INHIBITING ONLINE AGGRESSION IN ADOLESCENTS: SELF-CONTROL AS A MODERATOR OF NEGATIVE INTERNAL PROCESSES IN HOSTILE COMPUTER-MEDIATED INTERACTIONS

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ABSTRACT

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Preliminary research on cyberbullying has adequately presented online aggression as a destructive adolescent behavior of growing concern. It is now time to move beyond existing descriptive findings toward empirically-based, theoretically rich studies that help to shape systematic and predictive understandings of the behavior. The present research examines aggressive Internet behaviors of high school students from the General Aggression Model's (GAM) theoretical perspective. Participants were exposed to an anger-inducing provocation scenario with one of three behavioral stimulus conditions (anti-aggressive, aggressive, or control), in which they were bullied by a fictitious classmate through an online social-networking site. As expected, the anti-aggressive stimulus significantly curtailed state hostility in relation to the aggressive stimulus. However, the anti-aggressive behavioral stimulus did not significantly impede cognition. Trait and state self-control surfaced as important potential additions for the GAM. Trait self-control significantly moderated the negative effects of discomfort and arousal on aggressive behavioral intentions, such that adolescents with higher levels of negative internal states were less likely to express aggressive behavioral intentions if they maintained higher levels of trait self-control. Trait self-control also emerged as a significant moderator of the negative effects of affect on aggressive behavioral intentions for low trait aggression individuals. State self-control surfaced as a significant moderator

of the negative effects of affect on aggressive behavioral intentions and of cognition on aggressive behavioral intentions for low trait aggression individuals. Through qualitative analysis, the study also identified interactions of online and offline aggression. Specifically, results suggested that online aggression can lead to potential offline aggression. The present study's original contribution was to examine online aggression through a theoretical framework, to present trait and state self-control as valuable additions to the GAM, and to ascertain the value of exposure to anti-aggressive stimuli in restraining online aggression. The study provides a valuable platform for understanding how online aggression functions, how it can be inhibited, and how it should be explored in the future.

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Chapter 1

Despite the inclination of most adolescents to use electronic media for friendly social exchanges, some teenagers channel their aggression through media devices. Teenagers commonly use electronic media, such as the Internet, for entertainment purposes related to social connection and information-seeking (Pew, 2009); however, electronic encounters can psychologically damage and distress victims in spite of their infrequency. From the perspective of the General Aggression Model (GAM), aggression is defined as "any behavior directed toward another individual that is carried out with the immediate intent to cause harm" (Anderson & Bushman, 2002, p. 28). Online aggression specifically refers to any Internet behavior directed toward another individual that is carried out with the immediate intent to cause harm. Concordant with many other aggression definitions, inclusion of the term "intent" makes the behavior somewhat difficult to fully measure without specifically ascertaining the perpetrator's true intentions. It also leaves open the question of whether verbal behaviors (e.g. threats or name calling) constitute aggression. Recognizing the unique qualities of online interaction, here it is assumed that intention can be inferred from the perpetrators' actions in sending harassing messages in online venues, that psychological as well as physical harm is relevant, and that aggression can be verbal in nature. Terms such as cyberbullying and flaming are also used to identify aggressive Internet behaviors. They are referred to interchangeably throughout this study.

Anecdotal incidents of cyberbullying have catapulted the issue of online

aggression to the forefront of public concern. "Blast sites" embody a new forum for cyberbullying. Adolescents send public websites degrading and humiliating information about their friends, and the websites publicly post the stories. Victims are identified by their first names, last names and pictures. One of these sites, called "Brutal Weeks," maintains a Facebook account that allows people to post and share publicly humiliating information about their friends and classmates by posting stories on its Facebook wall (Lee, 2010). One such victim was angered by information on the Brutal Weeks Facebook wall that claimed that she was unattractive, that she smelled bad in private areas, and that she performed sexual acts. Despite reporting many blast sites to Facebook, she stated that the online social networking site had neither removed the humiliating wall posts nor had it shut down the hostile user accounts. In another case, an eighth grade girl was suspended from her Beverly Hills middle school after posting a YouTube video featuring fellow students bad-mouthing a classmate (Kim, 2009). Adolescents used the website to publicly ridicule their classmate, calling her 'spoiled,' a 'brat,' and a 'slut.' Text and electronic messages enabled the act of electronic aggression to become a viral phenomenon throughout the school. In a more extreme case, a 17-year-old female from San Jose, California tried to take her own life after becoming the victim of repeated harassment through thousands of text messages (Gebhart, 2009). She now suffers from severe brain damage despite surviving the suicide attempt. The most tragic cases involve those, such as the popular teenage star athlete from Long Island who sadly succeeded in taking her own life after becoming the victim of online abuse. She committed suicide after falling prey to vicious online attacks on social networking sites such as Formspring.me and Facebook (Del, Signore, 2010). People continued to post brutal

comments about her online after her death.

Cases of severe electronic aggression with devastating outcomes such as these are rare. Most incidents of online aggression do not make the local news, and most are likely only known to the aggressor and the victim. Online aggression clearly presents a cause for concern when the result of the destructive behavior is fatal. It also becomes concerning when it leads to subsequent violence or when it causes psychological damage. Whatever the outcome, the deviant behavior will likely continue with the growing popularity of the Internet and other forms of electronic communication. The existence of cyberbullying poses a serious and important question. What can be done to inhibit aggressors who act through electronic media? This question becomes increasingly important if online aggression mirrors offline aggression. Acts of offline aggression produce more, potentially violent acts of aggression, and the same may be true for cyberbullying.

The purpose of this study is to examine online aggression within the theoretical framework of the General Aggression Model (GAM). It is the first study to apply the GAM to online aggression, and it is the first to empirically examine the antisocial behavior from a theoretical perspective in general. The study also presents self-control as a new variable for the GAM by investigating whether the construct successfully inhibits online aggression. Finally, this study considers the interactions between behavioral cue exposure, cognition, state hostility, discomfort, self-control and arousal in the inhibition of online aggression.

Traditional Bullying

Although cyberbullying occurs in a dissimilar domain to traditional bullying, the online behavior is rooted in its offline counterpart. Like cyberbullying, traditional bullying research is somewhat complicated by inconsistent definitions that refer to the behavior in terms of direct physical forms of violence, or in terms of more indirect forms of violence such as harassment and verbal attacks (Ferguson, Miguel, Kilburn & Sanchez, 2007). Fuzzy terminology such as the meaning of "intentional" and whether aggression should be interpreted through the eyes of an outsider or from the perspective of the victim further convolute analysis of the behavior (Smith, 2004). Regardless of definitional constraints, research suggests that while bullying can occur in a variety of environments that the deviant behavior most frequently occurs in school settings among children and adolescents (Ambert, 1994).

In a survey of school bullying among adolescents in the United States, nearly 21% reported that they had been physically bullied at school within the last 2 months, and almost 54% claimed that they had been verbally bullied (Wang, Iannotti, Nansel, 2009). Verbal aggression constitutes "informing another that she or he is bad, possesses negative qualities, or is not meeting some internal or external standard" (Kinney, 1994, p. 4). It can involve "criticism, insults, cursing, or a negative affective reaction" (Greenberg, 1980, p. 108) or attacking the self-concept of another by "insulting the other's character, competence, background, or physical appearance" (Chory-Assad, 2004). Previous studies have found that verbal aggression is the most common form of bullying (Smith, 1994; Craig, Pepler & Atlas, 2000).

A meta-analysis of bullying among adolescents suggested that while males exhibit

physically aggressive behaviors more frequently than females, that differences between the sexes in relation to indirect bullying, which refers to exclusion, social ostracism, social isolation and gossiping, are relatively small (Scheitauer, 2002). Similarly, Wang et al. (1999) concluded that boys were more involved in physical and verbal aggression, whereas girls were more involved in relational aggression, which involves intentional manipulation of peer relationships to damage another individual's friendships and to create feelings of insecurity. Research suggests that traditional bullies tend to come from home backgrounds with less affection, more violence and low parental monitoring (Olweus, 1999) compared to non-bullies, while bully victims are frequently linked to depression, anxiety and low self-esteem (Hawker & Boulton, 2000). The proliferation of the Internet creates a virtual environment in which adolescents can engage in behaviors that closely align with traditional bullying.

Online Aggression

Empirical research involving online aggression is a relatively new undertaking, and the bulk of studies involving the behavior provide little in terms of explanatory utility. Still, descriptive findings provided through preliminary research suggest that online aggression is a behavior of growing concern. Many accounts of online aggression refer to the behavior as flaming. Preliminary flaming studies recognized that many individuals expressed themselves more strongly through the computer than they would in other settings of communication (Kiesler, Siegel & McGuire, 1984). Another flaming study similarly found that incidents of flaming among students increased when they worked together through an anonymous computer-mediated group rather than when they worked

together in a traditional classroom environment (Reinig, Briggs, Nunamaker, 1997). Indeed, many early accounts of flaming attributed the anti-social behavior to a consequence of the disinhibition experienced through computer-mediated communication, whereby a lack of social context and visual cues facilitate a disregard of social standards and conventions (Kiesler, Siegel & McGuire, 1984). Other early accounts alternatively suggested that the behavior is a product of the social norms of the computing subculture rather than a product of a lack of social norms (Lea, O'shea, Fung & Spears, 1992). In an attempt to reconcile the two competing perspectives, Kayany (1998) examined social newsgroups on a primitive Internet discussion system called Usenet. He found that like other media of communication, the tone and emotional content of computer-mediated communication is more strongly affected by the social and interaction context than by the medium itself. However, online affordances provided through the Internet such as the potential for asynchronous communication and a significant physical barrier distinguish online aggression from its offline counterpart.

Through his account of "A Rape in Cyberspace," Dibbell (1993) offered an early example of the type of devastation that aggressive behavior can produce for victims regardless of the medium in which it occurs. A user of a multiplayer computer game used the tools and resources available within the technology to engage in a virtual rape of another player. Despite occurring in a virtual environment, the incident demonstrated that online aggression can lead to emotional trauma, and that the boundaries between what is considered real-life and what is considered virtual reality may not be as clearly distinguishable as previously considered.

Most existing cyberbullying studies describe online aggression in terms of simple

descriptive statistics by identifying the frequency with which the behavior occurs and by describing gender differences. They focus mainly on the aftermath of the behavior. That is, they highlight the behavior's effects on the victim but give little attention to understanding the mindset of the perpetrator and the implications of the characteristics that distinguish online aggression from offline aggression. A clear understanding of the processes behind electronic perpetration is needed not only to understand the behavior, but to inhibit its persistence. Empirically-based, theoretically rich studies are needed to systematically understand online aggression as well as its byproducts.

Motivations for engaging in aggression online differ between individuals. Miller (2006) shed light on how various forms of motivation can lead to categorically distinguishable types of cyberbullies. Miller described multiple categories of online aggressors including "vengeful angels," "revenge of the nerds," "mean girls" and the "inadvertent." Vengeful angels refer to individuals who electronically bully an individual who has bullied them or their friends. In other words, these individuals aggressively retaliate against someone who first behaved aggressively. Revenge of the nerds refers to individuals who bully to have power over others over whom they normally have no power. This category suggests that features inherent to electronic media can empower unlikely traditional bully candidates. The Internet may enable people with physical or social limitations who would otherwise refrain from face-to-face interactions to behave aggressively. Mean girls refer to individuals who get together in a group to cyberbully. The term refers to girls because females more commonly engage in this type of activity; however, males can also get together in a group to bully through electronic communication. Inadvertent refers to individuals who do not know they are doing wrong

when they respond to an upsetting message, or who intend to be playful and do not understand that others could take it seriously. However, the absence of intent in the case of the inadvertent disqualifies the behavior from those belonging to this study's conceptualization of aggression. Miller's categories illustrate potential differences and similarities between offline and online aggression. At the same time, all of Miller's categories, aside from that which characterized the unlikely bully, share similarities with traditional bullying. At the very least, the categories demonstrate that the behavior is manifested through various and perhaps dissimilar manners, and that a variety of factors may promote or inhibit the behavior depending on its primary motivation.

According to a recent survey, 93% of youth ages 12-17 use the Internet (Pew, 2009). This suggests that while nearly all youth in this age group enjoy the Internet's benefits, that they are also at risk for potential downfalls of Internet activity such as interpersonal bullying. Research indicates that around 40-60% of adolescents have been harassed on the Internet and that around 20-30% of them have used electronic communication to harass others (Beran & Li, 2005). In a national survey involving youth and the Internet, one in three teenagers (34.5%) admitted that they had been harassed online in the last year (Ybarra, Diener-West & Leaf, 2007). According to these statistics, many teenagers have neither engaged in nor become victims of online aggression, but an alarming percentage have.

Previous online aggression research outlines a variety of characteristics commonly connected to victimization and perpetration of Internet aggression. A survey about youth and online interpersonal victimization found that 2 in 5 youth were with peers when they harassed others online, and that behaving aggressively online was one of

the most strongly related antecedents to becoming a victim of interpersonal online harassment (Ybarra, Mitchell & Finkelhor, 2007). The study revealed that youth who intentionally embarrassed someone online 3 or more times were among the most likely candidates for becoming victims of online aggression. An earlier survey conducted by the same team of researchers found that those who harass online are generally White, 15-17 year-olds (Ybarra & Mitchell, 2004b). These statistics present a logical cyberbully profile considering that Caucasians in this age group maintain disproportionally high leisurely access to the Internet when compared with most other racial groups and younger individuals. More access creates more opportunity, especially when the access is unrestricted. Those who can use the Internet at their discretion at home are more likely to harass others than those who enjoy only restricted access to the Internet in public locations or who are monitored by their parents. Adolescents who aggress online are not only subjected to infrequent monitoring, but they tend to have poor bonds with their care givers (Ybarra & Mitchell, 2004b). Traditional aggression research has demonstrated a similar pattern, whereby adolescents with highly supportive parents tend to exhibit less aggression (Finkenauer, Engels & Baumeister, 2005). An abundance of research in multiple fields also demonstrates that parental mediation is an important factor in curtailing risky media behaviors (Gentile, Lynch, Linder, Walsh, 2004; Austin, Pinkleton, Fujioka, 2000; Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth & Wartella, 2003; Rosen, Cheever & Carrier, 2008; Livingstone & Helsper, 2008).

Adolescents with parents who monitor their activities online are likely more afraid of the potential consequences of online aggression than are those whose parents allow them free rein over their Internet activities. Still, results from multiple studies suggest

that parents often do not monitor the online activities of their children. A study involving parental monitoring and an online social networking site found that most parents were largely unaware of their child's activities on the site, that they rarely viewed the site, and that they were unsure about the type of information that their child had posted on the site (Rosen, Cheever & Carrier, 2008). Authoritative parents, or those who monitor and impart clear standards for their children's conduct with warmth, have been linked to better choices for teens on the Internet. A telephone survey regarding parenting styles and adolescent Internet activity found that adolescents with authoritative parents are more likely to experience evaluative and restrictive Internet content mediation than children whose parents engage in alternative parenting styles (Eastin, Greenberg & Hofschire, 2006). Another study correlated the authoritative parenting style with the fewest risky Internet activity behaviors, including disclosing personal information (Rosen, Cheever & Carrier, 2008). Thus, parental intervention is an important mediator whether in the form of direct supervision or indirect consequences; however, it is unlikely to occur in the social media venues where cyberbullying takes place.

Most research suggests that males and females are equally likely to engage in online aggression (Werner, Bumpus & Rock, 2009; Ybarra & Mitchell, 2004b; Hinduja & Patchin, 2008), but some studies (Smith, Madavi, Carvalho, Fisher, Russell et al., 2006; Kowalksi, Limber & Agatston, 2008) suggest that girls engage in online aggression more frequently than boys. The notion that females engage in more, if not the same amount of online aggression as males runs contrary to societal conceptualizations of aggression as well as with most accounts of offline bullying (Kowalski & Limber, 2007). Consistent with this perspective, the most infamous incidents of online aggression

involve females rather than males. Indeed, most of the faces belonging to cyberbulling perpetrators and victims in the news media belong to females. Typically, males are not only expected to exhibit more aggression than females, but they are conditioned to do so from a young age through toys, social models and social expectations. Bandura, Ross and Ross (1961) advised that the tendency for males to exhibit more aggression than females can be explained through socialization. They suggested that society makes it more acceptable for males than for females to exhibit trait aggression because boys are raised to behave more aggressively. Studies involving aggression in offline environments support the argument that males tend to exhibit more aggressive behavior than females (Kowalski & Limber, 2007).

If females are indeed just as likely, if not more likely, than males to behave aggressively through electronic forms of communication, gender roles in online aggression starkly contrast those of offline aggression (Kowalski & Limber, 2007). Studies portraying females as likely electronic aggressors do not specifically distinguish between anonymous and private and open and public aggressive encounters. Cyberbullying research tends to lump the behavior into one, non-specific category. However, a fuller understanding of the behavior may illustrate that private and/or anonymous online aggression differs substantially from public and/or identifiable online aggression.

The indirect nature of anonymous and private aggression may partially explain why girls are represented as both perpetrators and victims of cyberbullying more than in traditional bullying. Characteristics of electronic communication (e.g. potential for anonymity) may remove some of the confining social expectations placed on females. If

the identity of the perpetrator is unknown, she cannot be personally judged. Likewise, if the behavior is enacted privately, it is less susceptible to public social expectations.

Characteristics inherent to the online environment can potentially modify dimensions of bullying because they carry a different set of perceived consequences. Anonymity and privacy cannot only eliminate many of the normative social consequence expectations; they can also reduce fear of retaliation. In reality, online aggression is often perpetrated anonymously because the Internet provides a medium through which individuals can misbehave without the fear of immediate physical retaliation (Wolak, Mitchell & Finkelhor, 2007). Physical abilities often empower traditional bullies. A physically tough teenager with a strong desire to fight a weaker teenager can accomplish his goal with few impediments. Conversely, fear of physical retaliation or lack of bullying self-efficacy may restrain a physically weak teenager from engaging in the same type of behavior. Electronic communication greatly diminishes the utility of physical strength, especially when aggressive behavior is enacted anonymously. Anonymity creates the potential not only for unlikely candidates for traditional bullying to become online aggressors, but for victims in the offline world to become bullies in the virtual world without fear of retaliation. Research has yet to empirically ground the notion that electronic communication devices reach their undeniable potential for enabling non-traditional bullies to become cyberbullies. While certain characteristics separate electronic communication from face-to-face communication, the notion that these features play a large role in modifying aggressive tendencies is merely speculative until it is scientifically tested. Online aggression, like offline aggression, may reveal itself to be a derivative of trait aggression rather than a distinctly altered behavior.

To what extent does online aggression truly differ from traditional forms of aggression? Many characteristics of electronic harassment run parallel with their offline counterparts. A majority of bullying occurs in public locations such as the school cafeteria, hallways and playgrounds in the offline world (Swearer & Doll, 2001), but instant messaging, chat rooms, e-mail messages and websites are among the most reported cyberbullying platforms in the online world (Kowalski & Limber 2007; Agstston, Kowalski & Limber, 2007). Traditional bullying is also usually confined to the hours of the school day (Rigby, Smith & Pepler, 2004), but electronic bullying eliminates the barrier that allows bully victims to find solace in the comfort of their own homes. At the same time, virtual environments create a physical barrier to the bully from which some may find comfort. Adolescents can engage in open and public electronic aggression just as easily as they can engage in private or anonymous aggression. Online affordances also facilitate and accelerate group bullying by allowing adolescents to collectively gang up on another person, even when they are not together in spatial proximity. The effects of anonymity and privacy afforded through electronic communication carry little weight when the behavior is perpetrated openly. The behavior likely more closely aligns with offline aggression in these instances.

Despite the ease with which one can anonymously convey hostility through the Internet, harassment by a known perpetrator can incite a more personal form of victimization for the message's receiver. Ignoring an act of online hostility becomes more difficult when the victim knows the attacker personally outside of the Internet. Indeed, online aggression likely aligns more closely with its offline counterpart when it is committed by a known perpetrator because the hostility is more difficult to ignore. The

question then becomes: how will the victim of the online attack respond to the provocation?

Results from multiple studies indicate that online aggression is potentially problematic because it can become part of an ongoing aggressive cycle. Ybarra and Mitchell (2004a) connected traditional bullying victimization with online aggression, indicating that adolescents who are bullied at school may become prime candidates for becoming bullies on the Internet. Numerous studies have presented past Internet victimization as an antecedent to future online aggression (Ybarra & Mitchell, 2004b; Kowalski & Limber, 2007; Wolak, et al., 2007; Werner, Bumpus & Rock, 2009). According to these reports, online aggression often creates a vicious retaliatory cycle in which an aggressive act by one peer can cause an equally, if not more aggressive act of retaliation by the so-called victim and so forth. In some cases, past Internet victims do not necessarily retaliate against their original perpetrator, but have learned that the Internet is a viable medium through which one can effectively engage in aggression. Wolak et al.'s (2007) study revealed that those who were harassed by peers over the Internet were more likely to have used the medium to harass someone they were angry with. Traditional bullying research has also demonstrated that this cyclical pattern is common in offline environments. An offline adolescent aggression study found that individuals bullied at school were significantly more likely to become bullies (Barboza, Schiamberg, Oehmke, Korzeniewski, & Post et al., 2009).

Much work needs to be done to flesh out the different types of cyberbullying. At this point, many of the ideas surrounding the implications of aggression through electronic media rely mainly on descriptive statistics or assumptions about characteristics

of the medium. Thus, most conclusions about the behavior rely mainly on speculation. Anonymous and/or private online aggression may significantly differ from open, identifiable online aggression. This study notes the importance of examining anonymous and private cyberbullying, but it looks specifically at open, identifiable online aggression within the context of computer-mediated provocation from a known perpetrator. It seeks to understand this particular type of aggressive behavior and to identify factors that promote and inhibit the behavior. Its main goal is to identify manners through which to impede online aggression, and thus the vicious retaliatory aggression cycle demonstrated in previous research. The present study's original contribution is to examine online aggression through a theoretical framework, to present trait and state self-control as valuable additions to the GAM, and to ascertain the value of exposure to anti-aggressive behavioral stimuli in restraining online aggression. Chapter 2 aims at grounding the behavior of cyberbullying within an explanatory and predictive theoretical framework.

Chapter 2

Theoretical Background

Media Effects

Two gunmen shot and killed twelve of their fellow classmates and one teacher before killing themselves at an affluent Colorado High School in 1999. Heartbreaking episodes such as the Columbine massacre have called attention and harsh criticism to a culture of media violence produced from movies and video games. Attempts to understand the tragic anger and rage of two seemingly unlikely killers led many people throughout the nation to point fingers of culpability at parental guidance and the negative outcomes of social exclusion. The search for an answer also left many fingers pointing directly at the media. According to one media critic, "Investigators found a strong connection between violent video games and the Columbine shootings, as well as other high school shootings here in the U.S. and Europe" (Tomeo, 2007).

Public television and radio networks saturated news coverage with stories revolving around uncanny similarities between the violence depicted in the video games and the movies that contributed to the Columbine killers' mediated experiences. For instance, the protagonist in The Matrix, a motion picture that had been recently released, wore a black trench coat and carried multiple automatic pistols as he raged against his antagonists. Many argued that the real-world scene that unfolded in the unsuspecting high school halls of Columbine appeared too eerily similar to be discounted as completely coincidental. Subsequent school violence incidents such as the tragedies that unfolded at Virginia Tech and Ecole Polytechnique drew similar comparisons. On a smaller scale, people continually question the effects of violent video games on individuals who spend

much of their free time absorbed in severely aggressive interactive content. They argue that the unique interactive capabilities of video games, more than television or film, may make them even more influential (Children Now, 2001).

