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Rumination and the Displacement of Aggression in UK Gang-Affiliated Youth

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### Abstract

The concept of gang aggression oftentimes elicits images of brutal inter-gang violence. In reality, gang-related aggression can vary widely, can have various motivations and causal factors, and includes interpersonal as well as intergroup aggression. This study examined the tendency of U.K. youth to engage in displaced aggression (aggression aimed at undeserving targets) and examined the relationship among gang affiliation, ruminative thought, and aggression levels. Students in three London schools were asked to complete a questionnaire that assessed levels of gang affiliation, rumination about aversive events, and a tendency to engage in displaced aggression. Our analyses found a three-way interaction between gang affiliation, rumination, and gender, such that males who were high in affiliation and rumination had the greatest tendency to displace aggression towards innocent others. Rumination additionally mediated the link between gang affiliation and displaced aggression. Furthermore, regression analyses showed that even after controlling for trait aggression, anger, hostility, and irritability, rumination remained a significant predictor of displaced aggression. The implications for understanding gang-related aggression and for conducting future research in this area were discussed.

### Rumination and the Displacement of Aggression in UK Gang-Affiliated Youth

Contrary to the common notion that gang aggression involves primarily instances of inter-gang revenge, often committed via drive-by shootings or bloody turf fights, members of urban street gangs actually engage in a range of different types of aggressive behaviours, motivated by a variety of factors, and committed not just at inter-group but also at interpersonal levels. Recently, researchers have proposed the employment of socio-psychological theory to guide research on the different types of aggressive behaviours committed by gang members (see Vasquez, Lickel, & Hennigan, 2010; Wood & Alleyne, 2010). Vasquez et al., (2010), for instance, have theorized that certain socio-psychological factors place members of street gangs, relative to non-gang members, at higher risk of engaging in rumination, which involves repetitive thinking about aversive events, including provocations. Ruminating about provoking incidents can prime individuals for aggressive responding and facilitates not only direct retaliation against a provocateur, but also displaced aggression towards innocent targets. Gang-affiliated youth may be at an increased risk of engaging in displaced aggression. The purpose of the current study was to test these hypotheses in a sample of adolescent youths in the United Kingdom. More specifically, we tested the hypotheses that youth affiliated with gangs, compared to non-affiliated youth, would be more likely to engage in ruminative thoughts following provoking incidents, and that rumination would be related to the tendency of engaging in displaced aggression. We additionally expanded our research to include not only self-categorized gang members, but also gang-affiliated youth who are not necessarily full gang members. This is because, as we discuss in a subsequent section, the latter are also under the influence of gang norms, culture, and other socio-psychological factors that produce delinquent behaviours that are similar to those of gang members.

## Displaced Aggression

Provocations typically motivate individuals to aggress against the provocateur. There are, however, situations that preclude retaliation against the original instigator, yet produce aggression against a different target. This phenomenon is termed *displaced aggression*, which refers to aggression targeted at either an innocent target (Dollard, Doob, Miller, Mowrer, & Sears, 1939), or one that has not provided sufficient justification for the levels of aggression they receive (see Pedersen, Gonzalez, & Miller, 2000). There are at least three situations wherein aggression against the provocateur is inhibited, thereby setting a context for displacement (Dollard et al., 1939). In one situation, the provocateur is unavailable, such as when this individual leaves the scene. A second situation involves instigators that are essentially intangible, such as when the economy is bad or a natural disaster occurs. The third condition involves fear of retaliation from the provocateur, such as receiving a provocation from one's boss or someone with high levels of authority. All these situations induce the motivation and readiness to aggress (i.e. induce aggressive priming), which is central to producing displaced aggression.

