The General Aggression Model: Theoretical Extensions to Violence

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This article discusses the General Aggression Model (GAM), which provides a comprehensive and integrative social–cognitive framework for understanding aggression and violence. After providing a brief description of the basic components of GAM, we discuss how it can be used to better understand 4 topics related to phenomena that occur primarily outside the laboratory and apply to a broad range of people. Specifically, we apply GAM to better understand intimate partner violence, intergroup violence, global climate change effects on violence, and suicide. We also explain how the tenets of GAM can be used to inform interventions aimed at reducing these forms of violence. Finally, we show how GAM can explain why people do not behave violently, such as in societies where violence is exceedingly rare. Applying GAM to violent behavior that occurs outside the laboratory adds to its explanatory power and enhances the external validity of its predictions. Because the 4 topics apply to such a broad range of people, GAM may have broader influence in fostering understanding of aggression in these domains. By increasing our understanding of the causes of violent behavior, GAM may help reduce it.

Keywords: General Aggression Model, climate change, intergroup violence, intimate partner violence, suicide

> Nonviolence leads to the highest ethics, which is the goal of all evolution. Until we stop harming all other living beings, we are still savages.
> —Thomas A. Edison, American inventor

In the distant past, aggression often was an adaptive behavior for our ancient ancestors who lived in small groups. Aggression and related threat displays played an important role in mate selection, protection of offspring and other kin, and survival of the group. As humans became more social and developed culture, however, aggression became less adaptive, especially at the group level. Although one can reasonably argue that even today, minor forms of aggression play an adaptive role in socialization and social control (e.g., Tedeschi & Felson, 1994), more serious forms of aggression are more maladaptive than adaptive. Aggression breeds aggression, and it seems to cause more problems than it solves. Even when it works in the short run, aggression frequently fails in the long run. So, why are people aggressive today? We could blame it on our genes, but that is only part of the story. The purpose of this is article is to explain how an overarching framework for understanding aggression and violence —the General Aggression Model, or GAM for short (see Figure 1)— can be applied to violence outside the laboratory: intimate partner violence, aggression between groups, global warming effects on violence, and suicide. We also discuss how GAM can be applied to interventions aimed at reduc-
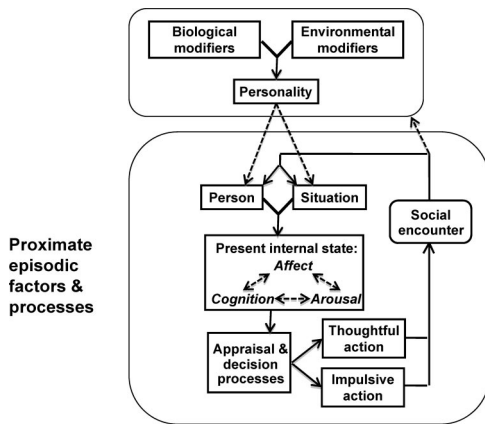
Figure 1. General aggression model.

ing these forms of violence and even nonviolent behavior. Applying GAM to aggression that occurs outside the laboratory not only adds to its explanatory power, but it also enhances the external validity of its predictions.

Psychologists have proposed a variety of theories to understand why people sometimes behave aggressively. Some examples include frustration–aggression theory (Dollard, Doob, Miller, Mowrer, & Sears, 1939), socioecological models (Heise, 1998), cognitive neoassociation theory (e.g., Berkowitz, 1989), social learning theory (e.g., Bandura, 1973; Mischel & Shoda, 1995), script theory (e.g., Huesmann, 1986), excitation transfer theory (e.g., Zillmann, 1983), and social interaction theory (e.g., Tedeschi & Felson, 1994). Each theory offers crucial insight into understanding specific reasons why people behave aggressively. Yet, these minitheories do not provide an overarching framework for understanding human aggression and violence.

GAM integrates minitheories of aggression into a single conceptual framework. In so doing, GAM provides a more parsimonious model of aggression than other theories do, explains aggression that occurs because of multiple motives, and offers empirically validated insights into ways to reduce aggression, including how to stunt the development of aggressive tendencies over time. It is the only social–cognitive model that explicitly incorporates biological, personality development, social processes, basic cognitive processes (e.g., perception, priming), short-term and long-term processes, and

decision processes into understanding aggression. Therefore, GAM offers scholars a framework from which to derive and test hypotheses regarding aggression, a framework that is more expansive than any other social–cognitive model. One major focus of the present article is to show how GAM can also increase our understanding of more extreme forms of physical aggression that occur outside the laboratory—violent behavior.

