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The relation between aggressive behavior and engagement in violence

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Abstract

Exposure to community violence is positively correlated with aggression towards other people (Allwood & Bell, 2008). Researchers in this area have classified aggression into two broad categories, proactive and reactive aggression. Proactive aggression refers to aggression that is used as an instrument to achieve a goal, whereas reactive aggression refers to aggression that is used as a response to a real or perceived treat (Chaux, Arboleda, & Rincon, 2012). Exposure to community violence impacts both reactive and proactive aggression, but mechanisms explaining this relationship are still unclear. One potential mediator of this relationship is religiosity. Previous research suggests that individuals turn to religion as a coping mechanism when encountering stressful situations, but the efficacy of this coping mechanism has generated mixed results (Ano & Vasconcelles, 2005). Considering that exposure to violence and aggressive behavior lead to stress, it is plausible that religiosity is a mediator of this relationship. One hundred twenty three currently enrolled Eastern Michigan University undergraduate students completed self-report measures assessing exposure to community violence, religiosity and both reactive and proactive aggression. It was hypothesized that higher levels of exposure to violence are positively correlated with both types of aggression and religious coping would moderate that relationship. This hypothesis was not supported. However, there was a direct effect between experiences with 'safety' (the mirror image of violence exposure) and lower levels of proactive aggression.

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The Relation Between Aggressive Behavior and Engagement in Violence

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Abstract

Exposure to community violence is positively correlated with aggression towards other people (Allwood & Bell, 2008). Researchers in this area have classified aggression into two broad categories, proactive and reactive aggression. Proactive aggression refers to aggression that is used as an instrument to achieve a goal, whereas reactive aggression refers to aggression that is used as a response to a real or perceived treat (Chaux, Arboleda, & Rincón, 2012). Exposure to community violence impacts both reactive and proactive aggression, but mechanisms explaining this relationship are still unclear. One potential mediator of this relationship is religiosity. Previous research suggests that individuals turn to religion as a coping mechanism when encountering stressful situations, but the efficacy of this coping mechanism has generated mixed results (Ano & Vasconcelles, 2005). Considering that exposure to violence and aggressive behavior lead to stress, it is plausible that religiosity is a mediator of this relationship. One hundred twenty three currently enrolled Eastern Michigan University undergraduate students completed self-report measures assessing exposure to community violence, religiosity and both reactive and proactive aggression. It was hypothesized that higher levels of exposure to violence are positively correlated with both types of aggression and religious coping would moderate that relationship. This hypothesis was not supported. However, there was a direct effect between experiences with 'safety' (the mirror image of violence exposure) and lower levels of proactive aggression.

Acknowledgements

The Relation Between Aggressive Behavior and Engagement in Violence

Defining Aggression

Aggression is defined as the combination of different behaviors characterized by anger, hostility, impulsivity or irritability but can vary in severity and type (Coccaro, 2003). Anderson and Bushman defined aggression as any behavior toward another individual that intents to cause harm (Chaux, Arboleda, & Rincón, 2012). The intent to cause harm could be either a response to a provocation or an instrument to achieve a goal and the two forms of aggression are categorized as reactive and proactive aggression. Reactive aggression refers to an aggressive behavior in response to a real or perceived provocation whereas proactive aggression is used as an instrument to achieve specific goals without a provocation.

A previous study conducted by Los Andes University in Colombia used two samples of children from Bogotá with different levels of exposure to violence. As expected, they found that "Exposure to community violence and to youth gangs were both significantly correlated to reactive and proactive aggression. However, in the regression analyses, exposure to community violence significantly predicted reactive and proactive aggression while exposure to youth gangs predicted only proactive aggression" (Chaux, Arboleda, & Rincón, 2013 *p*. 243). Therefore the article suggests that exposure to community violence is a predictor of both types of aggression.

Andreu et al (2003) compared levels of aggression in two samples of Spanish and Colombian college students. The study sought to determine the influence of economic and social factors on engagement in aggressive behavior. Andreu et al

found that Spaniards engage in reactive aggression while Colombians engage in proactive aggression. Hence, Colombians behave aggressively to solve problems, obtain rewards and avoid punishment whereas Spaniards engage in aggressive behavior when they have no control over the situation or want to express negative emotions (Andreu, et al., 2003). Colombian students showed significantly higher scores in engaging in proactive aggression in comparison with Spaniard students who engaged in more reactive aggression (24.92 vs. 3.07; p <0.001). Regarding the economic and social factors Andreu et al. (2003) argue that as Colombia has higher levels of violence the aggression tends to be proactive while as Spain has lower levels of violence therefore the aggression is frequently reactive.