Associations between violent episodes such as school shootings and media content are easily drawn, yet few conclusions made by the greater public are grounded in scientific research or theory. For most individuals, the media do not exert the direct and powerful influence widely postulated after the Columbine incident. Potential connections between media content and aggressive behavior present a clear call to understand the implications of media effects. Some media effects literature argues a more restrained interpretation of the effects of violent media on aggressive behavior (McGuire, 1986; Freedman, 1988; Ferguson, 2009). They advise that aggressive media stimuli, while potentially influential, are not always as directly powerful as some may believe. On the other side of the debate, meta-analytic reviews of violent stimuli and aggressive behaviors strongly advise that the connection between media violence and aggression is undeniable (Wood, Wong & Chachere, 1991; Paik & Comstock, 1994; Roskos-Ewoldsen, Roskos-Ewoldsen & Carpentier, 1994; Bushman & Anderson, 2001).

The Magic Bullet Theory (or Hypodermic-Needle), a primitive explanation of media effects, emphasized the potent persuasive powers of the media in shaping perspectives and actions. The idea that media are so strong that individuals largely absorb messages without filtering or selectively interpreting the content has been largely discredited (Sproule, 1989; Greenberg & Salwen, 1996). For some individuals, such as children, magic bullet-type effects are more likely. Mediated information has more potential to exert influence over people who have had little to no direct contact with a

matter because they lack a sufficient method for evaluating information (Liebert & Schwartzberg, 1977; Fujioka, 1999). For instance, a television character who complains that everyone has a monster under their bed would more likely terrify a young child than a seasoned adult. Likewise, a television character who suggests that hitting one's brother results in a delicious candy bar would doubtfully convince a mature, experienced individual. The media's strong influence is more likely to affect children because their knowledge structures closely resemble a blank slate or a sponge.

Children develop their understanding of the world in which they live during the critical stages of childhood and adolescence. Various life experiences educate them in the social roles, societal constructions, and behaviors that their environments generally accept. Bandura and colleagues (1961) demonstrated the potentially detrimental influence of violent media on children through social learning. Children in their experiment viewed one of three films with an adult attacking a blow-up doll with a stick. The first film featured the adult hitting the doll without reward or consequence. The adult was rewarded and praised after hitting the doll in the second film, and the adult was punished after hitting the doll in the third film. Children were left alone with a similar doll after viewing the film. Those who viewed the punishment condition behaved significantly less physically and verbally aggressively towards the doll than did children in the other treatment groups. These experiments provided support for Bandura's social learning theory, which advises that children can learn behaviors such as aggression from watching and imitating others.

Aggressive scripts learned during childhood often form the basis for the individual's knowledge structure and can become activated throughout the individual's

lifetime. Repeated exposure to parallel messages increases the knowledge structure's strength and accessibility. Through social learning, magic bullet-type explanations of the effects of media content on children are somewhat more viable. However, by the time children reach adolescence and young adulthood, years of socialization, interaction with family and friends, and life experiences create much more complex knowledge structures from which they interpret media messages. Mediated content can still affect the adolescent or adult, but knowledge structures and personalities filter the effects of the content on behavior.

A meta-analysis of media violence (including television, movies, video games music and comic books) and aggressive behavior considered the links between media violence and short and long-term effects (Bushman & Huesmann, 2006). Through combining the results of multiple studies, it found that short-term media effects were greater for adults than for children, whereas long-term effects were greater for children than for adults. The analysis argued that short-term effects through priming are more likely to affect adults because they rely on well encoded scripts, schemas or beliefs which adults have had more time to develop than have children. On the other hand, long term media effects require the encoding of scripts, schemas or beliefs to which children are more receptive through observational learning.

Along the same lines, one probable explanation for how media violence affects individuals involves desensitization through cultivation. For example, repeated exposure to portrayals of women in the media has been linked to sexual harassment, violence against women, and eating disorders (Lavine, Sweeny & Wagner, 1999). Cultivation theory advises that continual exposure to mediated reality can cultivate beliefs about

violence and thereby conduct (Gerbner & Gross, 1976; Dixon & Linz, 2000; Bandura, 1986). The media create pictures in viewers' heads that serve as knowledge of reality. Media messages can portray the world as being more violent than reality would suggest. They can also depict violence and aggression as acceptable behaviors if the individual possesses a meaningful motivation.

Many films feature antagonists who shoot, kill or fight in the name of revenge or to fulfill a basic need. Bandura (1986) proposed that drawing from media experiences may cause children to develop false beliefs about the real world. Insufficient information derived from media such as television, movies and video games may produce thought-processing errors. Television messages and video game content can be internalized through massive and continuing exposure. Cultivation provides a logical explanation for the manner through which media content can affect individuals, yet providing empirical support for the theory proves somewhat difficult. By definition, testing the theory requires a long-term longitudinal research design that lasts throughout a long portion of the participants' lifetimes (Bushman & Huesmann, 2000, p231). Tests are susceptible to many confounds as well as to attrition.

The General Aggression Model (Anderson & Bushman, 2002), the successor of the General Affective Aggression Model (Anderson, Deuser & DeNeve, 1995), has become the resident theory used to explain and predict the effects of media on aggressive behavior. The theory is more robust than previous media effect theories because it can be used to understand all types of aggressive behavior, not only those confined to the media. Through its incorporation of many previous theories of aggression and human behavior, the GAM has the ability to elegantly combine and account for many previous media

effect theories. Models integrated into the GAM's theoretical framework include Bandura's social learning theory, Berkowitz's Cognitive Neoassociationist Model, Dodge's social information-processing model, Geen's affective aggression model, Huesmann's social-cognitive model of media violence effects, and Zillmann's excitation transfer model (Anderson & Dill, 2000).

The GAM proposes that aggressive behavior, or lack thereof, is affected by various input variables (e.g. situation cues and individual differences), internal state variables (e.g. cognition, affect and arousal), and appraisal processes. It accounts for one of the Magic Bullet Theory's primary deficiencies through its proposition that factors and differences related to the individual influence the effects of violent media on behavior. Although most GAM applications are cross-sectional in nature, it also accounts for one of the cultivation theory's major propositions, that exposure to messages and images can affect behavior through long-term internalization and memory. These effects are discussed further within the discussion of the GAM in the next section.

The GAM has become well established within the field of media research. The primary concern of several GAM media studies is to address societal criticisms relating to detrimental media by explaining the effects of video game violence (Anderson & Bushman, 2002; Kirsh, 2003; Giumetti & Markey, 2007) and violent films (Bushman & Geen, 1990; Anderson, 1997; Anderson, Dueser & DeNeve, 1995) on aggressive behavior. Few GAM studies focus on the implications of aggression and how it relates to the Internet. However, the GAM's utility in understanding aggression involving alternative forms of media leads naturally to its application to the Internet.

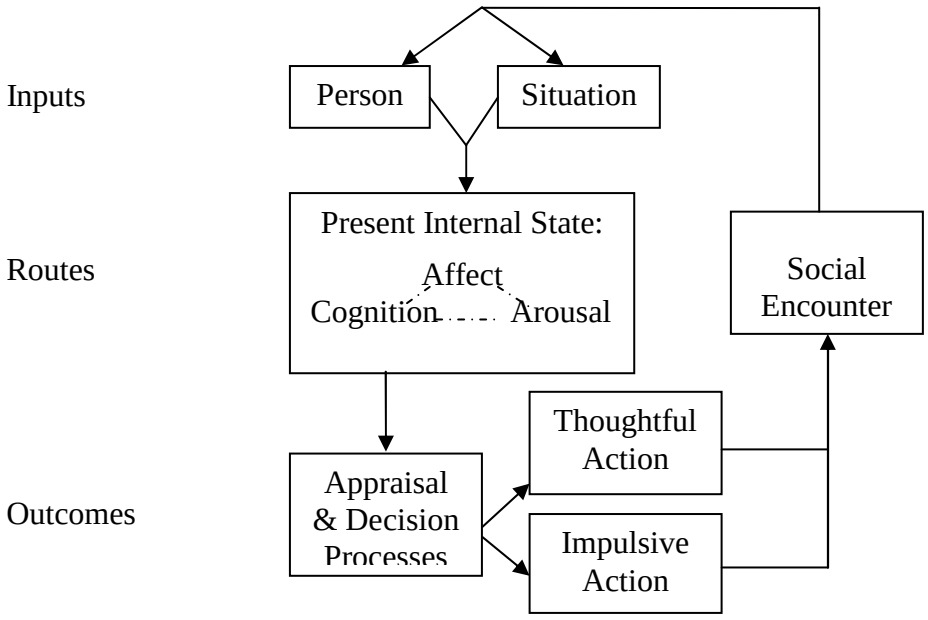
The General Aggression Model

The GAM calls attention to interactions between factors related to the individual and to the situation to understand aggressive behavior. Specifically, it proposes that aggressive behaviors result from a variety of input variables, present internal state variables, appraisal processes and outcome variables. Early tests of the theory focused primarily on the effects of aggressive stimuli (Bushman & Geen, 1990) and unpleasant conditions (Anderson et al., 1996; Anderson & Bushman, 2002) on aggressive behavior through cognition, affect, and arousal. Many of these tests illustrated the potential of exposure to aggressive behavioral stimuli to adversely affect aggressive behaviors, but they did not fully account for important personality factors that the aggressor brought to the situation. The interaction between person factors (e.g. trait aggression) and situation factors (e.g. aggressive stimuli) have become the primary concern for the theory's later development (Joireman, Anderson & Strathman, 2003).

The GAM provides an ideal framework for understanding online aggression although most of the studies to which the theory has been applied involve media environments such as video games or television. While the theory's utility in terms of understanding bullying and other offline situations has been discussed above, the GAM has yet to be fully explored outside of the media realm. However, the type of aggression depicted in this study is verbal in nature, and previous studies have applied the GAM to verbal aggression. A longitudinal study that utilized components of the GAM found that students who reported a high level of exposure to violent video games at the beginning of the school year scored higher on both verbal and physical aggression at the end of the year (Moller & Krahe, 2009). Media violence exposure was associated with all types of

aggression for boys, but only for verbal aggression for girls. In another study, participants who were exposed to a verbally aggressive television sitcom produced a significant number of verbally aggressive cognitive responses and produced more verbally aggressive cognitive responses than did participants exposed to a crime drama (Chory-Assad, 2004). Examination of the online aggression phenomenon requires a dynamic theory such as the GAM that can effectively account for and incorporate both the situational components of the mediated environment and the characteristics of the individual that ultimately substantially contribute to the behavior. The GAM's proposed relationships (Anderson & Bushman, 2002) are depicted in Figure 1.

Figure 1 The General Aggression Model (Source: Anderson & Bushman, 2002)



Present Internal State and Input Variables

The GAM suggests that an individual's present internal state mediates the input

variables' impact on the final outcome behavior. For example, situational input variables such as pain, uncomfortable temperatures and exposure to violent movie clips have all been shown to result in increased aggression (Anderson & Bushman, 2002). Activating these situational factors can lead to increased levels of hostile affect, cognition and arousal, which namely account for the internal present state components of the GAM. Cognition involves highly accessible aggressive scripts and hostile thoughts. Scripts refer to concepts stored in memory that develop over time from life experiences and that guide plans, actions, and social interactions (Schank & Abelson, 1977). Hostile thoughts directly refer to an individual's active contemplation of enacting hostile behavior. Studies examining the effects of viewing weapons (Berkowitz & LePage, 1967; Bartholow et al., 2005) or violent media (Bushman, 1998) on aggressive behavior have demonstrated that imagery with violent associations often stimulate aggressive cognitions.

Affect refers to an individual's situational mood and emotional state. Affect in the GAM directly involves state hostility which refers to the degree of momentary anger felt by the individual. Many studies examining the effects of state hostility on aggressive behavior have found that increased anger leads to aggressive behavior. A study involving workplace aggression demonstrated that angry individuals, or those in negative emotional states, were more likely to behave aggressively towards customers (Grandey, Dickter & Sin, 2000). Another study similarly found that negative mood states resulted in aggressive behavior when combined with the belief that aggressive behavior is good for one's mood state (Bushman, Phillips and Baumeister, 2000). Similarly to the effects of stimuli on cognition, studies examining the effects of violent media (Bushman & Geen,

1990) on aggressive behavior have demonstrated that imagery with violent associations often stimulate state hostility.

Input variables include two components: situational factors and person factors. Situational factors refer to any important aspect of the situation including presence of a provocation, aggressive cues, frustration, pain, induced discomfort, drugs, and incentives (Anderson & Bushman, 2002). Acts of provocation not only make certain individuals angry and produce hostile thoughts; they also provide an impetus for aggressive behavior which may otherwise not exist. The GAM specifies that provocation primes aggression related cognition, affect, and arousal. Vasquez, Denson, Pedersen, Stenstrom and Miller (2005) manipulated provocation by provoking some, but not all, participants through degradation and insult and by subsequently exposing all participants to a neutral, mild or moderately strong triggering event. Results indicated that aggressive behavior is greatest for previously provoked individuals who are exposed to mild triggering events.

Individuals in another study exhibited escalated aggressive behavior if they were strongly, rather than weakly provoked (Kramer, Jansma, Tempelmann & Munte, 2007). The studies differ on whether strong or weak provocation is likely to result in aggressive behavior. Vasquez et al. (2005) share the perspective with a previous study (Pederson, Gonzales, Miller, 2000) that similarly concluded that mild provocation may increase aggression beyond strong, repeated provocation because the latter increases motivation for escape or avoidance. The studies' divergent findings could also be explained through the type of provocation used to incite aggression. Vasquez and colleagues provoked individuals through direct insult and degradation, while Kramer and colleagues provoked individuals in a more passive manner by "punishing" them with high noise levels. The

former provocation circumstance challenged individuals on a personal level while the latter was part of a more trivial game. Despite potentially conflicting conclusions, results from both studies are consistent with the GAM's theoretical framework. Provocation affected aggressive behavior through cognition, affect and arousal. Kramer et al.'s (2007) study demonstrated these effects by monitoring which parts of the brain were activated by provocation.

Aggressive cues are objects that prime aggression-related concepts in memory and are particularly applicable to studies involving the channels through which media impact aggressive behavior. The GAM indicates that input variables such as aggressive behavioral cues may influence later aggression by temporarily augmenting hostile feelings and hostile thoughts. Berkowitz and LePage (1967) found that the mere presence of guns (versus badminton rackets and shuttlecocks) increased the aggressive behavior of angered research participants. Individuals administered more electric shocks to another person if they were exposed to the weapon than if they were not exposed to the weapon. Other studies have also found that the presence of guns or other aggressive cues increase the accessibility of hostile thoughts through automatic priming (Anderson et al., 1998; Bartholow, Anderson, Carnagey & Benjamin, 2005; Meier, Robinson & Wilkowski, 2007). Bushman and Geen (1990) similarly found that violent media can affect hostile thoughts. After exposure to either a violent or a non-violent movie clip from popular movies, participants were asked to write down their thoughts as they watched the tape. Those exposed to the non-violent movie wrote fewer hostile thoughts than those exposed to the violent movie.

Although the GAM provides an avenue through which aggressive behavioral cues

can affect behavior through both cognition (hostile thoughts) and affect (hostile feelings), many studies have only empirically supported the latter. Some studies (e.g. Berkowitz & LePage; 1967; Anderson et al., 1998; Bushman, 1998) looked for a purely cognitive route to aggression from aggressive primes without considering affect, which may partially account for the discrepancy. However, some studies that tested for both cognitive and affective effects found that aggressive behavioral cues (e.g. a photo of a weapon or a violent film) influence the cognitive route, but not the affective route to aggression (Anderson et al., 1996; Anderson et al., 1998). Despite this finding, other research has revealed an important link between comfort and aggressive affect. A GAM study by Anderson et al. (1996) found that uncomfortable temperatures increased state hostility but did not affect hostile thoughts.

Some of the literature on this topic revealed both affective and cognitive effects. A GAM study demonstrated through multiple experiments that violent song lyrics can detrimentally affect internal processes. After exposure to violent song lyrics, individuals felt more hostile and maintained more hostile thoughts than those who listened to a similar but non-hostile song (Anderson, Carnagey & Eubanks, 2003). The effects of exposure to violent film clips on both state hostility and hostile thoughts have been demonstrated through multiple studies (Bushman & Geen, 1990; Anderson, 1997; Anderson et al., 1995). After exposure to film clips varying in degree of violence, individuals who viewed the most violent of the videos, which depicted killing and guns, maintained more hostile thoughts and state hostility than those who viewed the other videos (Bushman & Geen, 1990).

Two possibilities emerge through these discrepant findings. The first is that the

aggressive cues used in the studies that only measured cognition may also have influenced affect but were unable to include the effect within the analysis because they did not test the relationship. The second possibility is that the behavioral cues in question would have only affected cognition, and that the route affected by the input variable depends on the type of behavioral stimulus.

For example, studies finding only a cognitive effect (Berkowitz & Lepage, 1967; Anderson et al., 1998) primed aggressive internal states through weapon cues while studies finding both cognitive and affective outcomes (Bushman & Geen, 1990; Anderson, 1997; Anderson, Dueser & DeNeve, 1995) primed cues through violent movie clips. Hostile thoughts are frequently measured through self-reported desires for revenge, and exposure to weapons could easily amplify this desire by activating aggression-related memory concepts by visually providing a mean through which one can enact revenge. Alternatively, exposure to a weapon cue would not necessarily increase an individual's angry feelings. Violent films, on the other hand, may affect both cognitive and affective channels because people often identify with and become attached to media characters through multiple mechanisms including parasocial interactions. In many cases, individuals may have formed revenge-related desires and feelings of anger on behalf of the media character or because they shared common life experiences with the media character.

While most aggression-related research uses either violent or non-violent stimuli, the current study proposes that similarly to the manner through which exposure to aggressive stimuli influence aggressive behaviors, exposure to anti-aggressive stimuli may prove useful for curtailing aggressive behaviors by activating anti-aggressive

concepts in memory. Previous literature that has demonstrated the utility of pro-social stimuli in affecting behavior provides support for this proposition (Huston-Stein and Friedrich, 1973; Greitemeyer, 2009; Greitemeyer & Osswald, 2010).

Person factors, or individual differences, comprise the second component of the GAM. They include the characteristics that an individual brings to a potentially aggressive situation, such as personality traits, attitudes, beliefs, values and genetic predispositions. Recent GAM applications have explored how person factors influence the effects of situational factors such as violent imagery on aggressive behaviors. Several studies have highlighted the importance of trait aggression as an individual difference for its influential power on multiple aggression-related mechanisms. Trait aggression, or trait hostility, refers to "an individual's characteristic pattern of aggressive behavior across development" (Kirsh, 2006, p. 286).

Previous research has demonstrated that trait aggression increases state hostility as well as hostile thoughts (Bushman & Geen, 1990; Lindsay & Anderson, 2000; Anderson, 1997). Research not only emphasizes the importance of trait aggression in predicting aggressive behavior, it also suggests that factors within the GAM's theoretical framework may disproportionately affect individuals based on their level of trait aggression. For example, exposure to aggressive stimuli may not affect high trait aggression individuals. In a particular instance, watching violent movie clips increased hostile thoughts for low trait aggression individuals, but had little to no impact on those classified as high in trait aggression (Anderson, 1997). Anderson suggested that high trait aggression individuals may be so chronically primed for aggressive stimuli that exposure to aggressive primes has little impact on them. In other words, aggressive

stimuli may generate hostile thoughts and anger for low trait aggression individuals, whereas high trait aggression individuals may not need the added stimulus.

Attitude and self-efficacy represent other important individual difference variables for aggressive behaviors in the GAM. Attitude refers to "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly & Chaiken, 1993, p. 1). Similarly to the Theory of Planned Behavior (Ajzen, 1985), the GAM proposes that an individual's attitude significantly impacts behavior, such that individuals who maintain positive attitudes towards violence are more likely to engage in violent behaviors. To illustrate, a study involving parental aggression against umpires at baseball games found that parents who maintained hostile attitudes were more likely to behave aggressively towards umpires (Hennessy & Schwartz, 2007). Attitudes have also demonstrated predictive utility in bullying research. Survey-based school studies have found that participants who report negative attitudes towards bullying are significantly less likely to emerge as bullies (Pellegrini, Bartini & Brooks, 1999; Salmivalli & Voeten, 2004).

Not surprisingly, studies investigating traditional bullying have found that most school-aged children and adolescents think that bullying is an inappropriate course of action and they maintain attitudes in clear opposition of the behavior (Boulton, Bucci & Hawker, 1999; Randall, 1995). However, these studies did not measure attitude in terms of potential outcomes of the behavior, but in terms of prescriptive social norms that reflect the individual's perceived morality of bullying. Aspects of more general behavioral theories such as the Social Cognitive Theory (Bandura, 1986) and the Theory of Planned Behavior (Ajzen, 1985) paint a more detailed picture of the motivation behind

attitudes. These theories suggest that attitudes about behaviors are influenced by outcome expectations in which individuals evaluate likely rewards or consequences of engaging in a particular behavior. For example, an individual will more likely develop a positive attitude towards aggressive online behavior if she believes that her actions will produce no consequences or that the beneficial outcomes will outweigh potential consequences.

An outcome expectation thought process resulting in a positive conclusion will likely result in a positive attitude toward online aggression. This process is extremely useful in understanding the route through which an individual's attitude may affect their behavior, yet it is potentially problematic in measuring the construct by any method other than through reflective self-report. The fact that many aggressive behaviors are not planned but impulsive, may account in part for why some studies involving traditional bullying have found only moderate correlations between pro-bullying attitudes and bullying among school children (Salmivalli & Voeten, 2004). Especially in the case of retaliatory aggression, an individual may maintain a generally negative attitude towards aggressive behaviors, but a specific, time-sensitive situation in which the individual has been provoked may produce a dissimilar attitude from that which their general attitude would predict.

The heart of this study focuses on retaliatory, rather than unprovoked aggression. Topalli and O'Neal (2003) refer to retaliatory aggression as a transient aggressive state in which the perceiver must "1) experience anger, 2) judge the egregious behavior of the provoker to have been deliberate, and 3) believe the act of retaliation to be achievable and pending." The combination of anger and perception of deliberate hurtful behavior by the

provoker may temporarily overshadow the individual's general attitude towards aggressive behavior. Furthermore, impulsive responses to provocations likely do not account for an individual's general attitude towards aggression as fully as do carefully planned responses.

Similarly to Bandura's Social Cognitive Theory, the GAM proposes that self-efficacy beliefs are important antecedents to aggressive behavior. Individuals who believe that they can successfully engage in aggressive acts and that those actions will produce desired outcomes are more likely to engage in aggressive behaviors than those who believe otherwise (Anderson & Bushman, 2002).

For example, someone who believes that he cannot win a fight against a bigger or stronger attacker will likely resist the temptation to engage in physical brawl. The same individual may, however, engage the attacker in a verbal dispute if he believes that he can outwit or emotionally hurt the individual. While electronic communication eliminates some of the physical barriers presented by traditional bullying, low levels of self-efficacy may persist in deterring a physically weak adolescent who has considered cyberbullying as a means of retaliation against a real-world bully from performing the behavior. In all likelihood, self-efficacy has the potential to both promote and restrain online aggression. It can protect individuals from becoming recurring victims of bullying, but it can promote the belief within potential bullies that they can successfully engage in the aggressive behavior. Although self-efficacy is generally described as an important antecedent to aggressive behaviors, most GAM literature in which it appears reference its importance without empirically testing its utility.