GAM emphasizes three critical stages in understanding a single episodic cycle of aggression: (1) person and situation inputs, (2) present internal states (i.e., cognition, arousal, affect, including brain activity), and (3) outcomes of appraisal and decision-making processes. A feedback loop can influence future cycles of aggression, which can produce a violence escalation cycle (Anderson, Buckley, & Carnagey, 2008; DeWall & Anderson, 2011). Several articles provide further insight into these basic tenets of GAM (Anderson & Bushman, 2002; DeWall & Anderson, 2011).

Applications of GAM

GAM has received consistent support as a general model of aggression (for reviews, see Anderson & Bushman, 2002; DeWall & Anderson, 2011). Although it was tested primarily using laboratory aggression experiments, it can also be applied to aggression in the "real world" outside the laboratory. Before we go further, however, we need to define the terms *aggression* and *violence*. We define *aggression* as any behavior intended to harm another person who does not want to be harmed (e.g., Anderson & Bushman, 2002; Bushman & Huesmann, 2010). We define *violence* as any aggressive act that has as its goal extreme physical harm, such as injury or death (e.g., Anderson & Bushman, 2002; Bushman & Huesmann, 2010).

In this section, we include several novel extensions of how GAM can inform understanding and research investigating intimate partner violence, intergroup violence, impact of global climate change on violence, and suicide. We chose these topics for two reasons. First, each topic applies to phenomena that occur outside the laboratory, thereby increasing the explanatory potential of GAM and the external validity of its predictions. Second, each topic relates to phenomena that occur relatively frequently in

the United States and in other countries. Violence between intimate partners in the United States occurs at alarmingly high rates, with over one in five of couples (Schafer, Caetano, & Clark, 1998) and over one in three college students (Straus & Ramirez, 2002) reporting at least one incident over the past year. Intergroup violence is also very common. In the 40 years after the end of World War II, there were roughly 150 wars and only 26 days of world peace (defined as the absence of international war; Sluka, 1992). In terms of global climate change, the earth is warmer now than it has been at any time in the past 2,000 years (Parry, Canziani, Palutikof, van der Linden, & Hanson, 2007). However, people rarely think of the impact of climate change on violence (Anderson & DeLisi, in press). Suicide also claims the lives of over a million people each year (World Health Organization, 2008). Thus, applying GAM to understand these four topics not only increases the explanatory power of GAM, but it also informs consideration regarding phenomena that impact millions of people worldwide.

Intimate Partner Violence (IPV)

Previous research on GAM has focused primarily on aggression between strangers (e.g., Anderson & Anderson, 2008, Study 2), but we believe that GAM can also provide a useful framework for understanding IPV. As with aggression between strangers, person and situation factors play a significant role in increasing the likelihood of IPV. There are dozens, if not hundreds, of personal factors involved, including trait anger, attachment style, and alcohol abuse (e.g., Finkel, 2007; Follingstad, Bradley, Helff, & Laughlin, 2002; Holtzworth-Munroe, Bates, Smutzler, & Sandin, 1997; Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001). Yet, there is little conceptual organization regarding how and why risk factors influence IPV, leading some scholars to suggest that "theory and research on relationship violence remain uncohesive" (Berscheid & Regan, 2005, p. 52).

Attitudes toward violence are also useful in predicting actual aggression directed toward an intimate partner. In one recent investigation, college students who had more positive attitudes toward IPV were more likely to physically assault and verbally abuse their current romantic partner 14 weeks later (Fincham, Cui,

Braithwaite, & Pasley, 2008). Other research has shown that people who have permissive attitudes toward IPV also have the highest perpetration rates (Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006).

Some situational factors that increase aggression toward strangers also increase IPV, such as alcohol (e.g., Hove, Parkhill, Neighbors, McConchie, & Fossos, 2010). Moreover, meta-analytic findings demonstrate that alcohol increases both male-to-female and female-to-male violence (Foran & O'Leary, 2008). Situations that decrease self-control increase aggression toward both strangers and intimate relationship partners (DeWall, Baumeister, Stillman, & Gailliot, 2007; Finkel, DeWall, Slotter, Oaten, & Foshee, 2009). For example, people who are made to feel mentally exhausted, compared with people who are not made to feel mentally exhausted, make their romantic partners endure longer painful yoga poses when the partner insults them (Finkel et al., 2009, Study 4).

Affect, cognition, and arousal may also be related to IPV. Currently experienced anger, for example, is related to more aggressive verbalizations among intoxicated maritally violent men (Eckhardt, 2007). In addition, having hostile cognitive biases toward one's spouse is associated with perpetrating more violence against one's partner (Fincham, Bradbury, Arias, Byrne, & Karney, 1997). Relatively little research has examined the role of arousal in IPV. In one relevant study, men who showed diminished sensitivity to their wives' expressions of happiness (an indicator of reduced arousal) were more likely to commit IPV compared with men who showed high sensitivity to their spouse's emotional expressions (Marshall & Holtzworth-Munroe, 2010). Future research is clearly needed on the relationship between arousal and IPV.

