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Online Aggression : The Influences of Anonymity and Social Modeling

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ONLINE AGGRESSION: THE INFLUENCES OF ANONYMITY AND

SOCIAL MODELING

by

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Dedications and Acknowledgments

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Abstract

Behavioral temptation to aggress and participant blog responses following a group word

unscrambling game were examined in situations of anonymity and positive or negative

social modeling. Anonymous participants were more aggressive than non-anonymous

participants. Also, social modeling seemed to moderate the effect of anonymity on

behavioral temptation to aggress as well as verbal aggression via blog posts. Specifically,

anonymous participants responded more aggressively when they viewed aggressive

models following failure in a team word unscrambling game. These findings suggest that

although anonymity may increase the likelihood that individuals will aggress, social

modeling may influence aggressive outcomes.

> *Keywords:* anonymity, social modeling, aggression, cyberdisinhibition, internet

behavior

Effects of Anonymity and Social Modeling on Online Aggression

The use of the internet and online virtual environments has become increasingly popular in modern time. From the U.S Census Bureau (2009), 73.5% of the U.S population lives in a household with internet access. Of individuals age 3-17 years, 61.6% access the internet. Internet use seems to peak among populations of 18-34 year olds with 79.9% of individuals accessing the internet. Virtual worlds provide a sense of escapism to those who ―inhabit" them. When individuals engage in online environments, they may disconnect themselves from the hackneyed ―real world," with this escapism perhaps serving as one of the many appeals of online usage (Yee, 2006). Although the internet offers various benefits, including instant access to an overwhelming amount of information, ease of communication, and affordable, accessible entertainment, it is not without repercussions. Content on online forums and blogs is frequently and deliberately offensive. In addition, racist, sexist, homophobic language is often used, which is arguably part of a group's identity: surpassing the limits of decorum in order to obtain attention and turn heads (Bernstein, Monroy-Hernández, Harry, André, Panovich, & Vargas, 2011; Boyd, 2010).

Computer-mediated Communication

Computer-mediated communication (CMC) refers to any interpersonal communication that occurs within the context of the Internet or intranet networks (Christopherson, 2007). Introduced in the 1960s, CMC has become an increasingly popular topic of research since the 1980s (Keisler, Siegel, & McGuire, 1984). There are several components of CMC: anonymity of the user, the absence of non-verbal communication, physical separation, and temporal flexibility (McKenna & Bargh, 2000;

Moral, Canto, & Gómez, 2007). Although CMC has obvious benefits (e.g., allowing businesses to communicate quickly and efficiently across extensive distances, virtual education, social networking), there are some negative implications for certain settings. For instance, CMC can be a vehicle for cyberbullying. *Cyberbullying* has been defined as continual harm inflicted through the use of computers and other electronic devices (Patchin, & Hinduja, 2006). This behavior can include harassing messages, derogatory comments on a Web site, or intimidating or threatening someone in various online settings of public forums, video games, blogs, or social networking sites (Burgess-Proctor, Patchin & Hinduja, 2009; Li, 2007). It should be noted that cyberbullying does not necessarily imply a personal relationship (Burgess-Proctor et al., 2009), where the victim and instigator know each other, as one would assume in archetypal bullying outside of the virtual world. Although not a very common occurrence, cases of cyberbullicide—suicide indirectly or directly influenced by experiences with online aggression have been documented (Hinduja & Patchin, 2009). Most of these cases involve teenagers, who take their own lives as a result of being harassed and mistreated over the internet (Apollo, 2007; Jones, 2008). To expand on what is perhaps the root of much of the negative behavior we see on the internet, this paper focuses on some inherent side products of social interaction via CMC. In particular, two components that seem to govern or guide the way individuals behave on the internet are *Anonymity* and *Social Modeling*.

Anonymity

Anonymity has long been a topic of interest among social scientists. Perhaps the most infamous study on anonymity was that of Zimbardo (1969) where participants who were dressed in large hooded clothing to obscure their identity distributed longer shocks

to confederates compared to those who were dressed in a manner that allowed them to be easily identified. This study was a prime example of *deindividuation* which Zimbardo (1969) defined as a process where certain social conditions reduce our self-awareness and concern with evaluation by others, thus weakening restraints against the expression of undesirable behavior. Another instance of deindividuation is evident in the Stanford prison experiment (Haney, Banks, & Zimbardo, 1973). Those individuals who were dressed in guard uniforms and glasses to hide their faces and perhaps their identity, engaged in cruel behaviors towards prisoners which presumably would not have occurred if they were not anonymous. As a construct, deindividuation encapsulates a broad definition of the more specific concept of anonymity.

A widespread interpretation of anonymity by the common layperson is the inability for an individual to be identified by others. Hayne and Rice (1997) developed two sub-types of anonymity: *Social Anonymity* - which refers to the perception of being unidentifiable by others due to a lack of cues available to attribute an identity to the specific individual and *Technical Anonymity* – which refers to the absence of all identifying information about an individual during interactions and communication. Social anonymity can help explain privacy in the abstract, noting intangible cues of identity whereas technical anonymity refers to privacy with concrete identifiable information that can allow someone to trace an individual's whereabouts or security. Some examples of social anonymity include body language, voice, personality, and appearances whereas technical anonymity refers to full name, home address, IP address, birth date, and telephone number. Both social and technical anonymity are evident among many common online social environments such as blogging, computer gaming,

internet forums, instant messaging, and chat rooms. Individuals can feel anonymous when alone in the privacy of their homes communicating over the internet, or even in a large crowd where identification cues appear to be absent or lacking.

Privacy. A large component of anonymity consists of privacy. *Privacy* merely involves one's ability to exert boundary control upon others' access to one's self (Pedersen, 1997). However, this definition does not imply that one must remove one's self from others' presence in order to maintain privacy. Privacy can afford several benefits including increases in subjective well-being (Werner, Altman, & Brown, 1992). For the purpose of this study, I will focus on two major functions of privacy, catharsis and autonomy, as explained by Pedersen (1997).

Catharsis. In turn, a component of privacy is catharsis, an unrestricted expression of thoughts and feelings to others. This emotional purging is most commonly found on internet blogs, or remarks to online news articles (Christopherson, 2006). In these venues of catharsis, one can use the anonymity of the internet as a cloak that allows one to express anything one wishes in a cathartic manner without fear of social identification.

Autonomy. Another component of privacy is autonomy which can be defined as an individual's behavioral experimentation on the internet (Pedersen, 1997). With the anonymity that most online atmospheres provide, one might do or say anything without fear of negative evaluation from others. Whereas catharsis seems to stem from a personal origin, autonomy allows us to try new behaviors or perhaps mimic others we have seen to enjoy a sense of self-government and a greater range of self-expression.

Spears and Lea (1992) argue that the anonymity of CMC weakens our inclination to subscribe to social/societal norms, but only if our personal identity is more relevant

than our social identity. In other words, the anonymous atmosphere of online social interactions may lower our need to maintain our social identity and status and allow for our personal identity (more so) and core beliefs and values to come to the surface without reluctance. This idea extends from the Social Identity model of Deindividuation Effects (SIDE theory, Reicher, Spears, & Postmes, 1995; Spears & Lea, 1992). The SIDE theory focuses on the cognitive reactions anonymity affords as well as the instrumental component of anonymity in CMC. For example, taking advantage of the benefits anonymity endorses, such as expressing opinions and beliefs that may contradict a powerful majority or social group (Spears & Lea, 1992).