Existing GAM literature has identified trait aggression, attitude and self-efficacy

as important individual differences for impacting aggression. The theory clearly recognizes person factors such as these as important antecedents to aggressive behaviors. However, to the author's knowledge, an individual's overall ability to successfully engage in self-control has been neither explicitly identified nor fully explored within the GAM. Trait self-control refers to the capacity to exert control over the self by the self (Baumeister & Exline, 2000) and involves an individual's ability to consider alternatives before acting, to engage in self-discipline, and to forgo present pleasurable experiences that will prove detrimental in the long-run. This study posits that an individual's self regulatory capacity should impact aggressive behavior through influencing multiple components of the GAM, including the individual's ability to engage in state self-control. Specifically, high levels of self-control should facilitate effective self-observation, such that the GAM components that lead to aggressive behavior, such as hostile cognition and affect, are counteracted by self-discipline and the individual's ability to consider potential future consequences and restrain violent impulses accordingly.

Outcome Variables

The final stage of the GAM model is outcomes, which includes appraisals and decision processes. In this process, an individual may engage in an immediate appraisal which is automatic, or a reappraisal which involves searching for an alternative view of the situation. The former should result in an impulsive action, while the latter should result in a thoughtful action (Anderson & Bushman, 2002). The current study proposes that state self-control occurs during the reappraisal process. The study also proposes that individuals who are high in trait self-control will more likely engage in the reappraisal

process than in the immediate appraisal process, and that they will more likely refrain from aggressive behaviors online.

A New Variable for the GAM: Self-Control

The concept of self-control closely relates to sensation-seeking, impulsivity and consideration of future consequences which previous GAM research has linked to aggression. In a survey-based methodology guided by the GAM, Joirman and colleagues (2003) found that aggression was positively related to sensation-seeking and impulsivity and negatively related to consideration of future consequences. They also experimentally manipulated anticipated consequences of an aggressive act. After experiencing criticism from an experimenter, participants were offered the opportunity to negatively evaluate the individual with whom they were told they would have no future interaction, possible future interaction, certain future interaction or certain immediate interaction. Aggression was most evident in cases with diminished perceived consequences, such that individuals believed they would have little to no future interactions with the evaluator.

Perceived consequences likely play a substantial role in anonymous forms of online aggression. Individuals who aggress anonymously online most likely consider future consequences to be relatively low or non-existent because the victim is unaware of their aggressor's identity. Perceived consequences generate potential motivation for self-control, yet the self-discipline dimension of self-control may still inhibit aggression in cases with few consequences for the perpetrator. In instances of online aggression when adolescents contemplate whether to openly bully their classmates, consideration of future consequences likely inhibits more individuals. For example, when cyberbullies perceive

their identities as known, they may perceive the risk of potential retaliation, parental consequences, school punishments, or even possible legal penalties depending on the severity of the behavior. The perception that engaging in socially undesirable behaviors could ultimately produce seriously negative future consequences can significantly impede aggressive behavior if the individual can control impulsive inclinations. However, behaviors are occasionally outside of an individual's volitional control.

Impulsivity and disinhibition present two constructs that undermine an individual's volitional control. Together they embody two related factors that are said to typify adolescence (Pechmann, Levine Loughlin & Leslie, 2005). Applying these measures to behavior, highly impulsive individuals frequently take actions without carefully thinking through or considering possible consequences. Convincing impulsive cyberbullies to modify their behaviors may prove to be particularly challenging because rationally appealing to their fears with potential consequences will unlikely obstruct negative behaviors.

Disinhibition is a dimension of impulsivity which is characterized by a low capacity to control response inclinations (Colder & Stice, 1998) and weak inhibitory control leads adolescents to pursue risky behaviors (Pechmann et al., 2005). Understanding the role that impulsivity and sensation-seeking play during adolescence may be of particular importance to understanding online aggression. Both of these characterizations of impulsivity suggest that an individual's level of control or regulatory abilities over their own actions are key to understanding why some individuals tend to be more impulsive than others. Indeed, disinhibition has emerged as one of the most significant predictors of physical aggression in prior research (Joireman et al., 2003).

Some adolescents are more impulsive than others and are therefore more likely to engage in problematic behaviors (Pechmann et al., 2005) such as cyberbullying. However, the asynchronous nature of the Internet, which affords individuals with time to think without the pressures of a real-time audience, may suppress impulsivity in ways that it is not suppressed in traditional bullying.

Adolescents are less likely than adults to use cognitive strategies to control their behaviors and are less able to regulate emotions (Gross & Levenson, 1997). Pechmann and colleagues (2005) suggested that weak inhibitory control leads adolescents to pursue risky behaviors and that some adolescents are more likely to engage in problematic behaviors because they maintain high levels of impulsivity. Their review of adolescence and impulsivity noted that neurobiological changes occurring during adolescence cause adolescents to be more impulsive than adults.

Impulsivity should be considered in the case of cyberbullying if for no other reason than that the majority of perpetrators are young individuals. Colder and Stice (1998) measured impulsivity through multiple items including the following: “Before making a decision I usually try to consider all sides of an issue,” and “I rely on careful reasoning before making up my mind.” Measuring dispositional self-control in a similar manner, Finkel, DeWall, Slotter, Oaten and Foshee (2009) found that high self-control related to significantly fewer acts of interpersonal violence.

Pechmann et al. (2005) make a clear case for understanding the importance of impulsivity in behavior during childhood and adolescence. However, impulsivity and disinhibition do not affect all adolescents equally. Therefore, it cannot be assumed that all adolescents, or even the majority, frequently behave aggressively online for impulsive

or irrational reasons. Like self-control, impulsivity can vary across settings and domains of behavior; however, many impulsivity studies treat the construct as a trait. For example, Colder and Stice (1998) found that impulsivity was more strongly associated with delinquent behavior for males than for females. This gender-based difference in impulsivity may also be closely related to why most aggression studies (e.g. Bandura et al., 1961; Kowalski & Limber, 2007) identify males as exhibiting more aggressive behaviors than females. Colder and Stice's research suggests that males are less likely to control their impulses, which results in more gender specific delinquent and aggressive behavior. Multiple descriptive studies (Agstston et al., 2007; Smith, Madavi, Carvalho, Tippet, 2006; Kowalksi, Limber & Agatston, 2008) have found that a significant proportion of online aggressors are females. Interpreting Colder and Stice's findings through this perspective suggests that females' problematic behavior likely does not result from impulsivity alone.

Furthermore, impulsivity does not equally affect all adolescent age groups. Research related to impulsivity and age has shown that impulse control and self-control improve gradually with age and experience, developing fully in late adolescence and early adulthood (Pechmann et al., 2005). Age implications are particularly relevant to online aggression because cyberbullies tend to be high school-aged rather than middle school-aged which contrasts much of the bullying that occurs in traditional environments (Ybarra & Mitchell, 2004; Hinduja, 2008). Under this assumption, many if not most cyberbullies are older and in the latter stages of adolescence. At this stage of development, impulsivity should play a less substantial role because an individual's level of self-control should be able to better counteract many impulsive desires.

The affordance of time after a provocation likely promotes self-control and consideration of possible consequences, thereby restraining impulsivity and aggressive behaviors. A study involving the effects of self-control on violence in interpersonal relationships manipulated response time after provocation by asking participants to respond either immediately after being provoked or to respond after 10 seconds (Finkel et al., 2009). Participants were more likely to exhibit signs of aggressive interpersonal violence when they responded immediately after the provocation than if they were afforded a 10 second delay.

Time pressure situations that require immediate responses likely restrict one's ability to effectively engage in self-control if self-control is external to the individual's automatic tendency. For example, the immediate response demanded from a time sensitive offline provocation may obstruct one's self-regulatory capabilities. Finkel and colleagues' research clearly demonstrates that people select more constructive courses of action when they are afforded time to think. Aside from instances in which individuals engage in forms of synchronous Internet communication, the self-regulatory capabilities of those who are provoked online have the potential to benefit from the asynchronous nature of the online environment if they do not immediately respond to their attackers. The Internet provides an opportunity that is generally not granted to individuals who are provoked offline: the opportunity to think through alternatives before acting and to consider potential future consequences.

This chapter focused specifically on understanding online aggression through theories of media research with a particular focus on the General Aggression Model. It looked specifically at why the construct of self-control should be added to the theoretical

model, and it made a case for why the concept is important to aggressive behaviors. Chapter 3 discusses hypotheses related to the GAM by taking a closer look at the roles of self-control and the activation of visual behavioral stimuli in online aggression.

Chapter 3

Hypotheses

Self-Control

Civilization is often defined by the ability of citizens to conform to societal demands by inhibiting their undesirable, antisocial impulses. Without self-control reinforced by personal and collective standards, an organized society would experience extreme chaos. Societal confines and individual self-control stop people from stealing, killing, cheating and engaging in other forms of socially undesirable behaviors. Despite societal boundaries and social desirability, the capacity to control one's self varies between individuals. Most people tend to lose control when they fail to actively monitor their actions. Some people succumb to antisocial behaviors because they fail to control their impulses, but others are better able to regulate their instinctual inclinations.

Literary accounts of the behavior use the terms self-control and self-regulation interchangeably (Baumeister & Vohs, 2003; Finkenauer et al., 2005). Self-control refers to one's capacity to inhibit and override socially unacceptable and undesirable impulses through altering and regulating one's behavior, thoughts and emotions (Baumeister, Herton & Tice, 1994; Carver & Scheier, 1998; Muraven & Baumeister, 2000 & Finkenauer, Engels & Baumeister, 2005). Consideration of its definition alone provides a potential avenue through which self-control may interact with existing GAM variables to inhibit socially undesirable behaviors such as online aggression. Situational factors such as provocation affect aggressive behaviors through cognition and affect. While the GAM proposes that thoughts and emotions contribute to increased aggressive behavior, a

conceptual understanding of self-control provides that one can regulate their thoughts, emotions and behavior. The relationship has not been tested; however, in theory, self-regulatory capacity should assist individuals with negative cognitive and affective states by inhibiting detrimental thoughts and emotions leading to aggressive behaviors.

While some people possess a natural inclination to control undesirable tendencies, others tend to exhibit their self-regulatory deficiencies whenever an opportunity arises. Rigid societal confines help individuals regulate potential desires for extreme forms of socially undesirable behavior such as murder. Many of the same individuals may find it harder to regulate their desires to stay on the couch with a bag of potato chips when they believe that they should be exercising, which illustrates that self-control is domain specific.

Successful exertion of self-control requires the acquisition of resources that can promote desirable behaviors by inhibiting a variety of undesirable ones. These resources include personal standards, an active monitoring process and the capacity to alter one's behavior (Bandura, 1991; Baumeister, 2002). For example, developing and maintaining strong personal standards against undesirable behaviors such as online aggression can help to inhibit undesirable behaviors. The ability to actively monitor personal standards in the presence of frustrating situations reinforces the strength of personal standards. The monitoring process alerts the individual to when personal standards need to be adhered to. Finally, the capacity to alter one's behavior is needed to successfully adhere to personal standards after becoming aware. Failure of any of these variables can undercut self-regulation.

As a person factor, self-control may effectively impede aggressive behavior by

modifying the relationships between multiple components of the GAM. For example, the GAM specifies that situation factors, such as violent stimuli or provocation, can lead to increased hostile cognition, affect, and arousal through the activation of aggressive scripts. Someone with a high self-regulatory capacity, whose personal standards run contrary to exhibiting anger and highly hostile thoughts, may use self-control to counteract the effects of the aggressive situation by maintaining low levels of hostile thoughts and anger. Further down the line in the GAM model, self-control may also be used to moderate the effects of the present internal state variables on aggressive behavior. The GAM suggests that present internal state variables such as state hostility and hostile thoughts lead to aggressive behavior. An individual may find it difficult to completely block the development of hostile thoughts and anger after experiencing an aggressive provocation or after exposure to violent stimuli. However, for the individual whose personal standards run contrary to aggressive behavior, the monitoring process component of self-control that alerts the individual to when personal standards need to be adhered to may help the individual to refrain from aggressive behavior, despite exhibiting high levels of hostile thoughts and anger. Self-control is considered an important precursor to many behaviors that require the inhibition of impulses. Many people instinctually respond to aggressive provocations with equally aggressive behavior. Walking away from a situation after provocation or confronting the perpetrator in a constructive, rather than destructive manner requires the exertion of willful self-control.

While lacking empirical support within the tradition of GAM research, self-control likely contributes substantially to aggressive and impulsive media-related behaviors such as online aggression. Previous research has revealed a negative link

between self-control and anger. Individuals with high levels of self-control were less angry in general than low self-control individuals in Tangney et al.'s (2004) study. Indeed, trait aggression has emerged as one of the most important predictors of aggression related processes (Bushman & Geen, 1990; Lindsay & Anderson, 2000; Anderson, 1997). Baumeister et al.'s finding supports the proposition that the effects of self-control on the processes leading to aggression may be significant.

Offline aggression research has demonstrated the utility of self-control in the domain of hostility by linking bullying to cost and benefit perceptions in combination with self-control (Archer & Southall, 2009), but the literature suggests that the ability to engage in successful self-control is not domain specific. An individual who maintains a high self-regulatory capacity should be able to exert control not only over their aggressive behavioral impulses but also over impulses that promote dissimilar behaviors.

Highly impulsive individuals exhibit low levels of trait self-control by frequently engaging in actions without carefully thinking about or considering possible consequences. Indeed, self-regulatory failure may be difficult to avoid for many adolescents who are more impulsive than their more mature counterparts. Impulsivity is sometimes viewed as the simple inverse of self-control. However, from Baumeister and Bandura's conceptualization of self-control, impulsivity, along with others such as sensation-seeking, comprises elements of a larger self-regulatory framework. While interrelated, the totality of self-control is more complex than any of its singular components. For example, a study investigating low self-control and imprudent behavior reported that for some of the deviant behaviors examined, the sensation-seeking component of self-control was more predictive than was the more inclusive self-control

scale (Arneklev, Grasmick, Tittle & Bursik, 1993). Another study alternatively found that self-regulation predicted child adjustment problems while impulsivity alone did not (Lengua, 2003). Accordingly, studies that have measured both self-control and impulsivity present impulsivity and self-control as separate and distinguishable factors, or they present impulsivity as one of multiple dimensions of self-control (Piquero & Rosay, 1998).

Self-control becomes increasingly difficult when provoked. Participants in DeWall, Baumeister, Stillman and Gailliot's (2007) study who were low in trait self-control were more likely to express intentions of behaving aggressively after provocation than those who were high in trait self-control. Similarly, Avakame's (1998) research involving the effects of self-control on conjugal violence measured both physical violence and psychological aggression, where psychological aggression constituted emotional or verbal maltreatment. Self-control emerged as a powerful predictor of physical as well as psychological aggression in the study, where both types of aggression increased for males and females as their self-control weakened. Despite occurring in the offline world, these cases indicate that aggression is more likely to occur when individuals do not actively engage in self-control. Furthermore, those who monitor their online behaviors should be able to overcome impulses to engage in aggressive behaviors online.

Research has demonstrated that a high self-regulatory capacity can counter a variety of personal and interpersonal problems associated with low self-control (Tangney et al., 2004). Aggression is among these behavioral problems. A growing body of research suggests that low self-control leads to aggressive behavior; however, the

relationship has yet to be fully examined within the context of media effects on aggression and has yet to be embedded within a larger theoretical framework such as the GAM.

Self-control has been linked to a variety of interpersonal problems such as destructive relationships, poor interpersonal skills and less optimal emotional responses such as aggression (Finkel & Campbell, 2001; Tangney et al., 2004). Combating the urge to destructively fight with someone after being wronged is difficult. It often requires the consideration of potential long-term consequences and setting aside pride to constructively respond to the situation.

To illustrate, Finkel and Campbell (2001) demonstrated that high self-control can help people overcome many of the impulsive tendencies that lead to romantic break-ups. In the face of relationship problems, high self-control individuals in their study were more likely to work against break-up or avoidance tendencies by confronting the situation. They expressed more of a desire to rationally confront problems through compromise than to exit the relationship. High self-control participants in Tangney and colleagues' (2004) study similarly expressed more of an inclination to constructively approach anger by engaging in rational discussion with their target and less of an inclination to grow increasingly angry by ruminating about anger.

In short, high trait self-control individuals exhibit higher capacities for managing anger and frustration. Mulling over anger likely increases the GAM's present internal state variables of hostile thoughts and state hostility, which increase aggressive behavior. The literature has identified control of thoughts as one of the major domains of self-control (Finkenauer et al., 2006). Tangney et al.'s (2004) findings present a potential

inhibitory relationship for the GAM. If high self-control can impede the progression of hostile thoughts, state hostility and other internal state factors that contribute to aggressive behavior once they develop, then high self-control may inhibit the ability of these factors to contribute to aggression. More simply, there should be a) a positive relationship between the present internal state variables and aggressive behavioral intentions and a greater positive relationship between b) hostile thoughts, c) state hostility, d) perceived discomfort, e) arousal and aggressive behavioral intentions among those with lower trait self control than among those with higher trait self-control (Hypotheses 1a-1e).

State Self-Control

A study involving the influence of impulsive precursors on behavior identified self-control as an important moderator. Across three experiments, self-control significantly moderated the effects of automatic affective reactions on impulsive eating and drinking behaviors (Hofmann, Friese & Strack, 2009). Within the context of the study, self-control was examined as a product of temporary ego-depletion rather than as a stable personality trait.

Many current self-regulation scholars consider self-control not only as a stable trait but as a finite resource which can be depleted. Self-control can vary not only as a trait but as a state. Studies that examine low self-control as a function of ego-depletion tend to focus on the latter rather than the former. The construct is often divided into two categories, and this study similarly proposes that the behavior should be considered as two separate, but interacting components: long-term trait self-control and the immediate

behavior of state self-control.

State self-control involves inhibiting and overriding socially unacceptable and undesirable impulses through altering and regulating one's behavior, thoughts and emotions in a particular moment. Within the context of the current research, state self-control refers to the willful exertion over the self to refrain from one's inclination to engage in retaliatory aggressive behavior despite provocation. The literature tends to isolate state self-control from trait control by examining one or the other without regarding their relationship to each other, but trait self-control should affect what an individual does in a situation in which effective self-regulation is required. Most self-regulatory depletion research relies on measures of observed trait self-control, such as an individual's persistence in completing a frustrating puzzle after being subjected to prior self-regulatory depletion.

According to a strong and convincing line of research, exerting self-control in one area depletes one's ability to exert self-control in another area (Baumeister, 2002; Vohs, Baumeister & Ciarocco; 2005; Stucke & Baumeister, 2006; Vohs, Baumeister, Schmeicel, Twenge, Nelson & Tice, 2008). For instance, two out of three experiments in a study designed to test the implications of self-regulatory depletion found that participants who exerted self-control in one area performed worse than their counterparts in subsequent tests of self-control (Muraven & Slessareva, 2003). Self-control depletion activities frequently involve engaging in cognitive tasks such as thought or memory suppression. Subsequently, self-control is often measured through persistence to complete a frustrating task. Despite relating to disparate self-regulatory behaviors, exercising self-control in one domain usually depletes one's ability to engage in self-

control in the second domain.

In light of prior research that demonstrated that suppressing a natural emotional response is more difficult than expressing the natural emotional response (Baumeister et al., 1994; Baumeister et al., 1998), Finkel and Campbell exposed participants to a hypothetical dilemma initiated by a hypothetical partner and experimentally manipulated self-regulatory strength depletion based on emotional suppression (high depletion) and emotional expression (low depletion). Consistent with self-regulatory depletion research, those with high self-regulatory depletion were less likely to accommodate their hypothetical partner's behavior by working to constructively accommodate the behavior. They were instead more likely to meet their partner's destructive behavior with additional unhelpful behavior.

Self-control requires that individuals avoid responding to immediate stimulus environments so that they can pursue long-term strategies that produce significant, but delayed benefits. However, research continuously illustrates that individuals with depleted self-regulatory strength are less able to avoid responding to stimulus environments so that they can reap delayed benefits. If self-control can indeed be easily depleted, as much of the research in the field of self-regulation suggests, what are the implications for individuals' ability to control their own behavior in difficult situations? Self-control can be effectively used to curtail incidents of online aggression only if individuals who have experienced self-regulatory depletion can overcome their depleted states. Research suggests that this goal can be accomplished through at least two avenues: training and motivation. Although not specifically addressed within the GAM, training and motivation may work behind the scenes through the model's cyclical nature, as

depicted in Figure 1. The model posits that the outcome of each potentially aggressive social encounter feeds back into the individual's personality traits, thereby influencing the individual's behavior in future similar situations. The decisions made by the individual after each potentially aggressive social encounter feed back into the individual's personality traits such as self-control. Uncomfortable consequences of a previous social encounter may motivate an individual to engage in more successful self-regulatory control in future potentially aggressive situations. From the training perspective, the GAM would imply that trait self-control is strengthened when the individual uses willful restraint in social encounters, whereby individuals essentially train and strengthen their self-regulatory capacity.

Recent evidence suggests that engaging in self-regulatory exercises can strengthen self-regulatory abilities (Baumeister, Gaillot, DeWall & Oaten, 2006). Finkel et al. (2009) assigned participants to one of two 2-week self-regulation bolstering regimens or to a control condition in which they were not exposed to an intervention. The intervention sought to improve self-regulatory capabilities by bolstering ego strength over time. The first intervention consisted of a physical regulation task that asked individuals to use their non-dominant hand for mundane tasks such as eating and brushing their teeth. The second intervention consisted of a verbal regulation task that asked individuals to regulate aspects of their habitual speech processes such as avoiding sentences that begin with the word 'I', saying the word 'yes' instead of 'yeah' and refraining from use of abbreviated speech and shorthand terms. Inclinations of interpersonal violence declined for individuals who participated in both the physical and the verbal self-regulation regimens, but not for those who belonged to the control condition.

The implications of Finkel et al.'s (2009) self-control interventions and others that have presented similar conclusions (Baumeister et al., 2006) are profound. They collectively demonstrate that by consciously and deliberately engaging in activities that counteract impulses, that individuals can effectively increase their self-regulatory capacity thereby potentially decreasing their involvement in risky behaviors through state self-control. Like strengthening a muscle, giving sufficient attention to the self-regulatory resource will increase its power and its utility.

One of the most intriguing dimensions of these interventions is that the regulatory regimens required of the participants were not behavior specific such that they only improved self-control over the behaviors performed during the intervention. Eating with a non-dominant hand and avoiding certain types of sentences are completely unrelated to abstaining from interpersonal violence after provocation other than that all of the behaviors in question required the individual to successfully engage in self-control. Participation in a comparable self-regulatory regimen should similarly inhibit incidents of online aggression after provocation for individuals with aggressive inclinations. Thus, individuals who continually and consciously engage in effective state self-control should also be able to build their long term self-regulatory capacities. Through this avenue, individuals can overcome incidents of self-regulatory depletion because they will possess more of the resource to deplete.