The appraisal and decision-making component of GAM is involved in both aggression toward strangers and toward intimate relationship partners. When people do not have sufficient mental resources to engage in reappraisal processing, they are more likely to behave aggressively toward their romantic partners (Finkel et al., 2009). When people are mentally exhausted, they are less likely to control their aggressive impulses when provoked. Just as exercising a muscle strengthens it, people who

exercise self-control are buffered from the negative effects of mental exhaustion on IPV (Finkel et al., 2009, Study 5). The implication is that the more self-control strength people have, the more likely they are to carefully consider the negative ramifications of their actions and to choose to behave in a more thoughtful, nonaggressive manner.

Thus, GAM provides a cohesive understanding regarding situational and personal attributes that elevate the likelihood of IPV, mechanisms through which aggressive urges translate into violent behavior and decision-making processes that influence whether people succumb to their aggressive urges or instead engage in thoughtful, nonaggressive behavior. Commonly used theoretical models, such as socioecological models (Heise, 1998) and social learning theory (Bandura, 1973), provide valuable insight into the causes of IPV, but they lack crucial components that limit their explanatory power. For example, socioecological models do not examine the influence of an individual's knowledge structures, attitudes, and beliefs on currently experienced emotions, cognitive processes, and arousal levels, and their influence on whether people engage in impulsive or thoughtful actions toward one's partner. Instead, socioecological models seek to understand the causes of IPV at different levels of analysis (individual, relationship, community, societal), which establishes the source of influence but does not offer clear understanding regarding the role of currently experienced emotion, cognitive processes, or arousal on appraisal and decision-making processes that influence whether people perpetrate IPV. Social learning theory offers a useful framework to understand risk factors for aggression, but it neglects the importance of factors that increase the risk for aggression that are independent of one's learning history, such as genetic predispositions known to heighten the risk for aggression (e.g., monoamine oxidase A gene, serotonin transporter gene; Dolan, Anderson, & Deakin, 2001; McDermott, Tingley, Cowden, Frazzetto, & Johnson, 2009). GAM is a biological–social–cognitive model, which uses both learning history and factors not associated with one's learning history to understand why people perpetrate IPV. For these reasons, GAM offers a more comprehensive model from which to test hypotheses regarding IPV perpetration.

Intergroup Violence

Most aggression theories attempt to explain the causes and consequences of aggression between individuals, leaving open the question of whether similar processes may be involved in explaining aggression between groups. GAM offers a useful framework for understanding how aggression between groups begins and why it persists.

Aggression between groups begins as a result of characteristics that each group brings to a situation and of environmental features that increase aggression. Groups, like individuals, tend to have enduring motivations, attitudes, values, and beliefs that develop out of their prior history. Indeed, research on the discontinuity effect has consistently shown that individuals have internal states that are heavily influenced by group processes (Insko, Schopler, Hoyle, Dardis, & Graetz, 1990). Other research from the attitude literature suggests that exposing people to an in-group member (e.g., a fellow member of one's political party) causes people to express strong attitudes that support their in-group, whereas exposing people to an out-group member has the opposite effect (Ledgerwood & Chaiken, 2007). Within the context of group aggression, the terrorist group Al Qaeda believes that an alliance between Christians and Jews threatens the future of Islam. Most people living in the United States are Christians (78%; Newport, 2009), and most people living in Israel are Jews (76%; Central Bureau of Statistics, 2009). As a result, situations that signal a strong Christian–Jewish alliance, such as activities related to a coalition between the United States and Israel, may increase aggressive affect, negative attitudes, and arousal among members of Al Qaeda. These internal states may, in turn, increase the likelihood that members of Al Qaeda will perpetrate violence against all people associated with a U.S.–Israel coalition, even bystanders and civilians.

GAM's feedback loop also explains why aggressive retaliations between groups persist. Once conflict between two groups begins, the violence escalation cycle is triggered. Group A experiences Group B's retaliation, which causes Group A's members to have high levels of aggressive affect, to perceive Group B as hostile and aggressive, and to experience heightened arousal. These internal states cause members of

Group A to act impulsively on their immediate appraisal of Group B as hostile and threatening. Group B then experiences the impulsively aggressive act from Group A, which sets in motion the same set of internal states and appraisal and decision processes that result in an even more aggressive retaliation (see Figure 2). Both groups will trade increasingly aggressive retaliations back and forth, which can result in the widespread destruction of human life and property. To be sure, the feedback loop can only be applied to understand ongoing aggressive retaliations between groups. If Group A refuses to respond to Group B's provocation with aggressive retaliation, then Group A bears no responsibility for any additional aggression provocation it may experience from Group B.