Positive and Negative Implications of Anonymity

There are several positive and negative implications for anonymity. A positive aspect is the security and privacy associated with feeling anonymous. In addition, individuals with perceived privacy and identity security may be more inclined to act in a more open and gregarious manner. They may even form meaningful relationships on the internet with other individuals who they may have kept at arms-length in the real world. For example, Jessup, Connolly, and Galegher (1990) found that groups working anonymously with confederates produced more ideas than their non-anonymous counterparts. Also, non-anonymous groups feel more personal, but have less overall cohesion (Tanis & Postmes, 2007).

Anonymity, however, can also lead to negative behaviors and consequences (e.g., Christopherson, 2007; Eastwick & Gardner, 2009; Hayne & Rice, 1997; Reicher et al., 1995; Robertson, 2006; Spears & Lea, 1992). The increase in inappropriate or uncharacteristic behaviors while online has been called *cyberdisinhibition*, a term coined

by Daniel Goleman (as cited in Eastwick & Gardner, 2009). Cyberdisinhibition occurs mainly because of the anonymous nature of the internet. Individuals may behave in ways that contradict normative behavior when they do not identify with a particular online community and are free to leave without desire to return (Eastwick & Gardner, 2009). Using CMC, individuals are able to freely make any statements, act in any online behavior available, or even be whoever they want to be – only to simply ―log off‖ at the end of the day. This ability to disconnect might trump the need for permission to behave in certain ways. One cannot simply log off in real world Face-to-Face (FtF) interactions. Although becoming a hermit and retreating to the privacy of their homes is a viable option, anonymity on the internet certainly bestows an increased ability to sever connections and maintain privacy in ways that FtF interaction cannot. This extreme sense of freedom and ability to disengage with the click of a mouse might lead one to behave drastically different in comparison to FtF interaction where this radical sovereignty does not exist.

Social Phenomena in the Virtual World

Social interaction via the internet may be characterized as having lessened saliency of stimuli available compared to in vivo interactions (e.g., the absence of body language and personal identification). Despite this limit of content, studies of online social behavior have found evidence for social phenomena that are present in real world interactions. For example, investigations have found patterns of interpersonal distance and eye gaze among users playing ―Second Life‖ (Yee, Bailenson, Urbanek, Chang, & Merget, 2007). In Second Life, users can do or simulate almost anything imaginable in real FtF interaction in a much more instantaneous and efficient virtual world. For

example, users can work jobs, meet other people, shop, and go to school. In the Yee et al.

(2007) study, male-male dyads were less likely to look directly at one another compared

to female-female dyads in Second Life. Males also maintained larger interpersonal

distances during social interactions with other users. This gender distinction occurs in FtF

interactions outside of the computer world as well (Aiello & Jones, 1971; Evans &

Howard, 1973). This study uncovered evidence for FtF social phenomenon in the CMC

world.

   In another study using the game Second Life, Eastwick and Gardner (2009) found

evidence of the foot-in-the-door technique—making a small request followed by a larger

request, and door-in-the-face technique—making an extremely large request followed by

a much smaller request which also are used in real-world situations in order to gain

compliance or to manipulate others toward one's goal. The term ―real-world" is

commonly used to distinguish between the internet world and direct FtF interaction

between individuals because many social scientists do not recognize the internet as real,

authentic social interaction. This stance is presumably due to the lack of FtF interaction

and body language among other things. For example, Green and Brock (1998) make a

distinction between real social interaction and substitute social interaction. Green and

Brock (1998) define ersatz social activities as substitutes or synthetic alternatives for true

social interaction. Ersatz involves interacting within media or through the use of media

characters rather than directly to individuals.   Although this distinction surely has

legitimacy, online social interaction can indeed seem very real to the individuals who are

engaged in it (Eastwick & Gardner, 2009). Clearly many norms and rules of social

interaction, such as the social phenomenon evidence outlined above, exist in virtual

worlds as they do in everyday life outside of the internet. Thus, it is perhaps misleading to refer to online social interaction as a fake or inferior substitute to reality.

Social Modeling

Many common social phenomena studied in psychology are also apparent in online/virtual environments as well. The prevalence of situational online anonymity is an important consideration. However, I purport that most online social settings (e.g., gaming, blogging, live chat, etc.) involve both anonymity and social modeling components. As the exceedingly common nature of online anonymity does not always lead to common online aggression or other negative behaviors, perhaps other factors mediate or moderate this relationship.   Social modeling is one factor that may moderate the previously established influence of anonymity on negative or non-normative

According to Bandura, Ross, and Ross (1961), exposure to aggressive models allows for observational learning of such aggressive behavior and may inhibit our inclination to display normative behavior, thus increasing our likelihood to display aggressive behavior. In the famous Bobo doll study, Bandura found evidence of observational learning, where children who viewed confederate adults punching and kicking a doll while shouting specific noises were likely to repeat this behavior when they were placed in the room with the Bobo doll. The disinhibiting effects of aggressive models have been well established by Bandura, as well as others (e.g., Baron, 1977; Diener, Dineen, Endresen, Beaman, & Fraser, 1975; Prentice-Dunn & Rogers, 1980). Importantly, this line of research discovered that although observational learning occurred rather easily in social situations (e.g., learning what one could do with the bat or gun to the Bobo doll; Bandura et al., 1961), such learned aggressive behaviors were not

enacted until social cues or context variables were presented that suggested the allowance of aggression. It is quite possible that this allowance or permission need not exist on the internet. The unaccountability provided by anonymity may provide a sense of permission to engage in our autonomous behaviors. However, humans are indeed social creatures and require other individuals to interact with. If we pick up social cues from others in real life FtF interaction, then it would only be natural to assume that individuals interacting in online atmospheres can certainly do the same. If social modeling occurs online, does anonymity help to override the need for social context permission to engage in inappropriate acts like aggression?

The present study aims to decipher the unique influences of anonymity and social modeling separately, as well as collectively, on aggression within the online environment. There are three hypotheses of this study. 1) It is hypothesized that individuals who engage in an environment that is anonymous should behave more aggressively than those who are not anonymous. Further, I hypothesize that 2) individuals who are exposed to aggressive social models should also behave more aggressively than those who view neutral models. Finally, 3) individuals who engage in activities in an environment with both anonymity and aggressive social modeling will display more counter-normative behavior in the form of aggression than those individuals who experience only one or none of these components.

I investigate how the online atmosphere of anonymity and social modeling affect the degree to which an individual displays verbal aggression via coding participant blog posts, as well as the desire or temptation to engage in various pro-social or antisocial behaviors via a behavioral temptation scale (Allen & Leary, 2010; adapted from Straus,

1979 Conflict Tactics Scale). Blog posts were coded for direct and indirect aggression. Specifically, direct aggression refers to confrontational aggression that is personal and aimed at provoking an individual whereas indirect aggression refers to aggression that is aimed at avoiding confrontation (Lagerspetz, Bjorkqvist, & Peltonen, 1988). The purpose of direct aggression is to be confrontational and damage the victim's self-esteem or social status (Lagerspetz et al., 1988). This study will measure instances of verbal aggression with inter-observer coding as well as self-report responses of behavioral temptation.

Method

Participants

One hundred twenty-six undergraduate psychology students attending the University of North Florida were sampled (25 men, 101 women; mean age = 22.00 *SD* = 5.09, age range from 18 to 41). Students received one hour of extra credit toward their class grade for participation in this experiment as well as a Chick-Fil-A® coupon for a free chicken sandwich. Participants were required to be 18 years or older in order to take part in this study. Students were recruited via the electronic Sona System subject pool administered by the UNF Department of Psychology. Participants actively chose to volunteer for the specific study after reading on the Sona System website a short descriptive cover story explaining that the study was a word unscrambling game designed to test their ability of mental visualization. The cover story was necessary to invoke accurate, unbiased responses from participants and to allow generalizability to other individuals engaging in video game interaction via CMC.

