety and avoidance such as exposure and response prevention have been successful in treating anxiety through repeated exposure to anxiety eliciting stimuli that combined with differential reinforcement of approach-related behaviors. Eventually conditioned emotional reactions such as fear and anxiety are extinguished, and the frequency of later escape and avoidance behavior is reduced (Barlow, 2002). Similar approaches have been developed for the treatment of maladaptive anger and aggression. In this treatment individuals are repeatedly exposed to anger provoking stimuli and non-aggressive behavior is reinforced (Brondolo, DiGiuseppe & Tafrate, 1997). Likewise, some developing treatments that emphasize forgiveness also encourage subjects to experience anger and other forms of discomfort without behaving in aggressive, abusive, or vengeful ways (DiGiuseppe & Tafrate, 2001). Contemporary mindfulness and acceptance interventions are also consistent with this approach, as participants learn to repeatedly observe uncomfortable thoughts and feelings without behaving impulsively or against one's values (Hayes et al., 1999).

Strengths of the current study included a large sample size, repeated administration of validated measures, and the use of hierarchical linear modeling and path analyses. Despite these strengths the validity of the study was compromised by several factors. It remains to be determined as to whether results obtained from a sample of university students will be replicated with outpatient anger management clients and violent offender samples. Subject attrition was another threat to the validity of the current study, as study completers and non-completers differed with regard to grade level, and levels of reported anger. As with all correlational research, is possible that the observed relations are spurious, and variability in anger and aggression better accounted for by unmeasured variables. In this vein, it can be expected that regression parameters would change if additional predictors were added to the models. Larger samples that permit more thorough regression analyses could help address this problem. As with all correlational research, is possible that the observed relations are spurious, and variability in anger and aggression better accounted for by unmeasured variables. In this vein, it can be expected that regression parameters would change if additional predictors were added to the models. Larger samples that permit more thorough regression analyses could help address this problem.

In addition to a need for replication with larger samples, more research is needed to address threats to the construct validity of experiential avoidance. Although the construct made an additional contribution to the prediction of anger and aggression controlling when controlling for social problem-solving and experiential avoidance, it is possible that the construct overlaps with other coping constructs and does not make a unique contribution to the psychological literature. Karekla and Panayiotou (2011) explored this issue in a correlational study of 197 subjects. The researchers found that experiential avoidance was associated with overall levels of

general coping. Experiential avoidance correlated with coping strategies such as denial and self-blame, yet still accounted for an additional 10 percent of the variance in stress when other coping factors were controlled. Similar to the current study, the Karekla and Panayiotou study offers some support that experiential avoidance, while related to general conceptualizations of coping and problem-solving, is a unique construct.

At this point additional correlational, factor analytic, and experimental research is needed to establish the construct validity of experiential avoidance. Kenny (1975) argued a logical course of social science research is to progress from cross-sectional studies to prospective designs before beginning experimental research. In this study experiential avoidance was shown to predict anger and aggression in cross-sectional data. Moreover cross-panel analyses with a subset of data suggest that experiential avoidance has a causal effect on later anger and aggression. Follow up analyses with path analysis found that lags were not significant after controlling for baseline relations. The issue of non-significance and effect size could be addressed in replication studies with larger samples; however, questions regarding causality are best addressed with experimental designs.

Ultimately, constructs such as experiential avoidance and social problem-solving are conceptualized as mediational processes that are manipulated indirectly via direct manipulation of independent variables. As it important as it to properly define these mediational constructs and processes, it is equally important to understand how the environmental conditions that impact these processes. In the context of behavior therapy research, the independent variables typically involve assignment to differing therapeutic or non-therapeutic conditions that may differ with regard to the provision of new verbal rules (Poppen, 1989). Experimental research will play an

important role in comparing the effects ACT, problem-solving, and other behavior therapies, and the ability of their differing verbal based rules and protocols to manage anger and aggression.