Thus, GAM offers a parsimonious and adequate perspective for understanding why intergroup violence begins and persists. Socioecological models and social learning theory offer useful insight into why intergroup violence occurs, but they also suffer significant limitations in terms of the scope of their explanatory

power. From a socioecological perspective, understanding intergroup violence begins with understanding the individual within the group, then understanding that individual's relationships with others inside and outside the group, and finally understanding the group's relationship within society. Although these levels of analysis provide information regarding risk and resiliency factors for intergroup violence, they do not offer much in the way of understanding how mechanisms through which the influence of the four-level socioecological model influences the appraisal and decision process that ultimately determines whether groups will engage in violent behavior. According to social learning theory, intergroup violence occurs in large part because members of a group are exposed to violence that taught them to solve group conflict through behaving violently. Unlike GAM, social learning theory does not emphasize the importance of personal factors that enhance or diminish the effect of exposure to violence on subsequent group violent behavior. GAM incorporates the best perspectives of these theoretical models, addresses their limitations, and as a result provides researchers with a strong theoretical framework from which to understand intergroup violence.
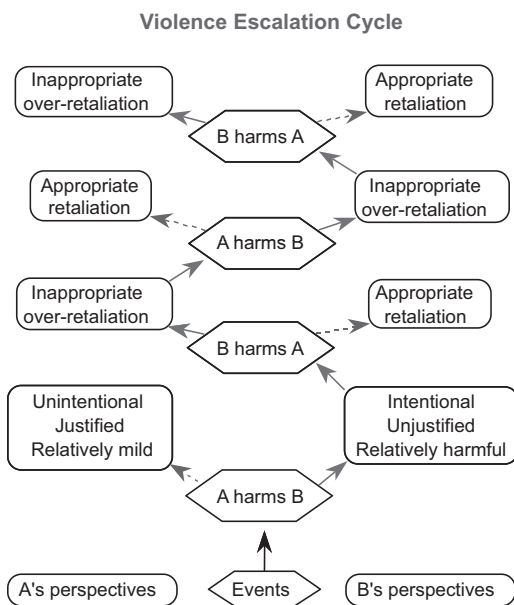
Global Climate Change and Violence

Global climate change and its wide-ranging environmental consequences (e.g., flooding, droughts, desertification, food and water shortages) have been recognized by numerous national, military, and international groups as a significant risk factor for social disorder, eco-migration conflicts, and war. Global climate change influences aggression and violence both as a proximate situational factor and as a distal environmental modifier. More specifically, there appear to be three main ways in which rapid global climate change (rapid in geological terms) can increase the risk of violence (Anderson & DeLisi, in press). First, there is a direct effect of heat on aggressive inclinations. This well-researched line of work has shown that uncomfortably hot temperatures can increase physical aggression in laboratory settings and in real-world violent crime studies (Anderson, 2001). Simply presenting people with words related to hot temperatures is enough to increase aggressive thoughts and hostile perceptions

Violence Escalation Cycle

Figure 2. The violence escalation cycle. N. L. From Violent evil and the general aggression model, by C. A. Anderson and N. L. Carnagey, 2004, Chapter in A. Miller (Ed.) The Social Psychology of Good and Evil (pp. 168–192). Copyright 2004 by New York: Guilford Publications. Reprinted with permission of Guilford Press.

(DeWall & Bushman, 2009). Second, many of the environmental risk factors known to increase the likelihood of a child growing up to be an aggression-prone adult will become more widespread worldwide, especially in regions likely to experience flooding as a result of sea level increases, tropical storms, glacial melt, and regions likely to experience drought and resulting food and water shortages. Poor pre- and postnatal nutrition is known to influence a host of aggression-related competencies and proneness to violence (e.g., DeLisi, 2005; Liu, Raine, Venables, & Mednick, 2004). Indeed, recent molecular genetics studies have found specific brain chemistry-related Genetic × Environment interactions (both physical and social environments) on violent criminality (see Anderson & DeLisi, in press). Third, historical and contemporary research shows that rapid climate change can increase group violence. Specifically, a growing body of literature supports the notion that rapid climate change (heating or cooling) increases civil disorder, political instability, and war, mostly by creating acute and recurring resource shortages that lead to ecomigration and violent conflict. Examples include war in China during 1000–1900 A.D. (Zhang, Zhang, Lee, & He, 2007), civil war in sub-Sahara Africa (Burke, Miguel, Satyanath, Dykema, & Lobell, 2009), ecomigration and violence in Bangladesh and India, and violence associated with the U.S. Dust Bowl and Hurricane Katrina. Similarly, U.S. data reveal a robust relation between increasingly hot years and violent crime rates (Anderson, Bushman, & Groom, 1997; Anderson & DeLisi, in press).