Materials and Procedure

"Get to Know You" Task (GTKY). In this task, participants were asked to reveal information (i.e., hobbies, college major, ―if you could travel anywhere in the world…") that would be viewable by the other ―participants" (computer confederates) who would be grouped with them in a Word-Unscrambling Game. The purpose of this task was to create a sense of accountability and non-anonymity in the participants. Those participants who were randomly assigned to be anonymous completed a modified version of this task where they were asked general questions about their perceptions of UNF students instead of being asked personal information. For example if the question was, ―What is your current major?", those who were in the non-anonymous condition would read, ―What do you think most UNF students are majoring in?" (see Appendix A, B).

Mental Visualization Scale. This scale was included to emphasize the cover story of the study. When participants viewed the description of the study they were told that the study was measuring mental visualization through use of a word-unscrambling game. This scale had statements such as, ―I have vivid dreams", or ―When I read a book, I can see the main characters clearly in my mind." (see Appendix D).

Word-Unscrambling Game. The word-unscrambling game was created in MediaLab. Each participant listened to a script explaining the game as follows: ―You will be playing a word-unscrambling game consisting of 10 scrambled words paired with two other participants who are participating in the study in a different location on campus. If, between the three of you, you can solve a correct total of 15 words (out of 30) then you will receive a Chick-Fil-A® coupon for a free chicken sandwich. You will also be asked questions about your personality and responses to your experience playing this word unscrambling game. After you play the game, you will be asked to read the posts

of other participants on the Word-Unscrambling Game Blog before posting yourself."

Each participant received 10 scrambled, 5-letter words that were selected for their ease to

unscramble. An example of words is as follows: ―BWRNO" (BROWN), THNKI

(THINK), SWTEE (SWEET)". Participants were told they were playing with other

participants online when in actuality they were playing with computer-controlled

confederates. The confederate players were manipulated by the Experimenter so that

completing 15 correct words was impossible. The use of this deception was necessary in

order to simulate a true online frustrating social situation in which individuals engage in

activities with other people. Confederates only successfully solved 2/10 words making it

possible to collectively achieve a maximum of 14/30 correct words (if the participant

solved all 10). The purpose of this manipulation was to simulate a frustrating social

situation on the internet in which other players are keeping an individual from achieving

the goal or task at hand. All participants in each of the four assigned Conditions

experienced this lack of success while playing the Word-Unscrambling game.

Participants received feedback of the other confederate players' performance on whether

they solved the word or not after each scrambled word was presented. The perception that

it was possible to win was necessary to help create both the frustrating and social nature

of this interaction (see Appendix E).

Word-Unscrambling Blog. Following the Word-Unscrambling game, all

participants were given an opportunity to verbally express themselves by writing about

their game experience on a mock Word-Unscrambling game blog. The blog was created

for the experiment to appear live (i.e., to be describing actual and recent participants).

The blog contained written descriptions with content that exemplified a neutral or

aggressive post. Participants viewed one of two blogs with either neutral or aggressive posts. An example of a neutral post was ―I like word games so it was fun even though we didn't get the reward. I'm sure the other two players had much harder words than I did…" An example of an aggressive post was ―I don't know why the other players couldn't get a combined amount of 10 words right. I got all of mine correct so they must not be smart at all. They have to be pretty terrible to not be able to solve these easy scrambled words. It really bothers me that I didn't get the reward just because I was paired with two idiots." Although this example doesn't show this, in general the posts were made to be as similar as possible (i.e., in length, number of posts, and wordiness) with the only distinction being the aggressive or neutral nature of the posts (see Appendix F).

Behavioral Temptation. This scale (1 = *not at all* and 7 = *very much so)* measured participants' self-reported temptations to engage in behaviors (e.g., smiling at the other person, trying to make the other person laugh, humiliating them, or slapping them, Allen & Leary, 2010; adapted from the Straus, 1979 Conflict Tactics Scale). Participants were reminded that this scale is not asking whether they would have actually done each behavior, but rather the degree to which they would have been tempted to do each one had they been able to interact face-to-face with the other players (see Appendix G).

Attributions to Success/Failure. All participants then completed one question about their attributions regarding the result of the game. ―To what do you attribute the game's result (whether you collectively succeeded or failed to achieve the reward)?" The

five fixed-answer choices were: my intelligence, my effort, the other player's intelligence, the other player's effort, luck or chance (see Appendix H).

Verbal Aggression Coding. All participant posts on the Word-Unscrambling Game Blog were coded for the frequency of aggressive words used as well as four types of aggression, Global vs. Specific and Direct vs. Indirect. Global and specific aggression are two dimensions that were added to build upon previous research on direct and indirect aggression in a new approach. Global and direct sentences were scored as two points whereas specific or indirect aggressive sentences were only scored as one point because the purpose of global and direct aggression is to be confrontational and damage the victim's self-esteem or social status (Lagerspetz et al., 1988). An example of global aggression would be, ―These players are idiots" because it implies the global idea that the players are idiots in all realms of their lives. An example of specific aggression would be, ―These players are terrible at scrambling words" indicating a specific realm of the player's deficit of unscrambling words. An example of subtle, indirect aggression would be ―I'm not sure why the words were so hard for the other players to solve" because it, rather indirectly, implies that there is some underlying reason for the other player's failure. An example of unsubtle, direct aggression would be ―I do not see what was so hard about this. It seemed almost impossible not to get 15 right. But I guess it is for some stupid people" because there is no ambiguity or sarcasm about the post. It is clear that the post was meant to be interpreted by the other players as negative. For the reasons that Lagerspetz et al., (1998) defines, direct aggression was weighted more heavily than indirect aggression because it is a more ―serious" type of aggression. (see Appendix I).

Procedure

Up to three participants completed the experiment on separate Dell desktop computers. Each participant completed the GTKY (or modified) task followed by the mental visualization scale. Participants then played the word-unscrambling game with two programmed computer confederates for the chance of winning a Chick-Fil-A® coupon for a free chicken sandwich. After losing, participants viewed the word-unscrambling blog and then were asked to post on the blog about their game experience. Behavioral temptation to aggress was then assessed, and finally, participants were asked to whom or to what they attributed the success or failure of the game.

A 2 (Anonymity: Anonymous vs. Not-Anonymous) × 2 (Social Modeling: Neutral vs. Aggressive) between-participants design was used for this investigation. In the not-anonymous conditions, participants were asked to answer personal questions in the GTKY task (full name, hobbies, major etc.). They were told to expect that – after the Word-Unscrambling game – their information would be revealed to the other players who would have access to the blog on which they were posting. In the anonymous conditions, participants were not asked to provide their information, but instead answered questions about general perceptions of other students at UNF. To further convince participants of the anonymous nature of this condition, they were told to expect that after the Word-Unscrambling game none of their information would be revealed to the other players and they would be posting under a ―GUEST‖ username on the blog. In the neutral social modeling conditions, participants read non-aggressive posts about the other players' game experience before posting. In the aggressive social modeling conditions, participants read aggressive posts about the other players' game experience before posting (see Appendix J). After posting on the blog, participants completed the

behavioral temptation scale and answered a question about their attributions towards the success or failure of the group. All participants were debriefed, thanked, and received a Chick-Fil-A® coupon. [1]

Results

The purpose of this study was to determine if anonymity and social modeling interact to affect online aggression. Analyses focus on participant's aggressive behavioral temptation and use of aggressive words following failure in the collaborative word unscrambling game. Data for two participants were excluded due to a computer malfunction that did not allow them to complete the entire experiment. Therefore, the results are based on the responses of 124 participants (for demographics see Table 1).