Although the displacement of aggressive behaviour towards innocent others has been replicated in some cases (e.g., Worchel, Hardy, & Hurley, 1976), but not in others (e.g., White, 1979), a meta-analysis of displaced aggression has nevertheless shown that it is a reliable phenomenon (Marcus-Newhall, Pedersen, Carlson, & Miller, 2000) and that levels of displaced aggression were positively correlated with the degree to which the interaction between the provoked individual and the target was negative. That is, for provoked persons, a subsequent negative encounter with another individual produced higher aggression levels (Marcus-Newhall, et al., 2000), suggesting that subsequent negative events can trigger aggressive behaviours towards relatively undeserving targets. Indeed, researchers have identified another type of displaced aggression, termed *triggered displaced aggression* (TDA;

Pedersen et al., 2000), which involves an additional provocation induced by a person who subsequently becomes the target of retaliation. In TDA, a previously provoked person who encounters a subsequent provocation (i.e., a trigger) from their target tends to express more aggression than non-provoked individuals. Interestingly, even mild annoyances can trigger relatively high levels of aggression in provoked persons (Vasquez, Denson, Pedersen, Stenstrom, & Miller, 2005), thus surpassing what would be expected from norms of reciprocity and the escalation of aggression, such as the tit-for-tat rule (Axelrod, 1984).

Why might individuals displace aggressive behaviour to undeserving others? Some theories of aggression, such as Berkowitz's Neo-associationistic model (Berkowitz, 1993), are largely based on neural network memory models, which state that activation of one construct in memory leads to activation of other related constructs. For instance, an individual who frequently drinks wine with dinner is likely to think about food when s/he sees a bottle of wine (and vice versa!). Similarly, with respect to aggressive contexts and behaviors, the occurrence of events that are psychologically related to aggression in individuals (e.g. provocations, weapons, alcohol) tend to activate a network of various other aggression-related cognitions, affect (e.g., anger, hostility), and behavioral tendencies. As a result, they become primed for aggression when they are exposed to aversive incidents. Such priming leads to increased attention to the negative aspects of events and to hostile interpretations of them. Thus, the combination of prior provocations and subsequent aversive interactions produces a greater motivation to aggress, even when the target is only guilty of a minor annoyance (Pedersen et al., 2000; Vasquez et al., 2005).

#### Displaced aggression and rumination

Researchers estimate that the negative affect and arousal from a provocation are likely to dissipate after 15-20 minutes (see Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005; Tyson, 1998). As a result, time gaps between provocations and triggering events exceeding

this amount are less likely to produce displaced aggression. This does not necessarily mean, however, that individuals who trigger a provoked person more than 20 minutes after a previous provocation are safe from aggression. Rumination can maintain negative affect and aggressive priming long after a provocation, thereby increasing the chance of displaced aggression (Bushman et al., 2005). Ruminative thinking produces a focus on one's thoughts, feelings and their causes (Lyubomirsky & Nolen-Hoeksema, 1995), and can involve provocation-focused thoughts (see Bushman et al., 2005; Rusting & Nolen-Hoeksema, 1998), revenge planning and fantasizing, and even attributions of blame. Thus, rumination can maintain aggressive priming and increase the chances of displaced aggression.

Several factors can influence ruminative thinking. Personality characteristics, for instance, have been shown to be related to a tendency to ruminate, which in turn, is related to displaced aggression (Denson, Pedersen, & Miller, 2006). In addition, anger is a high-activation emotion (Larsen & Diener, 1992) that may motivate rumination in provoked individuals, thus, creating a desire to retaliate, save face, or fantasize about revenge. As a result, intense provocations may also motivate higher levels of ruminative thinking.

Gang affiliation, rumination, and displaced aggression.

Researchers have theorized that gang members have a greater risk than non-members of engaging in displaced aggression (Vasquez et al., 2010). They argue that this is because gang members are more likely to encounter aversive events that preclude retaliation, but nevertheless produce rumination. For instance, because of their delinquent lifestyles, gang members may be more likely to come into conflict with authority figures (e.g., parents, teachers, police) in situations that generally preclude retaliation. In addition, the social environments that lead to gang membership, familial factors such as lack of parental management/supervision (e.g., Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003) or authoritarian parental management (e.g., Klein, 1995) may also provide constant sources of

negative affect against which individuals might often be unable to retaliate (Vasquez et al., 2010). Indeed, the claim that many gang members have retaliated against their harsh physical punishment from authoritarian fathers (Klein, 1995) suggests that gang members have ruminated for years before retaliating. Such situations are likely to produce aggressive priming, which augments the likelihood of displacing aggressive behaviour. Thus, one of the goals of our study was to test the hypothesis that individuals affiliated with gangs are more likely to possess a tendency to engage in displaced aggression.

