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Prosocial aggression: Validation of a behavioral measure and model

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Prosocial aggression: Validation of a behavioral measure and model

by

Christopher Lee Groves

A dissertation submitted to the graduate faculty

In partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Psychology

Program of Study Committee:
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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2018

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ABSTRACT

Helpful and hurtful behavior are commonly viewed as antithetical, with little overlap and are commonly found to be negatively related (e.g., Anderson et al., 2010). Anecdotally, however, there are many instances of behaviors that can be generally considered as representative of both help and harm (CBS, 2015; Karimi, 2015). Such behaviors, which I refer to as Prosocial Aggression (PA), have received relatively little attention in the social psychological literature. Two factors are identified as potential sources of this inattention. First, there is no current theoretical framework integrates social psychological theories of prosocial and aggressive behavior. Second, practical limitations of studying PA make such work difficult. The work presented here was designed to address these two limitations by developing a coherent theoretical account of PA behavior and validating a novel measure of PA. To this end, two studies were conducted. Study 1 provided an initial test of the PA task by manipulating the presence of victimization followed by measuring aggression toward the victimizer. In addition to the manipulation, long-term predictions of the PA model were tested in a cross-sectional manner. Personality factors that are theoretically relevant to PA (i.e., empathic anger, anti-bullying attitudes) were tested as likely predictors of PA behavior. Finally, an experiment (Study 2) tested the short-term predictions of the PA model in which empathy toward the (soon-to-be) victim, and vulnerability of the victim were manipulated and PA was subsequently measured. Results indicated no effect of either manipulation on PA. In addition, neither empathic anger, nor anti-bullying attitudes predicted PA. Discussion focuses on potential theoretical and methodological factors that may have limited the PA task's effectiveness with an emphasis placed on directing future investigations into PA.

Key words: prosocial; violence; aggression; helping; third-party punishment

CHAPTER 1. CONCEPTUAL AND PRACTICAL CONSIDERATIONS

On August 21st, 2015, a man boarded a French train, armed with a pistol, assault rifle, and a box cutter. When he opened fire, five men, including three Americans, charged and tackled the gunman. While the gunman was subdued, the men sustained gunshot and knife injuries (Karimi, 2015). In a less severe (and less well-known) incident, a California teenager observed a blind classmate being repeatedly struck by a bully. He responded by striking the bully to the ground, ending the episode quickly, albeit violently (CBS, 2015). These two incidents differ dramatically in age of the participants, geographic location, and severity, but are both characterized by behaviors that are simultaneously aggressive, and helpful, a type of behavior that is the focus of this manuscript and is henceforth referred to as prosocial aggression (PA).

Whereas these incidents are certainly noteworthy, PA is not limited to such extreme events. For instance, parents routinely punish children for misbehaving. The child who learns to delay gratification (due in part to experiences of punishment) in order to finish chores may be more likely to delay gratification in order to study for tests, complete additional job applications, spend additional time on a client's commission, and so forth. In other words, the aggressive act of punishment is used as a tool used to increase the likelihood of the child's success in their social and professional world and produce a potent long-term positive outcome. In this sense, the punishment itself is a truly prosocial act.

Children routinely encounter situations in which prosocial and aggressive behavior co-occur. Classroom bullying is among the most common observed by children, with approximately 1 in 4 middle school students reporting having been bullied (Zhang, Musu-Gillette, & Oudekerk, 2016). Students must often decide whether to ignore the behavior (which may incur the smallest social cost), tell an adult (and risk label as a tattletale and/or being targeted by the bully) or

confront the bully on behalf of the victim. This confrontation can come in many forms but at minimum, confronting a bully requires aggression as one's goal is to thwart the bully's goal of harming another. This thwarting can take the form of expressing disapproval of the bully's behaviors or intentions, physically intervening to shield the victim, or even verbally or physically aggressing against the bully.

Those who belong to military organizations around the world provide some of the most extreme examples of prosocial aggression. Soldiers join the military for several reasons but ensuring the safety of one's friends, family, and country is certainly among them (Pew Research Center, 2011). On the battlefield, soldiers engage in extreme aggression to keep their friends safe from harm. Such instances perhaps represent the most extreme examples of PA, combining what can be considered the most extreme form of aggression (taking a life) with the most extreme form of helping behavior (saving a life).

There is a dizzying variety of PA behaviors, each characterized by differing degrees of prosocialness and aggressiveness. Figure 1 demonstrates the broad applicability of this concept to a number of example behaviors, each of which is provided with a hypothetical prosocialness and aggressiveness rating. The purpose of the illustration is not to imbue these behaviors with "positive" or "negative" socio-cultural values, but to identify the theoretically useful tool of considering the two-dimensional nature of these and related behaviors. As the examples discussed thus far make clear, aggressive behaviors are not inherently negative or positive, but serve as a useful social tool that can be used to meet either end. In the case of PA, from the actor's perspective, it is always both.

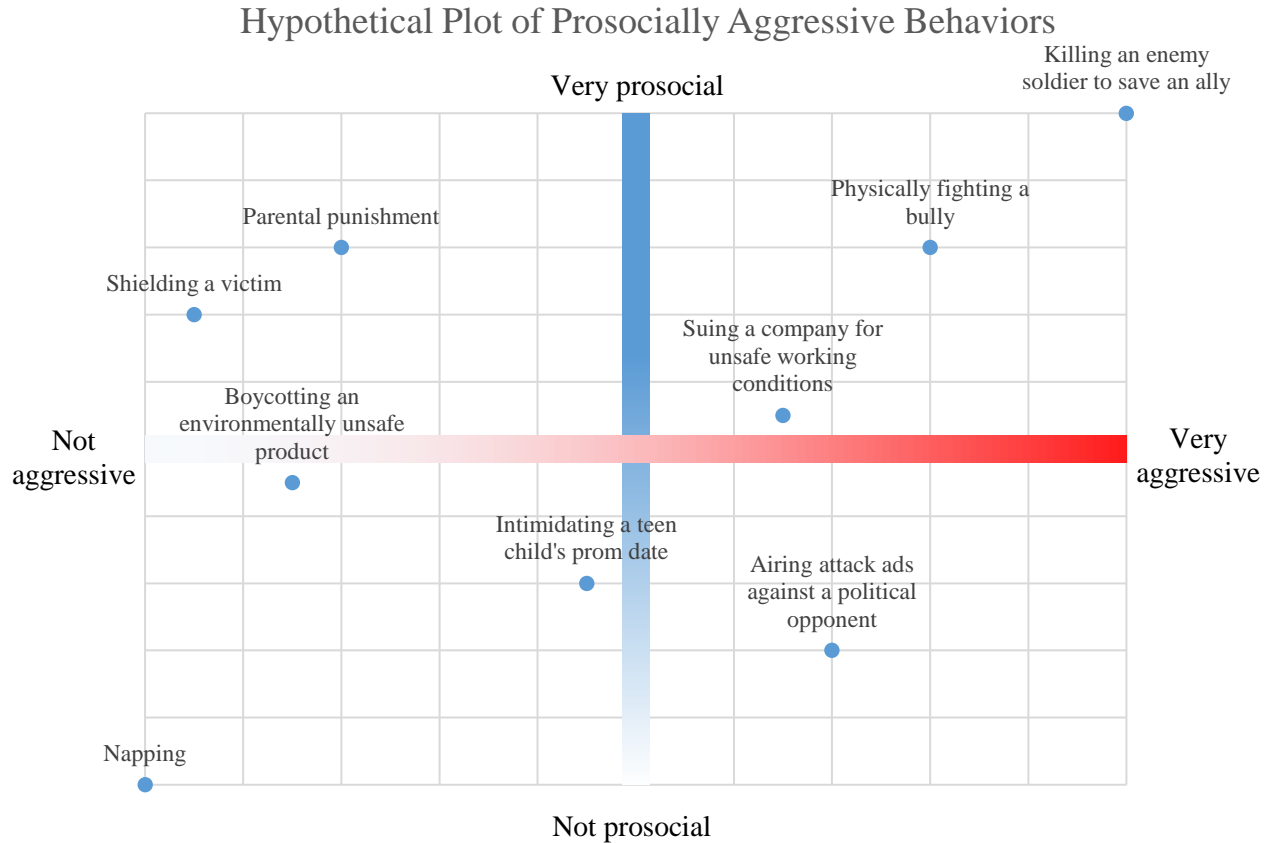


Figure 1. Hypothetical mapping of example behaviors' aggressive and prosocial components

Of course, this illustration dramatically oversimplifies the rich complexity of unique internal and external forces driving any given PA act. It is, however, useful to consider the relative degree of “activity” of aggression and prosocial-related processes. At low levels of aggressiveness and high prosocialness, one can expect empathic and helping-related processes to be the predominant psychological forces at work and vice versa. The most theoretically interesting contributions of studying PA likely lie in investigations centered along both of these dimensions as a full understanding of the interactions between these two “families” of processes would undoubtedly prove valuable to psychological science given their typically antithetical nature.

Despite the apparent prevalence of PA, research that is theoretically relevant to PA typically focuses on either aggressive behavior or prosocial behavior independently. Such work is only peripherally valuable in assisting scientists with making predictions regarding behaviors that are characterized by aspects of both prosociality and aggression. Further, the scientific understanding of human behavior is incomplete without thorough consideration of the intersection between these seemingly distinct, but highly prevalent social behaviors.

This critique of the current social psychological literature certainly doesn't preclude consideration of the well-studied processes involved in both prosocial and aggressive behavior when attempting to understand PA behavior. Undoubtedly, a complete understanding of PA behavior requires full explication of the processes that underlie both prosocial and aggressive behavior. Next, I discuss models of aggressive and prosocial behavior as described by the General Aggression Model (GAM; Anderson & Bushman, 2002), General Learning Model (GLM; Buckley & Anderson, 2006; Gentile, Groves, & Gentile, 2014), as well as other theories that are relevant to PA behavior.

CHAPTER 2. AGGRESSIVE PROCESSES AND THEORIES

Aggression is defined as “any behavior directed toward another individual that is carried out with the *proximate* (immediate) intent to cause harm. In addition, the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior” (Anderson & Bushman, 2002, pp. 28).

Briefly, it is worth discussing the distinction between hostile and instrumental aggression. Hostile aggression is considered impulsive, affectively driven, and has the ultimate goal of harming the other person. Instrumental aggression, in contrast, is aggression enacted with the intent of achieving some ultimate goal other than harming another person. While it may appear that these two forms of aggression are fairly distinct, there is significant overlap, particularly as the aggressor’s goals shift during a social encounter. For instance, the observation of bullying behavior may initiate a retaliatory response by a third party in order to protect the victim (a fairly instrumental process). In an identical scenario, the third party may feel anger on behalf of the victim and aggress against the bully – engaging in behavior with the ultimate goal of harming the bully (a relatively hostile process). Both instances appear identical but reflect separate goals that may or may not be stable throughout a given behavioral episode. Issues such as this have prompted theorists to suggest that the distinction between hostile and instrumental aggression produces a false dichotomy that fails to account for mixed motives (Bushman & Anderson, 2001). Instead, models of aggression that consider the role of knowledge structures in understanding aggression, such as the General Aggression Model (Anderson & Bushman, 2002) and other social cognitive models are much better able to handle the complexity inherent in most aggressive behavior. Understanding PA behavior is likely to be best understood, at least partially, through this model, to which I turn next.

The General Aggression Model (GAM) is a model of aggressive behavior that is designed to incorporate all sources of influence, including social, biological, cultural, and cognitive forces. The model distinguishes between short and long-term processes that give rise to aggression. The short-term processes describe the series of events that occur within a given social situation that determine the likelihood of aggressive behavior. The long-term processes describe the factors that contribute to the development of the aggressive personality, which influences the likelihood of aggressive responding across situations. As a domain-general theory of aggression, GAM is not designed to elaborate upon the specifics of the multitude of processes that produce aggressive responding. Instead, GAM is designed to integrate existing domain-specific theories of aggression into a coherent framework. Each of these theories describes factors that may increase or decrease the likelihood of aggressive responding and thus may be relevant for the likelihood of engaging in PA behavior.

Domain specific theories of aggression. There are five major theories of aggression that are explicitly incorporated into GAM. While discussion here is limited largely to these five theories, it should be noted that any theory of aggression can be integrated into the GAM framework. The five theories discussed here, however, are among the most heavily tested and influential in the psychological study of aggression.

Excitation transfer theory. Excitation transfer theory, developed by Zillman (1971), applies to relatively specific situations compared to many of the other theories discussed here. The theory relies upon an understanding of attribution processes and the role of arousal in the generation of aggressive responding. Specifically, the theory considers the misattribution of arousal derived in a previous situation to a current situation.

One tool that individuals use to understand their environment is their current physiological state (Schachter & Singer, 1962), which can be used to interpret how they are feeling or reacting to a given event. When individuals become aroused (e.g., from riding a bicycle), their arousal takes time to dissipate. The arousal derived in one situation can therefore be carried into a subsequent situation and affect the social encounter. If, for example, provocation is experienced in a subsequent situation, the arousal derived in the previous situation is misattributed to the provocation, increasing the perception of one's own anger and consequently exacerbates the reaction (Zillman & Bryant, 1974).

Cognitive neo-association theory. Cognitive neo-association theory was developed in order to iterate upon the frustration-aggression hypothesis (Dollard et al., 1939), which states that “people are driven to attack others when they are frustrated: when they are unable to reach their goals, or they do not obtain the rewards they expect” (Berkowitz, 1993, p. 30). In its basic form, the frustration-aggression hypothesis states that all aggression results from frustration in some form. Cognitive neo-association theory, in contrast, posits that aversive experiences (not simply frustration) instigate negative affect, which in turn activates fight or flight responses. This improvement helped explain some experimental findings that the frustration-aggression hypothesis could not handle directly (e.g., the role of arbitrariness in the elicitation of frustration; Cohen, 1955) and generalizes across various types of aversive experiences (Berkowitz, 1989).

Critically, cognitive neo-association theory incorporates a knowledge structure approach to understanding aggressive responding. It relies on the understanding that thoughts, emotions, and behavioral propensities are linked together in memory in a conceptual network (Collins & Loftus, 1975). When a concept is activated (e.g., when viewing the image of a gun), a spreading of activation occurs in which concepts closely related to the target concept (e.g., kill) are

subsequently activated (i.e., primed). The network of concepts related to the target concept is thereby readied for use and assists in generating potential plans of action, evaluating stimuli, triggering emotional responses, and selecting behavioral sequences for execution.

Script theory. In what can be thought of as a specific form of knowledge structure, a script (Abelson, 1981; Huesmann, 1988) is a cognitive organization of concepts that guide behavior in specific situations. A script is a well-rehearsed sequence of actions (behavioral, cognitive, and affective) that guide an individual through a social series of events. An easily understood basic example of a script can be seen during a typical outing at a restaurant. Patrons arrive at the restaurant, wait to be seated, order drinks, order food, wait, are served, eat, pay, and leave.