The second avenue through which self-regulatory depleted individuals can overcome their depleted state involves motivation. Studies have shown that when properly motivated, an individual can overcome self-regulatory depletion and engage in effective self-control. Muraven and Slessareva (2003) proposed that self-control is

jointly determined by depletion and motivation. They demonstrated across three studies that when depleted individuals were properly motivated, such that they believed that the task at hand would help others or themselves that they were more likely to engage in subsequent self-control than depleted individuals with low motivation.

These two avenues provide important implications for the utility of self-control within the context of online aggression. Individuals involved in online aggression maintain varying degrees of trait self-control, and depending on the day or the moment, situational factors may deplete their state self-regulatory abilities. However, these findings suggest that by practicing efforts of self-control, individuals may be able to strengthen their trait self-control and overcome future depletions. Furthermore, if supplied or instilled with proper motivation, individuals are even more likely to control themselves. For adolescents who openly engage in online aggression, motivation could manifest itself through a variety of channels including, but not limited to, repercussions by parents, school authority figures or friends, or isolation from their online community. However, aggressive behavior online should be more prevalent when adolescents fail to control their actions and self-regulatory capacity should impact one's ability to engage in state self-control. Specifically, aggressive behavioral intentions should be a) negatively related to trait self-control, b) negatively related to state self-control and c) trait and state self-control should be positively related to each other (Hypotheses 2a-2c).

Additionally, state self-control should moderate the relationships between the GAM's present internal state variables and aggressive behavioral intentions. In other words, there should be a greater positive linear relationship between a) hostile thoughts, b) state hostility, c) perceived discomfort and d) arousal and aggressive behavioral

intentions among those with lower state self-control, than among those with higher state self-control (Hypotheses 3a-3d).

Emoticons and Behavioral Cue Activation

Computer mediated communication lacks many of the non-verbal cues associated with face-to-face communication. When someone receives a provoking message on the Internet, the message likely lacks many of the non-verbal cues (e.g. facial expression and body stance) that normally accompany similar face-to-face encounters. Non-verbal cues often help to remove some of the ambiguity of a message and they assist the message's receiver with interpreting the provoker's intention.

Internet users have learned to enhance many of the limitations of text-based applications such as email to achieve communication that parallels face-to-face communication (Walther & Burgoon, 1992). Research indicates that computer mediated communication users have overcome many of the obstacles that limit expression through electronic media through emoticons. Emoticons refer to pictographics that are used in computer mediated communication "to express emotion or as surrogates for nonverbal communication" (Thompson & Foulger, 1996, p.226). Emoticons are graphic representations of facial expressions that are embedded in computer mediated communication. They depict emotion, such as happiness or anger, through visual representation. Social Information Processing (SIP) Model suggests that users who are unfamiliar with each other can achieve normal relationships online, but that it takes more time than with traditional communication because the lack of nonverbal cues within the environment limit the range of communication (Walther & A'ddario, 2001). Emoticons

serve to restore some of the emotion to what may otherwise come across as cold and textual communication. They can also reinforce the message's intended meaning. For example, participants in a study that paired a happy facial expression with a positive verbal message rated the combined image and message as more positive than the positive message on its own (Derks and Grumbkow, 2007).

Other studies have examined the effects of emoticons on computer mediated communication. Walther & A'ddario (2001) studied the impact of text-based emoticons by presenting participants with either a negative or positive message coupled with a happy facial expression, a sad facial expression, a winking facial expression or no facial expression. They found that messages with any negative element, either verbal or visual, rated significantly more negatively than messages without negative elements. Messages accompanied by the wink or smile were rated as significantly more positive than any other message combination, while emoticons did not significantly impact negatively worded combinations. By pairing an unspecified emoticon (presumably a happy face) with verbal hostility online, Thompson and Foulger (1996) found that an emoticon can reduce a message's perceived hostility. At the same time, the emoticon increased the perceived hostility of more hostile messages. In a similar study, Derks and Grumbkow (2007) found that when coupled with a smile emoticon, negative verbal computer mediated messages conveyed less negativity than a negative message without the emoticon for high school students. Their study also revealed that in combination with a negative message, a happy facial expression generated more ambiguity than either a positive message or negative message alone. The same was true for frowning facial expressions paired with positive messages.

In combination, these studies suggest that the incorporation of facial expression emoticons can be extremely effective in conveying the sender's emotion, but that emoticons may not be able to counteract a message perceived as highly negative. Participants exposed to highly antagonistic messages in Thompson and Foulger's study may have perceived the emoticon as a mocking rather than as a playful symbol. In both cases, the emoticons were created through sideways text-based symbols rather than through the symbols in current use such as yellow smiley faces. Derks and Grumbkow did not vary the degree of negativity in negative messages, thus the messages may not have been perceived as antogonistic enough when coupled with a happy emoticon to increase participant anger. Discrepancies between Derks and Grumbkow and Thompson and Foulger's studies suggest that the ambiguity created by conflicting message and emoticon valence will be perceived as positive when the message is mildly negative but as negative when the message is perceived as highly negative. This perception is likely based on the message receivers attempt to interpret the sender's seemingly conflicting meaning.

Much of the ambiguity generated through messages accompanied by contradicting messages from emoticons and verbiage likely stemmed from the fact that the emoticon came from the message's source. The counteracting impact of the positive emoticon paired with the negative message described by Derks and Grumkow and Thompson and Foulger to some extent, may be more effective when the emoticon comes from a neutral source. Outside of research on computer mediated communication, literature indicates that facial expressions can serve not only as emotion messengers that reveal specific information about a sender's intention, but as emotion elicitors that stimulate positive

affect because they simply represent positive stimuli in the same way that an image of a puppy may stimulate positive affect (Ruys & Stapel, 2008). Priming through facial expressions has been examined to a certain extent, and priming in general has been examined extensively within media research. Priming embodies an important component of the GAM through the proposition that situational priming cues can affect an individual's internal state and subsequently their behavior.

A study investigating the subliminal effects of priming emotional facial expressions found that exposure to angry, disgusted, or fearful faces elicited negative moods as well as increased the likelihood of performing actions corresponding to the expression (Ruys & Stapel, 2008). Negative emotions were more likely to develop when facial expressions flashed super-quickly (40 milliseconds) rather than quickly (120 milliseconds), and actions corresponding to the emotion (e.g. kicking the lamppost after exposure to the angry face) were more likely when the facial expression flashed quickly rather than super quickly. This facial expression study differs to an extent from the computer mediated communication facial expression studies because they were not combined with negative messages. However, findings from the subliminal facial expression study suggest that when facial expressions are not linked to a particular message or sender, that they can independently affect emotion and possibly behavior. From the perspective of the GAM, behavioral cues such as facial expressions should impact aggressive behavior by influencing affective state and/or cognition.

Studies involving physical violence and face-to-face aggression propose that violence is usually triggered by salient aggressive and contextual cues (Denson et al., 2007; Siever, 2008). Research suggests that schematized views of the world formed to

help people cope with the flood of new information that they constantly receive account, at least partially, for the impact that violent media have on aggressive behavior. Developing stereotypical models is not merely a subconscious action; it occurs automatically and inescapably (Coleman, 2003). Kawakami, Spears and Dovidio (2002) referred to automatic processes as mental activities that occur outside of awareness in a largely involuntary, unintentional, and effortless manner. Mere exposure to a symbol or representative of a social category can activate schematic associations and can subsequently influence behaviors (Bargh, Lambardi & Higgins, 1998). Behavioral cue activation refers to the extent to which an associated schematic belief is accessible in one's mind (Kunda & Spencer, 2003). Schematic associations are easily made because they are so well-learned that they become part of the status-quo. Conscious subscription to a schematic knowledge structure can potentially fuel associated behaviors. However, a general consensus among contemporary attitude researchers concedes that implicit attitudes may be automatically updated by the attitude object or by cues associated with the object, even when the person does not have conscious access to an attitude (Eagly & Chaiken, 1993).

Behavioral stimulus exposure does not influence all individuals equally. Behavioral stimuli used in stereotype research clearly demonstrate this notion. Devine (1989) found that despite possessing an equal knowledge-base regarding cultural stereotypes, people higher in prejudice endorsed the activated stereotypes more strongly than did low prejudice people. While most members of a culture are generally exposed to the same deeply vested societal schematic knowledge structures, a person's willingness or lack thereof to endorse these schemas may determine the extent to which they apply

them to behaviors. Similarly, a recent study found that hostile thoughts were primed by hunting guns for non-hunters, whereas they were primed by assault guns for hunters (Bartholow, Anderson, Carnagey & Benjamin, 2005). Weapon imagery primed hostile thoughts in both cases; however, individual differences determined which type of gun most strongly affected cognition. One would expect that the individual's experience with or level of endorsement of a symbolic cue, which result from life experiences among other factors, would moderate the relationship between the schema activation and intentions to engage in online aggression.

As outlined in the GAM discussion, many aggression studies have manipulated schematic associations through behavioral cues without particular regard to individual differences. These studies have demonstrated that stimuli can activate aggressive components that influence hostile behaviors. Violent music, films, video games and television have been shown to increase the likelihood of both short- and long-term aggressive behavior (Anderson et al., 2003). Physically aggressive behavior, verbally aggressive behavior, hostile thoughts and aggressive emotions have all been linked to short-term exposure of violent stimuli (Anderson et al., 2003). However, what happens after exposure to nonviolent, rather than a violent, stimuli? Behavioral stimuli can just as easily reflect positive associations as they can reflect negative associations. A peace symbol, for example, is associated with non-aggression rather than with aggression.

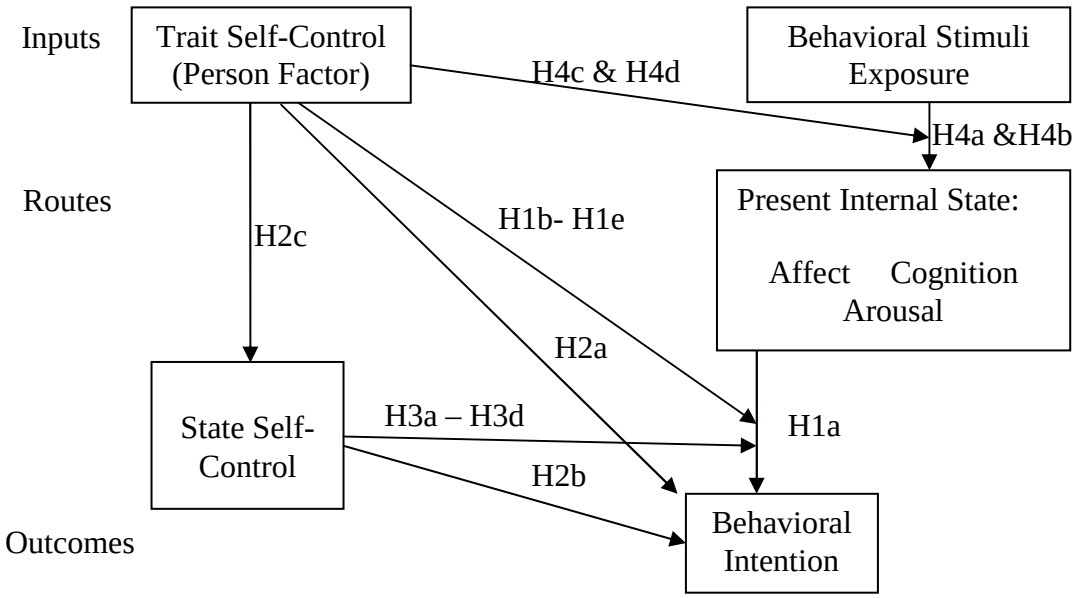
A long line of research indicates that violent and aggressive stimuli can adversely affect aggressive behavior, but some studies testing anti-aggressive or pro-social stimuli have found that exposure to certain types of stimuli can promote pro-social behavior. Huston-Stein and Friedrich's (1973) work on the impact of aggressive vs. pro-social

television viewing on children represents an early example of media effects on pro-social behaviors. After exposure to 12 half-hour episodes of Batman or Superman cartoons or Mister Rogers' Neighborhood, low socio-economic children exposed to the latter increased pro-social helping behavior in the classroom and on the playground. More recently, a series of four experiments testing the effects of video game content on behavior demonstrated that exposure to pro-social video games promotes, at least in the short-term, pro-social behavior (Greitemeyer & Osswald, 2010). Playing a pro-social game such as *City Crisis* led individuals to help an individual who spilled pencils on the floor, to assist a master's student who needed help with her thesis and to intervene when an angry boyfriend yelled at his girlfriend. Another study demonstrated an analogous effect through pro-social song lyrics rather than through video games (Greitemeyer, 2009). Individuals who listened to songs with pro-social, rather than neutral lyrics were more likely to exhibit helping behavior. The pro-social effect in Greitemeyer's (2009) study was mediated by interpersonal empathy, pointing to the importance of the cognitive route in influencing behavior. This study lends credence to previous studies that have similarly demonstrated that hostile song lyrics have the potential to affect an individual's internal state and their subsequent behavior by increasing the accessibility of state hostility, hostile thoughts (Anderson et al., 2003), empathy or mood.

Prior research clearly suggests that behavioral cues, whether positive or negative, can influence an individual's behavior through activating the internal state. Depending on the content, video games can lead to aggression or pro-social behavior as can song lyrics. Images of weapons have activated aggressive behavioral processes in the past, indicating the potential for anti-aggressive behavioral images to restrain aggressive

behavior. In line with previous research, this study posits that those exposed to aggressive behavioral cues should have a) the most hostile thoughts and b) the most state hostility, followed by those who were not exposed to behavioral cues, and finally by those who were exposed to anti-aggressive behavioral cues (Hypotheses 4a and 4b). Trait self-control should also moderate the effects of the behavioral stimulus on hostile thoughts and state hostility such that there should be a positive relationship between aggressive stimulus exposure and c) hostile thoughts and d) state hostility among those with low trait self-control, but no relationship among those with high trait-self-control (Hypotheses 4c and 4d). Figure 2 illustrates the present study's proposed hypotheses.

Figure 2 The General Aggression Model Redrawn with Hypothesized Relationships.



This study's goal is to test whether an increase in state hostility and hostile thoughts occur for those exposed to aggressive stimuli, and whether there is a decrease in

the effect on aggressive behavior for those exposed to anti-aggressive stimuli. Websites contain many areas within their screen space that can be used to display behavioral stimuli should they demonstrate utility in curtailing aggressive behavior. Should these symbols effectively curtail aggressive behaviors, they can be effectively incorporated into online applications such as Facebook, online forums and email.

The present study's original contribution is to examine online aggression through a theoretical framework, to present trait and state self-control as valuable additions to the GAM, and to ascertain the value of exposure to anti-aggressive behavioral stimuli in restraining online aggression. The study outlined in the following chapters investigates new GAM variables and studies the impact of pro-social priming with anti-aggressive stimuli. Specifically, it examines the impact of trait self-control on aggressive online behavior through the GAM's present internal state variables. It explores the relationships between state self-control, trait self-control and other GAM variables. It investigates the effects of behavioral stimulus activation on state hostility and hostile thoughts and finally, it explores potentially differences between off- and online aggression. Chapter 4 describes the method and operational variables used to test the hypotheses discussed in this chapter.

Chapter 4

Method

Pretest of Stimulus Materials

To augment confidence in the internal validity of stimulus materials and to ensure that the provocation scenario invoked a sufficient level of anger, a group of 20 mid-western high school students were presented with 4 different anger-inducing scenarios. The exercise's goal was to select the online aggression scenario that produced the most anger in the target population. Participants were given screenshots of 4 messages posted on a Facebook profile. They were then asked to imagine that after signing into their Facebook account, they see that one of their classmates has posted a harassing comment about them on their friend's Facebook wall for everyone to see. A screen shot of their friend's Facebook wall with a harassing comment about them was affixed below the instructions. After reading each message, participants rated the scenario based on how the provoking situation would make them feel on a 5-point Likert-type scale from 1 (not angry at all) to 5 (extremely angry). The scenario that produced the most anger in participants ($M = 3.93$) was selected for the remaining study. Stimulus materials are displayed in Appendices A, B, and C.

Selecting the behavioral stimulus symbols was the next pretest task. After rating the anger-inducing scenarios, participants were subsequently presented with 11 symbols and were asked to write a few sentences relating to the meaning of each symbol, the emotions the symbol made them feel or brought to mind, and if those emotions were strong or weak. The happy and angry facial expression symbols were determined to have

the highest level of face validity for the target population because participants agreed that the meaning of the happy face symbol was a strong, happy emotion in all but two cases. All except for one participant agreed that the angry face symbol represented an angry emotion. In many cases, individuals suggested not only that the meanings of these symbols were happy or angry, but that they also invoked the corresponding emotion within themselves as they viewed the symbols. Responses provided for the remaining symbols were much more convoluted and dissimilar and were therefore excluded from the subsequent study.

Sample

Data were collected from a sample of 464 high school students from two demographically diverse school districts in Colorado. High school students were deemed the most relevant target population because studies presenting descriptive statistics on online aggression suggest that individuals belonging to this age group engage in the behavior more frequently than any other age group (Ybarra & Mitchell, 2004; Hinduja & Patchin, 2008). The week of the study, all students received a parental consent form explaining the nature of the study. Additionally, an automated message by an administrative staff member was sent to homes to inform parents that a study was being conducted at their child's school and that they could choose to opt out of participation. The day of the study, students were provided with an informed assent form before completing the survey, which explained the nature of the study and indicated that participation was voluntary. After removing cases with incomplete information, data from 434 of the 464 participants was useable.

The sample consisted of 50.69% males and 49.31% females, which is consistent with the U.S. census bureau's record of this age group of 51.2% males and 48.8% females, respectively (U.S. Census Bureau, 2008). Of those who reported their racial background, 51% identified themselves as exclusively White, 11.48% as Black, 15.80% of Hispanic origin, .04% as Asian or Pacific Islander, and .01% as Native American. About 13.16% identified themselves as belonging to two or more racial groups. The remaining .03% of the sample indicated that they were from an unlisted race, but did not specify which one.

Consistent with previous research which indicated that 40-60% of adolescents have been harassed on the Internet (Beran & Li, 2005), 41.70 % of those in the present sample indicated that they had been bullied through some form of electronic technology such as a text message, an Internet chat-room or e-mail. A larger percentage, 68.7%, reported that they knew someone who had been bullied through some form of technology. Likewise, the portion of those who admitted to using some form of technology to bully others in this sample, 31.8%, closely corresponded to the portion of those who claimed to have used technology to bully others (20-30%) in previous research (Beran & Li, 2005). A large percentage of those who admitted to using technology to bully others were females (61.4%) while males comprised of only 35.6% of past online aggressors. Not surprisingly, only 5.3% admitted that they had bullied someone on Facebook specifically. This small percentage is understandable when considering that only 41.24% of the sample had Facebook accounts, well below the national average of 73% for teenagers (Pew, 2009). In the current study, 24% of females and 20.5% of males reported aggressive online behavioral intentions.

The majority of participants maintained GPAs between 2.0 and 4.0. Specifically, 1.61% reported a GPA below 1.0, 8.29% reported a GPA between 1.0-1.99, 46.54% reported a GPA between 2.0 and 2.99, and 42.62% reported a GPA between 3.0 and 4.0.

Data Collection

Using an online scenario-based survey, participants were systematically assigned to one of three conditions; aggressive (Appendix A), anti-aggressive (Appendix B) or control (Appendix C). A separate URL was assigned to each treatment condition. URLs were individually displayed on a piece of paper and the pieces of paper were mixed in a box to facilitate random assignment to treatment condition. Upon entering the classroom, students were directed to grab a piece of paper from the box and to choose a computer to work from. After all participants were seated in front of a computer, they were informed that they were participants in a study about teenagers and the Internet, that the study was voluntary, and that they did not have to answer questions that they did not want to answer. They were subsequently instructed to go to the URL on their piece of paper, to read the informed consent, and to follow the instructions on the website. Finally, they were asked to raise their hands if they had any questions during the course of the study.

Before exposure to the scenario, participants responded to a range of survey-based personality questions, including trait reactive aggression, trait self-control and attitude towards retaliatory aggression. Subsequently, the online application prompted participants with the stimulus materials. Participants were asked to imagine that after signing into their Facebook account, they see that one of their classmates has posted a harassing comment about them on their friend's Facebook wall for everyone to see. A

screen shot of their friend's Facebook wall with a harassing comment about them was affixed below the instructions. A behavioral cue visual stimulus was embedded in the Facebook page outside of the comment box for the aggressive (angry facial expression) and anti-aggressive (happy facial expression) conditions. The control group was not exposed to a symbol. Finally, participants completed the remaining survey items pertaining to hostile thoughts, state hostility, state self-control and aggressive behavioral intentions.

Analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 17.0 (SPSS, 2007). Data were cleaned before testing hypotheses, including the removal of scale items exhibiting basement or ceiling effects. Scale items contributing to the most valid and reliable measures were used in subsequent analyses. Moderation effects were tested through multiple regression analyses, while treatment effects were analyzed through factorial univariate analysis of covariance procedures.

Operational Measures

A complete list of scale items used for measurement is indexed in Appendix D. State hostility and State arousal were measured with subscales of the Profile of Mood of States (POMS) short form (McNair, Lorr & Droppleman, 1992). The POMS anger-hostility subscale used to measure state hostility determined the individual's level of momentary anger through 10 items (e.g. I feel angry) on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale consistently demonstrates internal reliability, typically yielding alphas of around .90 and it yielded a Cronbach's alpha of .81. The POMS vigor-arousal subscale measured state arousal through 3 items (e.g. I feel lively) on a scale

ranging from 1 (strongly disagree) to 5 (strongly agree). It generally yields alphas of around .87 and it yielded a Cronbach's alpha of .91 in this data set.

A 5-point Likert scale ranging from 1 (never) to 5 (often) measured trait reactive aggression. The scale was developed by Raine, Dodge, Loeber, Gatzke-Kopp, Lynam et al.(2006), and measures trait reactive aggression through 12 items (e.g. I react angrily when provoked by others). It typically yields an alpha within the range of .81 to .86. The present scale yielded an alpha of .87. The brief version of Tangney, et al.'s (2004) Self-Control Scale was used to measure trait self-control. Through 13 items (e.g. Sometimes I can't stop myself from doing something even if I know it's wrong), the 5-point Likert-type scale ranging from 1 (strongly agree) to 5 (strongly disagree) measured trait self-control. It has demonstrated alphas of around .85 and the present scale yielded a Cronbach's alpha of .74. The state self-regulation scale was adapted from the trait regulation scale. Previous research has demonstrated that creating a state measure by slightly rewording a trait scale can produce an equally valid and reliable measure (Farrar & Krcmar, 2006). Participants were asked to consider how they acted in the present situation. A confirmatory factor analysis (CFA) was conducted to assess internal consistency and factor loadings, using the statistical software program AMOS. The CFA determined that seven factors best represented state self-control. A Cronbach's alpha of .89 and substantial, significant factor loadings were obtained ($p < .001$), indicating internal consistency. The model also obtained a good model of fit ($X^2 = 10.82$, $df = 6$, $p = .09$, AGFI = .971, CFI = .996, RMSEA = .04). Scale items are displayed in Table 1.