The Andreu, et al. study suggests that high exposure to violence is directly related to the engagement in proactive aggression. To date, there is not a unified theory to explain human aggression (Roach, 2002). The following section attempts to review the main theories that explain the development and permanence of aggressive behavior within humans from a psychosocial perspective.

Frustration-Aggression Theory

The frustration-aggression theory was proposed by John Dollard, Leonard Doob, Neal Miller, O.H. Mowrer, and Robert Sears in 1939 (Berkowitz, 1989). The theory was the first to define aggression as "a reaction to environmental conditions, namely those conditions provoking frustration" (Roach, 2002, *p*. 2). But before the theory can be understood it is necessary to define the concepts involved. Frustration is defined by Dollard et al. as "an interference with the occurrence of an instigated goal-

response at its proper time in the behavior sequence" (as cited in Berkowitz,1989, *p.* 60). In this context, aggression was defined as a reaction to real or perceived provocation in the environment. Based on the definition of frustration, the frustration-aggression hypothesis proposes that aggression is a response to frustration and it always emerges from frustration. In the same way "frustration always leads to some form of aggression" (Ardila, 2005, *p*.65). In a somewhat more recent version of the theory, Berkowitz (1962) posited that even though frustration could provoke multiple responses including aggression, disappointment and depression "aggression will always be the product of frustration" (as cited in Roach, 2002, *p.* 3)

The relationship between frustration and aggression has also been examined in combat veterans. Perhaps one of the most infamous incidences involving US combatants in the Vietnam war was the massacre of Vietnamese civilians, including women and children, at My Lai on March 16th, 1968. The platoon leader was 1st Lt. William Calley. Calley was found guilty of killing 22 civilians but his sentence was reduced to 10 years. Calley was paroled in 1974. Following the frustration aggression theory an observation of the massacre of My Lai was done. The participants of the My Lai massacre responded to questionnaires and the results indicated that the level of aggression of the participants increased due to the fear and frustration provoked by the war. Therefore "war is not caused by human aggressiveness, or that people fight in war because they are aggressive" (Feshbach & Zagrodzka, 1997 *p.* 178) but rather the frustration emerges from situations of violence and war, which then leads to aggression.

Cognitive Neoassociation

The cognitive neoassociation theory expanded the score of the Dollad et al. frustration aggression theory. It argues that frustration is one of the many conditions that can provoke negative affect (Roach, 2002) and "any condition that evokes negative affect may serve as an antecedent of aggression and/or escape/avoidance behavior" (Crevecoeur, 2007 p. 15) that could or could not turn out to be aggressive behavior.

Previous experiments have tried to understand the relationship between violence and the negative affect caused by physical discomfort. Bell and Baron (1979) studied the influence of temperature on aggression in a sample of 35 undergraduates. The participants were assigned a certain task and after completing the task the participants were given the opportunity to administer an electrical shock to the evaluator. The study concluded that high temperatures increased the negative affect due to physical discomfort and the participants became more aggressive (Bell & Baron, 1979). Additionally, other sources of discomfort have been linked to negative affect and increased aggression such as negative assessments of the self in regards to skills and intelligence or the explicit aggressiveness of other members of the experiment. These studies concluded that induced pain increases the likelihood to aggress against an available target (Berkowitz, 1989) . Presumably, such aggression results in a decrease in frustration which in turn strengthens the relationship between negative affect and behavior.

On the other hand, the research methodology applied in the cognitive neoassociation theory has been criticized due to its inconsistency with the actual context of human aggression. Critics argue that the laboratory conditions that have been manipulated in these studies permit aggressive behaviors (e.g., shocking people) that cannot be generalized to situations outside the laboraory (Crevecoeur, 2007).

Social Learning Theory

The social learning theory emerged with Albert Bandura in the 1960s and focuses on the process of developing and changing aggressive behaviors. Bandura's work shifted attention away from frustration, biological factors, and reinforcements as causes of aggression. Instead, Bandura looked to explain how aggressive behavior is learned and focused on "the process of learning through observation or by example... either intentionally or accidentally" (Engler, 2014 p. 214).

In a typical study testing Bandura's social learning model, a participant observed a confederate performing either aggressive behavior (experimental group), or non-aggressive behavior (control group). Later on the participant is exposed to a frustrating situation. Subjects exposed to an aggressive model are compared to subjects exposed to a non-aggressive model on level of aggression.

The most famous of Bandura's experiment included a Bobo doll in which the model, an adult, behaved aggressively toward the doll hitting and kicking it. The children in the experimental group observed the model behaving aggressively while the control group viewed a non-aggressive model. Afterwards the children in each of the groups

were allowed to play with the Bodo doll. As hypothesized, the experimental group that observed an aggressive model was considerably more aggressive than the control group. Bandura concluded that observational learning exceeds straightforward imitation because individuals engage in the observed behavior and interpret the behavior adding new elements to it. In Bandura's experiments the main distinctions were between mimicking the model, *imitation,* and match the style and structure of the behavior, *modeling* (Engler, 1999).