These experiments can be explored using a single case methods, randomized group designs, and component analyses. One early research strategy would be to treat social problem-solving therapy for anger and aggression as a benchmark to which Acceptance and Commitment Therapy could be compared. Randomized control trials will have an important role to play in understanding the group level effects of ACT on aggression. Likewise, component analyses and single subject designs will play an important role in delineating the active ingredients in ACT and problem-solving therapies.

APPENDIX A
MEASURES

AGGRESSION QUESTIONNAIRE

A number of statements that people have used to describe themselves are listed below. Read these statements and indicate how they describe you by placing the appropriate number next to each item.

1 = Least like me

2 = Slightly like me

3 = Moderately like me

4 = Mostly like me

5 = Extremely like me

___ 1. Once in a while I can't control the urge to strike another person.

___ 2. I tell my friends openly when I disagree with them.

___ 3. I flare up quickly but get over it quickly.

___ 4. I am sometimes eaten up with jealousy.

___ 5. Given enough provocation, I may hit another person.

___ 6. I often find myself disagreeing with people.

___ 7. When frustrated, I let my irritation show.

___ 8. At times, I feel like I have gotten a raw deal out of life.

___ 9. If somebody hits me, I hit back.

- ___ 10. When people annoy me, I may tell them what I think of them.
- ___ 11. I sometimes feel like a powder keg ready to explode.
- ___ 12. Other people always seem to get the breaks.
- ___ 13. I get into fights a little more than the average person.
- ___ 14. I can't help getting into arguments when people disagree with me.
- ___ 15. I am an even tempered person.
- ___ 16. I wonder why sometimes I feel so bitter about things.

1 = Least like me

2 = Slightly like me

3 = Moderately like me

4 = Mostly like me

5 = Extremely like me

- ___ 17. If I have to resort to violence to protect myself, I will.
- ___ 18. My friends say that I'm somewhat argumentative.
- ___ 19. Some of my friends think I'm a hot head.
- ___ 20. I know that "friends" talk about me behind my back.
- ___ 21. There are people who pushed me so far that we came to blows.
- ___ 22. Sometimes I fly off the handle for no good reason.

- ____ 23. I am suspicious of overly friendly strangers.
- ____ 24. I can think of no good reason for ever hitting a person.
- ____ 25. I have trouble controlling my temper.
- ____ 26. I sometimes feel that people are laughing behind my back.
- ____ 27. I have threatened people I know.
- ____ 28. I have become so mad that I have broken things.
- ____ 29. When people are especially nice, I wonder what they want.

UNDERGRADUATE STRESS QUESTIONNAIRE

(Stressful events in descending order of severity)

Please check the appropriate stressors in your life that have affected you during the past semester.

- _____ 1. Death (family member or friend)
- _____ 2. Had a lot of tests
- _____ 3. It's finals week
- _____ 4. Applying to graduate school
- _____ 5. Victim of a crime
- _____ 6. Assignments in all classes due the same day
- _____ 7. Breaking up with boy/girlfriend
- _____ 8. Found out boy/girlfriend cheated on you
- _____ 9. Lots of deadlines to meet
- _____ 10. Property stolen
- _____ 11. You have a hard upcoming week
- _____ 12. Went into a test unprepared
- _____ 13. Lost something (especially wallet)
- _____ 14. Death of a pet
- _____ 15. Did worse than expected on test
- _____ 16. Had an interview
- _____ 17. Had projects, research papers due
- _____ 18. Did badly on a test
- _____ 19. Parents getting divorce
- _____ 20. Dependent on other people

- _____ 21. Having roommate conflicts
- _____ 22. Car/bike broke down, fiat tire
- _____ 23. Got a traffic ticket
- _____ 24. Missed your period and waiting
- _____ 25. Thoughts about future
- _____ 28. Lack of money
- _____ 27. Dealt with incompetence at the Register's Office
- _____ 28. Thought about unfinished work
- _____ 29. No sleep
- _____ 30. Sick, Injury
- _____ 31. Had a class presentation
- _____ 32. Applying for a job
- _____ 33. Fought with boy/girlfriend
- _____ 34. Working while in school
- _____ 35. Arguments, conflicts of values with friends
- _____ 36. Bothered by having no social support of family
- _____ 37. Performed poorly at a task
- _____ 38. Can't finish everything you needed to do
- _____ 39. Heard bad news
- _____ 40. Had confrontation with an authority figure
- _____ 41. Maintaining a long-distance boy/girlfriend
- _____ 42. Crammed for a test
- _____ 43. Feel unorganized
- _____ 44. Trying to decide on major