Table 1 State Self-Control Scale

Scale Item	β	M	SD
Circle the number next to each item that best describes your thought process when reacting to your classmate …			
I could not resist the temptation to treat my classmate the same way I was treated	.77	3.50	1.32
I could not stop myself from reacting angrily towards my classmate	.86	3.54	1.27
I had a hard time breaking the habit of reacting in a negative way	.75	3.42	1.23
I wanted to say inappropriate things	.68	3.09	1.32
I thought that I should humiliate my classmate even if it was bad for me in the long run	.70	3.61	1.23
I could not stop myself from treating my classmate the same way they treated me even if I thought that it was wrong	.69	3.53	1.24

Perceived discomfort was measured with Anderson, Anderson et al.'s (1996) 5-point Likert-type Perceived Comfort Scale (PCS) ranging from 1 (not at all) to 5 (extremely). Nine items (e.g. I feel comfortable) measured perceived discomfort. This scale typically yields an alpha of .90 and it yielded an alpha of .89 in this case. Through 9 items (e.g. I want to get revenge), the revenge/retaliatory thinking subscale of the Hostile and Hostile thoughts Scale (HAT) measured hostile thoughts on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). This subscale has demonstrated internal reliability with alpha's of .93 (Deffenbacher, Petrelli, Lynch, Oetting & Swan, 2003) and yielded a Cronbach's alpha of .95 in the present study.

Finally, aggressive behavioral intentions accounted for the primary dependent variable of interest[1]. Previous studies have measured aggression through scenario-based

[1] The aggressive behavioral intention scale consisted of the likelihood that individuals would engage in the following behaviors: 1. Send an angry private message back to the classmate who wrote on my friend's wall, 2. Post a humiliating comment about my classmate on my friend's Facebook wall, 3. Embarrass my classmate in front of other people on Facebook, 4. Curse back at my classmate in person, 5. Ask my friend to

aggression scales (Leifer & Roberts, 1972; Yagil, 2001; O'Connor, Archer & Wu, 2001). In the present case, participants were asked the likelihood that they would engage in online and offline retaliatory aggressive behaviors (e.g. post a humiliating comment about my classmate on my friend's Facebook wall and Humiliate my classmate in front of other people while at school) on a 5-point Likert-type scale ranging from 1 (very unlikely) to 5 (very likely). Combined aggressive behavioral intentions, online and offline aggressive behavioral intentions were measured and yielded Cronbach's alphas of .95, .94 and .89 respectively. Two open-ended questions (1. Is there anything else that you would do to respond to your classmate and 2. Would you have reacted differently if your classmate had harassed you in a similar manner in person) determined what other types of behaviors participants would engage in and differences between online and offline interactions. Based on a meta-analysis of short and long-term effects of violent media on aggression in children and adults, this study expected to yield modest, but significant effect sizes for exposure to stimulus on state hostility and hostile thoughts (Bushman & Heusmann, 2006). Chapter 5 summarizes the test of each hypothesis and research question.

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remove the insulting comment from their wall, 6. Use Facebook to treat my classmate the same way that I was treated, 7. Threaten my classmate on Facebook, 8. Humiliate my classmate in front of other people while at school, 9. Insult my classmate to their face, 10. Curse back at my classmate online, and 11. Humiliate my classmate in front of other people while at school.

Chapter 5

Results

In consideration of traditional bullying studies that indicate that males are more likely to bully than females (Wang et al., 2009), and conflicting previous research that found that females are more likely to participate in cyberbullying than males (Smith et al, 2006; Kowalski, Limber & Agatston, 2008) or that males and females are equally likely to engage in the aggressive behavior (Werner, Bumpus & Rock, 2009; Ybarra & Mitchell, 2004b; Hinduja & Patchin, 2008), sex was included as a control variable in all analyses. Trait aggression was also included as a control variable throughout the analyses because previous research has demonstrated the important association between the construct and multiple aggression-related mechanisms (Kirsh, 2006; Bushman & Geen, 1990; Lindsay & Anderson, 2000; Anderson, 1997). VIF and tolerance collinearity statistics were calculated for each regression equation to ensure that results were not adversely affected by multicollinearity. Table 2 shows a matrix of Pearson product-moment correlation coefficients, Cronbach alphas, means and standard deviations.

Hypotheses 1a – 1e

The first set of hypotheses predicted a) a positive relationship between the present internal state variables and a greater positive relationship between b) hostile thoughts, c) state hostility, d) perceived discomfort and e) arousal and aggressive behavioral intentions among those with lower trait self-control than among those with higher trait self-control. Linear regression analyses controlling for sex and trait aggression were

conducted to determine the moderating effects of trait self-control. Interaction terms were added to models as crossproducts of the independent predictors. The sex variable was dummy coded as 1 (male) and 2 (female). Variables were centered before analysis to reduce the potentially problematic occurrence of multicollinearity.

Table 2 Pearson Product-Moment Correlation Matrix of Independent and Dependent Variables

Variable	1	2	3	4	5	6	7	8	α	M	SD
1. Trait Aggression									.87	2.55	.78
2. Attitude	.50								.87	2.75	.86
3. Trait Self-Control	-.44	-.31*							.74	2.99	.59
4. State Self-Control	-.51	-.42*	.30*						.89	3.44	1.01
5. State Hostility	.43	.24*	-.30*	-.53*					.91	2.92	.98
6. Hostile Thoughts	.53	.44*	-.32*	-.70*	.71*				.95	2.69	1.16
7. Arousal	.16	.13	.06	-.09*	-.07	.06			.80	3.12	1.09
8. Discomfort	.00	-.01	-.13*	-.004	.15*	.06	.69*		.88	2.89	.88
9. Behavioral Intentions	.45	.45*	-.26*	-.69*	.48*	.68*	.16	.07	.95	2.33	1.11

Trait Self-Control and Hostile Thoughts

A multiple linear regression was calculated to determine if trait self-control significantly moderated the effects of hostile thoughts on aggressive behavior when controlling for sex and trait aggression. The regression equation was significant ($F(5,426) = 79.47$, $p < .001$) with an R of .69 and an R^2 of .48. However, hostile thoughts ($t = 14.79$, $p < .01$, $R^2 =$

.26) and trait aggression ($t = 2.61$, $p < .01$, $R^2 = .01$) emerged as the only significant predictors of aggressive behavioral intentions while trait self-control, sex, and the trait self-control-by-hostile thoughts variable were not significant predictors. Table 3 displays these relationships.

Table 3 Regression Statistics for the Effects of Trait Aggression and Hostile Thoughts on Aggressive Behavioral Intentions

Variable	b	β	t	p	VIF
Aggressive Behavioral Intentions					
Constant	-.01		-.13	.90	
Hostile Thoughts	.59	.62	14.79	.001**	1.04
Trait Self-Control	-.03	-.01	-.34	.73	1.32
Trait Self-Control-by-Hostile Thoughts	-.04	-.03	-.70	.48	1.27
Sex	-.03	.01	.36	.72	1.00
Trait Aggression	.16	.12	2.61	.001**	1.01

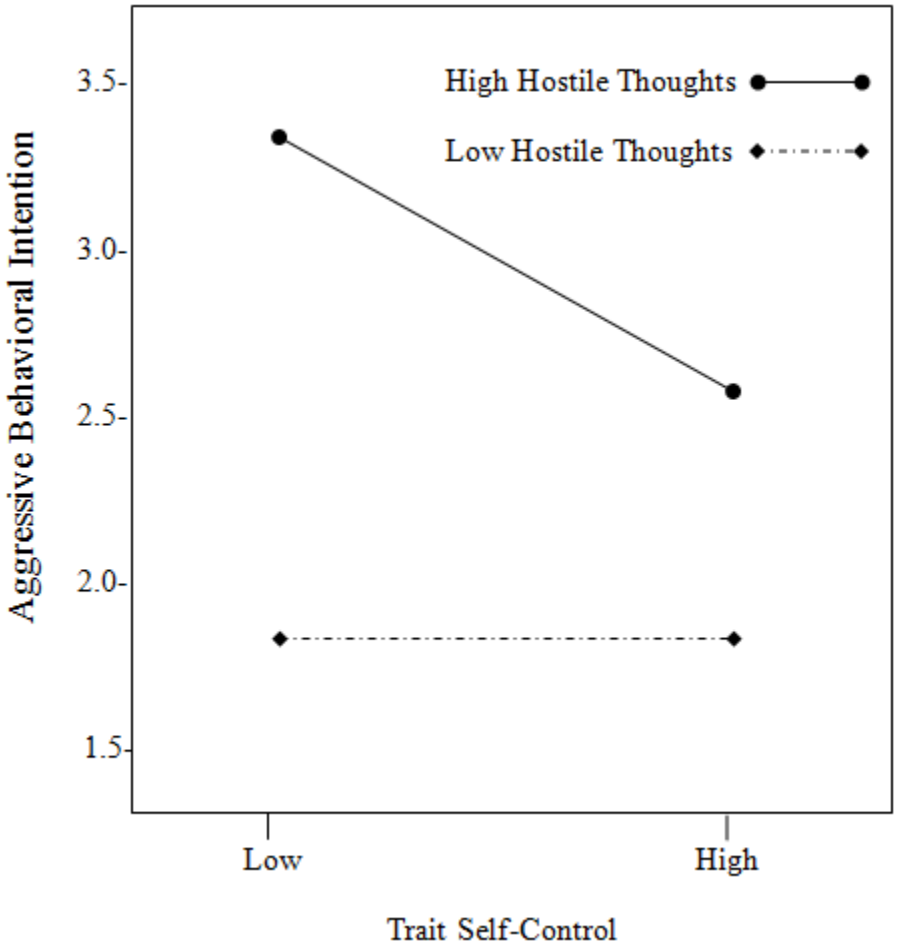
Trait self-control did not moderate the relationship between hostile thoughts and behavior as predicted; however, further analysis suggested that this relationship may be more complex. In consideration of research that suggests that factors within the GAM's theoretical framework may disproportionately affect individuals based on their level of trait aggression (Anderson, 1997), an additional multiple linear regression was calculated after splitting the data set between individuals with low and high trait aggression. Trait aggression was dichotomized by splitting the data set at the trait aggression scale's median (3), to derive a more accurate representation of high and low trait aggression than would be derived from splitting the data set in half at the respondent's median (2.46). The trait self-control-by-hostile thoughts interaction variable nearly reached significance for low trait aggression individuals when controlling for sex, trait self-control and hostile

thoughts (t = -1.79, p = .07), but fell short of arriving at the .05 significance level. The regression equation was significant (F(4,317) = 79.273. p < .001) with an R of .71 and an R^2 of .49. Once again, hostile thoughts emerged as a significant predictor of aggressive behavioral intentions (t = 17.24, p < .001, R^2 = .46) while sex and trait self-control were not significant predictors. In this case, low trait aggression individuals were almost significantly less likely to admit to aggressive behavioral intentions if they maintained highly hostile thoughts. Table 4 displays the regression equation and Figure 3 illustrates the relationships. The interaction between trait self-control and hostile thoughts did not approach significance (t = .140, p = .89) for high trait aggression individuals.

Table 4 Regression Statistics for the Moderating Effects of Trait Self-Control on Hostile Thoughts and Aggressive Behavioral Intentions for Low Trait Aggression Individuals

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	-.05		-1.23	.22	
Hostile Thoughts	.66	.70	17.24	.001**	1.04
Trait Self-Control	-.09	-.06	-1.22	.22	1.32
Trait Self-Control-by- Hostile Thoughts	-.12	-.08	-1.79	.07	1.27
Sex	-.05	.03	.67	.50	1.00

Figure 3 The Moderating Effects of Trait Self-Control on Hostile Thoughts and Aggressive Behavioral Intentions for Low Trait Aggression Individuals.



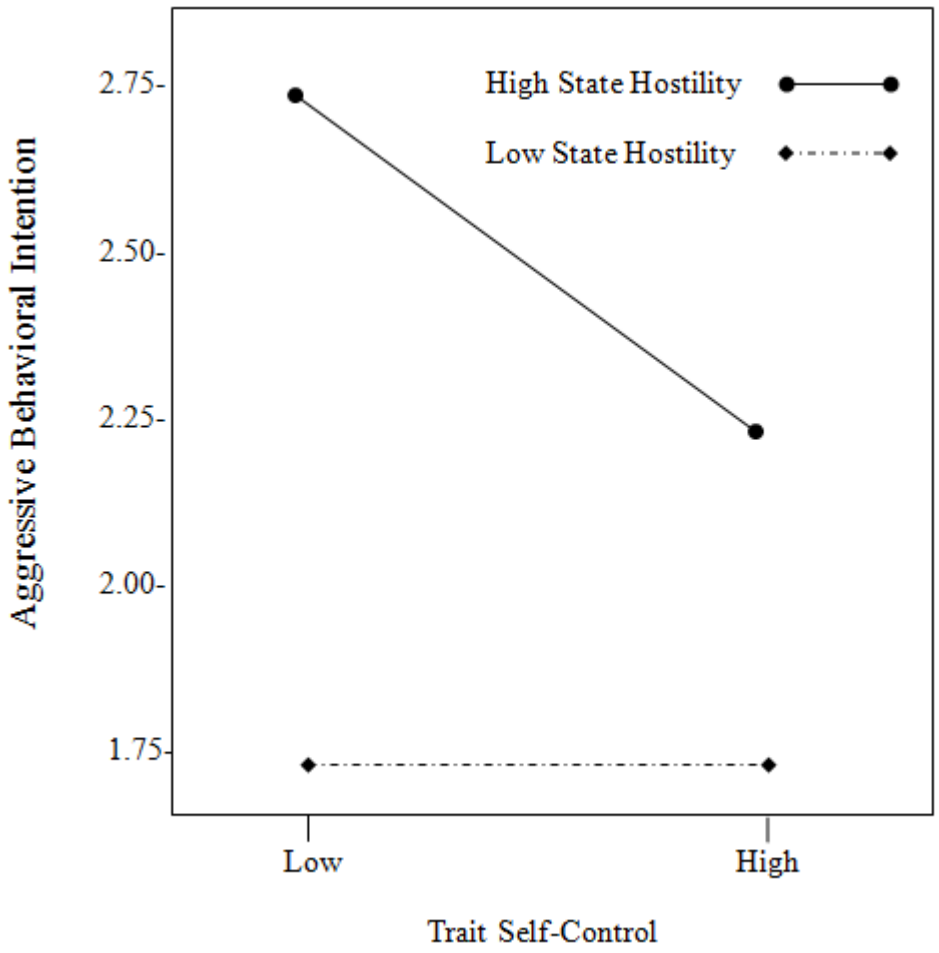
Hypothesis 1c was partially supported. A multiple linear regression was calculated to determine if trait self-control significantly moderated the effects of state hostility on aggressive behavior when controlling for sex and trait aggression. The regression equation was significant ($F(5,426) = 38.18$, $p < .001$), with a multiple R of .56 and an R^2 of .31. Trait aggression ($R^2 = .05$) and state hostility ($R^2 = .10$) significantly predicted aggressive behavior when controlling for sex, trait self-control, and the interaction between trait self-control and state hostility. Sex, trait self-control and the interaction

between trait self-control and state hostility were not significant predictors when controlling for trait aggression and state hostility. However, the data set was split once again between low and high trait aggression individuals in consideration of research that suggests that factors within the GAM's theoretical framework may disproportionately affect individuals based on their level of trait aggression (Anderson, 1997). When the data were split between high and low trait aggression individuals, trait self-control moderated the effects of state hostility on online aggressive behaviors when controlling for sex, state hostility and trait self-control. A significant regression equation was found ($F(4,317) = 24.29$, $p < .001$), with a multiple R of .484 and an R^2 of .235. Trait self-control ($t = -2.31$, $p = .02$, $R^2 = .013$) and state hostility ($t = 9.18$, $p < .001$, $R^2 = .20$) were significant predictors; however, sex did not significantly predict aggressive behavior. The trait self-control-by-state hostility variable emerged as a significant predictor ($t = -2.39$, $p = .02$, $R^2 = .02$), indicating that trait self-control moderates the effects of state hostility on online aggressive behaviors for low trait aggression individuals when controlling for sex, trait self-control and state hostility. Low trait aggression individuals who were high in state hostility were less likely to admit to aggressive online behavioral intentions if they were higher in trait self-control compared to high state hostility individuals who were lower in trait self-control. The regression equation is displayed in Table 5 and Figure 4 illustrates these relationships.

Table 5 Regression Statistics for the Moderating Effects of Trait Self-Control on State Hostility and Aggressive Behavioral Intentions for Low Trait Aggression Individuals

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	-.14		2.80	.001*	
Sex	-.13	-.07	-1.33	.185	1.0
State Self-Control-by-State Hostility	-.21	-.13	-2.40	.02*	1.2
State Hostility	.49	.47	9.18	.001*	1.1
Trait Self-Control	-.22	-.13	-2.31	.02*	1.2

Figure 4 The Moderating Effects of Trait Self-Control on State Hostility and Aggressive Behavior for Low Trait Aggression Individuals



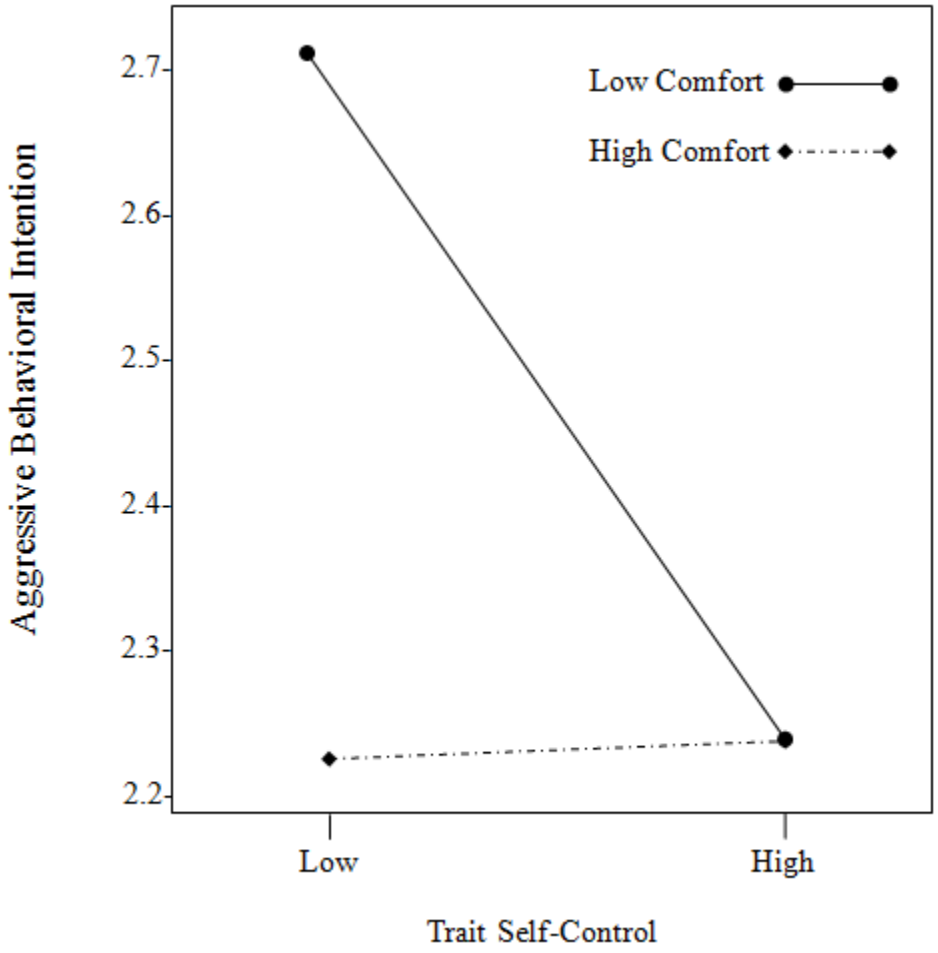
Trait Self-Control and Perceived Discomfort

Hypothesis 1d was supported. A multiple regression equation was calculated to determine if trait self-control moderates the effects of perceived discomfort on aggressive behavior. A significant regression equation was found ($F(5,426) = 26.68$, $p < .001$) with a multiple R of .47 and an R^2 of .23. Trait aggression ($t = 8.63$, $p < .001$, $R^2 = .14$), and perceived discomfort ($t = 2.28$, $p = .05$, $R^2 = .01$) were significant predictors of aggressive behavioral intentions when controlling for sex, trait self-control, and the interaction between trait self-control and perceived discomfort. Sex did not emerge as a significant predictor. As hypothesized, the trait self-control-by-perceived discomfort variable emerged as a significant predictor, indicating that trait self-control significantly moderated the relationship between perceived discomfort and aggressive behavior ($t = -2.28$, $p = .02$, $R^2 = .02$). The lower individuals were in comfort, the more likely they were to express aggressive behavioral intentions. Furthermore, individuals who were lower in comfort were significantly less likely to express aggressive behavioral intentions if they were higher in trait self-control. Table 6 presents the significant regression equation and Figure 5 illustrates the moderating influence of trait self-control on the effects of perceived discomfort on aggressive behavioral intentions.

Table 6 Regression Statistics for the Moderating Effects of Self-Control on Perceived Discomfort and Aggressive Behavioral Intentions.

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	.008		.319	.75	
Sex	.03	-.02	.35	.73	1.0
Trait Control	-.14	-.07	-1.476	.14	1.0
Comfort	-.10	-.08	-1.904	.05*	1.0
Trait Self-Control-by- Comfort	-.20	-.09	-2.28	.02*	1.0
Trait Aggression	.58	.41	8.63	.001*	1.0

Figure 5 The Moderating Effects of Self-Control on Discomfort and Aggressive Behavioral Intentions



Trait Self-Control and Arousal

Hypothesis 1e was supported. A multiple linear regression was calculated to determine if trait self-control significantly moderated the effects of arousal on aggressive behavioral intentions. A significant regression equation was found ($F(5,426) = 25.22$, $p < .001$), with a multiple R of .48 and an R^2 of .23. Arousal ($t = 2.40$, $p = .02$, $R^2 = .01$) and trait aggression ($t = 7.84$, $p < .001$, $R^2 = .11$) were significant predictors of aggressive behavioral intentions when controlling for sex, trait self-control, and the interaction between trait self-control and arousal; however, sex and trait self-control were not. The trait self-control-by-arousal variable emerged as a significant predictor suggesting that trait self-control significantly moderates the effects of arousal on aggressive behavioral intentions. Individuals who were more aroused were more likely to express aggressive behavioral intentions if they were lower in trait self-control ($t = -2.43$, $p = .02$, $R^2 = .01$). Table 7 displays the regression equation and Figure 6 illustrates the moderating influence of trait self control. There was a greater positive relationship between arousal and aggressive behavioral intentions among those with low trait self control than among those with high trait self-control. Individuals who were highly aroused and who were lower in self-control were the most likely to express aggressive behavioral intentions.