Bandura identified three main factors that influence the modeling process. The first factor consists in the characteristics of the model in relation to the observer, the greater similarity between the model and the observer, the greater the emulation of the behavior. Additionally, the aggression modeling process is also influenced by the complexity and kind of behavior been emulated by the observer (Engler, 1999). When the model engages in a simple behavior, such as saying please and thank you, the observer is more likely to model that behavior. On the other hand, if the model engages in a complex behavior, such as solving a difficult math problem, the observer is less likely to model that behavior. Arguably, aggressive behavior is fairly simple and consequently easy to model. Unfortunately, prosocial behavior is often more complex and consequently less easily modeled.

The second factor influencing the modeling processes are the attributes of the observers. People with low self-esteem, incompetent, or highly dependent are more likely to engage in a modeled behavior (Engler, 1999). The third and strongest factor determining the modeling processes are rewards associated with aggressive behavior. When aggressive behavior of a model is rewarded the observer is more likely to engage

in the same behavior as the model (Engler, 1999). The third factor explains why an individual "with a history of successful goal attainment through aggressive means develops both the expectation of reinforcement for aggressive behavior and the necessary confidence to execute those behaviors" (Roach, 2002 *p*. 4) therefore maintaining and further developing aggressiveness in society. An individual is more likely to engage in aggressive behavior if he or she has been previously rewarded for that behavior. For example a kid who is praised by his peers for winning a fight is more likely to engage in the same behavior again because his peers previously rewarded him. Furthermore, easily learned behaviors, such as violence and aggression are learned more rapidly in an environment having high levels of violence and where behaving aggressively is indirectly rewarded. The population's observational learning process makes them more prone to engage in aggressive behaviors in order to succeed.

Social Information Processing Model

The social information processing model of aggression is based on the idea that the behavior of a person in a conflict is determined by the person's cognitive representation of the event. The recent research proposed two main models of social information processing, one by Huesmann in 1988 and the other by Crick and Dodge in 1994. Huesmann proposed a four step decision making model that children use to solve social conflicts. The first step is to evaluate present environmental cues. The second step is to search in one's memory for a script to guide behavior. The third step is to evaluate the generated script, and finally the fourth step is to enact the script. Huesmann's theory has its roots in earlier cognitive theories adopting the concept of

scripts or guides to behavior generally stored in one's memory. The scripts are the concepts that explain the maintenance of aggressive behaviors (Boxer & Dubow, 2001).

The second information processing model was proposed by Crick and Dodge (1994). This model proposed that children have biologically limited capabilities and scripts based on past experiences. Crick and Dodge's model consists of six steps. The first step is the process of encoding and representing in memory the external and internal cues related to the social context (Roach, 2002). During the encoding process the individual's preexisting and reactive internal arousal affects the attention factors which, along with the sum of previous experiences, determines their perception. For example if a person has been exposed to violence or child maltreatment they direct their attention to hostile cues (Boxer & Dubow, 2002). The second step involves interpretation of the encoded cues and making attributions about the intent of the actor. The model argues for the possibility of a violent attribution bias in which the subject attributes hostile motives to other's behaviors (Coccaro, 2003). The third step in Crick and Dodge's model is the clarification and selection of the goals followed by the fourth step, accessing the potential responses. The fifth step is to evaluate and choose a response in relation to the desired outcome. The sixth and final step is to enact the behavior.

The social information processing model suggests that aggressive responses lower the possible access to future nonaggressive responses available in the individual's reservoir of responses (Coccaro, 2003) thereby making an aggressive individual more likely to engage in aggressive behaviors in the future.

Religiosity and Aggression

There are a number of potential mediators of the relationship between exposure to aggression/violence and engagement in aggressive behavior. One such mediator is the nature of one's religious faith. The underlying logic goes something like this. Frustration can lead to aggression, as can attributions of aggressive intent. Thus, adoption of belief systems that reduce frustration and/or decrease the likelihood of making aggressive attributions of other's behaviors may decrease the likelihood of engaging in aggressive behaviors. Religiosity may play such a role.

Individuals can use religiosity as a coping mechanism to deal with stressful situations, and crises, trauma, or life transitions (Pargament, Feuille, & Burdzy, 2011). Some of the religious coping strategies include religious reappraisals, collaborative relationships and spiritual support (Ano & Vasconcelles, 2005) that leads to spiritual growth, positive affect and higher self-esteem.