In the current study, we expanded on Vasquez et al. (2010) by examining not just gang membership, but gang affiliation more generally. Our measure of gang affiliation included self-categorized gang members, as well as non-members who have friends in gangs and who hang out with gang members. This decision is based on a debate in the gang literature as to what constitutes a gang and who can be considered gang members (see Esbensen, Winfree, He, & Taylor, 2001; Spergel, 1995). Research suggests that gang membership is transitory, with youth often times becoming involved in gang activities, without officially being a gang member (Curry, Decker, & Eagly, 2002). Some research suggests that such involvement leads to those who are affiliated, but not full members, engaging in delinquent behaviours similar (in some cases worse) to those of gang members (Curry et al, 2002; Alleyne & Wood, 2010). Given these findings, we decided to expand our study to include youths who likely are under the influence of gang-related norms and culture via their affiliation. Thus, we have (reasonably) taken the position that youth who have friends in gangs and hang out with them are more likely to resemble gang members.

Importantly, researchers have also predicted that gang members (and probably gang-affiliated individuals) are also more likely to ruminate, and thus, remain primed for aggression for longer periods than non-gang members (Vasquez et al., 2010). One reason for this is that individuals who tend to view anger as a normal or appropriate response to



provocations are more likely to ruminate (Averill, 1982; Tice & Baumeister, 1993). Gang-affiliated individuals likely perceive aggression as a normal reaction to aversive events (Decker & Van Winkle, 1996; Klein, 1995). They also value social status among their peers (Alleyne & Wood, 2010) and feel a need to engage in crime to build up a reputation or affirm their value (Alleyne & Wood, 2010). It is reasonable then to expect that they perceive anger as a normal affective reaction to provocation, and thus, become strongly motivated to ruminate if they are precluded from retaliating. A second reason involves street gangs as cultures of honor, whose members are more likely to react strongly to provocations and perceptions of disrespect (Cohen, Nisbett, Bowdle, & Schwarz, 1996). Norms of honor, status, reputation and aggressive reciprocity may motivate gang members to think about revenge and retaliation when they encounter provoking situations that preclude aggressing against an instigator (see Vasquez et al., 2010). A third reason for expecting higher levels of rumination among gang-affiliated individuals involves self-selected gang membership. That is, there exists the possibility that a tendency to encounter many aversive situations and ruminate about them increases the chances that youth will join or become closely involved in gangs--gangs may attract ruminators. Thus, a second goal of our study was to test the hypothesis that gang affiliation would be associated with encountering aversive events and with rumination about provoking events. In addition, we predicted that rumination would be more strongly related to displaced aggression for gang-affiliated compared to non-affiliated youth. Thus, we predict that gang affiliation and rumination interact to increase displaced aggression. A third, more general goal of our study was to employ socio-psychological theory to understanding gang-related aggression. The vast majority of research into gangs has not examined the psychological processes involved in gang-related aggression or used psychological theory as a framework for understanding gang violence and aggression (Wood & Alleyne, 2010).

## Method

### Participants

The sample originally consisted of 323 youth attending one of three comprehensive schools in or outside London, United Kingdom. Data from 11 adolescents was incomplete and so was not included in subsequent analyses. Thus, the final sample consisted of 310 youth (185 males and 125 females). Their ages ranged from 13 to 16 years coinciding with Year 9 (13-14 years,  $n = 75$ ), Year 10 (14-15 years,  $n = 91$ ), and Year 11 (15-16 years,  $n=144$ ) of secondary school. The majority of participants were white British ( $n = 215$ , 69%), but children from other ethnic groups also attended (Afro-Caribbean's,  $n = 49$ , 16%; Asian,  $n = 9$ , 3%; Mixed heritage,  $n = 27$ , 9%; other,  $n = 10$ , 3%).