- _____ 45. Feel isolated
- _____ 46. Parents controlling with money
- _____ 47. Couldn't find a parking space
- _____ 48. Noise disturbed you while trying to study
- _____ 49. Someone borrowed something without permission
- _____ 50. Had to ask for money
- _____ 51. Ran out of toner while printing
- _____ 52. Erratic schedule
- _____ 53. Can't understand your professor
- _____ 54. Trying to get into your major or college
- _____ 55. Registration for classes
- _____ 56. Stayed up late writing a paper
- _____ 57. Someone you expected to call did not
- _____ 58. Someone broke a promise
- _____ 59. Can't concentrate
- _____ 60. Someone did a "pet peeve" of yours
- _____ 61. Living with boy/girlfriend
- _____ 62. Felt need for transportation
- _____ 63. Bad haircut today
- _____ 64. Job requirements changed
- _____ 65. No time to eat
- _____ 68. Felt some peer pressure
- _____ 67. You have a hangover
- _____ 68. Problems with your computer

- _____ 69. Problem getting home from bar when drunk
- _____ 70. Used a fake ID
- _____ 71. No sex in a while
- _____ 72. Someone cut ahead of you in line
- _____ 73. Checkbook didn't balance
- _____ 74. Visit from a relative and entertaining them
- _____ 75. Decision to have sex on your mind
- _____ 76. Spoke with a professor
- _____ 77. Change of environment (new doctor, dentist, etc.)
- _____ 78. Exposed to upsetting TV show, book, or movie
- _____ 79. Got to class late
- _____ 80. Holiday
- _____ 81. Sat through a boring class
- _____ 82. Favorite sporting team lost

SOCIAL PROBLEM SOLVING INVENTORY—REVISED (short form)

Thomas J. D’Zurilla, Ph.D., Arthur M. Nezu, Ph.D., & Albert Maydeu-Olivares, Ph.D.

Age: _____ Sex: ___ M ___ F

Instructions

Below are some ways that you might think, feel, and act when faced with **PROBLEMS** in everyday living. We are **not** talking about the common hassles and pressures that you handle successfully everyday. In this questionnaire, a **problem** is something important to your life that bothers you a lot but you don’t know immediately how to make it better or stop it from bothering you so much. The problem could be something about yourself (such as your thoughts, feelings, behavior, health or appearance), your relationships with other people (such as your family, friends, teachers, or boss), or your environment and the things that you own (such as your house, car, property, money). Please read each statement carefully and choose one of the numbers below that best shows how much the statement is true of you. See yourself as you **usually** think, feel, and act when you are faced with important problems in your life **these days**. Put the number that you choose on the line before the statement.

1 = Slightly true of me

2 = Moderately true of me

3 = Very true of me

4 = Extremely true of me

1. _____ I feel threatened and afraid when I have an important problem to solve.
2. _____ When making decisions, I do **not** evaluate all my options carefully enough.
3. _____ I feel nervous and unsure of myself when I have an important decision to make.

4. ____ When my first efforts to solve a problem fail, I know if I persist and do not give up too easily, I will be able to eventually find a good solution.
5. ____ When I have a problem, I try to see it as a challenge, or opportunity to benefit in some positive way from having a problem.
6. ____ I wait to see if a problem will resolve itself first, before trying to solve it myself.
7. ____ When my first efforts to solve a problem fail, I get very frustrated.
8. ____ When I am faced with a difficult problem, I doubt that I will be able to solve it on my own no matter how hard I try.
9. ____ Whenever I have a problem, I believe that it can be solved.
10. ____ I go out of my way to avoid having to deal with problems in my life.