Moreover, positive religious coping strategies portray a secure relationship between the individual and a transcendent force, a spiritual connection with others and a positive view of the world. On the other hand negative religious coping methods suggests tension and struggle with the self, a transcendent force and other members of the community (Pargament, Feuille, & Burdzy, 2011).

A study by Ano and Vasconcelles (2005) proposed four hypotheses for the relationship between religious coping strategies and dealing with stressful situations. The types of relations are positive religious coping with positive adjustment, positive

religious coping with negative adjustment, negative religious coping with positive adjustment and negative religious coping with negative adjustment. Findings from this study supported the hypotheses that positive religious coping is related to positive psychological adjustment to stress (e.g., high self-esteem, life satisfaction and quality of life) and that negative religious coping is related to negative psychological adjustment (e.g., elevated depression and anxiety). Taken together, these findings suggest that religious coping strategies are strongly associated with psychological adjustment to stress (Ano & Vasconcelles, 2005).

Based on the previous research one potential mediator of the relationship between exposure to aggression and engagement in aggressive behavior would be use of positive and/or negative religious coping strategies.

Reactive and Proactive Aggression

Based on the aggression theories described above it is evident that aggression is a multifaceted concept that can be roughly divided into two subtypes reactive and proactive. As described above, the frustration aggression theory established that aggressive behavior is caused by a defensive reaction towards a perceived threat in order to neutralize it. Therefore the defensive behavior is often evident in emotions like anger and expressed in facial gestures and hostile verbalization. This type of reactive aggression is closely related to an idea of being out-of-control that escalates in intensity and is often caused by a provoker. On the other hand, the proactive subtype of aggression is consistent with the social learning theory in which aggression is considered an instrument to attain a desired outcome and therefore controlled by

reinforcements. Regularly proactive aggression is related to dominance and bullying and usually occurs without an immediate provocation but is done to achieve a specific goals (Roach, 2002).

Based on the two subtypes of aggression the current study seeks to investigate the correlation between exposure to violence and the engagement in reactive or proactive aggression considering the potential mediator of religiosity as a coping mechanism. Considering the studies mentioned above higher levels of exposure to violence were predicted to positively correlate with proactive aggression in college students and either a positive or negative religious coping strategy could mediate the strength of that relationship.

Method

Procedures

Participants in this study are currently enrolled Eastern Michigan University students. The study was listed and described on the EMU electronic study management system SONA. The participants were recruited through in-class announcements asking for volunteers to participate in an anonymous study examining the relationship between exposure to violence and feelings of aggression. Potential subjects initially accessed the study via the SONA system and after choosing the study they were first taken to the study's consent form, in which subjects clicked continue indicating they consent to participate. After completing the informed consent form subjects were automatically directed to a separate URL, survey monkey, in which the subjects will had access to the

study questionnaires. Completion of the study was estimated to take approximately 45 minutes but inspection of the time-to-completion data indicate that subjects typically took 7.3 minutes to complete the study. The questionnaires administered in the study include a brief demographic measure, followed by measures about exposure to violence, reactive and proactive aggression, and religiosity. After subjects completed the questionnaires they were linked to an external and independent URL in which they could provide their name and the course for which they would like to receive extra credit. The amount of extra credit received was determined by individual instructors.

Measures

Reactive and proactive aggression. The level of engagement in reactive and proactive aggression was assessed by a six-item measure adapted from Chaux, Arboleda and Rincon (2012). The first question assesses for propensity for retaliation using a binary (yes/no) structure as follows "When you are treated badly, do you retaliate?". The remaining items ask respondents to assess the frequency of engagement in each aggressive behavior using the following scale: 0 = *never*, 1 = *almost never*, 2 = *almost always* and 3 = *always*. To measure reactive aggression participants were asked the following questions "When they treat you badly, do you retaliate immediately" and "When they treat you badly, do you wait a while before retaliating?". To measure proactive aggression participants were asked "Do you threaten others to get what you want?", "Do you bully and make others feel bad?" and "Do you enjoy treating others badly?". The measure yields separate subscale scores for reactive aggression and proactive aggression. Sub-scale scores were computed by summing the individual item values within each scale. Thus, scores could range from 0

to 6 for the two-item reactive aggression subscale and 0 to 9 for the three-item proactive aggression subscale. Higher scores on these scales reflect greater levels of proactive and reactive aggression respectively. Estimates of internal consistency reliability (alpha) were computed for each subscale (reactive aggression: α = .03; proactive aggression: α = .68.