### Materials and procedure

*The Displaced Aggression Questionnaire* (DAQ – Denson et al, 2006) is a 31-item self-report measure of trait displaced aggression, consisting of three subscales comprising of an *affective* dimension (angry rumination, e.g. “I feel angry about certain things in my life”), a *cognitive* dimension (revenge planning, e.g. “If another person hurts you, it’s alright to get back at him/her”), and a *behavioral* dimension (a tendency to engage in displaced aggression, e.g. “I take my anger out on innocent others”). Our main measure of the tendency to engage in displaced aggression employed the behavioural dimension of the DAQ. The wording of some items on the DAQ was altered slightly to make them more appropriate for the age groups participating. All items were also rated on a 7-point scale that ranged from 1 (*Extremely unlike me*) to 7 (*Extremely like me*) rather than using “*Extremely uncharacteristic/characteristic of me*”. In addition, we included 2 items, not explicitly included in the DAQ, that assessed displaced aggression towards *siblings* (e.g. When I’ve had a bad day, I sometimes start an argument or fight with my siblings even if they haven’t done

anything to me”) and *romantic partners* (e.g. “If I am in a bad mood, I sometimes take it out on my girl-friend/boyfriend”). Furthermore, we assessed the tendency to displace aggression towards *out- group members* with three items (“Sometimes when I argue with my parents, I take it out on a person from another group that I’m not friends with”; “If I argue with someone at home, I usually take it out on someone at school who’s in a circle of friends that I don’t like”; “When I get really mad and a member of a group I don’t like as much as looks at me, I pick a fight with them”). Participants rated these 5 additional questions on a 5-point scale ranging from 1 (disagree) to 5 (agree).

The *Angry Rumination scale* (Sukhodolsky, Golub, & Cromwell, 2001) is a 19-item measure that assesses a tendency towards thinking about anger-producing events, their causes, and the experience of anger. In order to assess rumination in our sample, we employed all the items in the angry afterthoughts (e.g., “after an argument is over, I keep fighting with this person in my imagination”) and angry memories (e.g., “I keep thinking about events that angered me for a long time”) subscales of the measure.

*The Aggression Questionnaire* (Buss & Perry, 1992) is a 29-item measure assessing aggression across four dimensions with subscales comprising of *physical aggression* (e.g. “If somebody hits me I hit back”), *verbal aggression* (e.g. “My friends say I’m argumentative”), *hostility* (e.g. “I wonder why sometimes I feel so bitter about things”), and *anger* (e.g. “Sometimes I fly off the handle for no good reasons”). In our study, we employed the physical aggression, hostility, and anger subscales. All items were rated on a 7-point scale ranging from 1 (*Extremely unlike me*) to 7 (*Extremely like me*).

*Irritability Measure*: Caprara’s irritability questionnaire (Caprara, Cinanni, D’Imperio, Passerini, Renzi, & Travaglia, 1985) is a 30-item measure assessing emotional over-reactions and behavioural tendencies to react impulsively to situations. Participants were provided with

five questions from this scale due to time constraints of a one-hour lesson (e.g. “*I think I have a lot of patience*”; “*I could not put anyone in his place, even if I had to*”; “*I can’t think of any good reason to be violent*”; “*I hardly ever strike back even if someone hits me first*”; “*I never get mad enough to throw things*”). Responses were recorded on a 5-point Likert scale ranging from 1 (*Disagree*) to 5 (*Agree*).