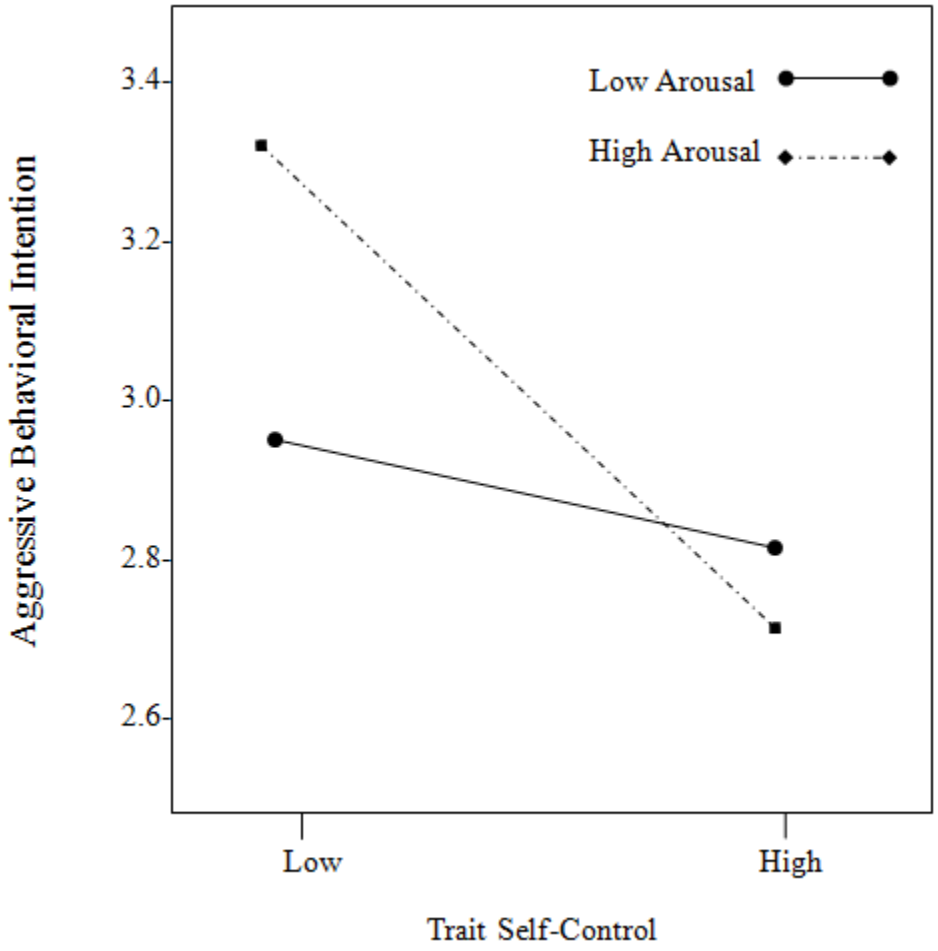
Table 7 Regression Statistics for The Moderating Effects of Trait Self-Control on Arousal and Aggressive Behavioral Intentions.

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	.01		.18	.86	
Sex	.02	-.01	.17	.87	1.0
Trait Self-Control	-.16	-.08	-1.73	.08	1.0
Arousal	.10	.11	2.40	.02*	1.0
Trait Self-Control-by-Arousal	-.18	-.12	-2.43	.02*	1.2
Trait Aggression	.54	.38	7.84	.001*	1.0

Hypotheses 2a-2c

The second set of hypotheses, which predicted that aggressive behavioral intentions are negatively related to a) trait self-control, and to b) state self-control and that c) trait and state self-control are positively related, was supported. A Pearson correlation coefficient was calculated to test the relationship between trait self-control and aggressive behavioral intentions. A weak but significant negative correlation was found ($r(432) = -.26$, $p < .001$). A Pearson correlation coefficient was calculated to test the relationship between state self-control and aggressive behavioral intentions. A strong negative correlation was found ($r(432) = -.69$, $p < .001$), indicating a significant negative linear relationship between the two variables. Individuals who reported low levels of state self-control tended to express more aggressive behavioral intentions. A Pearson correlation coefficient was also calculated to test the relationship between trait self-control and state self-control. The analysis revealed a weak correlation ($r(432) = .30$, $p < .001$), indicating a significant positive linear relationship between trait self-control and state self-control.

Figure 6 The Moderating Effects of Trait Self-Control on Arousal and Aggressive Behavioral Intentions.



Hypotheses 3a-3d

The third set of hypotheses proposed that there should be a greater positive linear relationship between a) hostile thoughts, b) state hostility, c) perceived discomfort and d) arousal and aggressive behavioral intentions among those with lower state self-control, than among those with higher state self-control. A series of multiple linear regressions were calculated to determine the influence of state self-control.

Hostile Thoughts

A multiple linear regression was calculated to determine if state self-control significantly moderated the effects of hostile thoughts on aggressive behavioral intentions. A significant regression equation was found ($F(5,426) = 109.05$, $p < .001$), with a multiple R of .75 and an R^2 of .56. However, the state self-control-by-hostile thoughts interaction variable did not emerge as a significant predictor of aggressive behavioral intentions when controlling for sex, state self-control and hostile thoughts, indicating that state self-control did not significantly moderate the effects of hostile thoughts on aggressive behavioral intentions (Table 8). However, a multiple regression calculated after splitting the data set between low and high trait individuals, suggested that state-self control was a significant moderator for certain people. A significant regression equation was found ($F(4,317) = 118.73$, $p < .001$), with a multiple R of .77 and an R^2 of .60. The state self-control-by-hostile thoughts interaction variable emerged as a significant predictor of aggressive behavioral intentions when controlling for sex, state self-control and hostile thoughts ($p = .005$, $R^2 = .01$), indicating that state-self control significantly moderated the effects of hostile thoughts on aggressive behavioral intentions for low trait aggression individuals. State self-control and hostile thoughts significantly predicted aggressive behavioral intentions while sex did not. Table 9 displays the regression equation and Figure 7 displays the moderating relationship between trait self-control, hostile thoughts and aggressive behavioral intentions.

The figure demonstrates that low hostile thought individuals were the least likely to express aggressive behavioral intentions, but that high hostile thought individuals who

were lower in state self-control were the most likely to express aggressive behavioral intentions.

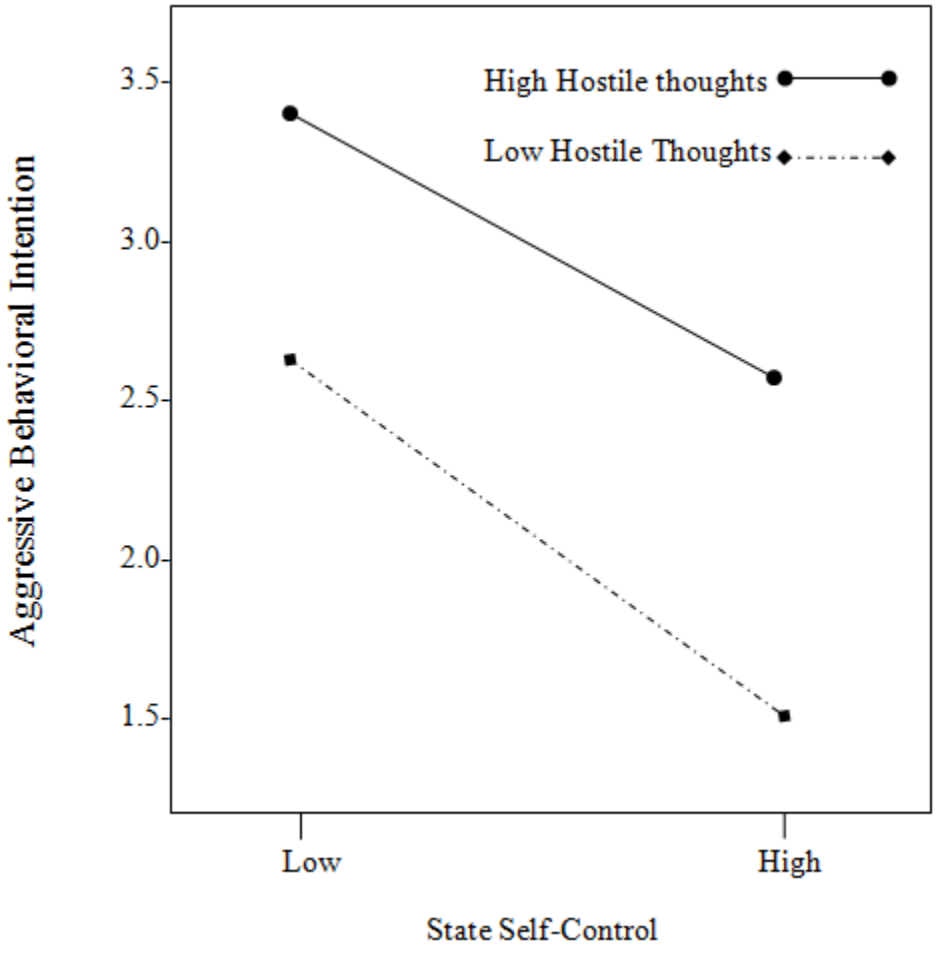
Table 8 Regression Statistics for the Effects of State Self-Control and Hostile Thoughts on Aggressive Behavioral Intentions

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	-.132		-2.96	.003	
Sex	-.01	-.01	-.16	.88	1.0
Trait Aggression	.06	.04	-1.13	.26	1.47
State Self-Control-by-Hostile Thoughts	-.04	-.04	-1.02	.31	1.18
State Self-Control	-.60	-.41	-8.73	.001*	2.09
Hostile Thoughts	.35	.37	7.43	.001*	2.35

Table 9 Regression Statistics for the Moderating Effects of State Self-Control on Hostile Thoughts and Aggressive Behavioral Intentions for Low Trait Aggression Individuals

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	-.07		-1.67	.096	
Sex	-.02	-.01	-.28	.78	1.02
State Self-Control	-.50	-.45	-9.01	.001*	1.99
State Self-Control-by-Hostile Thoughts	-.09	-.10	-2.81	.005*	1.04
Hostile Thoughts	.38	.40	8.11	.001*	1.94

Figure 7 The Moderating Effects of State Self-Control on Hostile Thoughts and Aggressive Behavioral Intentions.



State Hostility

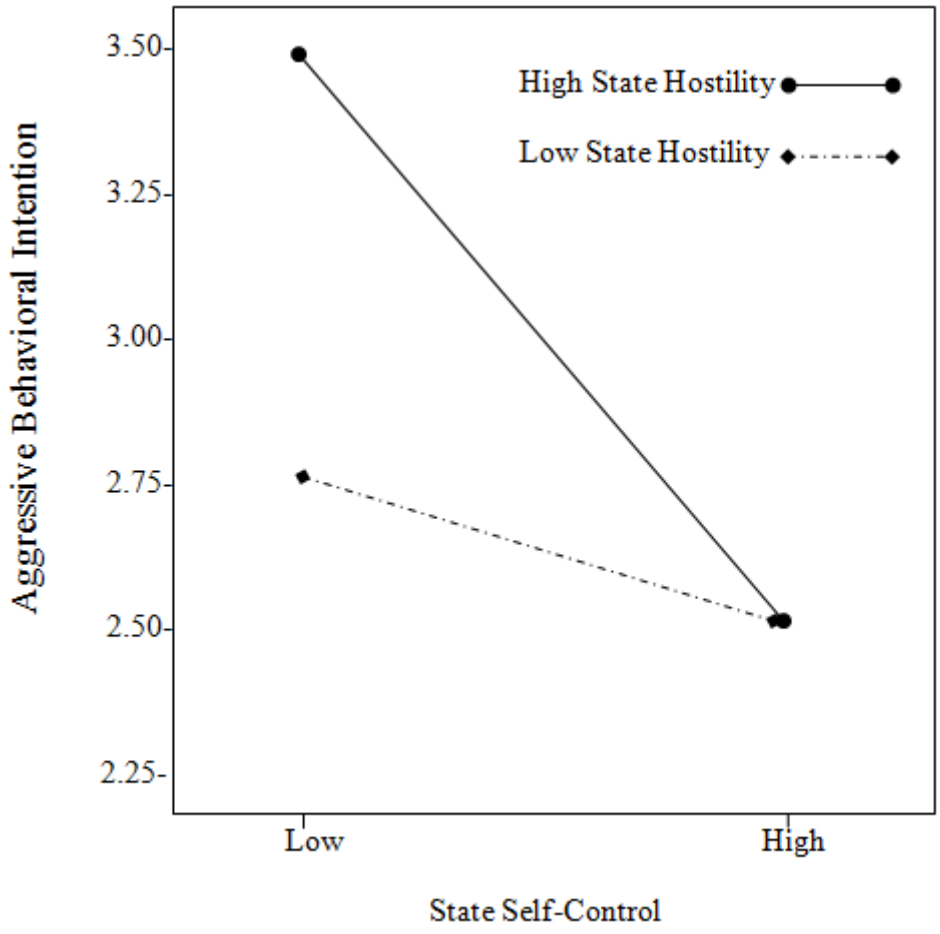
A multiple linear regression was calculated to determine if state self-control significantly moderates the effects of state hostility on aggressive behavioral intentions. A significant regression equation was found ($F(5,426) = 89.21$, $p < .001$), with a multiple R of .72 and an R^2 of .51. State hostility ($R^2 = .01$), state self-control ($R^2 = .20$), and trait aggression ($R^2 = .01$) significantly predicted aggressive behavioral intentions, when controlling for sex and the state self-control-by-state hostility variable. However, sex was not a

significant predictor. State self-control emerged as a significant moderator of the relationship between state hostility and aggressive behavioral intentions when controlling for sex, trait aggression, state self-control and state hostility (R^2 = .01). Individuals with higher levels of state hostility were significantly less likely to admit to aggressive behavioral intentions if they maintained higher levels of state self-control. Table 10 depicts the significant regression equation and Figure 8 illustrates the relationships.

Table 10 Regression Statistics for the Moderating Effects of State Self-Control on State Hostility and Aggressive Behavioral Intentions

Variable	b	β	t	p	VIF
Aggressive Behavioral Intention					
Constant	-.189		-4.34	.001	
Sex	-.06	-.03	-.83	.41	1.03
State Self-Control	-.84	-.56	-13.19	.001*	1.39
State Self-Control-by-State Hostility	-.09	-.07	-1.92	.05*	1.02
State Hostility	.14	.12	2.78	.006*	1.43
Trait Aggression	.14	.10	2.45	.02	1.04

Figure 8 The Moderating Effects of State Self-Control on State Hostility and Aggressive Behavioral Intentions



Comfort

A multiple linear regression was calculated to determine if state self-control significantly moderated the effects of perceived discomfort on aggressive behavioral intentions. A significant regression equation was found ($F(5,426) = 88.22$, $p < .001$), with a multiple R of .71 and an R^2 of .51. State self-control ($t = -15.91$, $p < .001$, $R^2 = .30$), perceived discomfort ($t = 2.93$, $p = .004$, $R^2 = .01$), and trait aggression ($t = 3.23$, $p = .001$, $R^2 =$

.01) significantly predicted aggressive behavioral intentions when controlling for sex and the state self-control-by-perceived discomfort variable. While the state self-control-by-perceived discomfort variable significantly moderated the effects of perceived discomfort on aggressive behavior when trait aggression was not part of the equation, the state self-control-by-perceived discomfort variable and sex were not significant predictors when controlling for trait aggression. Therefore, although the state self control-by-discomfort variable approached significance ($p = .09$), state-self control did not significantly moderate the effects of perceived discomfort on aggressive behavioral intentions as hypothesized. State self-control did not significantly moderate the effects of perceived discomfort on aggressive behavioral intentions for low trait aggression individuals ($p > .05$).

Arousal

A multiple linear regression was calculated to determine if state self-control significantly moderated the effects of arousal on aggressive behavioral intentions. A significant regression equation was found ($F(5,426) = 86.46$, $p < .001$), with a multiple R of .71 and an R^2 of .50. The state self-control-by-arousal variable did not emerge as a significant predictor of aggressive behavioral intentions after controlling for sex, trait aggression, arousal and state self-control indicating that state self-control did not significantly moderate the effects of arousal on aggressive behavioral intentions. State self-control ($R^2 = .30$), trait aggression ($R^2 = .01$), and arousal ($R^2 = .01$) significantly predicted aggressive behavioral intentions when controlling for the interaction between state self-control and arousal and sex, while sex did not. State self-control did not significantly

moderate the effects of arousal on aggressive behavioral intentions for low trait aggression individuals ($t = -.43$, $p = .67$).[2]

Hypotheses 4a - 4c

A factorial analysis of variance was performed to test the final set of hypotheses which proposed that those exposed to aggressive behavioral cues should have a) the most hostile thoughts and b) the most state hostility, followed by those who were not exposed to a behavioral stimulus, and finally by those who were exposed to the anti-aggressive stimulus, and that trait self-control should moderate the effects of the behavioral stimulus on hostile thoughts and state hostility, such that there should be a positive relationship between aggressive stimulus exposure and c) hostile thoughts and d) state hostility among those with low trait self-control, but no relationship among those with high trait-self-control.

To assess treatment effects, a 3 (treatment condition) x 2 (trait self-control) between subjects factorial analysis of covariance was calculated comparing the hostile thoughts of participants who were exposed to the aggressive behavioral stimulus, to the anti-aggressive stimulus or to no stimulus and who were classified as maintaining high or low trait self-control. A dichotomous self-control variable was created by splitting the construct at its median (2.92), and sex and trait aggression were included as a common covariates. The initial analysis did not support the hypothesis. The main effect for treatment group was not significant ($F(2, 424) = 4.41$, $p = .26$), nor was the main effect

[2] Post hoc analyses controlling for Facebook account ownership were performed on all regression equations to determine whether experience with Facebook impacted the reported results. Having a Facebook account was not a significant predictor in any of the equations, nor did it modify any of the reported results.

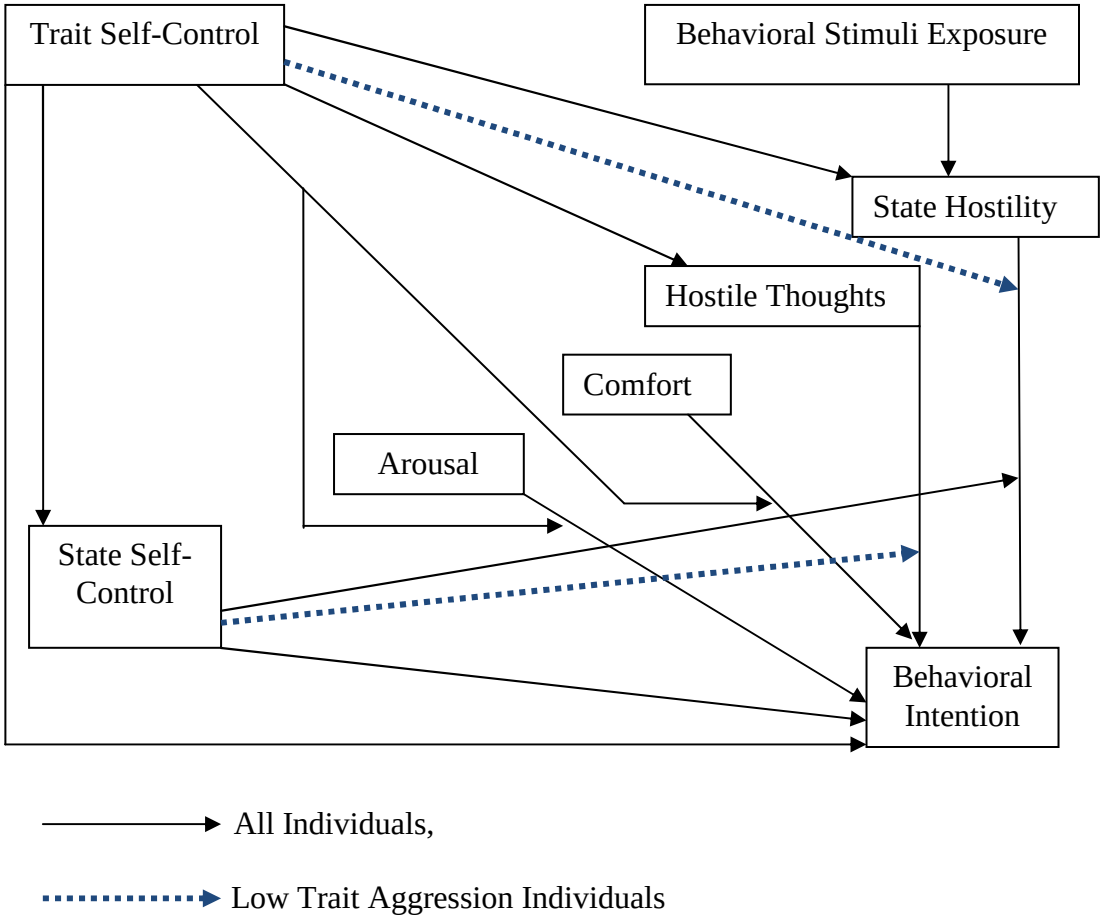
for sex ($F(1,424) = .01$, $p = .91$). However, significant main effects for trait self-control ($F(1,424) = 4.41$, $p = .04$) and trait aggression ($F(1,424) = 132.05$, $p < .001$) were found. Finally, the interaction between trait self-control and treatment group was not significant ($F(2,424) = .57$, $p = .57$). Thus, it appeared that neither treatment group nor sex had any significant impact on hostile thoughts, while trait self-control did.

A 3 (treatment condition) x 2 (trait self-control) between subjects factorial analysis of covariance was calculated comparing the state hostility of participants who were exposed to the aggressive behavioral stimulus, to the anti-aggressive stimulus or to no stimulus, and who were classified as maintaining high or low trait self-control. Trait aggression and sex were included as covariates. The main effect for treatment group was significant ($F(2,424) = 3.05$, $p = .04$), as were the main effects for trait self-control ($F(1,424) = 9.40$, $p = .002$), trait aggression ($F(1,424) = 43.64$, $p < .001$) and sex ($F(1,424) = 12.73$, $p < .001$). Low trait self-control individuals were higher in state hostility ($M = 3.14$, $SD = 1.0$) than high trait self-control individuals ($M = 2.73$, $SD = .93$, Cohen's $d = .42$) and females were higher in state hostility ($M = 3.06$, $SD = .98$) than males ($M = 2.77$, $SD = .96$, Cohen's $d = .30$). Individuals exposed to the aggressive treatment condition were highest in state hostility ($M = 3.09$, $SD = .96$), followed by those exposed to the anti-aggressive treatment condition ($M = 2.92$, $SD = .97$), and finally by those not exposed to an aggressive stimuli ($M = 2.72$, $SD = .99$). Contrary to the hypothesis, individuals in the control condition who were not exposed to a behavioral stimulus exhibited the lowest amount of state hostility. However, as predicted, those who were exposed to the anti-aggressive treatment condition expressed less state hostility than those exposed to the aggressive treatment condition. An a priori contrast test revealed a

significant difference between the aggressive and anti-aggressive treatment groups ($F(2,424) = 3.05$, $p = .04$), where individuals exposed to the anti-aggressive treatment condition exhibited significantly lower levels of state hostility than those exposed to the aggressive treatment condition ($p = .03$, Cohen's $d = .18$). In other words, the anti-aggressive treatment condition suppressed state hostility more than the angry treatment condition.

Finally, the interaction between trait self-control and treatment group was not significant ($F(2,424) = .164$), $p > .05$). When the data set was split between low and high reactive trait aggression individuals, the moderating influence of trait self-control on the effects of behavioral stimuli exposure on state hostility approached significance for low trait aggression females ($F(2,310) = 2.58$, $p = .07$); however, it fell short of reaching the .05 significance level. Figure 7 displays the significant relationships revealed by the present data analysis.

Figure 9 Significant Tested Relationships



Online vs. Offline Aggression

Research Question 1

A constant comparative preliminary analysis was conducted to identify commonalities between respondents. The first research question asked if participants would do anything beyond the replies that they had already given to respond to their aggressor. Of the 53% of participants who provided answers, 56.5% said 'yes' and 43.5% said 'no'. Of those who said 'yes', many respondents suggested that they would engage in a non-aggressive

confrontation (40.5%); however, others stated that they would respond aggressively online (20.61%) or in person (27.48%). Some of the participants who suggested that they would behave aggressively in person further admitted that they would confront their perpetrator verbally (15.27%) or physically (12.21%) in the offline world. Other responses included intentions to tell an authority figure such as a parent about the incident (3.1%), to remove the perpetrator from their list of friends (.04%), to take the post down (.01%) and to ignore the perpetrator (17.67%).