Data Coding

Data coding for participant blog posts was conducted by two research assistants blind to the four conditions. Among 60 randomly selected blog posts, the intraclass correlation was .81, representing good interrater agreement.

Behavioral Temptation

A 2 (Anonymity: Anonymous vs. Not-Anonymous) × 2 (Social Modeling: Neutral vs. Aggressive) between-participants Analysis of Variance (ANOVA) was conducted to test the aggressive behavioral temptation of people who were anonymous or not anonymous among individuals who were exposed to aggressive or neutral models. Results indicate a significant main effect for anonymity, $F(1,122) = 25.62$, $MSE = 0.64$, $p <.001$, $\eta_p^2 = .17$. In support of hypothesis 1, those who were anonymous showed higher aggressive behavioral temptations than those who were not anonymous. There was no significant main effect for social modeling. This suggests that the marginal means of

behavioral temptation for those individuals exposed to aggressive models were not very different from those individuals exposed to neutral models (see Figure 1). The main effect for anonymity was, however, qualified by a significant interaction between the two factors, $F(1,122) = 6.22$, $MSE = 0.64$, $p = .014$, $\eta_p^2 = .05$, indicating that the effects of anonymity were not the same for the two social modeling conditions. In support of hypothesis 3: Anonymous participants' behavioral temptation to aggress was higher for those who were exposed to aggressive models than it was for those who were exposed to neutral models. However, for Non-Anonymous individuals, behavioral temptation to aggress was higher for those exposed to neutral models than it was for those exposed to aggressive models (see Figure 1). To explain this interaction, two independent samples t-tests were conducted to compare the mean behavioral temptation scores for individuals in the two neutral model conditions, and individuals in the two aggressive model conditions. There were no significant differences between the anonymous neutral and not-anonymous neutral conditions. There were, however, significant differences between the anonymous aggressive ($M = 3.16$, $SD = 0.92$) and not-anonymous aggressive ($M = 2.07$, $SD = 0.68$) conditions; $t(61) = 5.31$, $p < .001$.

Verbal Aggression in Blog Posts

All participant posts on the Word-Unscrambling Game Blog were coded for the frequency of aggressive words used as well as the four types of aggression, Global vs. Specific and Direct vs. Indirect. Global and direct aggressive sentences were scored as two points whereas specific or indirect aggressive sentences were only scored as one point. Direct and global aggression carry more weight because they are generally used to confront directly and emotionally degrade others.

A 2 (Anonymity: Anonymous vs. Not-Anonymous) × 2 (Social Modeling: Neutral vs. Aggressive) between-participants ANOVA was conducted to test the total verbal aggression of people who were anonymous or not anonymous among exposure to aggressive or neutral models. Results indicate a significant main effect for anonymity, $F(1,122) = 14.49$, $MSE = 1.78$, $p = .005$, $\eta_p^2 = .06$. In support of hypothesis one, those who were anonymous had a higher aggression score in their blog posts than those who were not anonymous. There also was a significant main effect for social modeling $F(1,122) = 24.33$, $MSE = 1.78$, $p < .001$, $\eta_p^2 = .17$. Supporting hypothesis two, the marginal means of total verbal aggression for those individuals exposed to aggressive models were greater than those individuals exposed to neutral models. However, these main effects were qualified by a significant interaction between the two factors, $F(1,122) = 4.01$, $MSE = 1.78$, $p = .047$, $\eta_p^2 = .03$, indicating that the effects of anonymity were not the same for the two social modeling conditions. In support of hypothesis three, anonymous participants displayed the highest verbal aggression when exposed to aggressive models than anonymous individuals exposed to neutral models. Also, for non-anonymous individuals, total verbal aggression was higher for those exposed to aggressive models than it was for those exposed to neutral models (see Figure 2). To explain this interaction, an independent samples t-test was conducted to compare the total verbal aggression in responses for individuals in the two neutral model conditions. There were no significant differences between the anonymous neutral and not-anonymous neutral conditions. Another independent samples t-test was conducted to compare the total verbal aggression in responses for individuals in the two aggressive conditions. There were significant differences between the anonymous aggressive ($M = 2.37$, $SD =$

2.13) and not-anonymous aggressive ($M = 1.21$, $SD = 1.11$) conditions; $t(61) = -2.74$, $p = .008$. Participants' blog posts were significantly more aggressive when they were anonymous and exposed to aggressive models in comparison to when they were not anonymous and exposed to aggressive models.

Discussion

As outlined previously, the purpose of this study was to decipher the unique influences of anonymity and social modeling on online aggression. There were three hypotheses of this study. First, individuals who engage in an environment that is anonymous should behave more aggressively than those who are not anonymous. Second, individuals who are exposed to aggressive social models should also behave more aggressively than those who view neutral models instead. Finally, the effect of anonymity will be greater in the presence of aggressive models compared to neutral models. The results lent support for the first and third hypotheses, whereas marginal support was found for the second hypothesis.

In reference to the first hypothesis, anonymous participants reported a higher temptation to aggress against the other players through usage of various antisocial behaviors (e.g., slapping the other players, purposefully ignoring them, insulting or swearing at them) in comparison to non-anonymous participants. Furthermore, anonymous participants also used more aggressive words in their blog posts than their non-anonymous counterparts. This result is consistent with other studies that indicate an increase in inappropriate, uncharacteristic, or aggressive behaviors as a consequence of the environment of anonymity (Christopherson, 2007; Eastwick & Gardner, 2009; Hayne & Rice, 1997; Reicher et al., 1995; Robertson, 2006; Spears & Lea, 1992; Zimbardo,

1969). Anonymity lowers our discretion and seems to bolster inappropriate and uncharacteristic behaviors.

In line with the second hypothesis, participants who were exposed to aggressive models were more aggressive than those exposed to neutral models, but only on the blog posts. This effect replicates previous research on social modeling theory and modeled aggressive behavior (e.g., Bandura et al., 1961; Baron, 1977; Diener et al., 1975; Prentice-Dunn & Rogers, 1980). It is interesting to note however, that in self-reported behavioral temptation there were no differences in participants who were exposed to either aggressive or neutral models. A possible explanation for this result may be that the blog posts served as an opportunity for the participant to mimic behavior observed in the posts that they read, whereas the behavioral temptation scale lacked this opportunity to imitate the modeled behavior. It is also possible that the order of the study's procedure may account for these differences. In particular, participants were exposed to social models via the blog posts and then posted about their experience, followed by the behavioral temptation scale. This procedural order might have led participants to only model behavior on the posts and not on a prospective measure of aggression. An additional study that accounts for the temporal order of these measures might sort out this uncertainty. Furthermore, the behavioral temptation scale is scored on a one to nine scale yet there was a restriction of range in that participants only tended to use the lower half of the scale. The extreme behaviors that this scale inquires about may be the reason for this pattern.