Participants were also asked three questions to assess gang affiliation (“I have friends that are members of a gang”; “I spend time with people who belong in a gang”; “I consider myself as belonging to a gang”), and two questions assessing general levels of aversive events and conflict with authority figures and peers (“The stresses that come with living in my neighbourhood make me angry”; “I have many arguments with people of authority (this includes people like parents, older siblings, grand-parents, teachers”). Participants rated these questions on a 5-point scale ranging from 1 (disagree) to 5 (agree).

### Procedure

Ten schools were approached and three agreed to participate. Participants completed the questionnaires in a one-hour session led by the researcher with the classroom teacher present. The researcher read aloud an information sheet to ensure that participants were aware of the aims of the study, that their participation was voluntary and confidential, and that they could withdraw from the study at any time without penalty. Due to the diverse literacy abilities of participants, the researcher was available throughout to answer questions. Questionnaires were then distributed in random order. On completion of all questionnaires, the children were thanked for their participation and verbally debriefed. A debrief letter was also sent to parents for a more elaborate explanation of the study and thanking them for their child’s participation.

### Results

Data were analyzed using SPSS and a  $p < .05$  significance level. Alpha coefficients, means, and standard deviations for our measures of gang affiliation, trait physical aggression, trait hostility, trait anger, trait hostility, and displaced aggression are presented in Table 1.

Table 1 also presents the correlations between gang affiliation, rumination, trait aggression, trait hostility, irritability, displaced aggression (displaced aggression scores were standardized), and gender. As expected, gang affiliation was positively related to displaced aggression. In addition, the former was related to angry rumination, with individuals higher in gang-affiliation being more likely to ruminate after an aversive event. Gender was correlated with gang affiliation (males more likely to be affiliated with gangs ( $r = -.16, p = .006$ ) and trait aggression (males higher on trait aggressiveness than females ( $r = -.16, p = .004$ )). We found no correlation between gender and displaced aggression ( $p > .10$ ).

In addition, gang affiliation was positively correlated with the items “The stresses that come with living in my neighbourhood make me angry” and “I have many arguments with people of authority” ( $r = .33, p < .001$  and  $r = .32, p < .001$ , respectively).

We conducted a regression analysis to test for the predicted affiliation x rumination interaction on aggression, but additionally included gender as a third factor. The analysis revealed a significant affiliation x rumination x gender interaction, ( $b = -.21$ ),  $t(309) = -3.37$ ,  $p = .001$ . In addition, there was a significant gender x affiliation interaction, ( $b = -.14$ ),  $t(309) = -2.35$ ,  $p = .02$  and a significant affiliation x rumination interaction, ( $b = -.13$ ),  $t(309) = 3.40$ ,  $p = .001$ . Decomposition of the three-way interaction for each gender revealed a significant affiliation x rumination interaction for males, ( $b = .13$ ),  $t(184) = 3.27$ ,  $p = .001$  (see Figure 1). Displaced aggression was highest under high levels of affiliation and rumination. Comparison of differences in the slopes between high and low rumination showed that under high rumination, the slope of the difference in displaced aggression between low and high

affiliation was significantly greater than the slope under low rumination,  $t(310) = 4.06$ ,  $p = .001$ . Thus, under high rumination, gang affiliation was more strongly related to displaced aggression than under low rumination. For females, however, there was only a marginal interaction between affiliation and rumination for females ( $b = -.08$ ),  $t(124) = -1.77$ ,  $p = .08$  (see Figure 1). Comparison of the slopes under high versus low rumination showed no significant difference in slopes across levels of gang affiliation,  $t(310) = -.16$ ,  $p = .87$ . In short, the predicted gang affiliation  $\times$  rumination interaction was found only in male participants.

It was hypothesized that rumination would mediate the relationship between gang affiliation and displaced aggression. To test for mediation, we conducted regression analyses following procedures recommended by Baron & Kenny (1986). First, gang affiliation was significantly associated with rumination (see Figure 2). Second, affiliation was also significantly associated with displaced aggression. Third, rumination, the mediator, was a significant predictor of aggression. Finally, controlling for rumination led to a decrease in the predictive power of gang affiliation,  $z = 4.05$ ,  $p < .001$  (see Sobel, 1982).