GAM does a better job of explaining the effects of climate change on violence than other theories of violence. Whereas socioecological theories of violence focus primarily on how people in one's environment influence violence, GAM emphasizes the importance of both people in one's environment and changes in the physical environment itself as relevant to understanding violence. Likewise, social learning theory would explain the relationship between climate change and violence as a function of observing a greater number of people behaving violently, thereby ignoring the importance of changes in the actual environment (irrespective of the people in the environment) and their influence on the higher number of people behaving violently. Thus, GAM is unique in its ability to account for changes in the environment that may have implications for increasing violence, such as increasing ambient temperatures.

Suicide

Why people commit suicide has puzzled social scientists for centuries. Very few interventions aimed at reducing suicide are successful (Van Orden et al., 2010). To prevent suicides, we need to know why they occur. We believe GAM can offer a powerful framework for understanding why people commit suicide.

Many of the same person and situation factors that increase aggression between individuals and groups also increase suicide, sometimes called *self-aggression*. Alcohol intoxication, for example, is common among people who die by suicide (Ohberg, Vuori, & Ojanpera, 1996). Laboratory research has shown that intoxicated people inflict more intense shocks on themselves compared with sober people (McCloskey & Berman, 2003). Feeling rejected and lonely is also robustly associated with aggression toward others (e.g., DeWall, Twenge, Bushman, Im, & Williams, 2010; DeWall, Twenge, Gitter, & Baumeister, 2009) and with suicide (see Van Orden et al., 2010, for a review). One longitudinal study, for example, found that feelings of loneliness at age 12–13 predicted higher suicidal risk 30 years later (Rojas & Stenberg, 2010). Just as poor self-control and serotonergic dysfunction are related to aggression against other people, they are also reliably associated with an increased risk for death by suicide (e.g., Anisman et al., 2008; Brent et al., 1994; Renaud, Berlim, McGirr, Tousignant, & Turecki, 2008).

Affect, cognition, and arousal all play a crucial role in suicidal behavior. People who generally internalize their anger are also more likely to attempt suicide, which is the leading risk factor for suicidal completion (see Van Orden et al., 2010, for a review). Suicidal ideation refers to thoughts related to ending one's life. The more people think about dying by suicide, the more likely they are to die by suicide (Van Orden, Merrill, & Joiner, 2005). In addition, diminished arousal to the pain and distress that are associated with suicidal behavior relate to higher numbers of suicide attempts

(Van Orden, Witte, Gordon, Bender, & Joiner, 2008).

Because most people have a strong fear of death, they must acquire the ability to inflict lethal self-injury through repeated exposure to and habituation to fear-provoking stimuli (Van Orden et al., 2010). Simply having the desire to die by suicide is not sufficient to predict who actually will die by suicide. Recurrent exposure to frightening and painful situations desensitizes people to pain and increases their risk for suicide (Nademin et al., 2008). These findings mirror work in the aggression literature, which shows that frequent exposure to violent media desensitizes people to violent images and is associated with higher aggression toward others (Anderson et al., 2010; Bartholow, Bushman, & Sestir, 2006).

For researchers interested in understanding why people die by suicide, GAM provides a social–cognitive framework from which rich and complex hypotheses can be formulated and tested. Socioecological models of violence may identify risk factors for suicide, but they do not elucidate the crucial mechanisms through which these risk factors heighten the risk for suicide. Social learning theorists emphasize that exposure to others who commit suicide may heighten one's risk for suicide, but they neglect personal factors (e.g., traits, genetic polymorphisms) that may exacerbate or buffer people from this risk.

In contrast, suicide researchers can use GAM to make specific predictions regarding the moderators and mediators of the effects of belongingness and burdensomeness on suicidal behavior. They can also understand how the acquired ability to inflict lethal self-injury develops, and whether experiences of lowered belongingness, which influence physical pain processes (Borsook & MacDonald, 2010; DeWall & Baumeister, 2006; DeWall, MacDonald, et al., 2010; Eisenberger, Lieberman, & Williams, 2003), accelerate the development of people's ability to commit suicide. In addition, GAM offers suicide researchers an extensive toolkit of factors known to increase aggression against others (e.g., media violence) that may have a similar impact on suicidal behavior. Thus, GAM offers a more comprehensive framework for understanding suicidal behavior than existing theoretical models among researchers who wish to explain why people die by suicide from a social–cognitive perspective.