0 = Not at all true of me

1 = Slightly true of me

2 = Moderately true of me

3 = Very true of me

4 = Extremely true of me

11. ____ Difficult problems make me very upset.
12. ____ When I have a decision to make, I try to predict the positive and negative consequences of each option.
13. ____ When problems occur in my life, I like to deal with them as soon as possible.

14. ____ When I am trying to solve a problem, I go with the first good idea that comes to mind.
15. ____ When I am faced with a difficult problem, I believe I will be able to solve it on my own if I try hard enough.
16. ____ When I have a problem to solve, one of the first things I do is try to get as many facts about the problem as possible.
17. ____ I put off solving problems until it is too late to do anything about them.
18. ____ I spend more time avoiding my problems than solving them.
19. ____ Before I try to solve a problem, I set a specific goal so that I know exactly what I want to accomplish.
20. ____ When I have a decision to make, I do **not** take the time to consider the pros and cons of each option.
21. ____ After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better.
22. ____ When a problem occurs in my life, I put off trying to solve it for as long as possible.
23. ____ When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas.
24. ____ When making decisions, I go with my “gut feeling” without thinking too much about the consequences of each option.
25. ____ I am too impulsive when it comes to making decisions.

Multidimensional Anger Inventory

Everybody gets angry from time to time. A number of statements that people have used to describe the times that they get angry are included below. Read each statement and circle the number to the right of the statement that best describes you. There are no right or wrong answers.

1 = The statement is completely un-descriptive of me.

2 = The statement is mostly un-descriptive of me.

3 = The statement is partly un-descriptive of me and partly descriptive of me.

4 = The statement is mostly descriptive of me.

5 = The statement is completely descriptive of me.

Please answer every item.

- | | | | | | | |
|----|--|---|---|---|---|---|
| 1. | I tend to get angry more frequently than most people. | 1 | 2 | 3 | 4 | 5 |
| 2. | Other people seem to get angrier than I do in similar circumstances. | 1 | 2 | 3 | 4 | 5 |
| 3. | I harbor grudges that I don't tell anyone about. | 1 | 2 | 3 | 4 | 5 |
| 4. | I try to get even when I'm angry with someone. | 1 | 2 | 3 | 4 | 5 |
| 5. | I am secretly quite critical of others. | 1 | 2 | 3 | 4 | 5 |
| 6. | It is easy to make me angry. | 1 | 2 | 3 | 4 | 5 |
| 7. | When I am angry with someone, I let that person know | 1 | 2 | 3 | 4 | 5 |
| 8. | I have met many people who are supposed to be experts
who are no better than I. | 1 | 2 | 3 | 4 | 5 |
| 9. | Something makes me angry almost every day. | 1 | 2 | 3 | 4 | 5 |

10. I often feel angrier than I think I should. 1 2 3 4 5
11. I feel guilty about expressing my anger. 1 2 3 4 5
12. When I am angry with someone I take it out on
whoever is around. 1 2 3 4 5
13. Some of my friends have habits that annoy and
bother me very much. 1 2 3 4 5

1 = The statement is completely un-descriptive of me.

2 = The statement is mostly un-descriptive of me.

3 = The statement is partly un-descriptive of me and partly descriptive of me.

4 = The statement is mostly descriptive of me.

5 = The statement is completely descriptive of me.