Scripts such as this one can be learned through observation (e.g., on television) or directly experienced (e.g., being guided by a server). Repeated rehearsals (whether through observation or action) of a script increase its likelihood of being used for two main reasons. First, scripts can be rehearsed across many situations, expanding the repertoire of appropriate social scenarios that call for the script to be activated. Second, multiple rehearsals of scripts also increase the strength of links between concepts contained within the script (e.g., waiting to be seated – be guided to seat), making the activation of a script-relevant concept increasingly likely to engage the associated script. In short, this engenders a chronic accessibility of the script.

The development and reinforcement of scripts provides individuals with a method of automatizing normally complex social interactions that would otherwise require substantial cognitive resources to process. If verbal retaliation to a dirty look in a high school hallway is consistently rewarded, and passivity punished, it is to a student's advantage to quickly enact the scripted response of retaliation rather than process each aspect of the social situation to determine the appropriate response.

Social learning theory. Of course, the acquiring of these scripts (such as the one described above) is essentially a learning process that is driven by interactions with the social environment. This acquiring of knowledge from the social environment is detailed by social learning theory (Bandura, 1971). Broadly (and briefly) social learning theory states that individuals learn by either direct experience or by observing others. The theory details the social interaction processes (e.g., modeling, vicarious reinforcement) that determine what individuals learn and how they are likely to use that information.

Importantly, social learning theory illustrates the importance of outcome expectancies (e.g., expected rewards; Williams, 2010) and expectations regarding one's ability to carry out a behavioral plan (i.e., efficacy expectations; Lee, 1984). In the above example, a physically intimidating student who lacks the verbal intelligence required for an exchange of insults may favor a physical altercation as an alternative. In other words, the efficacy expectations inform the selection of the appropriate script.

Social interaction theory. Of particular relevance to PA, social interaction theory focuses on the higher-level goals that drive aggressive behavior. That is, the theory interprets aggressive behavior as a coercive action that is used to influence others. Such influence is used to gain goods or services (e.g., money, information, sex), demonstrate status and establish a reputation (e.g., for toughness), restore justice, or discourage others' behavior (i.e., via punishment).

Harkening back to the distinction between instrumental and hostile aggression and its application to PA, social interaction theory clearly emphasizes the instrumental component of aggressive responding. It focuses heavily on the practical values of aggression, viewing the aggressor as a decision maker whose behavior is driven by estimated probabilities of success, values of rewards, and the costs of actions. The social interaction theory approach to

understanding PA focuses on explicating the practical goals of engaging in PA (e.g., reducing short and long-term victimization behavior, providing the victim with a sense of justice), as well as the motivational and behavioral consequences of these goals.

Desensitization. Basic habituation learning indicates that repeated exposure to a stimulus reduces the impact that stimulus has on subsequent exposures. Desensitization often refers to affective reactions to stimuli, but can also refer to physiological reactions (Carnagey, Anderson, & Bushman, 2007), or may refer to more “cold” cognitive reactions to stimuli, such as when increasingly violent content over time may be required to capture and hold attention of media viewers (Slater, Hnery, Swaim, & Anderson, 2003). In some contexts, desensitization can be quite adaptive, as when a soldier is not startled by the horrible sights of war. However, anxiety in response to viewing aggressive and violent behavior serves as an inhibitor of such behavior (Bartholow, Bushman, & Sestir, 2006). In line with this view, desensitization to violence has been associated with increases in aggressive thoughts and behaviors (Engelhardt, Bartholow, Kerr, & Bushman, 2011; Krahe et al., 2011).

Single cycle episode. The single cycle episode (Figure 2), described by GAM, illustrates the psychological processes that influence the likelihood of aggressive responding within any given immediate social situation. Briefly, an episode begins with two sources of input: the situation and the person. These two factors influence the individual’s internal state, which includes cognition, affect, and arousal. Decision and appraisal processes are then engaged and result in a behavioral response (or non-response) to the situation, which influences the situation and initiates a new cycle. Next, I discuss each of these steps in more detail.

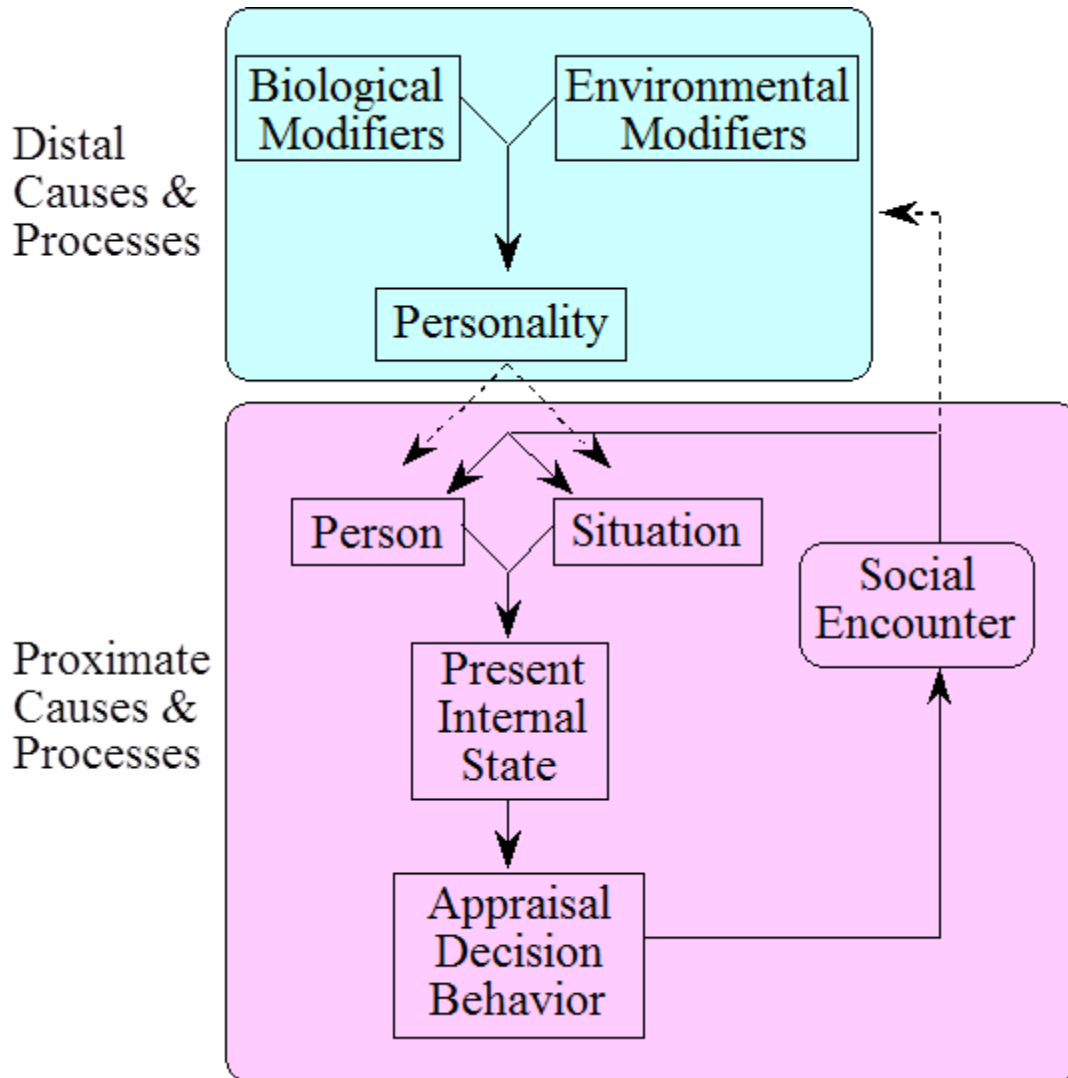


Figure 2. Single-episode cycle of the General Aggression Model. Reprinted with permission from Anderson & Bushman (2002)

Inputs. Person factors include all of the largely stable, persisting characteristics that an individual carries across situations. Obvious examples of person factors include heavily biologically based variables such as sex or baseline testosterone. They also include much less well understood factors such as genetic predispositions toward aggressive learning and responding. Personality traits also fall under the person input factor and (among many others) include trait aggression and unstable narcissism (Bushman & Baumeister, 1998).

There are several cognitive dispositions that are also included in the person input factor. For instance, individuals differ in their tendency to interpret neutral stimuli in hostile terms (as compared to benign terms); called their hostile attribution bias (Crick & Dodge, 1996). They also differ in their tendency to expect aggressive outcomes to ambiguous situations (e.g., for a fight to break out; Dill, Anderson, Anderson, & Deuser, 1997).

Attitudes, beliefs, and values also fall under the realm of person variables. For instance, positive attitudes toward aggression (Vernberg, Jacobs, & Hershberger, 1999), belief that aggressive responding is normal (Möller & Krahe, 2009), and even expectation of approval for aggressive behavior are associated with aggression (Borden, 1975).

Situation variables, on the other hand, are the prominent features of a given situation that have an influence on aggressiveness. The simplest, and perhaps most important situation variable is provocation (Denson, Pedersen, Friese, Hahm, & Roberts, 2011). Indeed, provocation in the form of insults (Pedersen, Vasquez, Bartholow, Grosvenor, & Truong, 2014), shocks (Giancola et al., 2002), and noise blasts (Cohen's $d = 1.43, p < .001$, Groves, 2012), to name a few, are reliable elicitors of aggression.

The presence of aggressive cues (or primes) provide a fairly automatic activation of aggressive responding (i.e., a postconscious automatic process; Bargh, 1992). Foundational work regarding this automatic activation of aggressive responding grew from experimental work regarding the weapons effect (Berkowitz & LePage, 1967). Such work extends to multiple domains and is considered a central process responsible for the violent media effect (Anderson & Dill, 2000; Groves, Prot, & Anderson, 2015).

Pain and discomfort also appear to produce aggressive responding across a wide variety of stimuli (Groves & Anderson, 2017). Such work on aversive events demonstrate the aggression increasing effects of pain (both acute [Ulrich & Azrin, 1962] and chronic [Margari et al., 2014]), bitter taste (Sagioglou & Greitemeyer, 2014), uncomfortable temperatures (Anderson & Anderson, 1998), stressful events (Guerra et al., 1995), and crowding (Lawrence & Andrews, 2004), to name a few.

As suggested by the discussion of social interaction theory, the presence of incentives or goals that require aggressive responding also serve as a risk factor for aggressive responding (e.g., contract killing, competitive academic or professional environments). Such responding obviously tends toward more instrumental forms of aggression, but can produce more hostile forms of aggression when frustrations result from the pursuit of the desired object.

Each of the above described person and situation variables provide reliable elicitation of aggression (i.e., each produce a main effect) but it should be noted that GAM is not limited to the incorporation of such simple effects. Interactions between the person and situation variables are extremely common and are explicitly considered by GAM. For instance, as mentioned, biological sex consistently predicts aggressive responding. This sex effect, however, tends to be much smaller in the presence of provocation (Bettencourt & Miller, 1996).

Routes. Such main and interaction effects, of course, do not themselves directly impact aggression. Instead, they affect internal processes, called routes, which in turn, influence the decision making processes that produce aggressive responding. The internal states are placed in three broad categories of cognition, affect, and arousal. It is important to note that each of these internal states does not operate in isolation, but mutually interact with each other, either by exacerbating or regulating each other's effects. Next, I briefly discuss these categories in turn.

Arousal. Arousal can increase aggression in at least three ways (Anderson & Bushman, 2002). First, arousal can increase the dominant action tendency, which may include the aggressive response. This effect forms the basis of social facilitation (Bond & Titus, 1983). Second, as described above, arousal from one source can be misattributed to a subsequent stimulus (e.g., a provocation) and mislabeled as anger (Rule & Nesdale, 1976; Schachter & Singer, 1962), thereby exacerbating (or instigating) an aggressive response. Lastly, as proposed by Anderson & Bushman (2002), excessive or insufficient arousal, if perceived as aversive, may increase aggressive responding through the natural response to aversive experience.

Affect. The clearest contributor to the affective component of internal states regarding aggressive behavior is anger. It serves as the basis for some of the more hostile forms of aggression and is a well-established mediator for a number of effects (e.g., Peters, Geiger, Smart, & Baer, 2013).

Cognition. There is now a large number of studies that illustrate the role of aggressive cognition in aggressive behavior. Many of the domain-specific theories of aggression directly address the roles of cognitive processes in the regulation and production of aggression. Aggressive knowledge structures can be broadly primed to affect aggressive behavior (Bartholow, Anderson, Carnagey, & Benjamin, 2005). Perceptual processes can be biased toward interpreting ambiguous social interactions as provocations (Crick & Dodge, 1996). Self-regulation and impulsiveness make the inhibition of aggressive responding less likely (Connor, Chartier, Preen, & Kaplan, 2010; Swing & Anderson, 2014).

Decision making processes. These internal states then feed into decision making processes.

These decision making processes begin with an initial appraisal, which occurs without awareness, is relatively effortless, and is thus largely automatic. This initial appraisal contains

affective, goal, and intention information (e.g., anger, a goal to harm the other, and a script that details how to attain that goal).

Three conditions determine whether the initial appraisal leads directly to behavior. The first condition is that the outcome of the behavior must be considered important (and worthy of attention). The outcome must also be evaluated as unsatisfying (e.g., the current script would not inflict enough [or inflict too much] harm). Finally, the individual must have the resources required (e.g., time) to reappraise. If these three conditions are met, a reappraisal process results.

The reappraisal process involves a reevaluation of one or more aspects of the initial appraisal. The individual could reconsider features of the current situation that would inform the appraisal. A search for relevant information in memory could be executed (e.g., a history of similar interactions with the target person). Also, alternative behavioral scripts could be entertained. The reappraisal process could include many or few cycles as alternatives are considered. Briefly, this appraisal process shouldn't be considered distinct from the internal processes as it interacts with the present internal state at every stage. For instance, the scripts that are selected are (among other things) the product of one's history of reinforcement and the currently activated knowledge structures in memory. Once the behavior is executed, it affects the situation, which, in turn, serves as the input for the next cycle.

Long-term processes. Over repeated cycles, the individual learns and develops stable characteristics (e.g., knowledge, personality changes, and goals) that persist across situations, as represented by the person input variable. In other words, the person input variable is not static, but constantly changes as a function of each single cycle learning episode.

Five long-term processes are explicitly considered by GAM, but it should be noted that any long-term changes in the person that moderate aggressive responding across situations can be incorporated. The first (and perhaps the simplest) of these long-term processes is desensitization. A result of basic habituation learning, desensitization occurs when individuals experience a reduction in response intensity (e.g., physiological, emotional) after viewing aggression or victimization (Carnagey, Anderson, & Bushman, 2007).

Aggressive attitudes and beliefs also clearly fall within the domain of long-term processes. As individuals observe (or experience) the success of aggressive responding, they learn that aggression is an effective means of attaining desired goals (e.g., respect, dominance, items of interest). Each instance of successful aggression reinforces beliefs that aggression is effective, useful, and the positive feelings associated with success are paired with (associated with) the aggressive act. These aggressive attitudes and beliefs then serve as a stable guide for behavior across situations in which the individual learns to expect positive outcomes to result from aggressive responding.