In line with the third hypothesis, results suggest that social modeling moderated the effects of anonymity. Specifically, participants reported the strongest temptation to

aggress against the other players when they were both anonymous and exposed to aggressive models. However, participants who were not anonymous but exposed to aggressive models reported the lowest temptation to aggress, even in comparison to those exposed to neutral models. This distinction suggests that when our privacy and anonymity is stripped, exposure to aggressive models may inhibit our own inclinations to model the aggressive behavior. Furthermore, aggressive blog responses were virtually absent in both neutral model conditions. Blog posts contained some aggression when participants were not anonymous and exposed to aggressive models. However, blog posts were most aggressive when participants were both anonymous and exposed to aggressive models. These results build upon previous research that focuses only on anonymity and social modeling as separate entities rather than their concurrent existence in CMC worlds (e.g., Bernstein et all, 2011; Christopherson, 2007; Eastwick & Gardner, 2009; Spears & Lea 1992). Seemingly, the sense of catharsis and autonomy that the privacy of anonymity yields (Pedersen, 1997) may not be the only culprit behind the appeal of online aggressive behavior. Modeling of other users' behavior is likely to occur in the highly inhabited world of CMC.

Limitations

One limitation of this study is that it was conducted in a laboratory setting strikingly different from that of a typical multiplayer online gaming environment. Anonymity also was manipulated in an absolute manner instead of measuring it on a continuum. It would be beneficial to measure several different levels of anonymity ranging in potency from complete anonymity to complete exposure. In regard to the coding scheme, it is important to note that because of the relatively novel nature of this

topic, the weighting and scoring method had to be created and molded to fit particular study. Another limitation may be that a word unscrambling game is not as relevant or meaningful to a gamer as the games that they play on a regular basis. Future research should be done in real online virtual environments to maximize ecological validity.

Conclusion

In conclusion, this study provides evidence for the influence of social modeling on the previously established effects of anonymity on aggression. The results showed evidence of increased tendencies to aggress when our sense of anonymity is retained and we have been exposed to aggressive social models. Online environments that provide anonymity and are filled with aggressive models may lead individuals to behave in uncharacteristic, aggressive ways as shown in the results of this experiment.

The findings of this study add to the growing body of knowledge regarding online behavior and social interaction (e.g., Christopherson, 2007; Eastwick & Gardner, 2009; Hayne & Rice, 1997; Reicher et al., 1995; Robertson, 2006; Spears & Lea, 1992; Tanis & Postmes, 2007; Yee et al, 2007). These findings may also serve the field of psychology to better address problematic events like cyber-bullying and stalking behavior documented in the literature (e.g., Apollo, 2007; Burgess-Proctor et al., 2009; Li, 2007). Specifically, parents may want to limit or avoid their children's contact with online environments in which anonymity is maximized and aggressive models are commonplace.

It should be noted, however, that different people choose to play games and interact on the internet for very different reasons (Yee, 2006). Not all virtual environments are full of aggression and it would be advantageous to be able to distinguish between these strikingly different realms of the internet world. Finally, this

study adds unique evidence that exemplifies the interaction of these two powerful

constructs and how they govern and guide the inappropriate and uncharacteristic

behaviors that are so prevalent in virtual environments.

Footnotes

[1]Participants were also given The Spheres of Control Scale (SOC; Paulhus & Selst 1990). The scale included 30 items that assess an individual's way of thinking about the control they have or do not have over the world around them (e.g., ―Most of what will happen in my career is beyond my control."). This scale was included at the beginning of the experiment to determine if LOC was related to online aggression. There were no significant results associated with LOC so this is not discussed further (see Appendix C).

Table 1

Demographics

N = 126	*Percentage of Sample*	*M*
Variable		
Age		22.00 (5.09)
Ethnicity – White	56.3%	
Ethnicity – Black or African American	19.8%	
Ethnicity – Native Hawaiian/Pac.Island.	1.6%	
Ethnicity – More than one race	3.2%	
Ethnicity – Other or Unknown	19.0%	
Class Ranking – Freshman	26.2%	
Class Ranking – Sophomore	12.7%	
Class Ranking – Junior	42.1%	
Class Ranking – Senior	19.0%	
Primary Language – English	97.6%	
Primary Language – Other	1.6%	
Primary Language – Spanish	.8%	

Note. Standard deviation is presented in parentheses.

Figure 1

Behavioral Temptation as a Function of Anonymity and Social Modeling

Anonymity/No Anonymity, $F(1, 122) = 14.29$, $p < .01$
Neutral/Aggressive, $F(1, 122) = 24.33$, $p < .001$
Anonymity/No Anonymity × Neutral/Aggressive, $F(1, 122) = 4.01$, $p = .047$

Figure 2

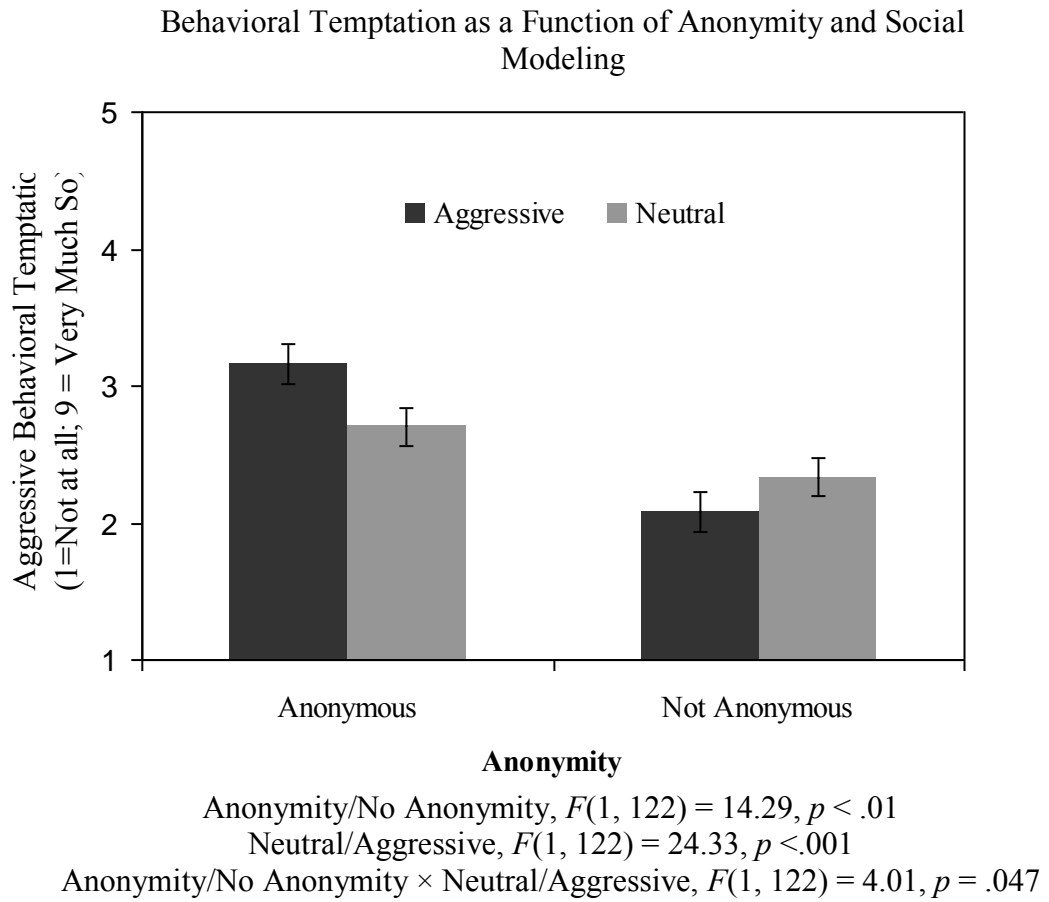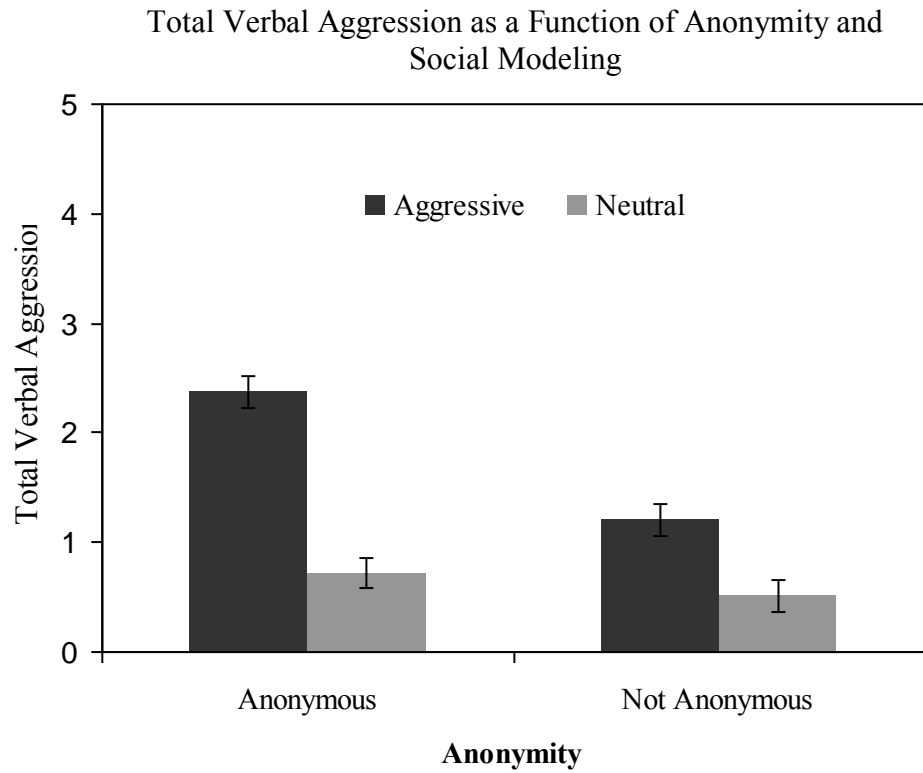
Total Verbal Aggression as a Function of Anonymity and Social Modeling