14. I am surprised at how often I feel angry. 1 2 3 4 5
15. Once I let people know I'm angry, I can put it out
of my mind. 1 2 3 4 5
16. People talk about me behind my back. 1 2 3 4 5
17. At times, I feel angry for no specific reason. 1 2 3 4 5
18. I can make myself angry about something in the past
just by thinking about it. 1 2 3 4 5

19. Even after I have expressed my anger, I have trouble
forgetting about it. 1 2 3 4 5
20. When I hide my anger from others, I think about it
for a long time. 1 2 3 4 5
21. People can bother me just by being around. 1 2 3 4 5
22. When I get angry, I stay angry for hours. 1 2 3 4 5
23. When I hide my anger from others, I forget about
it pretty quickly. 1 2 3 4 5
24. I try to talk over problems with people without letting
them know I'm angry. 1 2 3 4 5
25. When I get angry, I calm down faster than most people. 1 2 3 4 5
26. I get so angry, I feel like I might lose control. 1 2 3 4 5
27. If I let people see the way I feel, I'd be considered a hard
person to get along with. 1 2 3 4 5
28. I am on guard with people who are friendlier than I
expected. 1 2 3 4 5

1 = The statement is completely undescriptive of me.

2 = The statement is mostly undescriptive of me.

3 = The statement is partly undescriptive of me and partly descriptive of me.

4 = The statement is mostly descriptive of me.

5 = The statement is completely descriptive of me.

- | | | | | | | |
|-----|---|---|---|---|---|---|
| 29. | It's difficult for me to let people know I'm angry. | 1 | 2 | 3 | 4 | 5 |
| 30. | I get angry when someone lets me down. | 1 | 2 | 3 | 4 | 5 |
| 31. | I get angry when people are unfair. | 1 | 2 | 3 | 4 | 5 |
| 32. | I get angry when something blocks my plans. | 1 | 2 | 3 | 4 | 5 |
| 33. | I get angry when I am delayed. | 1 | 2 | 3 | 4 | 5 |
| 34. | I get angry when someone embarrasses me | 1 | 2 | 3 | 4 | 5 |
| 35. | I get angry when I have to take orders from someone less
capable than I. | 1 | 2 | 3 | 4 | 5 |
| 36. | I get angry when I have to work with incompetent
people. | 1 | 2 | 3 | 4 | 5 |
| 37. | I get angry when I do something stupid. | 1 | 2 | 3 | 4 | 5 |
| 38. | I get angry when I am not given credit for something
I have done. | 1 | 2 | 3 | 4 | 5 |

AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6				7		
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true				always true		
1.	It's OK if I remember something unpleasant.				1	2	3	4	5	6	7
2.	My painful experiences and memories make it difficult for me to live a life that I would value.				1	2	3	4	5	6	7
3.	I'm afraid of my feelings.				1	2	3	4	5	6	7
4.	I worry about not being able to control my worries and feelings.				1	2	3	4	5	6	7
5.	My painful memories prevent me from having a fulfilling life.				1	2	3	4	5	6	7
6.	I am in control of my life.				1	2	3	4	5	6	7
7.	Emotions cause problems in my life.				1	2	3	4	5	6	7
8.	It seems like most people are handling their lives better than I am.				1	2	3	4	5	6	7
9.	Worries get in the way of my success.				1	2	3	4	5	6	7
10.	My thoughts and feelings do not get in the way of how I want to live my life.				1	2	3	4	5	6	7

REFERENCES

- Azrin, N. H. (1961). Time-out from positive reinforcement. *Science*, *133*, 382-383.
- Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic*. (2nd ed.). New York: Guilford.
- Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, *106*(1), 59-73.
- Berkowitz, L. & Harmon-Jones, E. (2004). Toward an understanding of the determinants of anger. *Emotion*, *4*(2), 107-130.
- Brondolo, E., DiGuiseppe, R., & Tafrate, C. (1997) Exposure and response prevention for anger problems: Focus on the feeling. *Cognitive and behavioral practice*, *4* (1), 75-98.
- Bushman, B. J. & Anderson C. A. (2001). Is it time to pull the plug on the hostile versus instrumental aggression dichotomy? *Psychological review*, *108*(1), 273-279.
- Cantos, A. L., Neale, J. M., O'Leary, K. D., & Gaines, R. W. (1997). Assessment of coping strategies of child abusing mothers. *Child Abuse & Neglect*, *21*(7), 631-636.
- Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin*, *135*(2), 183-204.
- Chang, E. C., & D'Zurilla, T. J. (1996). Relations between problem orientation and optimism, pessimism, and trait affectivity: A construct validation study. *Behaviour Research and Therapy*, *34*(2), 185-194.
- Chang, P.P., Ford, D.E., Meoni, L.A., Wang, N. & Klag, M.J. (2002). Anger in Young Men and Subsequent Premature Cardiovascular Disease: The Precursors Study *Archives Internal Medicine*, *162*(8), 901-906.
- Chaplin, T. M., & Cole, P. M. (2005). The role of emotion regulation in the development of psychopathology. In B. L. Hankin, & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective*. (pp. 49-74). Thousand Oaks, CA, US: Sage Publications, Inc.
- Chemtob, C.M., Novaco, R.W., Hamada, R.S., Gross, D.M., & Smith, G. (1997). Anger regulation deficits in combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, *10*(1), 17-35.
- Deffenbacher, J. L., Oetting, E. R., & DiGiuseppe, R. A. (2002). Principles of empirically supported interventions applied to anger management. *The Counseling Psychologist*, *30*(2), 262-280.