Aggressive perceptual and expectations also contribute to stable aggressive responding over time. In essence, these two factors describe the tendency for aggressive individuals to perceive stimuli in hostile terms (i.e., a hostile attribution bias) and the tendency for these individuals to expect potential conflict situations to result in aggression. Of course, the expectations we have regarding how a situation may unfold serves to drive the scripts that individuals may select and enact. For instance, if one believes that another is likely to begin a fight, they may be more likely to (literally) beat them to the punch.

The theories and model put forth by GAM provide a detailed explanation of the processes that give rise to aggressive behavior. Critically, it also outlines many factors that may increase or

decrease aggression at multiple “points” among the psychological “steps” that occur in the production of aggression. Certainly, such theory provides valuable insight into some of the processes at work when individuals engage in PA behavior. Of course, however, there are a number of other processes, related to empathy and prosocial behavior, which are critical to understanding when PA behavior is likely to occur, what factors affect the likelihood of engaging in PA behavior, and what processes ultimately give rise to PA behavior. It is to these empathic and helping processes that I discuss next.

CHAPTER 3. MODELS AND PROCESSES OF EMPATHY AND HELPING

There are two models of helping behavior that are particularly useful for explaining the empathic/helping component of PA behavior. Further, both models lend themselves to integration with GAM to better understand PA behavior. The first of these models is the General Learning Model (GLM; Buckley & Anderson, 2006; Groves, Gentile, & Groves, 2014) and the second is the model of helping behavior put forth by Latane and Darley (1968a). Next, I describe these models and briefly discuss some relevant empathic processes in order to lay the theoretical groundwork required to integrate the three models (GAM, GLM, and helping).

The General Learning Model. Structurally, GLM is highly similar to GAM. For this reason, the following discussion of GLM is kept brief and is largely focused on the major emphases of GLM. Like GAM, the GLM posits a short-term cycle in which the situation and person interact to affect the individual's internal state (affect, cognition, & arousal). This internal state guides the decision making processes, which result in an action (or decision not to act), thereby affecting the situation and beginning a new cycle.

The primary difference between the GLM and GAM involves the domain specific theories that are emphasized by each model. This is largely because each is focused on different outcomes. As pointed out by Buckley & Anderson (2006), GAM is designed to be a general model of aggression, and therefore explicitly incorporates theories of aggression, but its basic structure can be generalized to many other effects. Resulting from this line of thought, the GLM, focuses largely on learning effects and has been used most frequently to explain helping behavior (e.g., the effects of prosocial media content on prosocial behavior; Buckley & Anderson, 2006; Gentile et al., 2009; Greitemeyer, 2009a; Greitemeyer, 2009b).

Some of the domain specific theories incorporated into GLM are very similar to GAM. For instance, script theory lends itself easily to non-aggression related outcomes (e.g., see example of restaurant behavior above). Social learning theory is also emphasized by GLM in a manner similar to GAM. Differences in emphasis, however, can be found in the incorporation of basic learning theories including habituation (Sidman, 1960), classical conditioning (Pavlov, 1927), and operant conditioning (Skinner, 1938; Thorndike, 1911), and the explicit identification of the steps within the single learning cycle at which learning occurs (Gentile, Groves, Gentile, 2014).

It should be noted that GLM and GAM may be best considered as two approaches from which to view the same general model of psychological function. For instance, it would be naïve to believe that fundamental learning processes such as classical and operant conditioning are irrelevant in the development and production of aggressive behavior. In this sense, understanding PA is likely to benefit from considering both models. Of course, as general models, GAM and GLM do not provide detailed explanations for domain specific processes regarding the prosocial component of PA. To this end, I turn to other theorists that have developed models dedicated specifically to helping behavior.

Darley and Latané's Model of Helping Behavior. Darley and Latane's model of helping behavior (Darley & Latane, 1968a) is perhaps the most influential model of helping within the field of psychology. Its impact is reflected clearly by the prevalence of the model in the most commonly used introduction to psychology and social psychology textbooks used in classrooms to date (e.g., Myers & DeWall, 2015). It has also been instrumental in understanding the bystander intervention effect (Darley & Latane, 1968b). The model presents five steps that occur in any given emergency helping situation. Next, I discuss each of these steps. Since the focus of

this discussion is on PA behavior, the more general term “helping event” that is typically referred to in the model will be replaced with the term “victimization event” as this term applies more directly to the topic of PA behavior.

Notice the event. The first step required for helping in any situation involves noticing the victimization event itself. This is perhaps the simplest step in the process of prosocial aggression but serves as a crucial requirement for the instigation of PA. Indeed, factors that may reduce the likelihood of noticing an event, such as the presence of others (Latane & Darley, 1969) or being in a rush (Darley & Batson, 1973). As such, one might presume that the same factors that influence this first step in engaging in helping behavior (e.g., the presence of crowds) may also operate in PA behavior.

Interpret as an emergency (interpret the need for help). After noticing the victimization event, the individual must perceive that the victim is in need of help. For instance, individuals look to others as a source of information regarding how to interpret a situation. When those around an individual do not seem concerned about an event, we are more likely to interpret the event as a non-emergency (Darley & Latane, 1968a). Without clear cues of distress (Whitsett & Shoda, 2014), individuals may also perceive a victimization event as a form of “rough and tumble” play, innocuous and good-natured teasing, a fight between friends, or simply an altercation between strangers. In any of these cases, PA behavior is unnecessary as there is no perceived victim to help.

Decide to help (take responsibility). Next, the individual must make the decision to help the victim. It may be the case that the individual perceives the need for help, but does not have the time to assist (Darley & Batson, 1973), believe that someone else will handle the matter (Levine

& Crowther, 2008), or decide that helping may be too costly (and/or benefits too few; Kanekar & Merchant, 2001).

Decide how to help. Once the individual has taken responsibility for helping the victim, they must determine how they can help. It is at this step that the individual selects the aggressive response (Abelson, 1976), characteristic of PA. Of course, an aggressive response, even in the case of victimization, is not the only behavioral option available. The individual may decide to wait until the episode is over and provide comfort (or another form of help) to the victim, or any other array of non-aggressive options (e.g., call the police).

Act. Finally, the individual engages the behavior (which may take the form of inaction) intended to help the victim. The individual may yell at or scold the victimizer, place him/herself in between the victim and victimizer, physically restrain the victimizer, or engage any number of other PA-related behaviors.

Other Empathic and Helping Related Processes. In addition to understanding the steps that give rise to helping behavior, discussion regarding the process of empathizing with others will prove valuable in understanding some of the processes that may give rise to PA. The term *empathy* has been used in a variety of ways but is defined here as “feeling a vicarious emotion that is congruent with but not necessarily identical to the emotion of another” (Batson, 1991; p. 68 as cited in Stocks, Lishner, Waits, & Downum, 2011). This term is therefore distinct from other empathy-related emotions such as concern (Batson, Early, & Salvarani, 1997; Stocks, Lishner, Waits, & Downum, 2011).

A term that is perhaps more precise is *emotional contagion*, described as “a tendency to ‘catch’ (experience/express) another person’s emotions (his or her emotional appraisals,

subjective feelings, expressions, patterned physiological processes, action tendencies, and instrumental behaviors)” (Hatfield, Cacioppo, & Rapson, 1992, p. 153). The “caught” emotion is not necessarily identical to the target’s emotion, as the individual is unable to know with absolute certainty what the target is feeling, but is thought to be congruent and the degree of similarity is a function of the individual’s *empathic accuracy* (Ickes, 1993). The construct is further described as “a complex process involving conscious perceptions and social evaluations as well as a more automatic, unintentional mechanism largely inaccessible to awareness” (Wild, Erb, & Bartels, 2001, p. 110). It is this latter component, the more automatic, unintentional aspect of emotional contagion that is called *primitive emotional contagion* (Hatfield, Cacioppo, & Rapson, 1992; Hatfield, Cacioppo, & Rapson, 1994). The former term, emotional contagion, is considered a more deliberate and conscious phenomenon, driven by processes that can be distinct from those fueling the construct’s more automatic counterpart. Emotional contagion, broadly considered, is therefore multiply determined and theorists have posited multiple possible mechanisms.

For instance, hearing about the suffering of another may trigger memories of one’s own similar experiences and thereby the re-experiencing of those emotions. Alternatively (or additionally), emotional contagion can occur because of learned associations as when a distressed family member behaves in a way that causes distress among other family members, or when a source of sadness for one family member also affects another (Aronfreed, 1970). Stimulus generalization, in this case, then causes distress or sadness to result simply from observing distress or sadness in others (Hatfield, Cacioppo, & Rapson, 1992). As a quick, but relevant aside, other theorists have identified an additional stage in that the observation of another’s suffering engenders empathic distress, which is a more general negative affective state

(relative to emotional contagion). After causal attributions are made regarding the source of suffering, empathic distress is recast as empathic anger (Hoffman, 1990).

Among the most heavily researched causes of emotional contagion, however, is the automatic mimicry of movements (Bernieri, 1988), postures (Bernieri, 1988; Duclos et al., 1989), facial expressions (Hess & Blairy, 2001; Lishner, Cooter, & Zald, 2008; Wild, Erb, Eyb, Bartles, & Grodd, 2003), and even vocal rhythms (Capella & Planalp, 1981). This phenomenon, also referred to as the chameleon effect (Chartrand & Bargh, 1999), then drives empathic concern.

Empathic concern, which is also sometimes referred to as sympathy (though it also encompasses similar, but distinct emotions such as tenderness; Lishner, Batson, & Huss, 2011), is the emotional experience of concern and compassion caused by the observation of another's need (Stocks, Lishner, Waits, & Downum, 2011). This concern motivates one to help with the ultimate goal of reducing one's own unpleasant experience and possibly the target other's experience. It should be noted that a large literature is dedicated to the investigating whether true altruism exists (an ultimate goal to help the other) or whether egoism (an ultimate goal to help the self) serves as the sole motive for helping behavior (e.g., Batson, Ackerman, Buckley, & Birch, 1981; Dovidio, Allen, & Shroeder, 1990; Maner et al., 2002) but such distinctions are not necessarily vital for a structural or functional understanding of PA.

CHAPTER 4. SYNTHESIZING MODELS OF AGGRESSION AND HELPING

It is interesting to note that models dedicated to both helping (Darley & Latane, 1968a) and aggression (Anderson & Bushman, 2002) describe similar sequences of events in the production of their respective outcomes. Next, I attempt to integrate these models of aggression and helping. To this end, I begin with Darley and Latane's model of helping behavior because it provides a simple, structured, sequence of events that describes a complete PA episode. With this baseline model, I incorporate aggressive processes as described by GAM, and elucidate empathic processes at work during the episode. Throughout, I provide a number of predictions that can be derived from this initial model of PA.

The first stage of the helping model states that one must notice the event. While not discussed explicitly by GAM, this stage is still required for a situation variable to initiate a single episode cycle. In other words, without noticing the victimization event, the cycle never begins and help will not be provided. Therefore, factors that reduce the likelihood of noticing a victimization event, including crowds (Latane & Darley, 1969), being in a rush (Darley & Batson, 1973), or cognitive load (Lamble, Kauranen, Laakso, & Summala, 1999), should reduce the likelihood of PA behavior occurring.

In the second stage, the individual must interpret the victimization event as one in which the victim requires aid. Essentially a perceptual process, this stage should be influenced by a perceiver's knowledge of social cues that signal victimization and a victim's distress. Individuals with strong anti-bullying attitudes, for instance, may be more vigilant in identifying such situations as they have an enduring motivation to reduce victimization in the world. Such motivation may, over time, lead individuals to attend to and address victimization events with the hope of assisting victims and deterring victimizers. This history of attention toward such events

may develop an individual's knowledge structures dedicated to identifying, and correctly labeling social situations characterized by victimization, and distress among victims. Of course, such well-developed knowledge structures can become overly accessible, leading to oversensitivity in identifying ambiguous situations as characterized by victimization.

Other non-cognitive processes are also highly relevant at this stage and while the cognitive components (e.g., perceptual processes) are critical to consider, they theoretically have downstream effects on other internal states including affect and arousal. Desensitization, for instance, is defined as “a reduction in emotion-related physiological reactivity” (Carnagey, Anderson, & Bushman, 2007) and is therefore an affective-arousal factor that should both reduce the likelihood that the victimization act is perceived as victimization and reduce the severity of response in cases which the event is perceived as victimization. Individuals who have been temporarily desensitized by violent media, for example, are less likely to help someone who was the victim of violence (Bushman & Anderson, 2009). Beliefs that aggression is normal (Möller & Krahe, 2009) may also reduce the likelihood of interpreting the event as one in which the individual requires aid as the victimizer's behavior is less likely to be considered violating social norms. Although, see Martin, Brickman, & Murray, 1983 and Batson et al., 2007 for discussion of the relative weakness of such moral outrage in predicting helping behavior.

Although emphasized in the decision-making stage of GAM, script theory is relevant at this stage as well. Script theory's emphasis on relatively “cold” cognitive generation of potential action sequences betrays its critical relevance to the affective consequences of viewing a victimization episode.¹ Specifically, scripts contain affective information that signals appropriate

¹ Note that here, the term “affect” is used interchangeably with “emotion”. Emotion-motivation theorists (e.g., Batson, Shaw, & Oleson, 1992; Brehm, Miron, & Miller, 2007) typically refer to affect in valence terms (i.e., either positive or negative), while emotions refer to more specific affective experiences that are characterized by the

(or seemingly appropriate) affective reactions to a situation (Anderson & Bushman, 2002). It is a common social convention, for example, that the receipt of a gift is followed by the experience of excitement and happiness. Similarly, when observing another being victimized (particularly vulnerable others such as animals and children), relevant affective-motivational components of a script are activated (e.g., anger on behalf of the victim; Vitaglione & Barnett, 2003) alongside a motivation to relieve the victim's distress. As noted previously, these components are linked to (i.e., automatically activate) a repertoire of potential behavioral options that are evaluated during the reappraisal process.

Those who are asked to take the perspective of a victim, may be more likely to successfully identify the victim's need as they would be more likely to experience empathic contagion. Of course, the effectiveness of perspective taking would likely depend on one's ability to accurately identify the victim's experience. Therefore, individuals lacking in empathic accuracy also may evidence a reduced likelihood of such an interpretation as they may be less likely to identify the victim's emotional expressions as characteristic of need.

Stages three and four both fall neatly into GAM and GLM's decision making processes stage and are therefore discussed together. The beginning of the decision making processes is marked by an immediate appraisal. This immediate appraisal includes affective, goal and intention information such as the desire for the victim to be helped. If others are nearby, no response may be necessary (bystander effect) as help is "likely" to be provided and therefore no action is selected (Darley & Latane, 1968b). If it is clear that the observer is the sole potential source of assistance, they may begin generating potential action plans to execute. Script theory

energizing and directing of behavior. Here and elsewhere throughout the manuscript, the term affect refers to this latter definition.

indicates that the most readily available scripts in memory are likely to be selected at this stage. This availability may be due to a chronic accessibility (e.g., as when a parent teaches a child to call an authority figure in such situations) or due to a more transient activation of knowledge structures (i.e., priming; e.g., having recently watched a heroic display on film). At this point, the behavior is either enacted (an impulsive action) or if time and cognitive resources are available, outcome expectations are evaluated. If the predicted outcome is unsatisfying (e.g., the victim may be protected, but the victimizer unaffected) and important (e.g., the observer has a strong belief in restoring justice), reappraisal processes result in which a search for alternative views of the situation, relevant memories, features of the situation, and/or behavioral scripts are assessed until an action that meets satisfaction criteria is met. Once these criteria are met, the behavior is enacted. This influences the situation and triggers another single-episode cycle.