A hierarchical regression analysis was used to test the hypothesis that gang affiliation and rumination were reliable predictors of displaced aggression, after controlling for other factors (e.g. trait aggression). This allowed us to test whether rumination remained a significant predictor of displaced aggression above and beyond factors that could normally predict more direct forms of aggression. In the first step, we entered gang affiliation scores, trait hostility, trait anger, trait aggression, and irritability, as predictors of displaced aggression. These factors accounted for 46% of the variance in displaced aggression,  $R^2 = .46$ ,  $F(3, 304) = 50.91$ ,  $p < .001$  (see Table 2). In the second step, we entered rumination as an additional predictor of displaced aggression, controlling for the previous factors. Rumination accounted for a significant additional 10% of the variance over and above the first group of factors,  $\Delta R^2 = .10$ ,

$F(1, 303) = 64.99, p < .001$ (see Table 2) . Results showed that gang affiliation and physical trait aggression both successfully predicted displaced aggression. Trait hostility, trait anger, and irritability were not significant predictors of displacement. After controlling for the factors entered in the first step, however, rumination remained a significant predictor of displaced aggression. Together, these factors explained 55% of the variance in the tendency to displace aggression.

### Discussion

As predicted, gang affiliation was positively related to ruminating about provoking incidents, encountering aversive events in general (e.g., anger-inducing stress from living in their neighbourhoods, arguments with authority figures), and the tendency to engage in displaced aggression. Our results also showed that for male participants, rumination moderated the link between affiliation and displaced aggression. The greatest tendency to engage in displaced aggression was found among males who were higher on gang affiliation and rumination. This is consistent with previous research showing that ruminative thinking about provoking events increases the likelihood of displacing aggression (Bushman et al., 2005).

Importantly, our results showed that rumination also partly mediated the link between affiliation and the displacement of aggressive behaviors. Thus, much of the aggression that is aimed at undeserving (or mostly undeserving) targets by gang affiliated youth may be explained by their greater tendency to ruminate about provoking incidents. Furthermore, gang affiliation and ruminative thinking remained significant predictors of displaced aggression, even after we controlled for other factors, and rumination accounted for a significant increase in variance explained over and above these factors. Our results support theorizing by Vasquez et al. (2010), who propose that individuals involved in gangs are more

likely to ruminate about provocations and aversive events, and that rumination should prime these persons for aggressive responding towards innocent targets (i.e., displace aggression towards them). Thus, it is clear that ruminative thinking is an important contributor in the tendency to displace aggressive behaviours among gang-affiliated youth.

One reason for the importance of rumination in this population may be that individuals who have strong tendencies and norms to retaliate against instigators tend to ruminate when they encounter situations that preclude direct aggression. In essence, they might become fixated on the instigating incident and engage in revenge planning and fantasy. This produces high levels of aggressive priming, which increases the likelihood of displacing aggression towards someone else. Gang affiliation moderates this effect because gangs either attract high trait ruminators or because they socialize and motivate these behaviours (or both). Another reason, not necessarily incompatible with the previous one, might be that more troubled family dynamics among individuals affiliated with gangs produce more rumination and aggressive priming, which influence perceptions of and reactions to subsequent events. This motivates the targeting of others for retaliation.

To summarize, gang affiliation is related to ruminative thinking, and they both predict displaced aggression. With regards to our study and our findings, what might be the implications for understanding and for confronting gang-related aggression? Our findings have several implications and are important for several reasons. One reason is that, as we have pointed out previously, gang-related aggression is a global construct that has various components and categories. It is, therefore useful for researchers to distinguish among the different types of aggressive behaviours expressed by gang members and affiliated individuals in order to develop a more detailed understanding of this phenomenon. Towards this goal, we focused on displaced aggression, which has been under-examined in populations affiliated with gangs, but is likely to have a significant impact in people's lives. For instance,



the displacement of aggression creates situations wherein unrelated aversive events can have detrimental effects within family life and life outside the home. It has the potential for disrupting social bonds and interactions because incidents of displacement are likely to be perceived by the target as very unfair and unjustified. In consequence, the aggressors may be avoided, explicitly disliked, and even ostracized. This, in turn, may push those high in gang involvement closer to maladaptive lifestyles.