- DiGuiseppe, R & Tafrate, R.C. (2001). A comprehensive treatment model for anger disorders. *Psychotherapy, 38*(3), 263-272.
- Dougher, M. J. & Hayes, S.C. (2000). Clinical behavior analysis. In Dougher, M.J. & Hayes, S.C. *Clinical behavior analysis*. (p 11-25). Reno: Context Press.
- Dymond, S. & Roche, B. (2009). A contemporary behavior analysis of anxiety and avoidance. *The behavior analyst, 32*(1), 7-27.
- D'Zurilla, T. J., & Goldfried, M. R. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology, 78*(1), 107-126.
- Eifert, G. H., McKay, M., & Forsyth, J. P. (2006). *Act on life not on anger: The new acceptance & commitment therapy guide to problem anger*. Oakland, CA, US: New Harbinger Publications.
- Fitness, J. (2000). Anger in the workplace: An emotion script approach to anger episodes between workers and their superiors, co-workers and subordinates. *Journal of Organizational Behavior. Special Issue: Emotions in Organizations, 21*(SpecIssue), 147-162.
- Gardner, F.L., Moore, Z. (2008). Understanding clinical anger and violence: The anger avoidance model. *Behavior Modification, 32*(6), 897-912.
- Gates, D., Fitzwater, E., & Succop, P. (2003). Relationships of stressors, strain, and anger to caregiver assaults. *Issues in Mental Health Nursing, 24*(8), 775-793.
- Gloster, A. T., Klotsche, J., Chaker, S., Hummel, K. V., & Hoyer, J. (2011). Assessing psychological flexibility: What does it add above and beyond existing constructs? *Psychological Assessment*, doi:10.1037/a0024135
- Gluck, J. P., Otto, M. W., & Beauchamp, A. J. (1985). Respondent conditioning of self-injurious behavior in early socially deprived rhesus monkeys. *Journal of Abnormal Psychology, 94*(2), 222-226.
- Hayes, S. C., Strosahl, K.D. & Wilson, K.G. (1999). *Acceptance and commitment therapy*. New York: Guilford.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1-25.
- Huesman, L. R. (1998). The role of social information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In Geen, R. G., Donnerstein, E. (Eds.). *Human aggression: Theories, research, and implications for social policy*. San Diego: Academic Press.

Karekla, M., & Panayiotou, G. (2011). Coping and experiential avoidance: Unique or overlapping constructs? *Journal of Behavior Therapy and Experimental Psychiatry*, 42(2), 163-170.

Kelly, J. F., & Hake, D. F. (1970). An extinction-induced increase in an aggressive response with humans. *Journal of the Experimental Analysis of Behavior*, 14(2), 153-164.