Using GAM to Inform Violence Prevention Programs

GAM suggests that a knowledge structure approach would be a more useful means of preventing violence compared with existing models. Specifically, it suggests that individual interventions should begin with an assessment of inappropriate aggressive episodes in the individual's life along four dimensions. The first dimension is how much hostile or agitated affect is present. The second dimension is how much a specific thought, feeling, or action has become automatized. The third dimension is how much the primary (ultimate) goal is harming the victim versus benefitting the perpetrator. The fourth dimension is how much the perpetrator considers the consequences of committing the aggressive act. Doing so allows the model to avoid the problems created by various artificial dichotomies of aggressive behavior types, such as the reactive–proactive dichotomy (Bushman & Anderson, 2001). One then could tailor the intervention to the specific aspects that appear most relevant to the individual. A GAM-directed intervention would be more likely to capture all of the critical elements. In what follows, we discuss how GAM can be applied to violence prevention programs for IPV, intergroup violence, global climate change-related violence, and suicide.

IPV

To illustrate the explanatory power of GAM in shaping effective interventions, consider the hypothetical scenario of an intervention to reduce violence in a man who is referred to a psychological clinic because he routinely batters his wife. Although some assessment protocols for preventing IPV involve setting clear-cut goals and expectations (Sonkin & Liebert, 2003), they do not do so within an overarching framework that assesses inappropriate aggressive episodes in the individual's life along the four dimensions noted above.

A GAM-directed intervention would consist of five steps. First, an assessment session would measure how much hostile affect is present in the man; how much a specific thought, feeling, or action related to violence against his wife has been automatized through repetitive exposure or practice; how much the man's primary goal is

harming his wife versus benefitting himself (e.g., feeling a sense of power and control in the relationship); and how much the man reflects on the consequences of violently battering his wife. Second, the therapist would provide the man with strategies designed to reduce his hostile affect (e.g., distraction, relaxation) and make him aware of the specific thoughts, feelings, and behavior related to his battering behavior that have become so deeply ingrained in his everyday life that they occur automatically. Third, the therapist would give the man strategies designed to increase his thoughtful awareness of the violent thoughts, feelings, and actions related to his wife. Fourth, the therapist would work with the man to reduce his desire to cause harm to his wife (if that is his primary goal) and to develop a list of other activities he could use to feel that he plays an important and valued role in his marriage. Fifth, the therapist would provide the man with activities designed to strengthen his self-regulatory abilities, which may increase the likelihood that he will engage in thoughtful decision-making processes when he has the urge to batter his wife. As noted earlier, practicing self-regulation reduces IPV inclinations (Finkel et al., 2009), even when people practice self-regulation in domains that are unrelated to violence. Thus, GAM can inform IPV programs that can be tailored to specific aspects that are most relevant to an individual.

Intergroup Violence

GAM can also help explain how to stop persistent intergroup violence. Whereas previous interventions have focused on improving relationships, increasing care and empathy, and becoming cognitively aware of one's aggressive urges (Shechtman & Ifargan, 2009), GAM suggests that understanding how to break the violence escalation cycle may also prove a useful intervention strategy to reduce intergroup violence. According to GAM, extinguishing persistent intergroup violence should occur under the following circumstances. First, Group A may perceive that the outcome of further aggressive retaliation is sufficiently important and unsatisfying that they should engage in thoughtful, as opposed to impulsive, actions toward Group B. Next, Group B experiences Group A's thoughtful response, which should not increase

its aggressive affect, cognition, or arousal. As a result, Group B does not perceive Group A as hostile and threatening, leading it to refrain from further aggressive retaliation. This is an upward spiral rather than a downward one (Slater, Henry, Swaim, & Anderson, 2003).

Thus, intergroup violence should stop in the appraisal and decision process component of GAM. But, of course, this can occur only if the thoughtful process results in a decision to de-escalate. Frequently, in international politics, this does not happen. In fact, formal political policies frequently endorse an escalation strategy on the oft-mistaken notion that "if we show the enemy that their provocations will only hurt them more, then they will back down." There may be cases, however, in which extreme escalation can end a conflict because one or more parties are simply unable to continue the escalation cycle.

Even in cases of vastly unequal power, however, "relative" escalation may occur (Anderson et al., 2008). That is, the weaker side may not be able to retaliate at the same level as the stronger side, but it still may retaliate more strongly than it did before. Indeed, much international terrorism has this characteristic.

The Israel–Palestinian conflict offers one example of how GAM can help explain how intergroup violence begins, persists—and how it can end. This intergroup conflict erupted several decades ago when Jews and Arabs exchanged violent attacks over a strip of land, alternately called Israel or Palestine, which Jews claim is their birthright and Palestinians claim as theirs.

When will the Israeli–Palestinian conflict end? A GAM-derived intervention would begin by encouraging citizens from Israel, Palestine, or both countries to perceive that the outcome of their country's retaliation is both important and unsatisfying. When this occurs, the relenting country will engage in reappraisal processing and thoughtful nonviolent action toward the other country. The opposing country will experience a thoughtful, as opposed to an impulsively aggressive, action from the other country, which will disrupt the internal states and appraisal and decision processes that usually accompany acts from the other group. For this to happen, of course, major belief systems (knowledge structures) must change and be replaced by a set of new beliefs, especially beliefs about each other and about the efficacy of violent

competition versus nonviolent cooperation. This could be implemented through the use of advertising and marketing campaigns and changes in the public opinions and apologies expressed by political leaders.