CHAPTER 5. THE NEED FOR A NEW MEASURE

Although the social psychological literature has focused largely on explicating aggression and helping behavior individually, there are some notable exceptions of direct examinations of PA. In a series of studies, Vitaglione & Barnett (2003) developed a measure of what they call trait empathic anger by gauging participant's anger reactions to a series of hypothetical events (e.g., I feel angry when a friend of mine is hurt by someone else). In a final study, they also used a pseudo-behavioral measure of PA by asking participants how likely they might be to engage in a series of behaviors against a drunk driver who injured another (e.g., circulate a petition to have the driver's license revoked).

In similar research, Batson and colleagues (2007) examined empathic anger with the use of a ticket exchange game. In this game, the participant is told that two other participants are in the study and will be exchanging tickets to be entered in a raffle (in reality, there were no other participants). The participant was assigned to the "stable" condition in which their ticket amount could not change. The other participants were ostensibly assigned to the unstable condition in which one of them would be able to redistribute their collective tickets. The participant then learns that one of the participants took most of the other's tickets. Half of the actual participants were also provided with perspective taking instructions designed to induce empathy on the victim's behalf. The experimenters found that empathic anger occurred, but only when empathizing with the victim.

More direct research on PA comes from the evolutionary psychology literature dedicated to what these psychologists term "altruistic punishment" (Fehr & Gächter, 2002; Krasnow, Delton, Cosmides, & Tooby, 2016). Paradigms in this literature use similar ticket exchange paradigms in which three participants (two are not real) rotate through roles in a dictator game.

To begin, the participant observes the “dictator player” take tickets away from a third participant. Next, the participant is allowed to play in the dictator role and may redistribute these tickets as desired. As predicted, individuals who observe this aggressive act often punish the transgressor by taking their tickets or redistributing them to the victim. Though this is certainly interesting, the majority of this research has focused on testing evolutionary predictions about norm violations (Fehr & Fischbacher, 2004; Fowler, 2005) and determining whether such behavior is truly altruistic (Fehr & Gächter, 2002, Kurzban & DeScioli, 2013; Pedersen, Kurzban, & McCullough, 2013).

Although this literature has provided valuable insight into the methodological pitfalls associated with measuring PA (Pedersen, Kurzban, & McCullough, 2013), it has done little to test the social psychological processes that give rise to PA (with the notable exception of tests of empathic anger and moral outrage; e.g., Batson et al., 2007). One can only speculate as to the reasons why PA has enjoyed so little attention in the social psychological literature. One reason may be the relative lack of theoretical discussion regarding the intersection between prosocial and aggressive behavior (and occasionally the explicit discussion of their antithetical relationship; Richardson, Hammock, Smith, Gardner, & Signo, 1994). In other words, it is difficult to test a construct without a guiding theoretical framework with which to generate hypotheses. A second reason may be the difficulty associated with the measurement of PA behavior. In short, it is challenging to convince participants of the presence of multiple other ostensible participants while also clearly demonstrating harm done to one of those participants by the other and providing an opportunity to aggress against the victimizer.

With this in mind, the field may benefit from the development of a tool that can be used to measure PA with relative ease, the use of which is guided by modern social psychological

theory. To this end, I conducted two experimental studies that were used to test the effectiveness of such a measure, as well as test some of the more basic predictions of the PA model.

CHAPTER 6. OVERVIEW OF CURRENT STUDIES

The current set of two studies were broadly intended to validate the PA task and theoretical model. To this end, the studies were designed to achieve three primary goals. For the first experiment, the basic function of the PA measure was tested. That is, it tested whether behavior on the task was sensitive to changes in the presence or absence of victimization. It was hypothesized that when exposed to the unfair treatment of one individual by another, participants should be more aggressive toward this third party.

In addition, long-term predictions put forth previously were tested. For the sake of testing the most basic predictions of the model, enduring traits that are theoretically closely related to PA were the focus of this study. Specifically, measures of anti-bullying attitudes (Craig, Henderson, & Murphy, 2000) and empathic anger (Vitaglione & Barnett, 2003) were hypothesized to predict PA behavior. Other ancillary measures included the Big Five personality traits (McCrae & Costa, 1987), civic engagement (Anderson, 2014), aggressiveness (Buss & Perry, 1992), just world beliefs (Dalbert, Montada, & Schmitt, 1987; Correia & Dalbert, 2008), media use (Busching et al., 2015) and empathy (Davis, 1980).

In the second experiment, short-term experimental predictions were tested. It was hypothesized that a standard perspective taking empathy manipulation would increase the likelihood that individuals engage in PA on behalf of the target. In addition, it was hypothesized that participants would be sensitive to a manipulation of vulnerability of the target (Lishner, Batson, & Huss, 2011) such that seemingly vulnerable victims would elicit more PA behavior from the participant.

Together, these two studies provide initial, but critical tests of the basic functions and predictions of the PA task and model, respectively. Of course, this work is best considered a series of preliminary tests designed to inspire and provide a foundation for future work regarding some of the more interesting theoretical and practical questions inherent in PA behavior. In addition to these two studies, a pilot study testing different provocation patterns was conducted to guide decisions regarding how aggressive the victimizer should behave in the task.

CHAPTER 7. STUDY 1 OVERVIEW AND METHODS

This first study was designed to validate the basic functions of the PA task. The most fundamental function is that the task should successfully expose participants to a situation in which one individual is being victimized by another individual. If successful, the situation should stimulate aggression toward the victimizer on behalf of the victim. In contrast, aggressive behavior should be relatively low when there is no clear victimization demonstrated in the task. In other words, when the two observed individuals treat each other fairly, the participant should be less likely to aggress toward any one individual.

To this end, Study 1 manipulated the presence of victimization in the PA task. Therefore, a one-way (victimization: present, absent) between-subject experimental design was implemented. It was expected that participants would be more aggressive toward the victimizer than the victim in the victimization present condition but will be equally aggressive (or non-aggressive) to both targets when victimization is not present.

The second primary purpose of Study 1 was to assess the sensitivity of the PA task to some of the enduring, long-term characteristics of participants that should be theoretically related to PA. The current study therefore served as a cross-sectional investigation into the long-term processes that should foster PA behavior. Specifically: attitudes toward bullying and empathic anger. Both scales were hypothesized to be positively related to PA.

Those with strong attitudes against bullying (relative to weak attitudes) may demonstrate differences at multiple stages in the PA model. Those with strong anti-bullying attitudes, given an implied motivation to reduce bullying, may be more likely to have rich knowledge structures dedicated to identifying instances of victimization. Additionally, such motivations also increase

the likelihood that immediate appraisals (and subsequent reappraisals) will be characterized by a motivation to help victims. These individuals may also be more likely to attend to and think about instances of bullying and solutions to them. They therefore may possess more numerous, well-articulated scripts for assisting victims of aggression.

Those prone to empathic anger may have more specific differences (relative to more globally impactful constructs, like attitudes) in the PA model. Given the specificity of the construct of empathic anger, its impact should be limited to the affect component of individuals' internal states that feeds into decision making processes. After successful identification of a victimization episode, those high in empathic anger should be characterized by more extreme affective reactions to the event, which should strengthen the motivational components of the initial appraisal and subsequent reappraisals, provided the reappraisals do not significantly attenuate the strength of the affective response (e.g., when an individual recalls instances in which the current victim was a victimizer and therefore "deserves" their current treatment). Of course, presumably, empathic anger may be related to other constructs of interest (e.g., normative beliefs about aggression) that may drive activity in other processes represented by the PA model and therefore simple examination of the relationship between empathic anger and PA may not cleanly represent changes in the affective component of an observer's internal state. Nonetheless, the main effect of empathic anger (in any case) should theoretically predict increases in PA.

Several additional measures were also included that may explain variability in PA. Civic engagement is defined as "individual and collective actions designed to identify and address issues of public concern" (American Psychological Association, 2010) and was hypothesized to be positively related to PA as identifying and addressing instances of victimization is ultimately

(in the long run) a public concern. Just-world beliefs (Dalbert, Montada, & Schmitt, 1987) also represent a specific belief system that is particularly relevant to PA. Individuals scoring high in just-world beliefs were hypothesized to be more likely to ensure that the “world remains just” by engaging in PA. It may be the case, however, that these individuals believe that “the world” will eventually punish victimizers as they may be more likely to believe that “what goes around comes around”, regardless of their efforts. In either case, it is unlikely that these individuals will be less likely than others to engage in PA. The Big Five personality traits were also included, primarily for exploratory purposes, but also because some of the specific traits may be positively related to PA. Those high in conscientiousness, for instance, tend to be less aggressive (Barlett & Anderson, 2012; Gleason, Jensen-Campbell, & Richardson, 2004), but as individuals who are responsible, dependable, and orderly, they may find the social norm violations associated with victimization to be particularly inappropriate and therefore may be more likely to engage in PA. As mentioned previously, however, some research suggests that the moral outrage associated with norm violations may not be as influential in driving affective reactions to unfairness relative to the other processes that are presumably at work (e.g., empathic anger; Batson et al., 2007). Extraverted individuals, given their propensity toward assertiveness (though, not necessarily aggression; Barlett & Anderson, 2012) may be less likely to inhibit the assertive impulse required to engage in PA (i.e., it is typically easier not to engage in PA than to engage in PA).

Lastly, general aggressiveness (Buss & Perry, 1992) and empathy (Davis, 1980) were also included, due to their clear relevance in several stages of the PA model. As mentioned above, some of the specific processes that contribute to general aggressiveness and empathy will positively predict PA (e.g., aggressive script availability, empathic concern) while other components may negatively predict PA (e.g., desensitization, reduced aggressive script

availability). Therefore, no specific predictions were made regarding these general measures other than the possibility that, as global constructs, both should be either unrelated, or positively related to PA behavior.

Participants. The pilot study included 51 college-aged student participants, one of which expressed suspicions about the study's cover story (e.g., did not believe the other participants were real, drew explicit connections between the surveys and task) and was therefore removed. For the primary study, a total of 193 college-aged students (57% female, $M = 19.33$, $SD = 1.37$) from a large Midwestern university participated in the study. Of these participants, 18 expressed suspicions. Another 11 participants expressed confusion about the study procedures (e.g., didn't understand the PA task or raffle) or did not follow directions correctly (e.g., progressed through the survey early). After their removal, a total of 164 participants remained for data analysis. Full details about the removal process and other data cleaning calculations are provided in Appendix A. Only U.S. citizens with English as their first language were asked to participate. The study design was reviewed by the Institutional Review Board of the university and all participants were treated in accordance with APA ethics guidelines (Appendix B).

Measures.

The PA task and manipulation. The PA task is a program that can be run on any computer that has a web browser program (an internet connection is not required). There are two main phases to the task. First, is the instruction phase in which the research assistant explains the task. Second, the participant proceeds through the task itself. During the task, participants were assigned to the role of the observer, viewing two other participants (A and B) engage in a point exchange task. After each round of exchanges, the observer was able to remove points from either of the other two ostensible participants. During the task, half of the participants observed

that participant B frequently selected aggressive options, reducing the number of points that participant A can earn. Participant A did not retaliate and continued selecting relatively cooperative options throughout the game. The other half of the participants observed a relatively egalitarian interaction between participants A and B. The pattern of this interaction can be found in Appendix C. Once the task was completed, the total number of points removed from participant B, relative to participant A, served as the dependent variable.

Empathic anger. Empathic anger ($\alpha = .82$) Vitaglione & Barnett, 2003) is a seven-item measure requiring responses on a 5-point scale (Appendix D).

Anti-bullying attitudes. Anti-bullying attitudes ($\alpha = .89$) was measured with a modified vignette-based method in which six instances of bullying are described (two verbal scenarios, two physical scenarios, two social exclusion scenarios; Yoon & Kerber, 2003). Individuals then report the perceived seriousness of the event, their likelihood of intervening, and their rating of the appropriateness of the behaviors of the characters in the story (Appendix E).

Civic engagement. Civic engagement ($\alpha = .48$) was measured with four items on a three-point scale (Appendix F; Anderson, 2014). Participants were asked to report the frequency of their engagement of specific civic behaviors (e.g., volunteered in one's community). The ratings include whether they never engaged in a behavior (scored as a 0), engaged in the behavior, but not within the past 12 months (1), or engaged with the behavior within the past 12 months (2).

Big Five personality traits. Due to the already large number of survey items, participants were asked to complete, a shortened version of The Five Factor Inventory (Costa & McCrae, 1992), consisting of 10 items (the TIPI or Ten-Item Personality Inventory; Gosling, Rentfrow, & Swann, 2003; Appendix G), will be used to measure each personality trait by asking participants

to rate their agreement for each item on a scale of 1 (strongly disagree) to 7 (strongly agree). Because of the small number of items per trait, and the multidimensionality of the scale, Cronbach's alphas were not computed for this measure.

Just-world beliefs. Just world beliefs ($\alpha = .57$) were measured with a slightly modified eight item scale (two additional items specifically relevant to PA were created for the current study; Dalbert, Montada, & Schmitt, 1987; Appendix H). The scale presents several statements (e.g., I think basically the world is a just place) that are rated on a 1 (strongly disagree) to 6 (strongly agree) scale.

General Media Habits Questionnaire. Media use was measured with the General Media Habits Questionnaire (Busching et al., 2015; Appendix I). It asks that participants report their three most-watched television shows and most-played video games. For each item, they rate how frequently they watch/play the media and rate the media on a number of content dimensions including prosocial and violent content, and whether the protagonist is a hero or villain.

Aggressiveness. Aggressiveness was measured with the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992; Appendix J; $\alpha = .89$). It presents 29 statements (e.g., "Some of my friends think I am a hothead") which participants rate on a scale of 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me) scale.

Empathy. Empathy was measured with the Interpersonal Reactivity Index (IRI; Davis, 1980; Appendix K; $\alpha = .85$). It presents 30 statements (e.g., "I often have tender, concerned feelings for people less fortunate than me") which participants rate on a scale of 1 (does not describe me very well) to 5 (describes me very well).

Histograms presenting the frequency distributions for each of the measures and their subscales are provided in Appendix L.

Procedure. Participants signed up for the study through the university SONA system for course credit. After arrival, the participant was greeted and led to a cubicle. They were then provided with an informed consent document. The consent form provided a brief overview of the cover story. After signing, the researcher verbally reiterated the cover story. Participants were told: “As you read in the consent form, this study is actually split into two separate studies. One is a survey study in which you’ll be filling out a number of questionnaires designed to measure various aspects of your personality. For the other study, the researcher’s main research interest is in understanding how people interact and make decisions with each other. Unfortunately, such research is often difficult to do because it requires that multiple participants gather in the same place and time. Therefore, a program has been developed that may help connect individuals across multiple labs located throughout the United States, making such research much easier to do. The purpose of that study is to test the effectiveness of this online program. The main function of the program is to observe how people naturally interact with each other. Because of this, we do not want study participants to cater their behavior to what they believe we or others might want them to do. For this reason, we cannot see what you or any of the other participants do in the program. All participant responses are encrypted and sent electronically to the program’s main server and your responses will not be linked to your personal information in any way.”