Koenigsberg, H. W., Harvey, P. D., Mitropoulou, V., Schmeidler, J., New, A. S., Goodman, M., Silverman, J. M., Serby, M., Schopick, F., & Siever, L. J. (2002). Characterizing affective instability in borderline personality disorder. *Am J Psychiatry*, 159(5), 784-788

Lerman, D. C., Iwata, B. A., & Wallace, M. D. (1999). Side effects of extinction: Prevalence of bursting and aggression during the treatment of self-injurious behavior. *Journal of Applied Behavior Analysis*, 32(1), 1-8.

Lochman, J. E., & Dodge, K. A. (1994). Social-cognitive processes of severely violent, moderately aggressive, and nonaggressive boys. *Journal of Consulting and Clinical Psychology*, 62(2), 366-374.

Looney, T. A., & Cohen, P. S. (1982). Aggression induced by intermittent positive reinforcement. *Neuroscience & Biobehavioral Reviews*, 6(1), 15-37.

Mittleman, M. A., Maclure, M., Sherwood, J. B., Mulry, R. P., Tofler, G. H., Jacobs, S. C., Friedman, R., Benson, H., & Muller, J. E., (1995). Triggering of Acute Myocardial Infarction Onset by Episodes of Anger. *Circulation*, 92, 1720-1725.

Nation, J. R., & Cooney, J. B. (1982). The time course of extinction-induced aggressive behavior in humans: Evidence for a stage model of extinction. *Learning and Motivation*, 13(1), 95-112.

Ollendick, T. (1996). Violence in youth: where do we go from here? Behavior therapy's response. *Behavior therapy*, 27, 485-514.

Öst, L. (2008). Efficacy of the third wave of behavioral therapies: A systematic review and meta-analysis. *Behaviour Research and Therapy*, 46(3), 296-321.

Poole, J. C., Snieder, H., Davis, H. C. & Treiber, F. A. (2006). Anger Suppression and Adiposity Modulate Association Between ADRB2 Haplotype and Cardiovascular Stress Reactivity. *Psychosomatic Medicine*, 68, 207-212.

Poppen, R. L. (1989). Some clinical implications of rule-governed behavior. In S. C. Hayes (Ed.), (pp. 325-357). New York, NY, US: Plenum Press.

Quartana, P. J., Yoon, K. L., & Burns, J. W. (2007). Anger suppression, ironic processes and pain. *Journal of Behavioral Medicine*, 30(6), 455-469.

- Rodriguez, C. M., & Green, A. J. (1997). Parenting stress and anger expression as predictors of child abuse potential. *Child Abuse & Neglect*, 21(4), 367-377.
- Ronan, G., Gerhart, J. I., Dollard, K., & Maurelli, K. A. (2010). An analysis of survival time to re-arrest in treated and non-treated jailers. *Journal of Forensic Psychiatry & Psychology*, 21(1), 102-112.
- Ronan, G., Gerhart, J., Bannister, D., & Udell, C. (2010). Relevance of a stage of change analysis for violence reduction training. *Journal of Forensic Psychiatry & Psychology*, 21(5), 761-772.
- Singer, J.D. & Willett, J.B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.
- Taft, C.T., Street, A.E., Marshall, A.D., Dowdall, D.J., & Riggs, D.S. (2007). Posttraumatic stress disorder, anger, and partner abuse among Vietnam Veterans. *Journal of family psychology*, 21 (2), 270-277.
- Thompson, R. H., & Iwata, B. A. (2001). A descriptive analysis of social consequences following problem behavior. *Journal of Applied Behavior Analysis*, 34(2), 169-178.
- Truman, J. L., & Rand, M.R. (October, 2010). Criminal victimization, 2009. Bureau of Justice Statistics.
- Ulrich, R. E., Hutchinson, R. R., & Azrin, N. H. (1965). Pain-elicited aggression. *The Psychological Record*, 15(1), 111-126.
- Vernon, W., & Ulrich, R. (1966). Classical conditioning of pain-elicited aggression. *Science*, 152(3722), 668-669.
- Walker, J. S., & Bright, J. A. (2009). Cognitive therapy for violence: Reaching the parts that anger management doesn't reach. *Journal of Forensic Psychiatry & Psychology*, 20(2), 174-201.