Further, our findings suggest that gang-affiliated youth might not aggress simply as a function of highly aggressive personalities. Rather, they may be part of a population that is more likely to experience *situations* that produce a wide range of aggressive behaviours. For instance, their tendency to experience aversive events and to ruminate increases the likelihood that gang-affiliated youth will aggress, even in the absence of proper subsequent justification. Ruminative thinking may explain, at least in part, why these individuals are more likely to engage in aggressive acts. Indeed, gangs can be categorized as cultures of honor (see Vasquez et al., 2010), which possess strong norms in favour of retaliation when the honor of their members is attacked or threatened (Cohen et al, 1996). We assume that not all instances of provocation provide an opportunity for immediate retaliation. Situations that preclude immediate revenge likely produce high levels of ruminative thinking because provoked individuals feel unease, angry, and in need to consummate their desire for retaliation. Rumination might provide an opportunity for revenge planning and fantasizing, which should make provoked persons feel better. As a result, the desire and motivation for revenge is maintained or prolonged, and perhaps even exacerbated, and ruminating individuals are more likely to be primed with aggressive tendencies.

Another reason why this study is important is that it is one of relatively few studies that successfully employ socio-psychological theory as a framework for understanding gang-related aggression. We have shown that despite the more extreme behaviours and norms

found among gang members, many of their behaviours involve the same psychological processes of non-gang populations. Thus, our findings are consistent with processes involved in triggered displaced aggression (Miller, Pedersen, Earleywine, & Pollock, 2003), and Berkowitz's cognitive neo-associationistic aggression model (Berkowitz, 1993), which predict that ruminative thinking maintains high levels of aggressive priming and impact reactions to subsequent events to augment aggression.

As we have argued, rumination is likely to be an important factor in the expression of aggressive behaviour among individuals affiliated with gangs. Thus, one promising route for reducing aggression and violence within this population involves developing interventions that focus on decreasing rumination. Currently, research on effective means for reducing rumination is still lacking, but it is likely that reducing ruminative thinking involves more than just the attempt of suppressing thoughts about prior aversive events. For instance, under high mental busyness or cognitive load, instructing individuals to avoid thinking about provoking incidents has the paradoxical effect of augmenting rumination (Wegner & Erber, 1992; Wegner & Gold, 1995), probably because such an attempt actually increases the availability of negative cognitions when an individual consciously tries to suppress them. Nevertheless, research on reducing rumination suggests that factors that reduce ruminative thought generally involve distracting behaviors and cognitions (Bushman et al., 2005; Morrow, Nolen-Hoeksema, 1990; Rustings, Nolen-Hoeksema, 1998). Some techniques, for instance, have included exercise and listening to music (Thayer, Newman, & McClain, 1994). Other types of activities that might prove useful against ruminating include meditation and relaxation techniques, hobbies, or reading. Such distractions regulate negative affect by keeping negative cognitions from being readily accessible and/or by drawing the focus of attention away from negative moods (Morrow, Nolen-Hoeksema, 1990; Rustings, Nolen-Hoeksema, 1998).