Exposure to violence. The level of exposure to violence was assessed by an adapted version of the Things I've Seen and Heard measure. The original version of the scale included 15-items (Richters & Martinez 1992) assessing exposure to violence and feelings of safety. The current paper used an adapted version of the Things I've Seen and Heard measure that was developed as a part of the Longitudinal Studies of Child Abuse and Neglect (Runyan et al. 2011). Items in the current version ask about frequency of exposure to: community violence, violence-related activities (drugs, arrests), violence within the home, and direct experience of violence. The instrument also asks about feelings of safety at home, in school, and with adults in general. The measure yields two sub-scales assessing exposure to violence (16-items) and feelings of safety (4 items). The violence exposure subscale included questions like "I have seen gangs in my neighborhood" and "I have seen somebody get shot". The items assessing violence exposure ask respondents to estimate the frequency of exposure using the following scale: 0 = *never*, 1 = *once*, 2 = *twice*, 3 = *three times*, 4 = *four or more*. The perceptions of safety subscale includes items such as the following: "I feel safe when I am at home", "I feel safe when I am at school". The items on this subscale ask respondents to estimate the frequency of perceptions of safety using the following scale: 0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *almost always*, 4 = *always*.

Sub-scales scores were computed by summing the individual item values within each scale. Thus, scores could range from 0 to 64 for the 16-item violence exposure scale and 0 to 16 for the four-item perceptions of safety scale. Higher scores on these scales reflect greater levels of exposure to violence and greater perceptions of safety respectively. This measure is ideal for the current project because it assesses lifetime exposure to community trauma, while excluding potentially distressing questions about personal victimization. Estimates of internal consistency reliability (alpha) were computed for each subscale (violence exposure: α = .81; feelings of safety: α = .73).

Religiosity. Religiosity was measured with the 14-item Brief RCOPE, which was designed to evaluate how people use religion to cope with stress (Pargament, Feuille, & Burdzy, 2011). The Brief RCOPE yields scores for two seven-item sub-scales assessing positive religious coping and negative religious coping. Items for both sub-scales were scored on a 4-point Likert-type scale with the following anchors: 1 = *not at all*, 2 = *somewhat*, 3 = *quite a bit*, and 4 = *a great deal*. The positive religious coping subscale included items such as the following: "Sought help from God in letting go of my anger" and "Looked for a stronger connection with God" while the negative religious coping subscale included questions like "Wondered whether God had abandoned me" and "Questioned the power of God". Sub-scales scores were computed by summing the individual item values within each scale. Thus, scores could range from 7 to 28 for each subscale with higher scores reflecting greater use of positive and negative forms of religious coping. Estimates of internal consistency reliability (alpha) were computed for each subscale (positive religious coping: α = .96; negative religious coping: α = .87).

Data analysis

The analysis was conducted using SPSS to assess direction and strength of relationships among all predictors (violence exposure, perceptions of safety), mediators (positive religious coping, negative religious coping), and outcomes (proactive aggression, reactive aggression. Tests of mediation were conducted using the process macro in SPSS to determine if positive and negative religious coping mediates the relationship between exposure to community violence, perceptions of safety and both types of aggression. Mediation analyses include estimates of direct, indirect, and total effects of predictors/mediators on the outcomes.

Results

Participants

Demographic data for the sample are presented in Table 1 through Table 4. Overall, the majority of the sample was female 76.4% and the predominant age group ranged from 18 to 29 years old (see Table1). The majority of students were in either their Freshman or Sophomore year of college (see Table 2). The most frequently reported ethnic heritage in the sample was either white (66.7%) or African American (13%) (see Table 3).The predominant religion reported was Christianity (35%) followed by no religion (30.9%), Catholicism(20.3%) and Islam (7.5%) (see Table 4).

Table 1

Age of the sample

Age range	N	%
17 or younger	3	2.4
18-20	77	62.6
21-29	27	22.0
30-39	10	8.1
40-49	4	3.3
50- 59	1	0.8
60 or older	1	0.8
Total	123	100.0

Table 2
Year in College

Class standing	N	%
Freshmen	42	34.1
Sophomore	33	26.8
Junior	19	15.4
Senior	23	18.7
5th year or beyond	6	4.9
Total	123	100.0

Table 3
Racial/ethnic Heritage of the sample

Race/ethnicity	N	%
White	82	66.7
Black or African American	16	13.0
American Indian or Alaskan Native	1	0.8
Asian	6	4.9
Native Hawaiian or other Pacific Islander	1	0.8
Hispanic	8	6.5
From multiple races	9	7.3
Total	123	100.0

Table 4

Reported Religion

Religion	N	%
Protestantism	3	2.4
Catholicism	25	20.3
Christianity	43	35.0
Judaism	1	0.8
Islam	7	5.7
Buddhism	5	4.1
Hinduism	1	0.8
Inter/Non-denominational	1	0.8
Other	8	6.5
No religion (yes/no)	38/85	30.9/69.1

Note. Subjects could endorse more than one option.