Multiple cases demonstrated that when online aggression does not occur anonymously, that its repercussions can affect and initiate offline aggressive responses. A few suggested that online attacks are shallow and unintimidating. These respondents expressed pity for aggressors who felt the need to instigate others through an online platform and suggested that aggressors who act face-to-face have courage if nothing else. However, several participants expressed desires to find their aggressor offline and to engage in forms of verbal aggression, such as yelling, or in forms of physical aggression, such as fighting, kicking, hitting or beating (12.21%).

Research Question 2

A constant comparative preliminary analysis was also performed to evaluate the second open-ended research question, which asked participants if they would have reacted differently if their classmate had harassed them in a similar manner in person. Out of all of the participants, 59% of the sample responded to the second research question. Of those respondents, 65% said ‘yes’ and 34% said ‘no’. Of those who said ‘yes’, some respondents expressed the desire to engage in a non-aggressive confrontation

(7.2%). Although many participants expressed the desire to react aggressively when harassed through an online setting, this desire seemed to escalate greatly when presented with the idea of an offline aggressor. Nearly 22% of those who responded suggested that they would react in a verbally aggressive manner by insulting, verbally harassing, screaming or yelling at their aggressor, or in a physically aggressive manner (22.75%) by punching, hitting, fighting, slapping or physically attacking their aggressor. They excused this behavior through multiple avenues. Nearly 12% of participants suggested that the nature of public aggression is much more intimidating in offline encounters because the presence of an active audience demands one's response. Respondents also suggested that public offline provocation produces more anger, frustration and/or embarrassment (11%). Other responses included intentions to talk to an authority figure such as a parent about the incident (1.8%), or to ignore the perpetrator (10.55%).

When probed about their online aggressor, many individuals (25.19%) expressed a desire to know why their classmate harassed them or to understand the source of their classmate's anger before reacting. This delayed response was barely evident in responses to the second open-ended research question (.03%), which asked participants if they would have reacted differently had their classmate harassed them in a similar manner in person. The final chapter discusses the implication of this study's results. It also addresses limitations of this research and outlines potential avenues of future research related to the present findings.

Chapter 6

Discussion

This study sought to understand and inhibit online aggression through the General Aggression Model's theoretical framework. The study's main purpose was to examine the interaction between aggressive and anti-aggressive behavioral stimuli and self-control on cognition, affect and aggressive behavior. Its secondary purposes were to consider trait and state self-control as additions to the GAM, and to explore the differences between off- and online aggression. Many studies have focused on the former; few have empirically investigated the latter. The original contribution of the present study was to examine online aggression through a theoretical framework, to present trait and state self-control as valuable additions to the GAM, and to ascertain the value of exposure to anti-aggressive behavioral stimuli in restraining online aggression. Trait and state self-control emerged as significant moderating variables, behavioral stimuli exposure influenced affect, but not cognition, and thought-provoking connections between off- and online aggression surfaced.

Trait and State Self-Control as Moderating Variables

This study's major contribution to online aggression and to the universe of aggression research in general is that self-control, whether as a trait, or as a function of state, is an important antecedent to aggressive behaviors. Consistent with the correlational relationships proposed by the GAM and previous research (Bushman & Geen, 1990; Lindsay & Anderson, 2000; Anderson 1999), hostile thoughts led to aggressive behavioral intentions. As expected, trait aggression was consistently a

significant predictor of aggressive behavioral intentions. Both trait self-control and state self-control negatively related to aggressive behavioral intentions, such that higher levels of self-control were associated with fewer aggressive behavioral intentions.

However, the data presented only a weak significant correlation between trait self-control and aggressive behavioral intentions, which likely accounted for its lack of predictive utility when controlling for other variables throughout many of the regression equations. Some adolescents may maintain inflated perceptions of their self-regulatory capacities. The gap between an individual's perceived self-regulatory capacity and their actual self-regulatory capacity could partially explain the weak effect for trait self-control on behavioral intentions. On the other hand, self-regulatory domain specificity may also partially explain the gap. Self-control is said to be domain specific, such that one's ability to self-regulate one behavior is not necessarily indicative of one's ability to self-regulate another behavior. Some participants who maintain generally high levels of trait self-control in most areas, and who thus reported high levels of trait self-control, may experience self-regulatory failure in the face of retaliatory online aggression. Alternatively, self-control may not be fully developed even among high school-aged adolescents, and personality traits are not always good behavioral predictors (Mischel, 1968).

Contrary to expectations, trait self-control was not found to moderate the effects of hostile thoughts on aggressive behavior. However, trait self-control closely approached significance in moderating the effects of hostile thoughts on aggressive behavior for low trait aggression individuals, and state self-control did significantly moderate the effects of hostile thoughts on aggressive behavior for low trait aggression individuals.

Logically, individuals who think fewer hostile thoughts (e.g. I want to get this person back and I want to get revenge) are less likely to engage in acts of retaliatory aggression. Hostile thoughts express a cognitive desire to behave aggressively. In their absence, an individual may feel anger, but not enough anger to actually aggressively retaliate. For those who develop highly hostile thoughts, what can be done to inhibit incidents of aggression in instances when aggressive retaliatory cognition clouds judgment?

According to the results of this study, self-control can significantly inhibit those thoughts for some individuals. By applying the presumed utility of self-control to relationships that already existed within the GAM, this study revealed that self-control can moderate the relationship between hostile thoughts and aggressive behavioral intentions for low trait aggression individuals. Those with highly hostile thoughts were more likely to refrain from aggressive behavioral intentions, despite exhibiting thoughts of revenge, if they had high levels of self-control. Self regulatory literature suggests that thought control is one of the primary dimensions of self-control (Baumeister et al., 2004; Finkenauer et al., 2006). These results empirically bolster the notion that self-control can play a significant role in cognition.

However, this effect was not evident for high trait aggression individuals. Descriptive statistics ascertained after splitting the data set between low and high trait aggression individuals revealed that in general, more low trait aggression individuals were high in trait self-control (64.3%) than high trait aggression individuals (35.8%). Previous studies have found that high trait aggression may derail influential effects of other variables, thus the lack of effect for high trait aggression individuals is clearly

conceivable. For example, previous studies have found that exposure to aggressive stimuli may not affect high trait aggression individuals (Anderson, 1997). In this case, neither trait nor state self-control were significant moderators for high trait aggression individuals, suggesting that inhibitory factors may also experience greater difficulty in impeding aggressive behavior for those with highly hostile personalities.

General aggressiveness is also related to an attribution bias in people (Lindsay & Anderson, 2000). The appraisal processes of individuals who maintain highly hostile personalities tend to be somewhat skewed, such that these individuals often justify aggressive actions by attributing blame to the other person. In this case, high trait aggression may have reduced the mediating effects of the appraisal process, thereby eliminating the need or desire to engage in self-control. During the appraisal stage, they could have justified their retaliatory aggressive behavior by attributing blame to the provoker. They may not have perceived the act of retaliatory aggression as a negative or socially undesirable action, but as a necessary, warranted and justifiable or uncontrollable reaction to which they were entitled.

A similar pattern between state hostility and aggressive behavior emerged. Consistent with the correlational relationships proposed by the GAM and previous research (Bushman & Geen, 1990; Lindsay & Anderson, 2000; Anderson 1999), a positive relationship between state hostility and aggressive behavioral intentions suggested that individuals experiencing more anger are more likely to form aggressive behavioral intentions. Individuals experiencing highly hostile states were less likely to admit to aggressive behavioral intentions if they were higher in state self-control. Low trait aggression individuals experiencing highly hostile states were also less likely to

admit to aggressive behavioral intentions if they were higher in trait self-control. Once again, the data presented a clear division between low and high trait aggression individuals for trait self-control. However, state self-control emerged as a significant moderator of the effects of state hostility on aggressive behavioral intentions for both low and high trait aggression adolescents.

This study's results are consistent with previous studies which have found that factors such as pain and uncomfortable temperatures result in increased aggression (Anderson & Bushman, 2002). Aggression research manipulating temperature effects often include perceived comfort as a manipulation check (Anderson et al., 1996) to determine whether inductions produced adequate degrees of discomfort. These studies have manipulated comfort levels by immersing an individual's hand in ice cold water or modifying room temperatures to make individuals uncomfortable. This study did not involve a comfort manipulation; however, perceived discomfort was similarly associated with aggressive behavioral intentions. A positive relationship between perceived discomfort and aggressive behavioral intentions emerged, indicating that those who felt comfortable, rested and soothed, were less likely to exhibit aggressive behavioral intentions. Participants who felt uncomfortable in the current study did not feel uncomfortable because they were subjected to painful stimuli, but level of comfort still functioned as expected.

Once again, trait self-control emerged as a significant inhibitory variable, demonstrating that its importance extends beyond cognition and hostile affect. Those who were more likely to express aggressive behavioral intentions because of low comfort levels were significantly less likely to express aggressive behavioral intentions if they

maintained higher trait self-control. Individuals are more receptive to logical and rational thought processes when they feel rested and comfortable (two items used to measure perceived discomfort) than when they are grappling with uncomfortable and unpleasant feelings. Individuals with rested mindsets through which they can rationally consider potential consequences likely have more control over their self-regulatory capabilities. Self-monitoring, one of the necessary components of self-control (Baumeister, 2002), operates more efficiently within comfortable internal states. Contrary to these expectations, however, state self-control was not a significant moderator of the effects of perceived discomfort on aggressive behavioral intentions. Interestingly, the confirmatory factor analysis suggested that certain items (e.g. I thought through all of the alternatives before I reacted and I used a lot of self discipline in this situation) be removed from the state self-control scale, although their equivalents were represented in the trait self-control scale. The strongest indicators of the self-monitoring component were therefore absent from the measure of state self-control which could partially explain why trait self-control emerged as a significant moderator but why state self-control did not.

Consistent with the GAM propositions, arousal was positively correlated with aggressive behavioral intentions, suggesting that increased arousal leads to increased aggressive behavioral intentions. Trait self-control, but not state self-control, moderated the relationship between arousal and aggressive behavioral intentions. This study measured arousal through self-report items (e.g. I feel active and I feel energetic). Anderson and colleagues (1995) suggest that arousal can be measured through either physiological indicators such as blood pressure or through self-report items, yet most previous studies that have connected arousal to aggressive behaviors relied on the former.

Previous GAM studies have measured arousal through self-report (Chory-Asaad, 2004), however, physiological indicators may more accurately measure the effects of provocation or other stimuli on the individual, while the self-report measures used in this study seem somewhat disconnected from the bodily affects of arousal that one would expect from aggressive provocation. Perhaps the moderating influence of the effects of arousal on aggressive behavioral intentions would have been more evident if arousal was measured through physiological indicators. Another possibility is that as an automatic process, arousal is not as subject to state-level control, which requires thoughtful consideration. Automatic processes such as arousal present a potential challenge to the utility of self-control because they occur outside of awareness in a largely involuntary manner.

In general, self-control's influence on the present internal state factors can potentially be significant. Interactions between self-control and aggressive thoughts, state hostility, comfort and arousal are particularly important in light of recent self-regulatory research which suggests that an individual's self-regulatory capacity closely relates to a muscle that can be trained and expanded (Baumeister, 2002). Individuals who have participated in self-regulatory regimens have successfully increased their self-regulatory capabilities by exerting control over mundane, but habitually routine activities. Activities included in previous self-regulatory regimens include brushing one's teeth with the non-dominant hand and refraining from using sentences that begin with the word "I" (Finkel et al., 2009). In a similar fashion, adolescents who consistently exert conscious control over activities that require active self-monitoring of even non-related behaviors can increase their capacity to do so in future situations. Similarly, self-regulatory

exercises should allow adolescents who were previously unable to overcome hostile cognition and affect to exert greater levels of control over their future behaviors.

The Relationship between Trait and State Self-Control

Trait self-control was an important predictor of state self-control; however, the relationship was weak. The data presented only a weak relationship between the two constructs. Adolescents who reported possessing a capacity for resisting temptation and the ability to avoid engaging in behaviors that they knew were wrong at the beginning of the study, did not necessarily resist temptation or avoid engaging in risky behavior after provocation at the end of the study.

Motivation likely mediates the relationship between trait self-control and state self-control. This research demonstrated that an individual may actually elect or not elect to engage in self-control regardless of their ability to control their impulsive inclinations. Perhaps some high trait self-control individuals were not motivated to inhibit their desire to behave aggressively because they believed that responding in a similar manner as their provoker would be good for them rather than bad for them. Aggressive behavior is generally considered socially undesirable, but the motivation to pursue more personally important goals may override consideration of unattractive behavior. To illustrate, the individual may believe that he must behave aggressively to prevent further acts of aggression by the provoker. Thus, he would be motivated to behave aggressively in order to create good future results. Another possibility is that some of these individuals had depleted self-regulatory resources and were not supplied with significant enough motivation to restrain their behavior. This alternative is consistent with previous research

(Muraven & Slessareva, 2003) which demonstrated that individuals can overcome depleted self-regulatory states when supplied with a meaningful motivation. Finally, the weak relationship between the trait and state measures may have been because trait self-control measured a more general form of self-control while state self-control was a domain specific indicator. It also provides support for the argument that personality traits are not always adequate behavioral indicators because people sometimes behave quite differently depending on the situation (Mischel, 1968; Fleeson, 2007). In any case, the significant role of trait self-control is intriguing through its influence on state self-control. The relationship reveals a somewhat predictable interaction; however, it presents another avenue through which one's trait self-control can positively counteract aggressive behaviors.

Behavioral Stimuli

Exposure to the aggressive behavioral cue functioned partially as hypothesized, such that the anti-aggressive behavioral stimulus inhibited state hostility significantly more than the aggressive behavioral stimulus, but the treatment conditions did not significantly impact hostile thoughts. Previous GAM studies have found that aggressive stimuli act primarily through the cognitive channel to affect aggressive behavior. The GAM proposes that aggressive stimuli can impact aggressive behaviors through both cognition and affect, yet multiple studies have discovered only partial support for this proposition, finding that aggressive cues influence aggressive behavior primarily through cognition and not through affect. The mere presence of guns increases aggressive behavior of participants (Berkowitz & LePage, 1967) and the presence of guns or other

aggressive cues increases the accessibility of hostile thoughts (Anderson, Benjamin & Bartholow, 1998; Bartholow, Anderson, Carnagey & Benjamin, 2005; Meier, Robinson & Wilkowski, 2007).

In line with previous studies that have demonstrated the utility of pro-social behavioral stimuli to pro-social behavior (Huston-Stein and Friedrich, 1973; Greitemeyer, 2009; Greitemeyer & Osswald, 2010), the current results indicate that behavioral stimuli can impact aggressive behavioral intentions through affect. Exposure to the anti-aggressive behavioral stimulus decreased state hostility such that individuals who were exposed to the happy face reported feeling less angry, less bitter, less aggravated and less resentful than those who were exposed to the angry facial expression.

Contrary to expectations, however, participants in the anti-aggressive treatment condition actually appeared angrier than the control condition participants who did not view a behavioral stimulus, although the two groups were not statistically different from each other in state hostility. Despite the pretest consensus on the behavioral stimulus's meaning, when paired with the anger-inducing scenario, the happy facial expression may have acquired a mocking connotation. For instance, the perception that not only is this individual harassing you, but s/he thinks that it is funny may have been interpreted. The facial expression stimulus may have been perceived as an additional message from the online provoker rather than as a non-affiliated visual cue. The stimulus facial expression was displayed on the right side of the comment box, away from the words; however, the absence of other visual cues from the website may have made the image appear as if it came from the provoker. Previous computer mediated communication research suggests that emoticons are used to convey emotions that are otherwise not strongly conveyed in a

medium that lacks non-verbal cues, and that an emoticon can impact a message's interpretation when it is perceived as belonging to the message. If this was the case in the present study, the results are consistent with previous research (Thompson & Foulger, 1996) in that positive facial expressions can increase, rather than decrease anger when the message is perceived as extremely negative. The emoticons were not images of actual people; however they potentially personalized the attack by providing a face for the provoker. In any case, the results suggested that mere exposure to certain behavioral stimuli can affect aggressive behavior through an individual's internal state. With further research, online social networks or other online websites can potentially curtail acts of aggression on their sites by displaying, or not displaying, the cues that affect cognition and affect.

Consistent with previous research (Berkowitz & LePage, 1967; Anderson, Benjamin & Bartholow, 1998; Bartholow, Anderson, Carnagey & Benjamin, 2005; Meier, Robinson & Wilkowski, 2007) hostile thoughts influenced aggressive behavior. However, the aggressive stimulus' impact on aggressive behavior through hostile thoughts was curiously absent. Perhaps the provocation of participants in the present study can account for some of the discrepancies between current and prior findings. Many previous studies have attempted to invoke hostile thoughts, state hostility, and aggressive behavior solely through aggressive cues (Berkowitz & Lepage, 1967; Anderson, Benjamin, & Bartholow, 1998) or provocation, while the present study combined the two stimuli. Exposure to the anger-inducing scenario undoubtedly influenced these variables. The scenario was designed to impact cognition by increasing hostile thoughts and affect through escalating state hostility. Its direct impact could not

be assessed because it was not experimentally manipulated across participants; however, it was designed to engage the cognition by igniting vengeful thoughts against the attacker. Results suggested that the anger-inducing scenario sufficiently invoked hostile thoughts, without the aggressive cue, for those who subsequently intended to engage in aggressive behavior.

The divergence between the channel affected in previous studies and the current one may also be explained through the nature of the behavioral stimulus. Most prior studies have used a gun or another such weapon as an aggressive cue to impact the present internal state (Berkowitz & Lepage, 1967). For multiple reasons, the present study cued behavior through emoticons relating to anger or happiness rather than through more commonly used weapons. Weapons may more readily impact cognition than state hostility because they provide a tool through which one can enact revenge. Hostile thoughts are measured by sentiments such as 'I want to get revenge' and 'I'll show this person.' Exposure to a weapon likely activates an automatic and vengeful mental script. Angry facial expressions, on the other hand, do not provide a tool through which someone can engage in retaliatory aggression and they likely activate a different type of mental script by increasing an already present angry or bitter emotion. Trait self-control did not moderate the relationship between behavioral stimuli exposure on cognition or affect. However, low self-control led to high state hostility and highly hostile thoughts.

Online Aggression and Gender

Aggression is generally considered a male dominant trait and most aggression research supports the notion that males tend to exhibit more aggressive behavior than

females (Bandura et al., 1961; Kowalski & Limber, 2007). Preliminary cyberbullying studies suggest that aggressive tendencies may function differently online. Results from this study's exploration on gender roles in online aggression are consistent both with previous research that suggests that males and females are equally likely to engage in online aggression (Werner, Bumpus & Rock, 2009; Ybarra & Mitchell, 2004b) and with those that contend that females are more likely to engage in online aggression than males (Smith, Madavi, Carvalho, Tippet, 2006; Kowalksi, Limber & Agatston, 2008). While 61.4% of females admitted to having used a technology such as text messages, chat room or email to aggress, only 35.6% of males made the same confession.

Further information is needed to identify the specific technologies that females used to aggress in the past. Text messages and email generally involve private interactions, while communication in chat rooms frequently occurs anonymously between individuals who have not met each other in the offline world. These descriptive statistics support the notion that females are more likely to behave aggressively in private or anonymous settings. Consistent with gender role literature contending that males are socialized to openly exhibit more aggression than females (Bandura et al., 1961; Kowalski & Limber, 2007) this research lends credence to the proposition that females may feel more comfortable with aggression when it is performed through a private or anonymous electronic barrier. The significantly smaller percentage of males who reported prior cyberbullying behavior suggested that when the desire to behave aggressively arises, males may prefer to express their aggression through more conventional channels.

Results indicated that females were significantly higher in state hostility than

males, however, sex consistently proved to be an insignificant predictor of aggressive behavioral intentions. A chi square test of independence was calculated comparing the frequency of online aggressive behavioral intentions for males and females. Only 24% of females indicated that they were at least somewhat likely to use the Internet to aggressively respond to their provoker within the context of this study. A slightly smaller, but not significantly different ($X^2(1) = .720$ $p > .05$) percentage of males (20.5%) also intended to behave aggressively online. Online aggression within the current context was neither anonymous nor private. If anonymity and privacy promote electronic aggression for females as descriptive statistics suggested, the public and identifiable nature of this study's behavior of interest should restrain aggressive online conduct. When stripped of anonymity and dimensions of privacy, females may view online aggression as increasingly similar to offline aggression. In any case, the high percentage of females who admitted to some form of cyberbullying illustrates a potentially important difference between off- and online aggression.

Online vs. Offline Aggression

Through qualitative analysis, this study identified thought-provoking similarities, differences and connections between off- and online aggression. After provocation, many respondents stated that they would respond aggressively online or in person. This finding supports previous research that has identified Internet victimization as an antecedent for future online aggression (Ybarra & Mitchell, 2004b; Kowalski & Limber, 2007; Wolak et al., 2007; Werner, Bumpus & Rock, 2009) and offline aggression as an antecedent for future offline aggression (Barboza et al., 2009). However, the current

results suggested that online aggression can also serve as an impetus for offline aggression. Most of the current horror stories that depict the offline consequences of online aggression reflect self-inflicted violence on the part of the victims. However, results from the present study strongly implied that victims of online aggression may direct serious violent reactions towards others rather than towards themselves. Multiple respondents expressed the desire to fight with, kick, hit or beat the classmate who provoked them on the Internet. An adolescent who bullies someone online might receive a verbal attack or even a punch in the face the next day at the school yard if the so-called victim was sufficiently angered. Many respondents referred to online attacks as shallow and unintimidating, yet some of these same individuals expressed a desire to aggressively engage their attacker in person if not in an online environment.

Despite the potential for off- and online cyclical violence, qualitative results also suggested that the effects of online aggression are generally less severe than their offline counterparts. A much larger percentage of individuals stated that they would have behaved in a verbally or physically aggressive manner if they were provoked offline rather than online. Many suggested that face-to-face encounters make them angrier, more embarrassed, and create more pressure than do online encounters. These comments aligned closely with the GAM's propositions. Increased anger should lead to increased aggressive behavior. If an online encounter does not sufficiently arouse or anger the individual in the way that an offline encounter would, it will not result in aggressive behavior. Likewise, when the feelings produced by online attacks involve pity for the attacker (as suggested by some participants) rather than anger or frustration for the victim, they will unlikely result in retaliatory aggression.

A few individuals suggested that an online encounter would be worse than an offline encounter because the public nature of the Internet allows people to read the comment repeatedly and to share the comment with other people, whereas the comment exists only in memory in face-to-face encounters. Furthermore, within the context of this study, the individual would have to depend on an outside source to remove the comment because it was made on their friend's profile. However, it is possible that many of the respondents who did not belong to Facebook did not know how the online social network functioned, including the implications of the anonymity afforded or not afforded by the website. Despite the few who feared the potential shame produced from lasting online comments, participants overwhelmingly agreed that the nature of public aggression is much more intimidating in offline encounters because the presence of the active audience demands one's response. Many participants seemed to disregard the impact of the audience in the online environment suggesting that either they did not consider the online audience, or that an online audience generates far less pressure than an offline audience.