Global Climate Change and Violence

To curb the relationship between global climate change and violence, GAM suggests two approaches. The first involves four steps designed to reduce greenhouse gas emissions and to reduce or slow climate change. Previous research has shown that people can be motivated to invest money in a fund to encourage people to reduce fossil fuel use if doing so can foster a positive social reputation (Milinski, Semmann, Krambeck, & Marotzke, 2006). A GAM-directed intervention would extend this prior work by changing not only aspects of the social situation related to fossil fuel use but also motivating people to change their beliefs regarding global climate change and its influence on violence as opposed to other outcomes.

First, widespread programs would attempt to change people's beliefs regarding the presence of global climate change and their attitudes toward activities that would reduce global climate change. Second, programs would seek to change aspects of the social situation that may increase behavior that would reduce global climate change. For example, organizations and communities can publicly reward their employees for using the fewest carbon emissions each month, which would establish a norm that limiting one's carbon emissions would be met with social acceptance and approval. Third, a GAM-driven intervention would seek to reduce negative emotions, cognitive processes, or arousal that people may experience in response to overtures to change their behavior to reduce global climate change. Among people who report that they do not monitor their carbon emissions because it increases their anxiety, interventionists can provide simple and easy solutions aimed at reducing anxiety or tension associated with changing their behaviors that reduce global climate change. Fourth, interventionists would seek to convince citizens that by not taking action to reduce global climate change, the result will have an important and unsatisfying effect on violence. In so doing, citizens will be motivated to engage in thoughtful action to en-

gage in behaviors that will reduce global climate change. By reducing global climate change, such an intervention provides an effective means of reducing violence that occurs in its wake.

The second approach involves directly addressing the violence-enhancing effects of rapid climate change. Although the basic heat effect on aggressive tendencies is likely so subtle and automatic that it will difficult to short circuit, it may be that widespread education programs that inform people about the effects of heat-induced stress on aggression might well help some people to refrain from acting on aggressive impulses. More important, international programs can intervene on behalf of the other two climate change paths to violence. Well-mother and well-baby nutrition programs for the poor; improved birth control and family planning access and education; and improved education for all, especially for girls, can reduce the effects of poverty and climate-change-induced food and water shortages on the development of violence-prone individuals. Similarly, large-scale investment in flood and drought control and in general environmentally sensitive economic development in regions that have subsistence economies can reduce future resource crises that otherwise are likely to precipitate ecomigration and war.

Suicide

As noted earlier, suicide prevention programs are notoriously ineffective (Van Orden et al., 2010). Previously successful suicide prevention programs have involved providing people at risk for suicide with information about suicidal behavior and frequent follow-up contacts (Fleischmann et al., 2008; Motto & Bostrom, 2001), but it is unclear precisely why these interventions were successful. Because GAM focuses on understanding the mechanisms underlying suicidal behavior, it may provide a useful extension to these previous interventions.

A GAM-directed intervention would take a four-pronged approach to preventing suicide. First and second, therapists would identify personal (e.g., beliefs, attitudes, traits) and social (e.g., social rejection, employment, exposure to violence) factors known to increase the risk for suicide. After identifying an individual's personal and social "risk profile," the therapist

would direct the individual to treatments directed at each specific risk factor. For example, individuals who have positive beliefs about suicide may be exposed to therapeutic treatment aimed at changing the individual's suicide beliefs. Individuals who chronically feel rejected would be given opportunities for renewed affiliation, which quickly reduces the harmful effects of social rejection (DeWall, Baumeister, & Vohs, 2008; DeWall, Twenge, et al., 2010).

Third, therapists would identify whether an individual possesses emotional responses, cognitive processes, or arousal levels associated with a risk for suicide. After identifying those risk factors, the therapist would offer the individual treatments aimed at alleviating each risk factor. Among individuals who have become desensitized to graphic images and physical pain, for example, treatments would center on limiting exposure to situations that might increase such desensitization (e.g., exposure to weapons, violent media) and providing medical attention to limit any physical damage that may enhance the individual's desensitization. Fourth, therapists would motivate individuals to perceive suicide as having an outcome that is deeply important and unsatisfying for them personally and their loved ones. By focusing individuals to engage in such appraisal processes, individuals may be more likely to engage in thoughtful action that does not involve suicide.