Approximately half of the sample (51.2%) indicated that they retaliate when treated badly. However scores on the reactive aggression measure were quite low (*M* = 2.4, *SD* = 1.1) (see Table 5). Similarly, the observed mean for proactive aggression (*M* = 0.8 *SD* = 1.2) reflected really low levels of engagement in proactive aggression. Level of violence exposure was in the low to moderate range (*M* = 17.1, (*SD* = 10.0).

Conversely, perception of safety was quite high with ratings indicating that participants almost always feel safe (M = 11.9 SD = 2.5) (see Table 5). Regarding the use of religious coping, participants reported using positive religious coping somewhat frequently (M = 15.5 SD = 6.7) and infrequently using negative religious coping (M = 10.6 SD = 4.2) (see Table 5).

Table 5
Included Measures

Measure	α	M	SD
Reactive Aggression	.03	2.4	1.1
Proactive Aggression	.68	0.8	1.2
Exposure to Violence	.81	17.1	10.0
Perceptions of Safety	.73	11.9	2.5
Positive Religious Coping	.96	15.5	6.7
Negative Religious Coping	.87	10.6	4.2

Bivariate Relationships Among Predictors, Mediators, and outcomes

Correlational analyses were used to examine the relationships among violence exposure, perceptions of safety, positive religious coping, negative religious coping, proactive aggression and reactive aggression. The results indicate that feeling safe and engagement in proactive aggression are negatively and significantly correlated $r(121) = -.20$, $p < 0.05$. This suggests that participants who feel safe in their environment are less likely to engage in proactive aggression. The second relevant correlation reveals that positive and negative religious coping are positively correlated $r(121) = .39$, $p < 0.001$. The result suggests that participants who engage in positive religious coping are also likely to engage in negative religious coping. The remaining correlations were not statistically significant.

Mediation Analysis

The direct and indirect effects of exposure to violence or perceptions of safety on reactive or proactive aggression are estimated with a continuous X. The proposed mediator, positive or negative religious coping, is regressed on exposure to violence or perceptions of safety (X) to produce *a*, and reactive or proactive aggression is regressed on both positive or negative religious coping and exposure to violence or perceptions of safety, which yields b and c', respectively (see Figure 1).
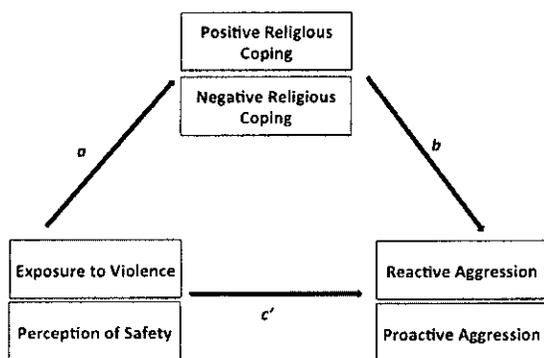
Figure 1. Mediation Analysis

Eight tests of mediation were conducted alternating the six variables mentioned

above. In the service of comprehensiveness, findings from all 8 tests of mediation are

presented in Tables 6 - 13). However, only two findings were significant, located in

models five and seven (see Tables 10 and 12).

Table 6

Model 1

		M(Positive Religious coping)				Y (Proactive Aggression)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Violence Exposure)	A	.04	.06	>.05	c'	.00	.01	>.05
M(Positive Religious Coping)		—	—	—	b	.00	.00	>.05
Constant	i_1	14.86	1.20	<.001	i_2	1.03	.33	<.001
		$R^2 = .00$				$R^2 = .00$		
		$F(1, 121) = .36, p > .05$				$F(2, 120) = .26, p > .05$		

Table 7

Model 2

		M(Positive Religious coping)			Y (Reactive Aggression)			
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Violence Exposure)	A	.04	.06	>.05	c'	.01	.01	>.05
M(Positive Religious Coping)		—	—	—	b	.00	.00	>.05
Constant	i_1	14.86	1.20	<.001	i_2	2.34	.30	<.001

$R^2 = .00$ $R^2 = .00$

$F(1, 121) = 1.36, p > .05$ $F(2, 120) = .19, p > .05$

Table 8

Model 3

		M(Negative Religious coping)			Y (Proactive Aggression)			
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Violence Exposure)	A	.05	.04	>.05	c'	-.01	.01	>.05
M(Negative Religious Coping)		—	—	—	b	.00	.01	>.05
Constant	i_1	9.82	.75	<.001	i_2	.63	.35	<.001