In order to ensure that order effects did not impact scores on the PA task or the surveys, the order in which participants completed either of the two studies was counterbalanced. Half of participants engaged in the PA task prior to completing the surveys while the other half of

participants completed the surveys prior to engaging in the PA task. For the sake of brevity, the procedure for those completing the PA task first is described.

There were two main phases to the task, the instruction and task phase. During the instruction phase, the research assistant provided the participant with a brief overview of the task, stating that the task involves three roles: two task participants and an observer. The two participants engaged in a point exchange task in which each participant selected one of four point exchange options. These point exchange options varied in how much they benefitted each of the participants. There were several rounds of exchanges and the observer had the opportunity to remove points from either participant after each round.

The participant was then shown the first page of the PA instruction sheet (Appendix M). Each of the four point exchange options were explained, and the cooperative/aggressive nature of each option was described. The researcher stated that if the participant selects option A, they will provide themselves 50 points and the other person 50 points for that round. Participants were told that this option is considered cooperative. For option B, the participant will provide themselves with 60 points and the other person with 30 points. This was considered a competitive option. For option C, the participant provides themselves with 40 points and the other person with 10 points. This was considered an aggressive option. Option D provides only 40 points but grants the other person 60 points. This was considered a helpful option. It was decided to verbally label the options as cooperative, competitive, aggressive and helpful in order to make clear the consequences of the options to participants.

After explaining the point exchange options, participants were then directed to the second page of the instructions detailing the observer's role. Participants were told that after each round, the observer has one of four options that he or she must pick for each task participant. Option A

removes no points from the participant's total. Option B removes 10 points from the participant's total. Option C removes 25 points from the participant's total. And lastly, option D removes 50 points from the participant's total.

At this point, the participant was told that in order to ensure that participants take the task seriously, the total points earned at the end of the round will be translated into tickets that will be entered into a raffle. For every 100 points, one ticket will be entered into a raffle. Each role (participant A, participant B, and the observer) has its own independent raffle for a \$50 gift. Therefore, the number of tickets earned by one participant does not influence the other participant's likelihood of winning the prize. In other words, it's in both participants' best interest to cooperate in the task. This instruction was provided to ensure that participants understand that the harm by one participant to another is unjustified. Lastly, the participant was told that because the observer is not able to earn points, all observers are provided with the maximum possible number of points (1,200) and therefore tickets (120). This was done to ensure that any aggression toward a victimizer in the task was not due solely to envy on the part of the observer regarding the number of tickets earned by the other participants (Pedersen, Kurzban, & McCullough, 2013).

Next, participants were directed to the third page of the instructions detailing the other components of the task screen. They were told that the bottom right portion of the screen contains details regarding the options selected by each participant for the most recent round, how many points were allocated by each participant, and what the total point earnings for that round were. The bottom left side of the screen displays the total points earned across all rounds. It shows a history of all of the option selections for all rounds played thus far.

Lastly, participants were shown an example task on the instruction pages four and five. They were told that in this example, participant A selected option A, providing themselves 50 points and the other participant 50 points. Participant B also selected option A, bringing the total amount earned for each participant to be 100 thus far. The observer, in this example, then removed 10 points from each participant, bringing their totals earned for the current round to 90 points.

With the task instructions covered, the participant was asked if they had any questions or required clarification regarding any of the task procedures. The researcher then checked the time (by looking at their watch or phone) and indicated that the other labs should be ready any time now. They excused themselves briefly in order to communicate with the other labs and determine whether they were available. The researcher then closed the door, went to the main computer and began typing, ostensibly in order to check on the status of the other laboratories. After roughly one minute, the researcher returned and indicated that the other labs were ready and that the task can begin.

The researcher then turned on the participant's computer monitor, which had the task prepared. They told the participant "You will be randomly assigned to one of three possible roles and the program determines this by randomly assigning roles to the IP addresses of the participant computers (an image of this screen can be found in Appendix N). Therefore, we need to select each role until we are successfully assigned." The researcher then selected "Player 1", but a screen will pop up stating that the IP address does not match the role (Appendix O). An identical message will result when selecting "Player 2" but the program proceeded only after selecting the "Observer" button.

After entering the participant's ID number, the ostensible participants "loaded" into the game and the trials began. The researcher sat in on the first trial to ensure that the participant understood the task procedures, then stepped out, asking that the participant crack the door open when finished. The first trial in the task was set so both of the ostensible participants select the cooperative (50/50) option so no socially desirable responding PA behavior was prompted.

When the participant completed the task and opened the door, the researcher asked that the participant collect their belongings before directing them to the lab next door. Here, they were introduced to a second research assistant. This research assistant introduced themselves before reiterating the cover story information regarding the "second study", then directed the participant to a cubicle where they completed the surveys. Once complete, participants were probed for suspicion, debriefed, thanked for their time, and dismissed.

The pilot study procedure included three steps that were described above. First, participants were provided with, and signed an informed consent document. Next, participants were randomly assigned to one of three PA task conditions (high, moderate, and no victimization) and were given the same cover story and instructions that were used in Study 1. Finally, participants were probed for suspicion, debriefed, thanked for their time, and dismissed.

CHAPTER 8. STUDY 1 RESULTS

All analyses were conducted using the R software package (version 3.4.3). The code that was used for Study 1 can be found in Appendix P. Tukey's HSD t-tests conducted on the pilot study following an ANOVA ($F(2,47) = 48.57, p < .001$) indicated that the no provocation condition ($n = 16, M = -29.12, SD = 29.86$) produced significantly lower PA scores than the moderate ($n = 16, M = 106.25, SD = 61.55, p < .001$) or high ($n = 16, M = 132.06, SD = 56.76, p < .001$) conditions. The high and moderate conditions, however, did not differ ($p = .32$). To ensure the clearest difference between the two conditions in Study 1, the high and no provocation conditions were selected.

Before conducting analyses testing the primary hypotheses, preliminary analyses were conducted to evaluate participant attention/motivation lapses and to calculate the PA outcome measure. Participant inattention was assessed by identifying invariant responding (e.g., selecting five for every item in the scale), this was done by calculating the standard deviations of scale responses for each participant, for each scale. The procedure identified 20 participants who provided invariant response patterns to at least one scale. For the majority of these cases, individuals provided invariant responses to one or more subscale of the GMHQ. In five of these participants indicated that they did not play any other games or watch any other shows/movies so in these cases, scores of zero were imputed (to reflect these participants' relative lack of violent/prosocial content exposure). In 10 cases, participants did provide a title, most often referring to sports-related games or shows (in which violent, or prosocial content is not necessarily present, at least in the eyes of a participant). For the one participants who did not provide a game/show/movie title, the invariant responses were retained as it was possible that these individuals simply forgot to type the names of the titles. Two participants provided

invariant responses to the IRI, one to EA and ABA, and one to JWB. The IRI, EA, ABA, and JWB, scales each are either multidimensional, had reverse-coded items, or did not possess a true neutral response option. For this reason, the responses to these scales for these cases were deleted.

Calculation of the violent and prosocial media content exposure measures was done by multiplying the content rating item (violent or prosocial) by the frequency of playing/viewing the title and summing across the three titles for each type of media (video games vs. shows/movies). This produced four measures of content exposure: violent video game, violent TV, prosocial video game, and prosocial TV content exposure scores. Those who provided no ratings for the video games or TV shows were assigned a 0 for their content and exposure ratings to reflect non-exposure.

Next, items in the EA, ABA, BPAQ, and IRI scales were reverse coded. Items were identified as needing to be reverse-coded when the scale directly identified items to be reversed (IRI), or when visual inspection of the items clearly indicated reversing was required.

Calculation of the primary dependent variable measure (PA) was done by calculating a difference score between the number of points taken from Participant A (the victim) relative to Participant B (the victimizer). The difference scores were then summed across all 10 trials to produce the total difference in points taken from each other “participant”. Finally, for interpretation purposes, the PA scale was reverse coded so that higher values reflected more PA (more points taken from the victimizer). Negative values, therefore, indicate that more points were taken from the victim than the victimizer.

Finally, a t-test was conducted comparing PA scores between those who completed the surveys first and those who completed the task first. The analysis indicated that those who did the task first ($M = 28.61$, $SD = 90.78$) did not statistically differ from those who took the surveys first ($M = 22.35$, $SD = 88.42$; $t(162) = .45$, $p = .65$, Cohen's $d = .07$; see Figure 3).

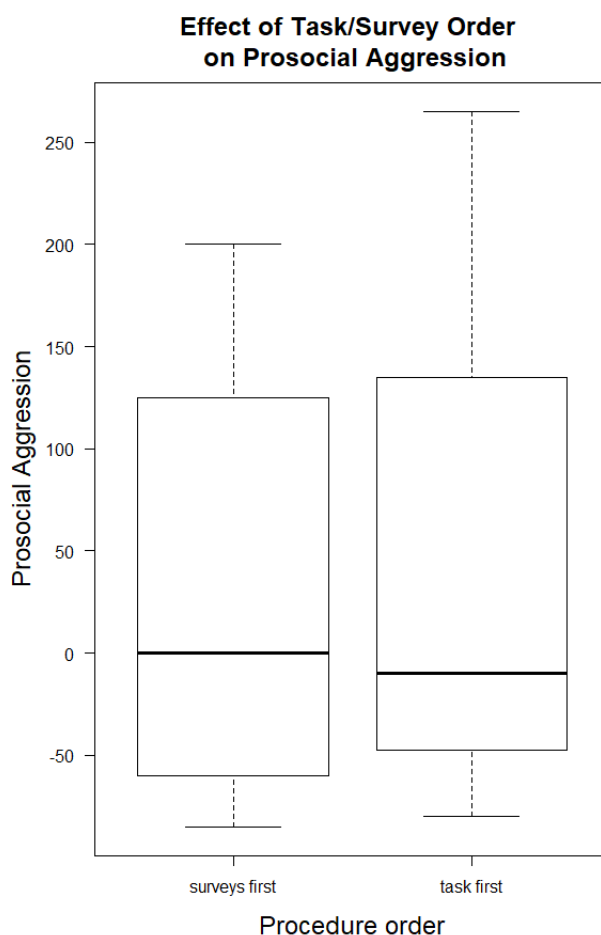


Figure 3. Group differences in PA based on procedure order

Primary analyses. First, it was imperative to test the most basic function of the task: the elicitation of PA when witnessing victimization. To this end, a simple t-test was conducted comparing the two groups. The test indicated a strong positive effect of the presence of victimization on PA (Cohen's $d = 2.27$). Participants who were not exposed to victimization in the task took significantly fewer points away from the would-be “victimizer” relative to the

“victim” ($M = -38.51$, $SD = 38.58$), compared to participants in the victim-present condition ($M = 97.85$, $SD = 73.92$; Welch’s $t(111) = 14.53$, $p < .001$; test of variance equality $p < .001$; see Figure 4).²

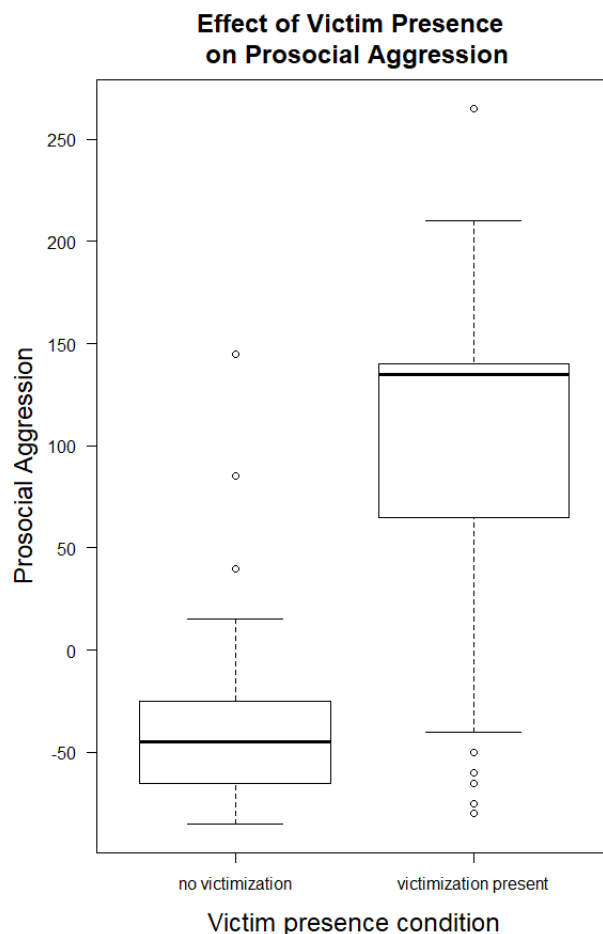


Figure 4. Effect of victimization on PA behavior

Next, relations between PA and empathic anger, as well as anti-bullying attitudes were assessed using simple regression analyses. Data were subset so that only participants exposed to the victimization episode ($n = 77$) were evaluated. There was no apparent relation between PA and EA ($B = 14.01$, $\beta = .14$, $SE = 11.87$, $p = .24$), nor between PA and ABA, ($B = 20.19$, $\beta = .10$,

² A square root and log transformation were also applied to the PA measure but did not produce appreciable differences in results and are therefore not reported here.

$SE = 24.39, p = .41$). Thus, the current study does not provide evidence that attitudes toward bullying or empathic anger predict PA.

In addition to these primary measures of interest, simple regressions were conducted on each of the exploratory measures. Of the 32 outcomes (IRI and its subscales were each analyzed), five demonstrated significant relations: prosocial video game exposure, the 6th ABA narrative, agreeableness, IRI emotional contagion items, and IRI personal distress items. It is worth noting that a number of items demonstrated relatively impactful effect sizes ($> .15$) but lacked the power for statistical detection. Among the scales, empathy-related measures tended to produce somewhat larger effect sizes on average, suggesting that PA, in this version of the task, could be driven primarily by empathy-related processes. Of course, any interpretations of these items should be met with caution due to their exploratory nature, and the sheer volume of tests being conducted. Indeed, application of the conservative Bonferroni correction for multiple tests (critical value = .002), drop all tests out of the significance threshold (see Table 1; a correlation matrix can also be found in Table 2).