### Limitations of our study

We note several limitations to our study. One limitation is that school samples are not necessarily the best populations for an examination of the effects of gang membership because gang youth are prone to truancy (Young, Fitzgerald, Hallsworth, & Joseph, 2007). Thus, many gang members and gang-affiliated youth may not have completed the study. Our findings are, nevertheless, impressive because we have demonstrated the relationships among the relevant variables even if many gang members did not participate in our study. This suggests that, had they been present, the findings would probably have been even more significant than they were. Another limitation is that the cross-sectional design of the study restricts directional causality. It may be the case that gang affiliation actually encourages rumination of a group nature (e.g., the discussion of perceived wrongs among gang members exacerbates behavioural responses). Equally, gang affiliation we know increases violent behaviour over and above association with even the most delinquent peers (Klein, Weerman & Thornberry, 2006). This may mean that the aggression shown at home by high ruminators may stem more from gang affiliation than from rumination. Finally, the findings may be limited by the self report methodology of this study. However, in order to assess participants' perceptual and experiential constructs, self report is currently the most fruitful method (Chan, 2009).

### Future directions

Our findings suggest that future research should examine the role that ruminative thinking plays in aggressive and violent behaviours among gang-affiliated individuals, including examining the long-term development of ruminative tendencies (i.e., trait rumination), which likely contributes significantly to aggressive tendencies, among gang-affiliated youth. Such research may shed light into the potential causes of ruminative thinking

within this population, and would require more longitudinal research to be conducted on this topic. It may also assess the extent to which rumination influences various types of aggression (e.g., inter-personal vs. inter-group aggression). Future research should also examine more closely the role of displaced aggression in the lives of gang-affiliated youth. For instance, it is currently unclear whether gangs attract individuals who tend to displace aggression or gang affiliation produces the processes that lead to rumination and displacement. Additionally, research should examine the consequences of engaging in displaced aggression. It is possible that displacement further erodes relationships within the family and friendships. If this were the case, such erosion may lead to increased isolation, resentment, and conflict, thereby making gang-affiliation and membership more attractive.

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Table 1

Cronbach's alphas, means, standard deviations, and correlations for and among gang affiliation, trait aggression, trait hostility, irritability, rumination, displaced aggression, trait anger, and gender.

Factor	$\alpha$	Mean	SD	Correlations									
				1	2	3	4	5	6	7	8		
1) Gang affiliation (3)	.77	2.28	1.21	—									
2) Trait aggression (9)	.82	3.90	1.24	.43*	—								
3) Trait hostility (8)	.81	3.83	1.24	.27*	.63*	—							
4) Trait irritability (5)	.57	3.23	.81	.28*	.32*	.20*	—						
5) Rumination (11)	.91	3.94	1.55	.23*	.55*	.61*	.22*	—					
6) Trait Displaced Aggression (15)	.95	0.00	.68	.44*	.59*	.55*	.28*	.65*	—				
7) Trait Anger (7)	.69	3.62	1.11	.43*	.78*	.66*	.29*	.55*	.58*	—			
8) Gender	N/A	N/A	N/A	-.16*	-.16*	.00	.03	.02	-.07	-.09	—		

Note: numbers in parentheses next to factor name indicate number of items in composite measures.

\* Significant at  $p < .01$

Table 2  
 Unstandardized and Standardized Weights From Hierarchical Multiple Regression Analysis  
 Predicting Displaced Aggression From Gang Affiliation, Trait Hostility, Trait Aggression,  
 Irritability, Trait anger, and Rumination.

Predictor	<i>b</i>	$\beta$	R <sup>2</sup>	$\Delta R^2$
<b>Step 1</b>			.46**	.46**
Control variables				
Affiliation	.14*	.20*		
Hostility	.14**	.26**		
Trait Aggression	.12**	.23**		
Irritability	.05	.06		
Trait anger	.08	.13		
<b>Step 2</b>			.55**	.10**
Affiliation	.14*	.21*		
Hostility	.06	.10		
Trait Aggression	.08*	.16*		
Irritability	.03	.04		
Anger	.04	.06		
Rumination	.18**	.41**		

\*  $p < .05$ ., \*\*  $p < .01$ .

### Figure Captions

Figure 1. Marginal and significant rumination x affiliation interactions for female and male participants, respectively.

Figure 2. Path model illustrating rumination mediating the link between gang affiliation and displaced aggression. The values represent standardized coefficients. \*  $p < .05$ , \*\*  $p < .01$