Anonymity/No Anonymity, $F(1, 122) = 25.62, p < .001$
Neutral/Aggressive, $F(1, 122) = .48, p = .49$
Anonymity/No Anonymity × Neutral/Aggressive, $F(1, 122) = 6.22, p = .014$

Appendix A

Directions for "Getting-to-know-you" Task
(for not anonymous condition)

Please answer the following questions. This information will be accessible to the other participants that you will be playing with. If you don't feel comfortable answering one of the questions or having one your answers shared, please feel free to leave the field blank:
Profile Questions:

1. Where are you from?

2. What are you majoring in, or what do you think you will major in? Why?

3. Why did you decide to come to UNF?

4. What is your favorite class so far?

5. What would you like to do after you graduate from UNF?

6. What are your hobbies?

7. If you could change one thing about yourself, what would that be?

8. What is one habit you'd like to break?

9. Do you miss your family?

10. What is one strange thing that has happened to you since you've been here at UNF?

11. What is one thing happening in your life that makes you stressed out?

12. Is it difficult or easy for you to meet people? Why?

13. What is one of your biggest fears?

14. What is your happiest childhood memory?

15. What is one thing about yourself that most people would consider surprising?

16. If you could have one wish granted, what would that be?

17. If you could travel anywhere in the world, where would you go and why?

Appendix B

Directions for "UNF Perceptions" Task
(for anonymous condition)

1. Where do you think most UNF students are from?

2. What year are the majority of UNF students in?

3. What do you think the majority of UNF students are majoring in? Why?

4. Do you think there are more males or females at UNF?

5. What do you think most students' favorite class at UNF is?

6. What do you think the most popular place to eat on campus is?

7. What do you think the average age of students at UNF is?

8. Do you think most students miss their family while in college?

9. What is one strange thing that has happened to you since you've been here at UNF?

10. What is one thing that happens in college that stresses most people out?

11. Is it difficult for the average college student to meet people? Why?

12. Where do you think most people would go if they could travel anywhere in the world?

Appendix C

Indicate on a scale of 1 (totally inaccurate) to 7 (totally accurate). *indicate reverse scoring.

Personal Control:

1) I can usually achieve what I want when I work hard for it.

2) Once I make plans I am almost certain to make them work.

3) *I prefer games involving some luck over games of pure skill.

4) I can learn almost anything if I set my mind to it.

5) My major accomplishments are entirely due to my hard work and ability.

6) * I usually do not set goal because I have a hard time following through on them.

7) * Bad luck has sometimes prevented me from achieving things.

8) Almost anything is possible for me if I really want it.

9) Most of what will happen in my career is beyond my control.

10) * I find it pointless to keep working on something that is too difficult for me.

Interpersonal Control:

1) *In my personal relationships, the other person usually has more control over the relationship than I do.

2) I have no trouble making and keeping friends.

3) *I'm not good at guiding the course of a conversation with several others.

4) I can usually develop a close personal relationship with someone I find appealing.

5) I can usually steer a conversation toward the topic I want to talk about.

6) *When I need assistance with something, I often find it difficult to get others to help.

7) If there is someone I want to meet I can usually arrange it.

8) * I often find it hard to get my point of view across to others.

9) * In attempting to smooth over a disagreement I sometimes make it worse.

10) I find it easy to play an important part in most group situations.

Socio-Political Control:

1) By taking an active part in political and social affairs we, the people, can control world event.

2) The average citizen can have an influence on government decisions.

3) * It is difficult for us to have much control over the things politicians do in office.

4) * Bad economic conditions are caused by world events that are beyond our control.

5) We enough effort we can wipe out political corruption.

6) One of the major reasons we have wars is because people don't take enough interest in politics.

7) * There is nothing we, as consumers, can do to keep the cost of living from going higher.

8) * It is impossible to have any real influence over what big businesses do.

9) * I prefer to concentrate my energy on other things rather than solving the world's problems.

10) In the long run we, the voters, are responsible for bad government on a national as well as a local level.

Appendix D

Mental Visualization Scale

Instructions: We are interested in how mental visualization affects human behavior. People vary in terms of how they mentally visualize. We want to ask you some questions about how likely and easy it is for you to mentally visualize. Please use the provided scale to select your response for each statement.