Using GAM to Explain Nonviolent Behavior

Whereas the previous sections have emphasized how GAM can be used to explain violence in four novel ways, this section demonstrates that GAM also can be used to explain nonviolent behavior. Most theories of violence are used to explain the causes of these behaviors in contexts in which they occur somewhat frequently. At first blush, it might seem natural for GAM to be used only to explain behavior in societies marked by relatively frequent instances of violence. We argue that GAM also may be used to explain the nonoccurrence of violence in relatively peaceful societies.

There are not very many of them, but there are some societies in which *war* is a foreign word and violence is extremely rare (Bonta, 1997; Fry, 2007). For example, more than 100 years ago, the Fipa of western Tanzania trans-

formed their society from one based on violence and war to one based on nonviolence and peace. The Fipa are very competitive in their business dealings, but the competition is constructive and peaceful (Willis, 1989). Another peaceful society is the Jains of India. The Jains believe in *ahimas* (nonviolence), and they take vows to avoid any socially harmful acts, including stealing and telling lies.

But even in these largely peaceful societies, GAM can explain both the predominance of nonviolence and the rare cases in which people engage in violent and aggressive behavior. Because their lives are filled with largely cooperative and prosocial experiences, people embedded in highly peaceful societies do not develop enriched aggressive knowledge structures. As a result, violence and aggression in peaceful societies should occur primarily as a result of situational factors that give rise to internal states and appraisal and decision processes associated with impulsive actions.

GAM can also explain why peaceful societies remain peaceful—and how societies marked by frequent war and violence can become more peaceful. Unpleasant stimuli and interpersonal conflict are inevitable, which can increase aggressive affect, cognition, and arousal. But members of peaceful societies likely appraise the outcome of an aggressive action as a significant and unsatisfying break from norms that encourage cooperation and peaceful conflict resolution, leading them to engage in a thoughtful nonviolent action. In a similar fashion, societies marked by frequent violent conflicts can become less violent when norms that formerly advocated violence now encourage citizens to exercise self-control to override their violent impulses. The eminent sociologist Norbert Elias (1969, 1982) argued that European societal norms changed from the 9th century to the 19th century to encourage people to exercise restraint over their violent impulses and to shame people who failed to do so, which Elias referred to as a "civilizing process." Other work has shown that modern civilizations are the most peaceful in the history of the world in terms of deaths by war (Keeley, 1996) and murder (Eisner, 2003), presumably as a result of changes in the situational context that encourage people to override their violent impulses. Thus, although unpleasant stimuli and interpersonal conflict pervade human life, GAM argues that appraising the

outcome of an aggressive action as important and unfulfilling can reduce the likelihood of violence and aggression even in peaceful societies.

Conclusion

This article has highlighted the strengths of a general theory of aggression. Specifically, GAM provides the only theoretical framework of aggression and violence that explicitly incorporates biological, personality development, social processes, basic cognitive processes, short-term and long-term processes, and decision processes. We not only have discussed the basic components of GAM, but we also have made several novel contributions to the development of GAM as a theoretical model. First, whereas GAM has been used primarily to explain aggression, we have demonstrated that GAM can also be used to explain violence. Second, GAM was developed to account for aggression between strangers, but we have shown that it can also be applied to understand IPV. Third, we have shown how GAM can help explain how changes in one's physical environment, such as climate change, can have direct implications for the safety and sustainability of that environment by increasing violence. Fourth, we have suggested that GAM may be applied to understand violence between groups of people and suicide. Fifth, we have explained how GAM can be used to inform interventions aimed at reducing IPV, violence between groups, violence that occurs as a result of global climate change, and suicide. Sixth, this article illustrates the utility of GAM for explaining nonviolent behavior, such as that found in societies in which war and violence are extremely rare.

There are some drawbacks, however, to GAM. Hints about the potential weakness of a general theory of aggression come from the attitude literature. In the attitudes domain, general attitudes can be poor predictors of specific behaviors (Ajzen & Fishbein, 1977). For example, a student's attitude toward college is a poor predictor of whether he or she will like a particular class. Similarly, GAM was proposed to offer a comprehensive, general view of human aggression. Domain-specific theories may do a better job predicting more specific behaviors.

The disadvantage of domain-specific aggression theories, however, is that they cannot capture the complexity of human aggression and violence. Human behavior, including aggressive and violent behavior, is complex and is multiply determined. GAM includes most if not all of the factors that can influence aggression and violence. When grappling to understand the causes of aggression, researchers and laypersons can use GAM to provide a glimpse into why a person or group behaved aggressively—and how that aggression can be reduced. Such global insights can prove very helpful to researchers working on more domain-specific models as well as practitioners involved in individual or intergroup violence. Ultimately, as we begin to understand the causes of aggression and violence, people may stop "harming all other living beings," which is what Thomas Edison hoped would happen one day.

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