Finally, many participants expressed a desire to understand why their classmate harassed them before reacting when they were provoked online. The desire to understand the source of the classmate's anger before reacting was not expressed when individuals were probed about how they would react if they were provoked offline. Online provocations may result in more thoughtful reactions because they remove many of the pressures generated from offline provocations. Online provocations more than offline provocations may thereby present opportunities for adolescents to engage in more successful self-control efforts because online encounters grant them more time and fewer pressures. Baumeister (2002) suggested that the resources needed to engage in self-

control include personal standards, an active monitoring process and the capacity to alter one's behavior. While removed pressures and increased time cannot directly increase an individual's self-regulatory capacity, they can assist one's monitoring process and help them to remember their personal standards.

Limitations

As with all research projects, this study contained multiple limitations. Attempts were made to make the online environment in which the high school students participated in the study as authentic as possible. However, most institutions of secondary education block online social networking sites, including Facebook from their Internet servers. Thus, participating in the project from the classroom environment created a degree of artificiality. While participation in the survey was completely anonymous so that students would feel comfortable with acting normally, adolescents who engage in online aggression most likely do so from their own homes or from another private location. The anger-inducing provocation scenario likely felt somewhat unauthentic to participants because it asked them to imagine a hypothetical situation. An actual anger-inducing situation would expectedly produce an even greater degree of hostile cognition and affect.

This study was limited by a lack of a manipulation check for behavioral stimuli. The color, size and location of the faces embedded within the anger-inducing scenario were likely difficult to ignore. However, a specific question was not included within the questionnaire to determine whether participants saw the behavioral stimuli, making treatment condition conclusions more difficult to ascertain. Furthermore, participants

answered questions relating to trait aggression and attitude towards aggression before exposure to stimulus materials which could have possibly primed aggression-related internal processes.

Behavioral intentions and not behavior comprised the study's major outcome variable. Many scholars argue that behavior should be clearly distinguished from behavioral intentions because intentions do not always accurately predict an individual's actions (Budd, 1987; Weinstein, 2007). However, others contend that behavioral intentions are the best known predictor of behavior (Ajzen, 2002), and multiple meta-analytic reviews have demonstrated at least moderate links between the two constructs (Milne, Sheeran & Orbell, 2000; Armitage & Connor, 2001; Webb & Sheeran, 2006).

Some of the sample was inexperienced with Facebook. Only 41% of the participants had Facebook accounts, which was well below the national average of 73% of teenagers with social networking accounts (Pew, 2009). Inexperience with Facebook directly may have adversely affected their responses. However, regression results were still consistent with those reported after controlling for Facebook account ownership, suggesting that inexperience with Facebook was not problematic in this sample. Nearly half claimed to have been past victims of cyberbullying, nearly a third confessed to having been prior cyberbullies and nearly 70% knew someone who had been bullied through technology in the past.

The red tape surrounding research involving minors greatly complicated this project. Gaining access to the desired population was very difficult and certain concessions for what would be considered appropriate and allowable to show minors had to be considered. It is possible that experimental inductions involving aggressive stimuli

may have revealed more significant findings or may have demonstrated stronger effect sizes if the stimuli could have been more blatantly aggressive.

For example, prior GAM research using aggressive cues has found that exposure to images of guns or other weapons has significantly increased hostile thoughts in adults (Bartholow et al., 2005). In light of increased levels of fear about school violence and massacres, gaining access into high schools with a research project involving aggression that proposed showing adolescents images of guns or similarly violent content would have made an already difficult task nearly impossible. The fact that the community in which the study took place has experienced devastatingly extreme school violence in the past amplified the potential difficulty of showing guns or other weapons in the schools.

Future Research

Future research involving online aggression and aggression in general should continue to test the roles of trait self-control and state self-control in aggressive behavior. Results from the current data set suggest that trait-self-control and state self-control can inhibit many of the factors that contribute to online aggression; however, they yielded small effect sizes. This study specifically examined public, identifiable retaliatory online aggression, but it would be interesting to explore whether high trait self-control can successfully inhibit private and/or anonymous online aggression as well. Perceived anonymity afforded through electronic media may potentially encourage some unlikely traditional bullies to become cyberbullies, especially in instances of retaliation. Furthermore, the Internet characteristically provides asynchronous communication and a significant physical barrier. The former removes time pressure by granting an unlikely

bully the opportunity to carefully formulate words and craft an attack, while the latter, in combination with anonymity, removes the threat of immediate retaliation.

Self-control characteristically involves avoiding behaviors that may be bad for the individual in the long-term, but perceived consequences of electronic aggression may differ substantially with private and anonymous communication. If no one can identify the perpetrator or if privacy removes normative expectations, this particular dimension of self-control may be less useful. At the same time, trait self-control also characteristically assists the individual in controlling thoughts and anger: two avenues that lead to aggressive behavior from the perspective of the GAM. Self-control should similarly affect hostile thoughts and state hostility regardless of whether the behavior occurs anonymously or openly.

Through descriptive statistics which suggested that females are nearly twice as likely to have used a technology such as text messages, chat rooms or email to aggress, the present research provided preliminary support for the notion that females are more likely than males to use forms of electronic communication for aggression. It also supported the notion that females are just as likely to aggress online as males when aggression is enacted publicly and the perpetrator is identifiable. These findings are mainly supported through descriptive statistics, but either notion cannot be definitively considered until more rigorous tests on the subject matter are conducted. Future research should address whether electronic mediums truly enable bullying for females in a way that offline environments do not.

Future research should also explore whether motivation significantly mediates the relationship between trait self-control and state self-control. This study demonstrated that

the relationship between trait self-control and state self-control is significant, but weak. What factors keep an individual who maintains high levels of trait self-control (at least through self-report) from actively utilizing that resource when facing aggressive stimuli? The strongest indicators of the self-monitoring component were absent from the present study's measure of state self-control. Refinement of the state self-control scale may lead future studies to find a stronger link between the two variables.

In combination with many other studies, this research emphasizes the difficulty of inhibiting aggressive behavior for high trait aggression individuals. Trait self-control failed to inhibit aggressive behavioral intentions for low trait aggression individuals with high levels of state hostility. Additionally, the provocation scenario without any aggressive imagery produced enough state hostility for high trait aggression individuals to behave aggressively without the added aggressive stimulus. Methods promoting the inhibition of aggressive behaviors may be most successful for individuals who are not chronically primed to exhibit aggressive behaviors; yet high trait aggression individuals are the ones who need behavioral interventions the most.

Rather than looking at all individuals, future research should more specifically identify high trait aggression individuals and examine how to inhibit their aggressive behaviors. Understanding how to inhibit aggressive behaviors for non aggressive adolescents can decrease instances of aggression, but aggressive individuals disproportionately contribute to overall societal aggression. Impeding aggressive tendencies is important for everyone; however, it is particularly important for high trait aggression individuals. They are the most likely candidates for destructive and habitual aggressive behavior. This study provided promising results in that high trait self-control

successfully inhibited aggressive behavioral intentions for those high in hostile cognition and for those low in comfort and high state control successfully inhibited aggressive behavioral intentions for those high in state hostility regardless of level of trait aggression. Counteracting retaliatory contemplations for high trait aggression individuals is particularly important.

Behavioral Stimuli

One of this study's primary goals was to consider the effects of an anti-aggressive behavioral stimulus on impeding hostile cognition and affect. The goal was not achieved for cognition; however, future research should consider other anti-aggressive or pro-social behavioral stimuli. Previous research has demonstrated the effectiveness of pro-social video games and pro-social song lyrics in promoting pro-social behavior (Greitemeyer, 2009; Greitemeyer & Osswald, 2010). However, the behaviors in question in the previous studies dealt with helping other people rather than with regulating one's own behavior. Pro-social behavioral stimuli such as the peace symbol were removed from this study after the pretest because they generated convoluted and dissimilar meanings among pretest participants. However, perhaps the right pro-social or anti-aggressive behavioral stimulus can effectively curtail hostile cognition.

Future research can also explore whether positive facial expressions can more strongly counter the effects of provocation scenarios when the visual stimulus is clearly separated from the content of the message. Facial expression symbols were placed outside of the comment box in the current study's stimulus materials. They were not intended to be interpreted as messages from the provoker; however, the placement of the

behavioral stimulus within the stimulus material may have confused participants. Future studies may also choose to directly test the differences between symbols interpreted as coming from the provoker and symbols interpreted as coming from an outside source.

Online vs. Offline Aggression

Preliminary cyberbullying studies rely on assumptions about electronic medium characteristics to draw inferences about differences between off- and online aggression. While these assumptions may be well grounded, more empirical research is needed to support the suppositions. This study looked specifically at online aggression perpetrated in a public environment by a known perpetrator, yet online aggression can also occur privately and anonymously. Many cyberbullying assumptions likely depend largely on which type of online aggression occurs. Future studies should focus on the effects of these types of aggressive behaviors because many of the paths to and consequences of aggressive retaliatory behavior would likely change.

Depending on which electronic platform a cyber-bully uses to express aggression towards another individual, the bully can be afforded complete anonymity. Over half of the cyberbully victims in Kowalski and Limber's (2007) study did not know the identity of the person who bullied them. This element of cyber-bullying differs substantially from traditional bullying in that a perpetrator does not necessarily have to know his/her victim, and victims are blind to who harasses them. In one of the first studies involving hostile behavior in computer mediated communication, uninhibited remarks such as name-calling, swearing and insults appeared more frequently in the anonymous computer mediated group than in the identifiable computer mediated communication group and the

face-to-face group (Siegel, Durbrovsky, Kiesler, & McGuire, 1986). Aggressive behavior through online social interactions may therefore have little perceived consequences and less perceived social risk (Caplan, 2005; Walther, 1996), thereby reinforcing the behavior. Anonymity also easily enables a victim of traditional bullying by providing a medium through which s/he can easily retaliate. The literature surrounding this possibility is inconsistent and incomplete.

The impact of normative influences on cyber-bullying is also likely domain specific. Because cyber-bullying frequently occurs in private settings (e.g. text messaging and e-mail) or is enacted anonymously where the perpetrator is not subjected to public judgment, the values and beliefs of reference groups towards the behavior are less likely to impact the individual as strongly as they would in a more public domain. Anonymity diffuses the overall utility of consideration of future consequences as it pertains to social norms that reject cyber-bullying. Bagozzi et al. (2000) suggested that normative influences are likely moderated by the extent to which a behavior is enacted publicly or privately, where perceived social norms would likely exert little influence on behavior in completely private settings where actions are likely to be unknown by others.

Future online aggression scholars can enjoy the benefits of grounding their research in a long line of prior aggression research, but should also explore new components of aggression as modified by electronic characteristics. The behavior presents many clear similarities to traditional bullying, but it also presents some potential and intriguing divergences. Descriptive statistics presented by preliminary studies are helpful in guiding prospective online aggression research. However, upcoming work on the behavior can remove many of the speculative assumptions about online aggression by

moving beyond descriptive statistics to systematically and scientifically focus on the manners through which cyberbullying modifies existing conceptualizations of aggression.

Conclusion

This study contributed to online aggression research and aggression research in general by examining the effects of behavioral stimuli on cognition and affect, by presenting new important variables for the resident theory in media aggression, by demonstrating manners through which online aggression can be curtailed, and by identifying differences and similarities between on- and offline aggression. Contrary to most previous research, the behavioral stimuli used in this study impacted the affective, rather than the cognitive route to aggressive behaviors. Future research should explore whether, as suggested, it is the type of behavioral stimulus that makes the difference between which route to aggressive behavior is taken.

The study presented trait self-control and state self-control as new variables for the General Aggression Model. Trait self-control was shown to significantly moderate the negative effects of cognition, affect and comfort on aggressive behavioral intentions while state self-control was shown to significantly moderate the negative effects of cognition and affect. Adolescents with highly hostile thoughts and low comfort levels were less likely to engage in aggressive behaviors if they also maintained high trait self-control. The study demonstrated that trait and state self-control are negatively related to aggressive behavioral intentions and that a positive relationship between trait and state self-control exists. The combined impact of trait and state self-control present a potentially powerful force through which future aggressive behaviors can be curtailed.

Current self-control and self-regulation research demonstrates that individuals can train themselves to engage in effective self-control and improve their capacity for trait self-control (Baumeister, 2002) which can be used to inhibit future incidents of aggressive behaviors. Steps towards building one's self-regulatory resource are incredibly important for high trait aggression individuals who emerged as the least likely candidates for high self-control and the most likely candidates for aggressive behavior.

Finally, this study explored differences between off- and online aggression. The implications of anonymous and private online aggression were not explored because participants were provoked through a public environment by a known perpetrator. Qualitative results suggested that retaliatory aggression produced from offline provocation is much more severe than aggression produced from online provocation in that it produces more anger, embarrassment and pressure for victims and many individuals expressed the desire to retaliate not only verbally, but physically as well.

Online aggression presented an important characteristic that was reasonably absent from offline aggression. Separation from the provoker in a physical sense affords the potential for delayed response in which individuals have time to think about taking the best course of action rather than being consumed by the immediate pressure of responding. The online environment, which characteristically involves physical separation and asynchronous communication, may provide a more effective platform for self-control than the offline environment because it allows people to stop and think on their own before acting. Future research should empirically test this proposition and it should explore the question of how much time people wait before responding to insults online.

At last, one of the most important, if not troublesome findings from the study was the potential for online aggression to result in offline aggression. Many individuals expressed a desire not only to retaliate online, but to find their provoker in person and to engage in verbal or physically aggressive behavior. Especially when the perpetrator is known, online aggression can result in a potentially vicious cycle that is not necessarily confined to the boundaries of electronic mediums. There is still much to learn about the idiosyncrasies of online aggression; however, this study provided a valuable platform for understanding how it functions, how it can be inhibited, and how it should be explored in the future.

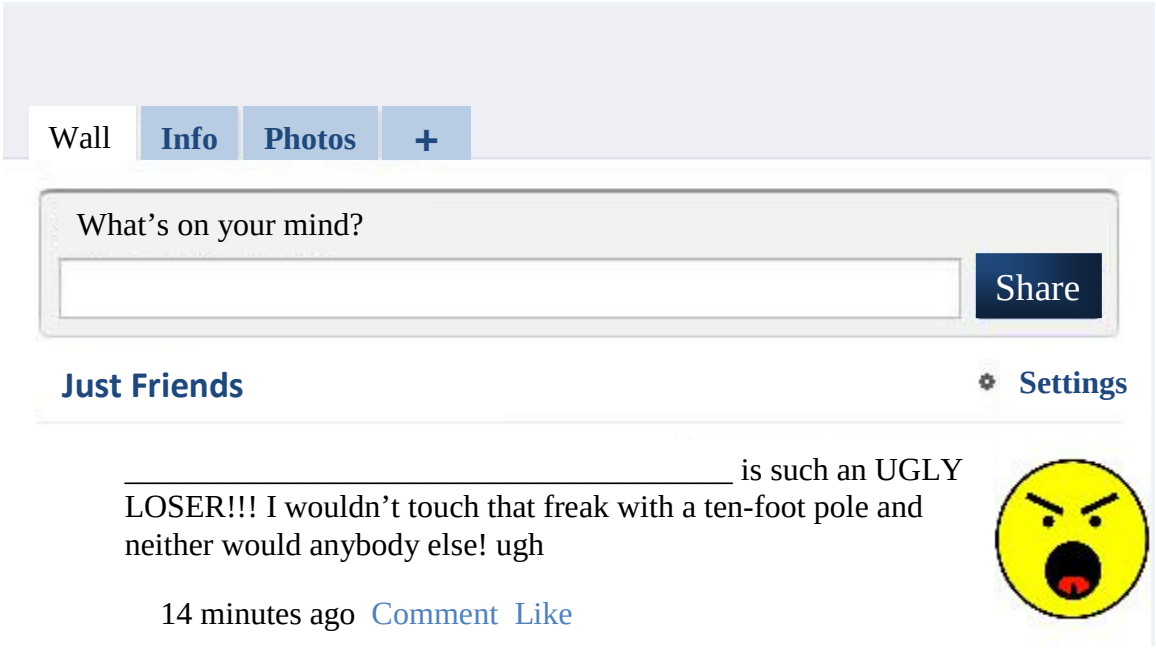
APPENDICES

APPENDIX A

Figure 10 Stimulus Materials for Aggressive Condition

Imagine yourself in the following situation:

You sign into your Facebook account and you see that a classmate from school has posted a humiliating comment about you on your friend's wall for everyone to see. The classmate harasses you in the message. Imagine that your name is on the blank line. This is what you see:



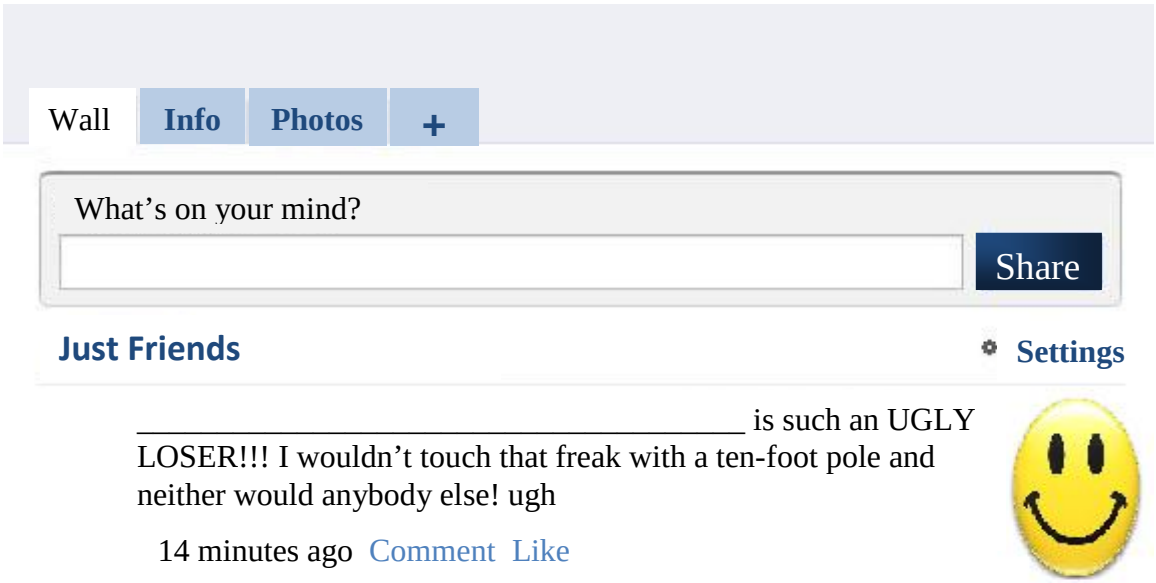
*For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.

APPENDIX B

Figure 11 Stimulus Materials for Anti-Aggressive Condition

Imagine yourself in the following situation:

You sign into your Facebook account and you see that a classmate from school has posted a humiliating comment about you on your friend's wall for everyone to see. The classmate harasses you in the message. Imagine that your name is on the blank line. This is what you see:



APPENDIX C

Figure 12 Stimulus Materials for Control Condition

Imagine yourself in the following situation:

You sign into your Facebook account and you see that a classmate from school has posted a humiliating comment about you on your friend's wall for everyone to see. The classmate harasses you in the message. Imagine that your name is on the blank line. This is what you see:

_____ is such an UGLY LOSER!!! I wouldn't touch that freak with a ten-foot pole and neither would anybody else! ugh

14 minutes ago Comment Like

APPENDIX D

Measurement Items

A. Trait Aggression

1. I yell at others when they annoy me.
2. I react angrily when provoked by others.
3. I get angry when frustrated
4. I have temper tantrums.
5. I have damaged things because I felt mad.
6. I have hurt others to win a game.
7. I become angry or mad when I don't get my way.
8. I get angry when I lose a game.
9. I get angry when others threaten me.
10. I feel better after yelling at or hitting someone when they are mean to me.
11. I hit others to defend myself.
12. I get angry or mad or hit others when teased.

B. Trait self-control

1. I am good at resisting temptation.
2. I have a hard time breaking habits.*
3. I am lazy.
4. I say inappropriate things.*
5. I do certain things that are bad for me, if they are fun.*
6. I refuse things that are bad for me.
7. I wish I had more self-discipline.*
8. People would say that I have iron self-discipline.
9. Pleasure and fun sometimes keep me from getting my work done.*
10. I have trouble concentrating.*
11. I am able to work effectively toward long-term goals.
12. Sometimes I can't stop myself from doing something even if I know it's wrong.*
13. I often act without thinking through all the alternatives.

C. Attitude

1. Suppose a boy says something bad to another boy, John. Do you think it' ok for John to scream at him?
2. Do you think it's OK for John to hit him?
3. Suppose a boy says something bad to a girl. Do you think it's wrong for the girl to scream at him?
4. Do you think it's wrong for the girl to hit him?
5. Suppose a girl says something bad to another girl, Mary. Do you think it's OK for Mary to scream at her?
6. Do you think it's OK for Mary to hit her?
7. Suppose a girl says something bad to a boy. Do you think it's wrong for the boy to scream at her?
8. Do you think it's wrong for the boy to hit her?
9. Suppose a boy hits another boy, John. Do you think it's wrong for John to hit him back?
10. Suppose a boy hits a girl. Do you think it's OK for the girl to hit him back?
11. Suppose a girl hits another girl, Mary. Do you think it's wrong for Mary to hit her back?

D. State Hostility

1. I feel angry
2. I feel peeved.
3. I feel aggravated.
4. I feel grovely.
5. I feel annoyed.
6. I feel resentful.

7. I feel bitter.
8. I feel furious.
9. I feel polite.*
10. I feel kind.*

E. Hostile thoughts
1. I want to get revenge
2. I just want to hurt this person as bad as s/he hurt me.
3. I want to treat this person like s/he treated me.
4. When someone attacks me like this person did, I attack them back.
5. I'll show this person!
6. I should do something to this person.
7. I have to get this person back.
8. I want to get back at this person.
9. This person needs to be taught a lesson.

F. Comfort
1. I feel comfortable
2. I feel pleasant
3. I feel cozy
4. I feel full of pep
5. I feel cheerful
6. I feel rested
7. I feel snug
8. I feel soothed
9. I feel uncomfortable*

G. Arousal
1. I feel active
2. I feel energetic
3. I feel lively

H. State self-control
1. I could not resist the temptation to treat my classmate the same way I was treated.
2. I could not stop myself from reacting angrily towards my classmate.
3. I had a hard time breaking the habit of reacting in a negative way.
4. I wanted to say inappropriate things.
5. I thought that I should humiliate my classmate even if it was bad for me in the long run.
6. I used a lot of self-discipline in the situation.
7. I refused to humiliate my classmate because I thought that it would be bad for me.
8. It was hard to concentrate when I was deciding how to react to my classmate.
9. People would say that I had iron self-discipline in this situation.
10. I could not stop myself from treating my classmate the same way they treated me even if I thought that it was wrong.

I. Behavior
1. Send an angry private message back to the classmate who wrote on my friend's wall.
2. Post a humiliating comment about my classmate on my friend's Facebook wall.
3. Embarrass my classmate in front of other people on Facebook.
4. Curse back at my classmate in person.
5. Ask my friend to remove the insulting comment from their wall.
6. Use Facebook to treat my classmate the same way that I was treated.
7. Threaten my classmate on Facebook.
8. Humiliate my classmate in front of other people while at school.
9. Insult my classmate to their face.
10. Curse back at my classmate online.
11. Humiliate my classmate in front of other people while at school.

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