Scale:

Strongly Agree   Agree   Neutral   Disagree   Strongly Disagree

1. When I read a book, I can see the main characters clearly in my mind.

2. I am a visual person.

3. I regularly daydream.

4. I have difficulty understanding instructions without first seeing a demonstration.

5. I have vivid dreams.

6. I prefer class lectures to include PowerPoint slides with lots of graphics and animations.

7. I prefer listening to music instead of watching movies.

8. I prefer to play role-playing games, such as "Dungeons and Dragons."

9. I would much rather read books than play sports or watch television.

10. I love to write stories in my free time.

11. I would rather listen to a sports game than watch it.

12. I enjoy vivid colors.
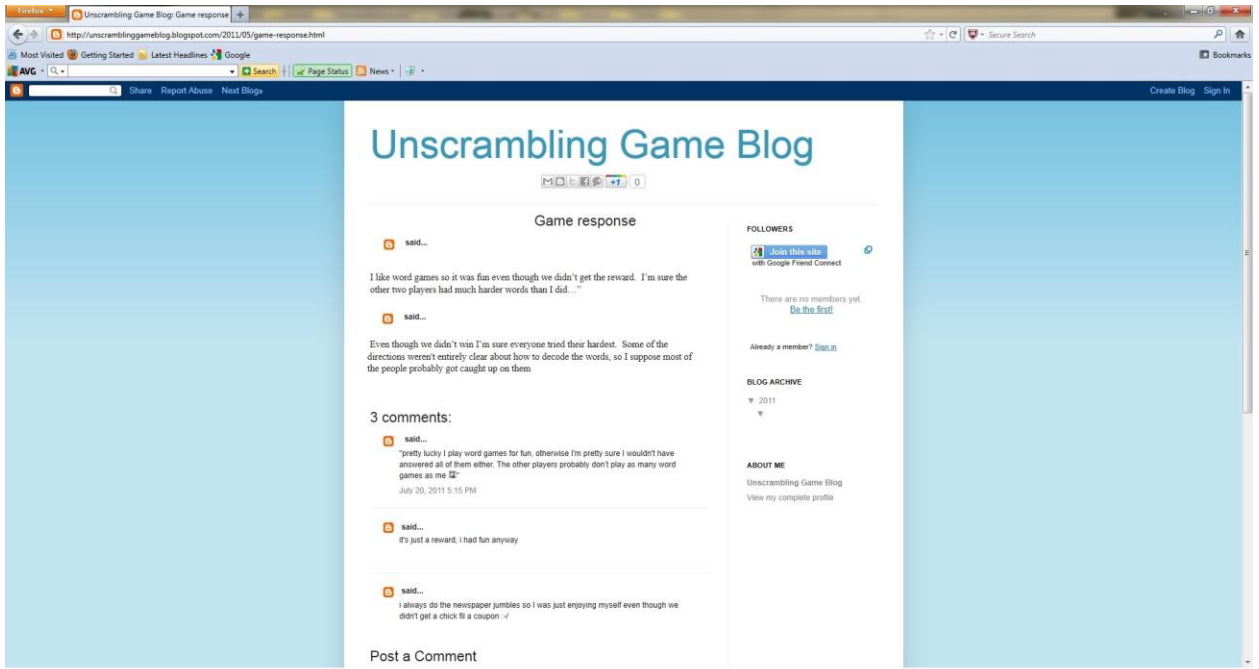
Appendix E

Please UNSCRAMBLE the following word:

U-D-P-O-N
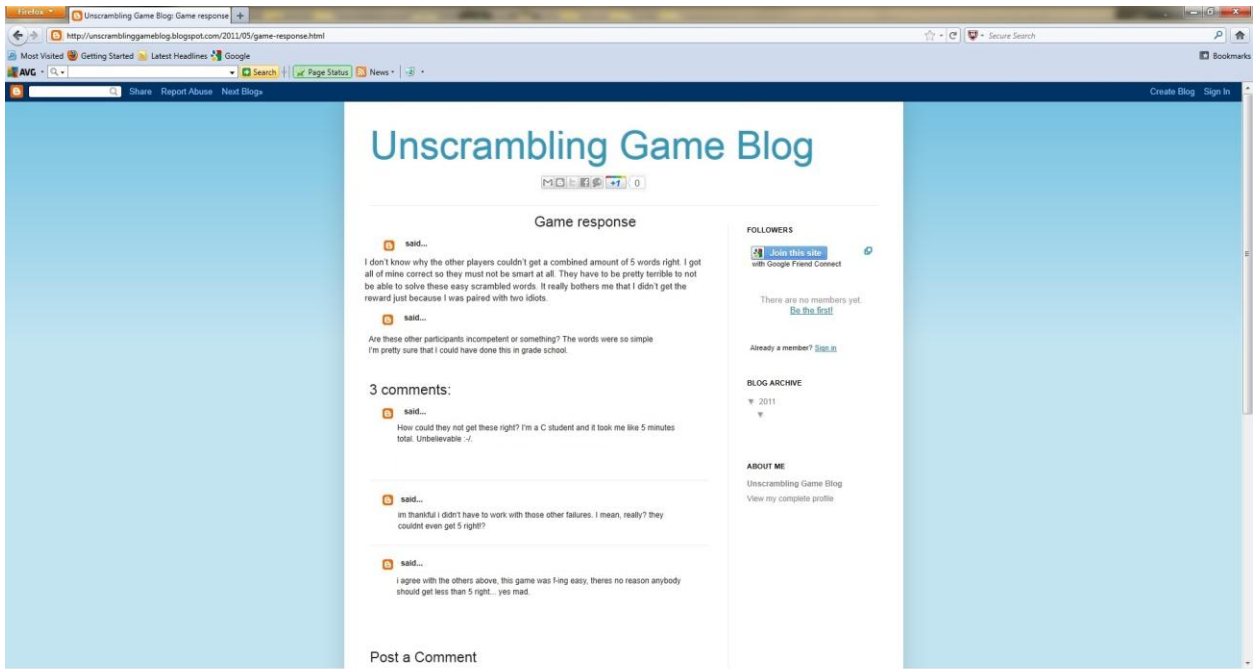
Press ENTER when you have typed your answer

Continue ▶

Appendix F

Neutral

Aggressive

Appendix G

Behavioral Temptation Scale

Imagine for a moment that, rather than receiving the other participant's evaluations of you on a feedback form, you received them **face-to-face.** If you had been talking about yourself face-to-face with the other participant in a real-life conversation, how tempted would you have been to do each of the behaviors below.

Note that we are **NOT** asking whether you would have actually done each behavior, but rather the degree to which you would have been **tempted** to do each one. Use the scale below to indicate your response.

1 -------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7 -------- 8 -------- 9
not at all   somewhat   very
tempted   tempted   tempted

_____ Smiling at the other person

_____ Showing interest in what the other person said

_____ Humiliating the other person in front of others

_____ Purposely ignoring the other person

_____ Making the other person feel good

_____ Insulting or swearing at the other person

_____ Shouting or yelling at the other person

_____ Trying to make the other person laugh

_____ Throwing something at the other person that could hurt him or her

_____ Complimenting the other person

_____ Putting the other person at ease

_____ Pushing or shoving the other person

_____ Treating the other person nicely

_____ Slapping the other person

_____ Showing that you enjoyed talking to the other person

_____ Threatening to hit or throw something at the other person

Appendix H

Attributions to the Game Result

To what do you attribute the game's result (whether you collectively succeeded or failed to achieve the reward)?