$R^2 = .01$ $R^2 = .01$

$F(1, 121) = 1.55, p > .05$ $F(2, 120) = .60, p > .05$

Table 9

Model 4

Antecedent		M(Negative Religious coping)				Y (Reactive Aggression)		
		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Violence Exposure)	a	.05	.04	>.05	c'	.01	.01	>.05
M(Negative Religious Coping)		——	——	——	b	-.01	.00	>.05
Constant	i_1	9.82	.75	<.001	i_2	2.30	.20	<.001
		$R^2 = .01$				$R^2 = .00$		
		$F(1, 121) = 1.55, p > .05$				$F(1, 121) = .35, p > .05$		

Table 10

Model 5

Antecedent		M(Positive Religious coping)				Y (Proactive Aggression)		
		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Safe)	A	.05	.24	>.05	c'	-.10	.04	>.05
M(Positive Religious Coping)		——	——	——	b	-.01	.01	>.05
Constant	i_1	14.86	2.91	<.001	i_2	2.09	.58	<.001
		$R^2 = .00$				$R^2 = .04$		
		$F(1, 121) = .05, p > .05$				$F(2, 120) = 2.62, p > .05$		

Table 11

Model 6

Antecedent		M(Positive Religious coping)				Y (Reactive Aggression)		
		Coeff.	SE	p		Coeff.	SE	p
X(Safe)	A	.05	.24	>.05	c'	.01	.04	>.05
M(Positive Religious Coping)		—	—	—	b	-.01	.01	>.05
Constant	i_1	14.86	2.91	<.001	i_2	2.23	.48	<.001
		$R^2 = .00$				$R^2 = .00$		
		$F(1, 121) = .05, p > .05$				$F(1, 121) = .13, p > .05$		

Table 12

Model 7

Antecedent		M(Negative Religious coping)				Y (Proactive Aggression)		
		Coeff.	SE	p		Coeff.	SE	p
X(Safe)	A	-.19	.15	>.05	c'	-.09	.04	>.05
M(Negative Religious Coping)		—	—	—	b	-.03	.00	>.05
Constant	i_1	12.91	1.80	<.001	i_2	1.72	.63	<.001
		$R^2 = .01$				$R^2 = .04$		
		$F(1, 121) = 1.70, p > .05$				$F(2, 120) = 2.71, p > .05$		

Table 13

Model 8

Antecedent		M(Negative Religious coping)				Y (Reactive Aggression)		
		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Safe)	A	-.19	.15	>.05	c'	.01	.04	>.05
M(Negative Religious Coping)		——	——	——	b	-.01	.02	>.05
Constant	i_1	12.91	1.80	<.001	i_2	2.30	.57	<.001
		$R^2 = .01$				$R^2 = .00$		
		$F(1, 121) = 1.70, p > .05$				$F(2, 120) = .09, p > .05$		

In model number five (see Table 10) multiplying *a* and *b* yields the indirect effect, *ab* = 0.5(-.01) = -0.005. This indirect effect of -0.005 means that two participants who differ by one unit in their reported perceptions of safety are estimated to differ by -0.005 units in their reported intentions to engage in proactive aggression as a result of the tendency for those under relatively higher perceptions of safety to engage in more positive religious coping (because a is positive), which in turn translates into lower proactive aggression (because b is negative). This indirect effect is not statistically different from zero, as revealed by a 95% BC bootstrap confidence interval that is not above zero (-0.01 to 0.01) indicating that positive religious coping does not moderate the relationship between perceptions of safety and proactive aggression.

The direct effect of perceptions of safety, $c' = -.10$, is the estimated difference in proactive aggression between two participants experiencing the same level of positive religious coping but who differ by one unit in their reported perceptions of safety. The coefficient is negative, meaning that the person with higher perceptions of safety but who is equal in positive religious coping is estimated to be 0.10 units lower in his or her reported proactive aggression.

The total effect of perceptions of safety on proactive aggression is derived by summing the direct and indirect effects: $c = c' + ab = -0.10 + (-0.005) = -0.105$ Two participants who differ by one unit in perceptions of safety are estimated to differ by -0.056 units in their reported proactive aggression. The negative sign means the person under greater perceptions of safety reports lower proactive aggression.

The second significant finding is in model number seven (see Table 12) in which the indirect effect $ab = -0.19(-0.03) = 0.0057$ means that the two participants who differ by one unit in their reported perceptions of safety are estimated to differ by 0.0057 units in their reported proactive aggression as a result of the tendency for those under relatively more perceptions of safety to engage in less negative religious coping(because a is negative), which in turn translates into lower proactive aggression (because b is negative). However, these indirect effect is not statistically different from zero, as revealed by a 95% BC bootstrap confidence interval that is not above zero (-0.03 to 0.01) indicating that negative religious coping does not moderate the relationship between perceptions of safety and proactive aggression.