Table 1. Simple linear regressions among exploratory measures in Study 1

IV	B	β	SE	t-value	p
VVGexpo	.53	.19	.32	1.65	.10
VTVexpo	.33	.09	.44	.75	.45
PVGexpo	.82	.25	.37	2.20	.03*
PTVexpo	.42	.12	.40	1.06	.29
EAmean	14.01	.14	11.87	1.18	.24
ABAmean	20.19	.10	24.39	.83	.41
ABA1	-.28	-.01	3.73	-.08	.94
ABA2	7.08	.19	4.33	1.64	.11
ABA3	-2.59	-.08	3.60	-.72	.47
ABA4	3.15	.07	4.98	.63	.53
ABA5	-.37	-.01	3.38	-.11	.91
ABA6	11.78	.28	4.68	2.52	.01*
Extraversion	.200	.09	2.67	.75	.45
Agreeableness	6.40	.23	3.18	2.01	.05*
Conscientiousness	.13	.003	4.28	.03	.98
Emotional Stability	-2.48	-.10	2.96	-.84	.41
Openness	4.16	.11	4.22	.98	.33
CEmean	11.58	.05	24.68	.47	.64
JWBmean	2.92	.03	12.15	.24	.81
JWB2mean	15.99	.18	10.32	1.55	.13
JWB8mean	11.42	.09	14.77	.77	.44
BPAQmean	-.77	-.01	9.68	-.08	.94
BPAQphy	-.90	-.01	7.33	-.12	.90
BPAQverb	-10.51	-.17	6.92	-1.52	.13
BPAQang	3.90	.05	9.98	.39	.70
BPAQhost	5.85	.09	7.78	.75	.45
IRImean	35.39	.20	19.95	1.77	.08
IRIfs	-1.19	-.01	10.72	-.11	.91
IRIec	25.02	.23	12.13	2.6	.04*
IRIpt	3.09	.03	11.24	.28	.78
IRIpd	27.27	.24	12.90	2.11	.04*

Note: Indented items refer to subscales. VVGexpo = violent video game exposure; VTVexpo = violent television exposure; PVGexpo = prosocial video game exposure; PTVexpo = prosocial television exposure; EA = empathic anger; ABA = anti-bullying attitudes; CE = civic engagement; JWB = just-world beliefs; JWB2 = two items within JWB created for current study purposes; JWB8 = full JWB scale including 2 new items; BPAQ = Buss-Perry aggression questionnaire; BPAQphy = physical aggression subscale; BPAQverb = verbal aggression subscale; BPAQang = anger subscale; BPAQhost = hostility subscale; IRI = interpersonal reactivity index; IRIfs = fantasy subscale; IRIec = empathic contagion subscale; IRIpt = perspective taking subscale; IRIpd = personal distress subscale.

Table 2. Study 1 correlation matrix

IV	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1.PA	-															
2.VVGexpo	.19	-														
3.VTVexpo	.09	.23	-													
4.PVGexpo	.25*	.87	.10	-												
5.PTVexpo	.12	.01	.54	-.04	-											
6.EAmean	.14	-.04	-.03	.04	.06	-										
7.ABAmean	.10	-.15	.06	-.16	.23*	.38*	-									
8.ABA1	-.01	.01	.17	-.001	.15	.17	.66*	-								
9.ABA2	.19	.01	.04	-.02	.16	.41*	.74*	.51*	-							
10.ABA3	-.08	-.03	.07	-.05	.14	.22	.57*	.38*	.40*	-						
11.ABA4	.07	-.28	-.004	-.27*	.19	.30*	.56*	.30*	.49*	.51*	-					
12.ABA5	-.01	-.19	-.01	-.22	.21	.22	.79*	.41*	.48*	.35*	.29*	-				
13.ABA6	.28*	-.08	.13	-.09	.34*	.40*	.61*	.40*	.47*	.22	.39*	.38*	-			
14.Extraversion	.09	-.12	-.12	-.21	.003	.10	.14	.16	.06	.23*	.12	.08	.15	-		
15.Agreeableness	.23*	-.12	-.10	-.10	.07	.19	.36*	.18	.34*	.07	.28*	.27*	.31*	.01	-	
16.Conscientiousness	.003	-.17	-.09	-.22	.13	-.01	.01	.08	-.10	.10	.24*	-.06	.16	.19	.15	-
17.Emotional Stability	-.10	.03	-.04	-.01	-.08	-.19	-.15	-.03	-.12	.16	-.16	-.10	-.01	.03	.09	.39*
18.Openness	.11	.13	.17	.11	.18	-.04	-.05	-.05	-.04	-.04	-.06	-.03	.18	.16	-.16	.04
19.CEmean	.05	-.08	-.11	-.16	-.05	.14	.23	.03	.13	.25*	.30*	.17	.21	.29*	.24*	.13
20.JWBmean	.03	.06	-.12	.10	-.16	.17	.10	-.01	-.05	-.03	-.10	.13	-.06	.06	.10	.13
21. JWB8mean	.09	.06	-.09	.13	-.07	.003	.00	.08	.07	.06	.03	.13	.10	.05	.23*	.18
22. JWB2mean	.18	.03	.06	.11	.21	.48*	.27*	.25*	.32*	.24*	.35*	.03	.42*	-.02	.38*	.14
23.BPAQmean	-.01	.18	.13	.20	-.05	.14	-.08	-.19	-.10	-.05	-.20	-.06	-.18	.17	-.38*	-.29*
24.BPAQphy	-.01	.26*	.10	.27*	-.06	.09	-.21	-.25*	-.06	-.06	-.35*	-.14	-.30*	.13	-.36*	-.29*
25.BPAQverb	-.17	.10	.11	.02	-.08	-.01	-.09	-.10	-.46*	.02	-.02	-.04	-.13	.17	-.42*	.01
26.BPAQang	.05	.16	.21	.15	-.01	.30*	.11	.04	.11	.09	.05	.02	.08	.36*	-.25*	-.30*
27.BPAQhost	.09	.04	.05	.13	.04	.12	.03	-.16	-.13	-.11	-.11	.00	-.09	-.01	-.21	-.26*
28.IRImean	.20	-.16	-.05	-.13	.21	.39*	.52*	.35*	.38*	.17	.47*	.40*	.49*	.02	.42*	.11
29.IRIfs	-.01	-.03	.11	-.05	.28*	.20	.09	.03	.06	.04	.15	.19	.14	.07	.09	.01
30.IRIec	.23*	-.21	-.12	-.17	.09	.41*	.51*	.34*	.47*	.13	.40*	.34*	.54*	.10	.52*	.02
31.IRIpt	.03	-.02	.04	-.05	.13	.06	.24*	.36*	.10	.02	.19	.16	.26*	-.11	.23	.29
32.IRIpd	.24*	-.12	-.14	-.05	-.08	.24*	.39*	.04	.28*	.20	.32*	.26	.17	-.04	.13	-.15

Table 2 cont. Study 1 correlation matrix

IV	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.
17. Emotional Stability	-														
18. Openness	.14	-													
19. CE _{mean}	.19	.41	-												
20. JWB _{mean}	.19	.03	.06	-											
21. JWB _{8mean}	.17	.05	.11	.94	-										
22. JWB _{2mean}	-.04	.06	.14	.06	.41	-									
23. BPAQ _{mean}	-.29*	.10	-.003	-.11	-.17	-.20	-								
24. BPAQ _{phy}	-.09	.08	.002	.04	-.03	-.18	.87	-							
25. BPAQ _{verb}	-.09	.15	.03	-.05	-.13	-.25	.75	.56	-						
26. BPAQ _{ang}	-.39*	.13	.14	-.21	-.18	.03	.79	.57	.54	-					
27. BPAQ _{host}	-.37*	.04	-.10	-.18	-.23	-.18	.80	.54	.43	.55	-				
28. IRI _{mean}	-.22	.08	.05	-.12	.05	.45	-.35	-.49	-.30	-.12	-.14	-			
29. IRI _{fs}	-.05	.24	.06	-.10	-.04	.13	.01	-.09	.04	.08	.05	.55	-		
30. IRI _{ec}	-.27*	.03	.04	-.10	.08	.47	-.37	-.47	-.38	-.05	-.19	.76	.16	-	
31. IRI _{pt}	.12	.06	-.05	.01	.07	.19	-.44	-.42	-.22	-.38	-.37	.54	-.07	.39	-
32. IRI _{pd}	-.40*	-.17	.05	-.08	.01	.22	.03	-.13	-.16	.11	.27	.42	.09	.24	-.17

Note. Indented items refer to subscales. VVG_{expo} = violent video game exposure; VTV_{expo} = violent television exposure; PVG_{expo} = prosocial video game exposure; PTV_{expo} = prosocial television exposure; EA = empathic anger; ABA = anti-bullying attitudes; CE = civic engagement; JWB = just-world beliefs; JWB₂ = two items within JWB created for current study purposes; JWB₈ = full JWB scale including 2 new items; BPAQ = Buss-Perry aggression questionnaire; BPAQ_{phy} = physical aggression subscale; BPAQ_{verb} = verbal aggression subscale; BPAQ_{ang} = anger subscale; BPAQ_{host} = hostility subscale; IRI = interpersonal reactivity index; IRI_{fs} = fantasy subscale; IRI_{ec} = empathic contagion subscale; IRI_{pt} = perspective taking subscale; IRI_{pd} = personal distress subscale.

CHAPTER 9. STUDY 2 OVERVIEW AND METHODS

Study 2 was designed to test short-term processes that may theoretically occur when observing a victimization event. Specifically, two factors that are theoretically important in determining the likelihood of engaging in PA, vulnerability and empathy, were manipulated. The current study utilized a 2 (vulnerability: vulnerable vs. non-vulnerable) by 2 (empathy instructions: take perspective vs. remain objective) factorial design.

Vulnerability is a factor that is closely related to the likelihood of engaging in helping behavior generally (Lishner, Batson, & Huss, 2011) and therefore theoretically PA behavior as well. Individuals perceived as vulnerable are more likely to be viewed as requiring help (Lishner, Batson, & Huss, 2011). Those not perceived as vulnerable, on the other hand, may be viewed as resistant to the harm caused by another's aggressive act or more likely to address the injustice themselves.

Individuals with whom we empathize are generally more likely to elicit empathic contagion and concern (Lamm, Batson, & Decety, 2007). Perspective taking instructions consistently elicit increases in helping behavior (e.g., Batson et al., 1997; Cialdini, Brown, Lewis, Luce, & Neuberg, 1997) and the current study therefore tested the effectiveness of these instructions in eliciting PA as a form of helping behavior. These two factors were hypothesized to produce main effects on PA. No specific hypotheses were put forth regarding whether an additive or multiplicative interaction effect was expected.

In addition to the manipulations and subsequent measurement of PA, manipulation checks and demographic information were collected. Such checks were designed to

determine whether failures to manipulate empathy or vulnerability were due to ineffective or confusing instructions or high prevalence of failures to pay attention.

Participants. A total of 176 college-aged students (57% female) from a large Midwestern university participated in the study. Of these participants, 21 expressed suspicions about the study's cover story (e.g., did not believe the other participants were real, drew explicit connections between the essays and task). Another 8 participants expressed confusion about the study procedures (e.g., didn't understand the PA task or raffle) or did not follow directions correctly (e.g., progressed through the survey early). After their removal, a total of 147 participants remained for data analysis. Full details about the removal process and other data cleaning calculations are provided in Appendix Q. Only U.S. citizens with English as their first language were asked to participate. The study design was reviewed by the Institutional Review Board of the university and all participants were treated in accordance with APA ethics guidelines (Appendix R).

Measures and manipulations

Vulnerability manipulation. The manipulation of vulnerability has been done several ways including varying the musculature of males (Dijker, 2001) or portraying a story character as a child (Lishner, Batson, & Huss, 2011). For the needs of a current experiment, however, neither approach was feasible. For the current study, participants were told that they were randomly assigned to a "communication condition" in which they would receive a printed communication from a random participant in the study regarding how they deal with conflict. The communication, which always came from the victimized participant, read one of two ways.

For the vulnerable participant, “I’m not exactly sure what to say about how I deal with conflict. I think that I tend to have trouble resolving conflicts. People tell me that I need to stand up for myself a bit more. I just don’t want to make things worse I guess. I suppose I usually just try to avoid these kinds of things for the most part. Not sure what else to say about it.”

For the non-vulnerable participant, “I’m not exactly sure what to say about how I deal with conflict. I tend not to have much trouble with conflict. When I have a problem with someone, I say something. For the most part I can fend for myself. Most of my conflicts, at least the ones I can think of, turn out OK I suppose. Not sure what else to say about it.”

Empathy manipulation. Empathy was manipulated using standard perspective taking instructions. The perspective taking instructions, taken from Batson et al. (2007), were provided immediately before engaging in the PA task (before the task itself began, after the instructions were provided).

At this time, all participants were told “In determining our reactions to how others interact with each other, it has been found that the perspective we take is especially important. Therefore, as the observer, you will be asked to take a particular perspective toward the person whose note you read.” Afterward, the following sentence was randomly assigned to half of the participants. “While they engage with the task, try to *take an objective perspective* toward the person whose communication you read. Try not to get caught up in how the person feels; just remain objective and detached.” Those receiving the empathy manipulation instead read “While they engage with the task, try to *imagine how the person whose communication you read feels* about what is going on. Try to imagine how what happens in the task affects the person and how it makes them feel.”

Manipulation checks. In order to ensure that the manipulations were successful, participants were asked a number of questions regarding their perceptions of the other participants' behaviors (Appendix S).

Procedure. Participants signed up for the study through the university SONA system for course credit. After arrival, the participant was greeted and led to a cubicle. They were then provided with an informed consent form. The consent form provided a brief overview of the cover story. After signing, the researcher verbally reiterated the cover story, which was identical to that used in Study 1 with the exception that no survey study was to be conducted.

Next, participants were directed to a web browser containing an online survey. They were told "A big part of how we interact with each other is how we communicate. In order to better understand the role of this important component of interaction, we're asking all of our participants to enter their first name and last initial on this first page, then write a paragraph about how they deal with conflict. This paragraph will be provided to one of the other participants in the study and the recipient will be randomly selected. As a reminder, your personal information will remain confidential and you will not be provided with identifying information of the other participants. With this in mind, please remember to use your last initial and do not write your last name in the survey as this information will be sent to one of the other labs." The participant was then asked if they fully understood the instructions and if they had any questions. The researcher then progressed through the first page of the survey to reveal the page that requires the participant to write their name and a paragraph. When the participant completed their paragraph and selected the "next" button, a page was displayed thanking them for their entry, confirming that the information has been submitted to the other

lab, and asked them to crack the door open so the researcher could enter the passcode required to proceed to the next portion of the study.

When the participant cracked the door open, the researcher entered and told the participant “Okay, thank you for your entry. That information has been sent and we just need to determine whether the other participants have finished their entries. I’ll receive the passcode from them once they are finished so we can continue. Please hang on for a moment while I contact the other lab to determine whether they’ve finished.” The researcher then closed the door and returned to their desk, feigned communication by typing at the computer, waited approximately two minutes, then returned to the cubicle.

The researcher then told the participant that “The other lab participants have completed their entries and one of them has been sent to you. Please excuse me while I enter the passcode so you can see the entry. I am not supposed to see the entry, so I will enter the passcode and leave the cubicle. After I leave, please click next and read the response. When you’re finished, please click next and crack the door open.”

After the participant opened the door, the researcher returned and introduced the PA task using the procedure described in Study 1. After selecting the participant’s role in the task but prior to entering the participant’s ID number, the researcher administered the perspective taking instructions. Participants then continued through the PA task as normal. Once finished, participants were directed to complete additional survey items that included manipulation checks. In order to ensure that participants understood which participant player the survey questions were referring to, a paper sheet with the names of the two players and their corresponding roles in the task was provided (Appendix T). Lastly, participants were probed for suspicion, debriefed, thanked for their time, and dismissed.