_____ My intelligence (the participant)

_____ My effort (the participant)

_____ The other players' intelligence (the confederates)

_____ The other players' effort (the confederates)

_____ Luck or chance

Appendix I

Coding Verbal Aggression

Specific aggression = **Score +1 point**
Global/General aggression = **Score +2 points**
Indirect/Passive/sarcastic/subtle aggression = **Score +1 point**
Direct/Unsubtle/vulgar/obvious aggression = **Score +2 points**

Example #1: - Total post score = +4 points aggression

―Some stupid people just can't do anything right…I can't understand why this task was so hard. All we needed to do was get 15 right, and I got 10"

I can't understand why this task was so hard – indirect subtle aggression; somewhat passively stating that the task wasn't hard so this implies that other people shouldn't be bad at it. --------------**Score +1 point**

All we needed to do was get 15 right, I got 10… - indirect passive aggression, somewhat passively stating that they got all 10 right so everyone else should have at least half-matched that. -------------**Score +1 point**

I suppose some stupid people just can't do anything right – direct obvious/general aggression, talking about people who are GLOBALLY stupid, (not just stupid in this unscrambling game) and how they can't do ANYTHING right (again global) ---------**Score +2 points**

Example #2: - Total post score = +3 points aggression

―I don't know my group members so I can't get mad at them but they probably have trouble spelling or they were probably from another country haha."
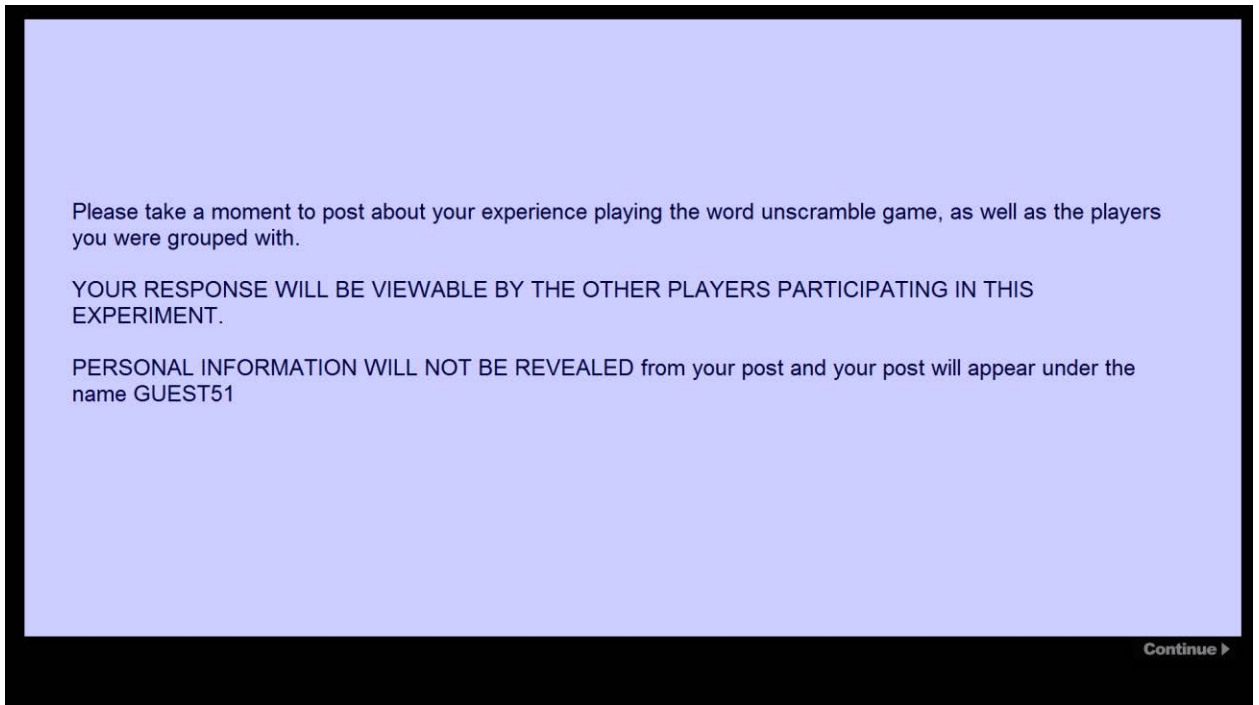
I don't know my group members so I can't get mad at them – indirect subtle aggression – Implying that I don't know my group members so I can't get mad… (but if I did know them I would get mad at them). ----------**Score +1 point**

But they probably have trouble spelling – very subtle passive and indirect – They have trouble spelling which is what the participant thinks rationalizes why they did so bad. ---------**Score +1 point**

Or they were probably foreigners haha. – subtle, sarcastic aggression. Even though they state they can't get mad, they follow it up with a sarcastic comment about the other players being from another country or having problems spelling. ---------------**Score +1 point**
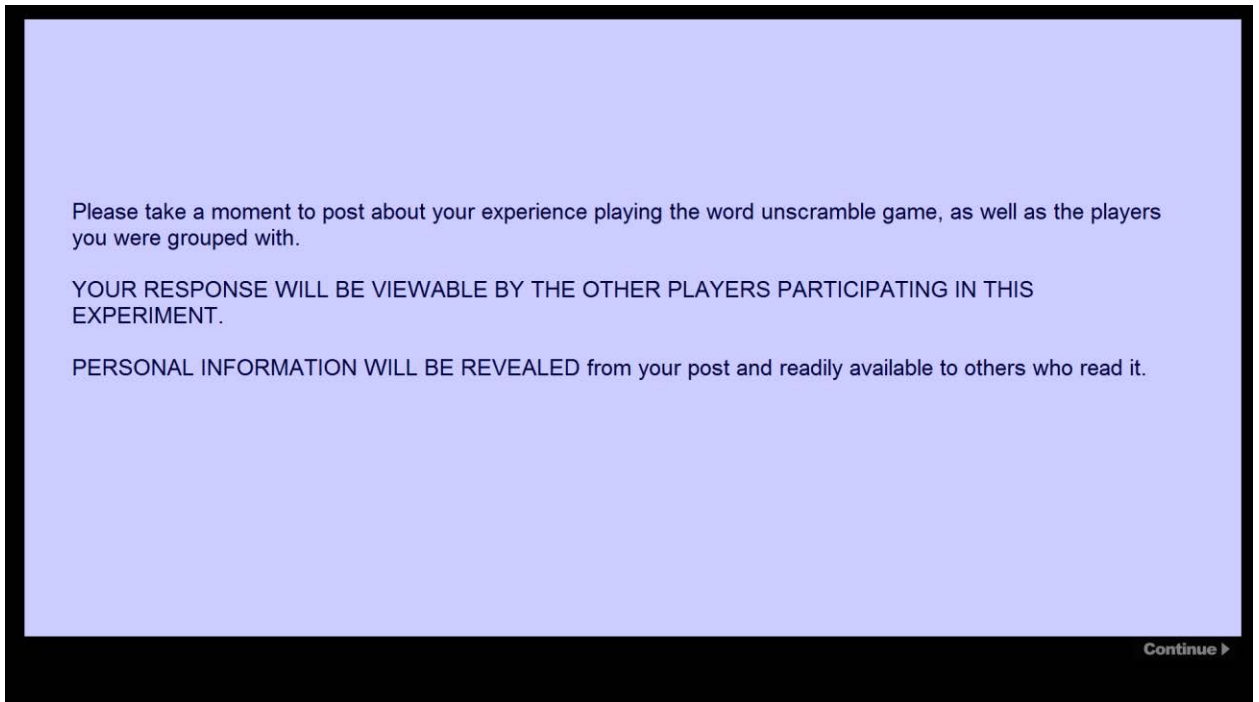
Appendix J

Anonymous

Please take a moment to post about your experience playing the word unscramble game, as well as the players you were grouped with.

YOUR RESPONSE WILL BE VIEWABLE BY THE OTHER PLAYERS PARTICIPATING IN THIS EXPERIMENT.

PERSONAL INFORMATION WILL NOT BE REVEALED from your post and your post will appear under the name GUEST51

Continue ▶

Not Anonymous

Please take a moment to post about your experience playing the word unscramble game, as well as the players you were grouped with.

YOUR RESPONSE WILL BE VIEWABLE BY THE OTHER PLAYERS PARTICIPATING IN THIS EXPERIMENT.

PERSONAL INFORMATION WILL BE REVEALED from your post and readily available to others who read it.

Continue ▶

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