The direct effect of perceptions of safety on proactive aggression is $c' = -.09$ which is consistent with model five and indicates that coefficient is negative, meaning

that the person with higher perceptions of safety but who is equal in negative religious coping is estimated to be 0.09 units lower in his or her reported proactive aggression.

The total effect of perceptions of safety on proactive aggression is derived by summing the direct and indirect effects: $c = c' + ab = -0.09 + (0.0057) = -0.0843$. Two participants who differ by one unit in perceptions of safety are estimated to differ by -0.0843 units in their reported proactive aggression. The negative sign means the person under greater perceptions of safety reports lower proactive aggression.

Both, models five and seven, are consistent in the results that a person under greater perceptions of safety reports lower proactive aggression and neither positive or negative religious coping influence that relationship. The remaining six analyses did not yield any significant results.

Discussion

The original hypothesis in the study stated that higher levels of exposure to violence would predict of higher levels of aggression, and religiosity would mediate the strength of that relationship. The findings from this study partially support the hypothesis indicating that greater perceptions of safety (the mirror image of exposure to violence) predicts lower proactive aggression. However, neither positive nor negative religious coping mediate that relationship. The results are partially consistent with previous literature by Chaux et al. (2012) in which exposure to violence was significantly correlated with both proactive and reactive aggression.

Lastly, the hypothesized mediation effect was not found in the current study. It was hypothsized that either positive or negative religious coping would mediate the

relationship between exposure to violence and aggression but the findings did not indicate any effects. Previous literature by Greil et al(1989), Segall et. al (1989)and Schuster et al.(2001) (as cited in Pargament, 2011) suggests that people engage in religious practices as a strategy to deal with critical life situations. Moreover, Ano and Vasconcelles (2005) found consistent links between measures of religious coping and health and well-being indicators in different populations facing critical life events. As exposure to violence and aggression are linked to crisis, trauma or life transitions it was hypothesied that religiosity could have an effect on these variables as a strategy to cope with challenging events. The mediation effect was not found in either postive or negative religious coping.

There are three overarching limitations to the current study, which may have limited the power to detect differences between groups. These limitations refer to the limitations in characteristics of the sample, limitations in the measures used to assess the core study constructs, and the failure to include alternative mediators. Turning first to limitations in the sample, the current sample was drawn from a convenience sample of college students, many of whom did not report elevations in violence exposure, religious activities, or engagement in proactive or reactive aggression. One effect to consider in the analyses is the limitation in the magnitude of the correlations due to a restricted range of responses. The more limited the range of the responses the lower the strength of the correlation and in the current study the range of the responses was restricted by the characteristics of the sample. Perhaps one of the limitations of the study leading to the non-significant findings is attributable to the questionnaires being self-reports of aggression and violence in which participants may be particularly

reluctant to endorse items related to engagement in more aggressive behaviors or violent situations. This is consistent with the low mean scores on the aggression and violence variables across analyses.

A potential option to increase the range of responses in the sample could be to recruit participants with higher scores on aggression and who show at least some religious preferences. These participants need to be recruited in settings other than EMU's psychology classes. Recruiting the sample from higher crime rate cities and vary religious community gatherings could yield more consistent results due the increase in the response range.

Turning now to limitations in the measures used to assess core study constructs the main limitation emerges regarding the reactive aggression questionnaire. The measure was included in the current study because it was previously used by Chaux et al. (2012) in a study assesing aggression and exposure to community violence. The results for the measure in the current study indicated a very low internal consistency reliability or alpha level of 0.03. The low level of reliability of this measure impacts all the potential results related to this construct.   This limitation is consistent with lack of findings related to reactive aggression in the study.

A third limitation relates to the absence of additional mediator variables that might also impact the relationship between exposure to violence and aggression such as emotion regulation or forgiveness. Emotion regulation was found to be a mediator between interparental aggression and marital physical and emotional aggression (Delsol, 2004). The previous mediation of emotion regulation could also have an effect

on the relationship between level of aggression and exposure to community violence. Another potential mediator is forgiveness. Prior research has found that forgiveness mediated the intergenerational transmission of violence (Rivera & Fincham, 2015). Specifically, greater levels of forgiveness mediated the relationship between severity of mother-perpetrated violence and offspring dating violence victimization.

Future research should focus on further examining the effect of higher perceptions of safety on lower levels of proactive aggression. Additional research could study this relationship in samples characterized by higher exposure to violence and/or more frequent engagement in religious practices. Lastly, as mentioned earlier, it is important to evaluate other potential mediators of the relationship between perceptions of safety and proactive aggression.

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