CHAPTER 10. STUDY 2 RESULTS

All analyses were conducted using the R software package (version 3.4.3). The code that was used for Study 1 can be found in Appendix U. Before conducting analyses testing the primary hypotheses, preliminary analyses were conducted to evaluate participant attention/motivation lapses. Participant inattention was assessed by identifying invariant responding (e.g., selecting five for every item in the scale), this was done by calculating the standard deviations of scale responses for each participant, for each scale. The procedure identified seven participants who provided invariant response patterns to at least one scale. Two participants provided invariant responses to Participant A's essay evaluations, six participants provided invariant responses to Participant B's task behavior measures while three did so for Participant A's task behavior measure. All of the scales that had invariant responses were multidimensional and therefore, true neutral response options were unlikely in these cases and the scores for these scales were therefore deleted. Calculation of the primary dependent variable measure (PA) was identical to the procedure used in Study 1.

To determine whether the PA task successfully produced differences in perceptions between the two computerized players, a series of pairwise t-tests were conducted on the relevant evaluations. The results of these pairwise tests can be found in Table 3 and illustrate clear perceptual differences between the two participants based on their performance in the task. Participants viewed the victim participant as more helpful, cooperative, and kind, and less aggressive or competitive than the victimizing participant. They also rated the victim as someone they would prefer to interact with again in a future task, believed that the victim deserved the gift card more than the victimizer, and believed the victimizer (more so than the victim) should be punished for their behavior in the task.

Table 3. Repeated measures tests of participant perceptions of player behavior during the PA task

Item	Part A mean(SD)	Part B mean (SD)	t-value (df)	p
“During the task, this participant was helpful”	4.86 (1.37)	3.63 (1.35)	7.82 (140)	<.001
...Rude	2.31 (1.38)	3.70 (1.49)	-9.68 (140)	<.001
...Cooperative	5.42 (1.26)	4.08 (1.54)	8.00 (140)	<.001
...Kind	4.96 (1.19)	3.76 (1.23)	8.77 (139)	<.001
...Aggressive	2.50 (1.45)	4.61 (1.68)	-11.63 (140)	<.001
...Competitive	3.44 (1.63)	5.48 (1.27)	-11.43 (135)	<.001
Interact again	4.83 (1.46)	4.01 (1.57)	4.61 (139)	<.001
Deserves to win	4.81 (1.49)	3.64 (1.47)	5.71 (139)	<.001
Should be punished	1.69 (1.28)	2.23 (1.50)	-4.58 (140)	<.001

Note: Interact again = “If I were to do this task again, I would like to interact with this person”; Deserves to win = “This person deserves to win the gift card”; Should be punished = “This person should be punished for how they acted in the task”

Next, to determine whether the vulnerability manipulation was effective, participant ratings of the essay writer’s personality were compared using t-tests and can be found in Table 4 below. The analyses indicated that perceptions of the target participant varied significantly based on the essay they read.

Table 4. Differences in participant perceptions of the victim participant as a function of the vulnerability manipulation

“Based on their communication about how they deal with conflict, I would describe this person as...”	Vulnerable condition mean (SD)	Non-Vulnerable condition mean (SD)	t-value (df)	p
...Nice”	5.74 (1.07)	5.10 (1.19)	-3.38 (142)	.001
...Rude	1.94 (1.01)	2.73 (1.30)	4.06 (142)	<.001
...Aloof	3.19 (1.44)	3.37 (1.43)	.72 (142)	.48
...Shy	5.33 (1.41)	3.39 (1.56)	-7.83 (143)	<.001
...Timid	5.18 (1.65)	3.42 (1.55)	-6.57 (142)	<.001
...Assertive	2.19 (1.07)	4.38 (1.62)	9.52 (142)	<.001
...Aggressive	1.79 (1.13)	3.14 (1.49)	6.11 (143)	<.001

Primary analyses. In order to determine whether target vulnerability or perspective taking caused changes in PA, a 2x2 factorial ANOVA was conducted. Results indicated that those who were given the vulnerable essay ($M = 101.00$, $SD = 66.72$) were no different from those receiving the non-vulnerable essay ($M = 112.99$, $SD = 63.51$; $F(1,143) = 1.23$, $p = .27$). In addition, those asked to take the perspective of the victim ($M = 107.32$, $SD = 73.32$) did not exhibit greater PA than those given instructions to remain objective ($M = 106.47$, $SD = 57.60$; $F(1,143) = .01$, $p = .94$), nor was there any interaction between the two factors ($F(1,143) = 1.45$, $p = .23$).³ Box plots comparing these conditions are presented in figures 5 and 6 below.

³ Interaction tests between the manipulations and gender were also conducted but there were no significant differences between genders, nor did gender interact with either manipulation alone or in conjunction.

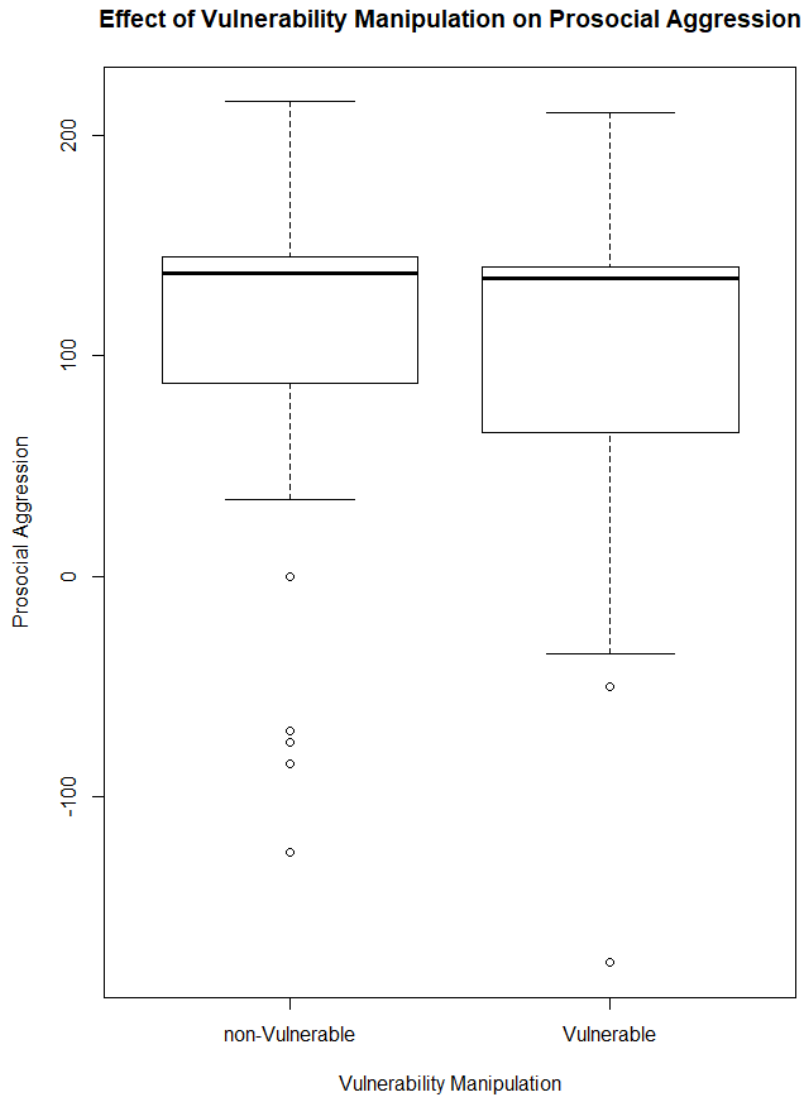


Figure 5. Effect of vulnerability essay manipulation on PA behavior in Study 2

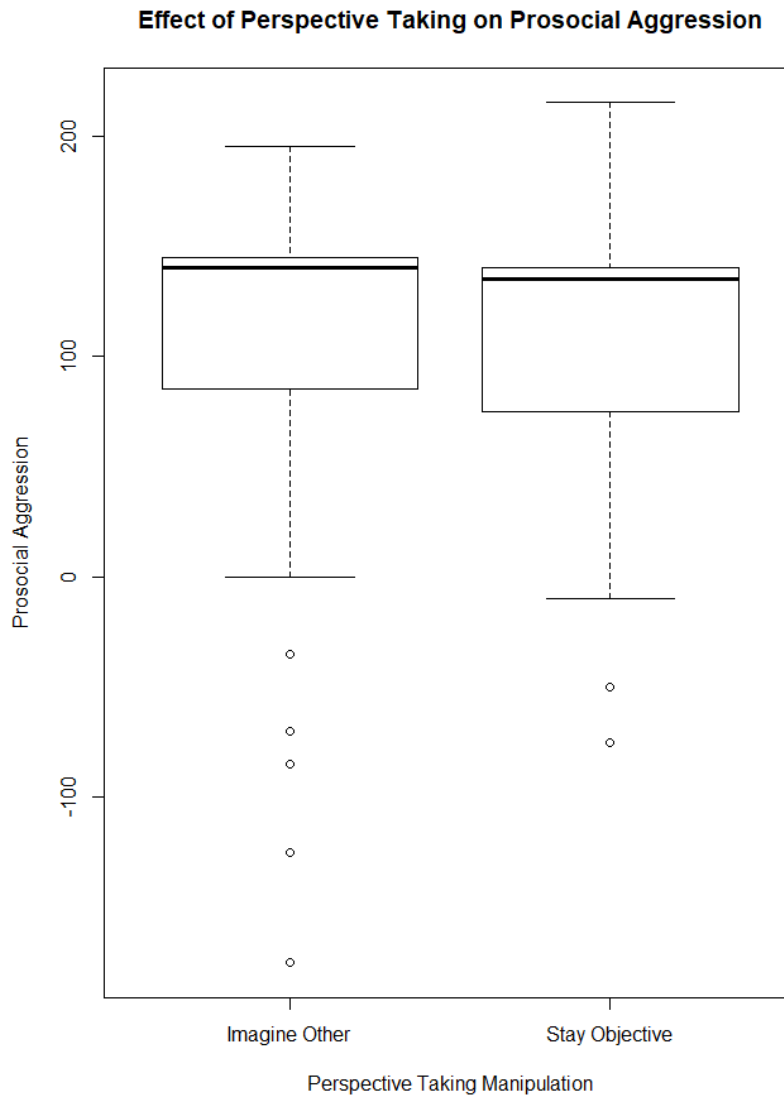


Figure 6. Effect of perspective taking instructions on PA behavior in Study 2

CHAPTER 11. DISCUSSION

The studies presented here provide initial tests of the PA task and model, focusing on sensitivity to victimization in the task, as well as short and long-term predictors of behavior within the task. While participants appeared to be sensitive to the presence of victimization, neither individual differences, nor the manipulations appeared to influence participants' behavior on the task. There are two obvious explanations for the surprising stability of the PA behavior observed in these studies. First, the theoretical foundation from which the predictions were generated is incorrect or flawed. Given the relative simplicity of the model, coupled with decades of research verifying the basic components of the model (e.g., the bystander intervention, empathy/helping, and aggression literatures), it is possible, but unlikely that this would explain PA's stability. Second, methodological characteristics inherent in the task itself create conditions that overwhelm both personal and other situational factors that would otherwise be predictive. Given the novel nature of the task, its complexity, and its artificiality, discussion and future research considerations focus largely (but not exclusively) on addressing this possibility. It's worth noting that these two potential sources for the current studies' findings are not mutually exclusive, and that failings could have occurred on both of these fronts.

Theoretical considerations. Regarding long-term predictors, it was originally hypothesized that factors presumably closely related to PA, such as anti-bullying attitudes and empathic anger, would predict behavior on the task. Both of these constructs reflect fairly empathy-laden propensities; that is, anti-bullying attitudes and empathic anger both are characterized by a high degree of empathy for others (r 's = .52 and .39 respectively). It may be that individuals high in either or both of these characteristics possess the empathic traits that also

suppress aggressive propensities. In this sense, high scores on the two factors, empathic anger, for example (which theoretically increases aggression in this situation) and trait empathy (which tends to predict globally reduced aggression) may essentially cancel each other out. One could consider replicating the analyses while controlling for trait empathy. It is difficult, however, to determine whether such an analysis would generate meaningful results given the theoretically critical role that empathy places in the role of PA behavior. In other words, by controlling for trait empathy, one essentially controls for a whole host of processes that make up the trait (e.g., emotional contagion, empathic accuracy, etc.) A more refined test of this possibility would involve isolating the characteristics of empathic processes that reduce aggression and controlling for these constructs. Such a follow-up study would benefit from more research in this domain that helps elucidate the components of these empathic constructs (both global, such as trait empathy, and specific, like empathic anger) that directly or indirectly suppress aggression and those that are unrelated to aggression.

This speculation potentially applies to the stability of PA in the experimental tests of short-term effects. It's possible that those who are sensitive to perspective taking and vulnerability manipulations are also much less likely to aggress, producing the same cancellation effect. If this "competing forces" hypothesis is correct, however, it is unlikely that every "conflict" tested here produces a near-perfect cancellation so that the resulting effect size is statistically zero and not negative (over-suppression) or positive (under-suppression). While not a rigorous test, the current findings do not lend much support to this hypothesis.

Instead, future work is likely to benefit more by considering the methodological features of the current procedures, and perhaps the task itself, that may be overwhelming the

situational and personal predictors of the behavior. It's worth noting that a number of participants reported (Study 1 $n = 15$; Study 2 $n = 15$) finding the task confusing, but only at first. This may indicate that the cognitive resources required to understand what is occurring during the task may overwhelm attempts to keep in mind recently encountered information (e.g., how vulnerable the participant was). It may be the case that in this situation, participants' cognitive load is so high that they default to simple heuristics for making decisions (e.g., keep it fair), rather than considering their attitudes, beliefs, values, or recently encountered information when making decisions. The likelihood of this possibility is somewhat mitigated (but still possible) by the data-cleaning procedure that identified and removed highly confused participants.

Another possibility is that the task itself presented such an unambiguous instance of victimization in which simple heuristics like social norms drive nearly all the variability in responses on the task. There are a few reasons why this possibility is one of the more likely contributors to PA's stability. First, PA behavior was resilient to influence from nearly all short and long-term predictors. Such a global stability in PA is more likely to result from a single feature shared across these tests, rather than from other alternative test-specific reasons for the stability. Given the fairly universal social norm of maintaining fairness, unambiguity in the task may lend itself to a fairly mechanistic response pattern. In such a case, PA should be considered a step-wise process in which a punishment response occurs as a function of this mechanistic adherence to social norms. When it becomes unclear whether the social norms apply to the current situation, other internal information is consulted. Such a possibility suggests that introducing more ambiguity (e.g., by reducing the amount of victimizing that occurs) may create the conditions required for personal and situational

factors to influence PA. An argument could be levied that if this type of ceiling effect is occurring, there should be little variability in PA behavior when a victim is present. It's quite possible, however, that each individual's "ceiling" is highly personalized, in which case high variability in PA responses is possible while still maintaining high variability between participants, as was observed here.

Methodological considerations. It's also worth considering the prominent methodological similarities and differences between the current and similar measures of PA (Fehr & Gächter, 2003; Krasnow, Delton, Cosmides, & Tooby, 2016). First, none of the paradigms is significantly simpler than the current paradigm with perhaps the exception of the raffle ticket component in the current approach. Instead, these studies tend to use either real money or real money "surrogates" that can be directly converted into money at the end of the session. In other words, the stakes are obvious and high in these studies, relative to the raffle tickets in which, regardless of performance, one is not likely to win any money.

These tasks also often require that the participant pay a price in order to punish the third party (i.e., offer some of their money). This feature may increase the likelihood that participants carefully consider each aggressive act, weighing whether the altruistic act is worth the costs and thereby prompting consideration of other aspects of the situation (e.g., how vulnerable the victim is).

Some paradigms (e.g., Krasnow, Delton, Cosmides, & Tooby, 2016), but not all (e.g., Shinada, Yamagishi, & Ohmura, 2004; Crockett, Clark, Lieberman, Tabibnia, & Robbins, 2010) have been conducted with multiple real participants. Nearly all current paradigms, however, suggest to participants that their group members are in the same building (usually in a nearby cubicle; Shinada, Yamagishi, & Ohmura, 2004). This feature may remove some

of the artificiality of the task when experimenters speak to other participants (real or fake) during the procedure.

Interestingly, most of these paradigms require that participants rotate between roles in the task (e.g., Fehr & Gächter, 2003) or participate in both roles simultaneously (e.g., Krasnow, Delton, Cosmides, & Tooby, 2016). The participant, therefore, has had some degree of experience in the task from the “vulnerable” side of the table, so to speak. It may be that being placed within a vulnerable position in the task lends participants to better understand the potential distress that can occur when victimized, providing the perspective required to empathize with victims.

One issue that is of significant concern when identifying and speculating about the roles of these task features that differ from the current paradigm, is that the vast majority of investigations into PA do not evaluate short or long-term social psychological constructs relations with behavior in their PA tasks. Much of this literature compares methodological variations of paradigms (Krasnow, Delton, Cosmides, & Tooby, 2016; Piazza & Bering, 2008), proximate measures of participant motivations during the task (e.g., egalitarian motivations; Johnson, Dawes, Fowler, McElreath, & Smirnov, 2009), or proximate measures of evolutionarily relevant biological mechanisms (e.g., serotonin depletion, Crockett, Clark, Lieberman, Tabibnia, & Robbins, 2010; reward network activation, Fehr & Rockenbach, 2004). In short, it is unclear whether this body of literature is directly pertinent to determining the source of stability of PA in the current study, given the significant differences in the goals of the research. These methodological differences are therefore considered with a degree of reservation.

Future research. To advance the study of prosocial aggression, there are a number of methodological decisions that should be considered in future experimental and cross-sectional work. First, more ambiguity should be introduced to the task. This approach also suggests that important covariates worth examining include perceptual processes that increase the likelihood of interpreting ambiguous situations as a victimization event (e.g., assessments of how common bullying is among the participant's age group).

In addition, more time should be provided to train participants in the task. The reports by participants of being confused near the beginning of the task suggests that viewing the task in vivo was informative. Providing an automated demonstration of the task was ruled out of the current paradigm due to concerns that participants might be more likely to suspect that their participant partners were computerized. An alternative approach worth considering would be to video record a session with names of participants blurred so that the illusion of realism is maintained without communicating to participants that the task can be automated. In further service of this goal of clarifying the task procedures, ostensible participant responses could be slowed so as to give the actual participant more time to comprehend what is occurring in the task.

An additional consideration is that the participant be allowed to rotate through roles in the task so that they can fully grasp the potential costs of being a victim. Ironically, this feature in other research was criticized on the grounds that in such paradigms, PA may simply be a function of self-interest by enforcing cooperation norms that the participant would presumably benefit from in future trials (Krasnow, Delton, Cosmides, & Tooby, 2016); a criticism the current paradigm overcomes. In fact, the finding that PA occurred in the current paradigm suggests that PA is not simply a function of self-interest. Finally, the

compensation for performance in the task should be made more tangible to participants, potentially by providing actual cash to participants if such funding is available.

Research on PA from a social-psychological perspective is quite young. The findings observed here are not necessarily surprising, given the novelty of the paradigm being tested. Without a doubt, resolution of the methodological limitations in the current paradigm lends itself to a great deal of potential in better understanding the interactions of prosocial and aggressive processes. Incorporation of the suggestions above into future tests mark a potentially fruitful avenue of investigation. If such future tests produce similar results to those seen here, it should be considered evidence for some degree of inherent stability in PA behavior – a finding that itself, would be quite interesting.

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APPENDIX A. STUDY 1 DATA CLEANING PROCEDURE

Raw data downloaded from Qualtrics – labeled “Groves – diss – RAW DATA – numeric – DL April 11, 2018_6.58” (starting $N = 209$; This would be considered the 1.0 document). Only changes made to this file were to remove the two unnecessary header rows (row 2 and 3)

- 1.1** - “Groves – diss – missing data removed 1.1” (resulting $N = 193$) – Sixteen cases in this file had no data and were therefore deleted. These cases were due to either technical errors (e.g., failure to enter the correct data into beginning page of survey -> restart survey), survey tests (e.g., experimenter entered data as a test of the survey), or participant no-shows (i.e., survey started, but participant did not arrive).
- 1.2** - “Groves - diss - suspicious Ps removed 1.2.csv” (resulting $N = 175$) – Coding method (1=no suspicion whatsoever, 2 = general suspicion, 3 = specific suspicion, but irrelevant to study deceptions/design/hypotheses, 4= specific suspicion, potentially relevant to study deceptions/design/hypotheses, 5= specific suspicion related to study deceptions/design/hypotheses, 6= participant is aware of study deceptions and hypotheses; note: RAs coded these on a 0-5 scale but were recoded as 1-6 by Qualtrics).
- One case (ID: EB3HC) was identified as not having a suspicion rating, but research assistant described in notes that participant was not suspicious at all. Therefore, a suspicion score of 1 was provided.
 - Three additional cases contained no dependent variable data and were removed. One case (ID: 6I8BA) was due to the procedure taking longer than expected and therefore ended early (outlier on survey completion time [50 min]). The second case was identified as test data entered by the experimenter (no ID entered). The third case did not include a note regarding the reason for failure to record dependent variable data (possible experimenter error; e.g., forgetting to enter data).
 - One participant was rated as a 6 as he had participated in a related study and knew the study hypotheses and procedures (ID: FHM7GB).
 - Eleven participants were rated as a 5. Of these, 9 indicated they did not believe the other “participants” in the study were real and were therefore removed. The remaining two appear to have been identified as suspicious due to their confusion about the task and/or instructions and were kept.

Table 1. *Suspicion rating = 5*

ID	RA note	Removal? (1=yes, 0=no)
0HDXB	The participant said he thought that the other participants were computers. He said he thought this from his second interaction with them. This may have altered his behavior in this task. Emily and Andrew A	1
FR2VXA	She said she felt bad about taking points away, but tried to keep it fair to be nice in social interaction	0
F53J7A	Thought other participants were not real.	1
F52U8A	She didn't think the players were real.	1
IHLAA	Didn't think the players were real people. Thought they were computers	1
YYPPA	players weren't real, camera was watching how I reacted, and thought you guys were trying to see if I would keep it fair.	1
01GHC	If he didn't think the other participants were real, it's hard to say he had any genuine reactions to them.	1
M8CQA	Thought there weren't other real players	1
FL00JD	During the explanation of the task she kept questioning what to do and why the observer would take points away or not. I told her it was completely up to the observer on what they wanted to do. She asked after I explained the IOT instructions if the players were real people. I told her yes and that they were from other labs across the U.S. During questions before debriefing, she didn't indicate any suspicions or similar issues.	0
FZXDSC	thought players weren't real and we were trying to see if she'd keep it fair and be kinder to player 1 since player 1 was more giving of points.	1
F5XJPC	Since she did not think the players were real she may not have acted in a genuine manner. Emily and Andrew A	1

- e. Another 15 participants were recorded with suspicion ratings of 4. Of these, one participant indicated suspicion that the other “participants” were not real. One additional participant mentioned possible awareness of study hypotheses. The remaining removed participants drew explicit connections between the content on the surveys and the nature of the task or not enough information was provided in the note to judge suspicion with confidence.
- i. Five total removed.

Table 2. *Suspicion Rating = 4*

ID	RA note	Removal? (1=yes, 0=no)
XQC1D	He seemed content with the response that the other participants were real people and not just programs in the system.	0
91NTD	Asked during observer instructions if there were real people or computer simulated people. I lied and said they were people in other labs. He showed no suspicion after that or during debriefing	0
4FIKC	I gave this participant a "3" just because they brought up advantage and interaction, but it shouldn't have affected the results. Also, to note, my 2nd RA was not here (Chris knew about it anyways) - so I just ran both parts of the study. the participant wasn't phased.	0
DN2UA	Kept asking why he would or would not take away points... what the point was. I told him it was his discretion and he could do whatever he wanted with taking away points or not taking away points.	0
357WC	Thought we were seeing if he'd keep it fair or anarchy after dealing with the violence questionnaire he took first.	1
PWSDB	He didn't think the people were real	1
F4FIKC	Noticed that other players were responding quickly but did not result in any affect on her results.	
F1JM RB	Although a bit ambiguous, it was directed toward a specific section of the study. She could not clarify what the suspicion was, just assumed something was amiss in the task portion of the study.	0
FCSO94	she was suspicious but didn't seem to know what we were testing	0
F8OYUB	She said she didn't really know what the points were for	0
FSQ5LC	She felt as though we were being studied on how we would react to what each player does.	0
375DD	thought we were trying to find the "bridge" between the task and the questionnaire.	1
6YWSD	Voiced suspicion, likely had no affect on the results but was obviously relevant to the study.	1
FDI3CB	Although it was relevant and could've made a difference to the study, the participant noted that she thought the other "individuals" in the study were real as she was performing the task and didn't have that suspicion until after the task was over.	0
HG7YB	they way he said the people were picking answers too fast made it sound like he knew they weren't real	1

All remaining participants were rated 3 or lower. Inspection of the experimenter notes did not indicate that suspicion was a problem in any remaining cases.

1.3 - Confused and/or procedure error case removal – file: “Groves – diss – confused Ps removed 1.3” (resulting $N = 164$)

- a. An additional column was created to the right of the “Did you find any of the study instructions confusing?” column. Cases were coded as 1 to be removed if a) experimenters indicated that the participant seemed significantly confused about study procedures or b) study procedures were not followed as indicated in the confusion and suspicion notes.

Table 3. *Confused participant/procedure error removals*

ID	“Did you find any of the study instructions confusing?”	“Did you think that there was anything strange or unusual about the study? Anything we might not be telling you?”	“Provide justification for your suspicion rating.”
WVYOC	Yes, I thought the task instructions were confusing. yes, the task instructions were confusing. Would be better if there was a demo	No	He did not think there was anything suspicious. Emily and Andrew A.
QDFTA	Yes, I thought the task instructions were confusing. Would be better if there was a demo	No	No suspicion. Entered the wrong ID. Entered EV61D I think i might have accidentally picked the IOT 2 instead of the IOT. he also said hes never done a study like this before so I don't think he was suspicious about anything
W2BUD	no Yes, the instructions for the task and doing the online task. I also did not really see the point in doing this task and how it relates to the study.	no	Not suspicious about the questions or the study.
FVOA7B	The task instructions. Didn't understand the goal of the task.	No.	Only provided an answer of "No."
FJGOB	Game was confusing	No	She did not seem to care. Didn't voice any suspicions during or after the study.
FX27B		No	Participant skipped past the ID code section of the task and continued to do the task without notifying the researcher, however, during
FKDZVB	"Yes, I didn't understand the purpose (of the task portion of the study)"	No	

			the task she explained that she was taking points away from people that she deemed as fair.
WVYOC	The instructions were worded weirdly	Game did not make sense	Not suspicious didn't seem suspicious she did have no idea what was going on when the game started and kind of freaked out since she didn't know what to do. also she kind of tried to leave right away before i debriefed her
FYPPA	she didn't know what to do during the game (she wasn't paying any attention)	no	Participant was just suspicious of the questions not the study itself. Also, when instructed to read and sign the consent form, the participant signed it, and turned on the monitor and went straight into the task with no instruction. I checked on them at about 5 after the hour and they task was minimized and complete. I ran through the instructions, anyway. They also asked how long the task would take, so they seemed rushed. Kept asking why he would or would not take away points... what the point was. I told him it was his discretion and he could do whatever he wanted with taking away points or not taking away points.
FW2BUD	No	Some of the questions were asking weird things. I didn't see how they were related to the study	
DN2UA	yes. the task at first but the example cleared it up	no NON NATIVE ENGLISH SPEAKER: Caroline ran it anyway with Chris's prior permission.	

Note. Bolded content identifies information used to mark participants for removal.

- b. In addition, another column was created to the right of the “Provide justification for your suspicion rating” column to identify cases where the procedure was conducted with one experimenter and not two. A total of 9 cases were described in the notes as having been run with a single researcher.
- c. A third column was also created to identify instances where the participants noted confusion about the purpose of the task (not necessarily the procedure; usually in reference to not understanding what the observer is “supposed to do”). This column was created to the left of the “Did you find any of the study instructions confusing?” column. Participants were identified as “confused” (code = 1) when indicating clearly that they did not understand the purpose of the task. Those who indicated that they found the task “a little” or “a bit”

confusing were coded as 0. Those who indicated that the task was confusing, but only at first, were also coded as 0. Thirteen participants indicated some degree of confusion about the purpose of the task. These participants were not removed.

- i. Note: One case (ID: W2BUD) was identified as having potentially been run in the wrong condition and was therefore identified as “confused” for removal (rather than creating a new column for experimenter confusion/error).
- d. All cases listed in Table 3 were removed – information used to mark cases for exclusion is bolded. Eleven cases total were removed.

1.4 – DV calculations – file name: “Groves – diss – DV calculations 1.4” (resulting $N = 164$)

- a. The headers of the DV columns (HK through ID) were truncated to make coding easier.
- b. A second set of columns was created to include the recoded DV measure so that it properly reflects the points removed (0, 10, 25, or 50, instead of the current code of 1, 2, 3, or 4)
 - i. Excel code for first case:


```
=IF(HK2=1,0,IF(HK2=2,10,IF(HK2=3,25,IF(HK2=4,50,""))))
```

 1. This was done because the differences between point values is non-linear, requiring that each response should not have equal weight in an aggregated analysis.
 2. After the columns were created, all cells were copied and pasted as text, removing the formulae)
- c. Next, the values removed from each participant were differenced for each round to create a metric of participants’ relative point removals for the two ostensible participant players. The resulting 10 columns (one for each trial) were created to the right of the original (raw) DV column data.
 - i. Note: a column at the end of the data set “Q109 – Topics”, was also removed at this stage of the data cleaning procedure.
 - ii. Excel code for first case, first trial: =SUM(GQ2,-GR2)
 1. Again, after the columns were created, all cells were copied and pasted as text.
- d. Therefore, negative values indicate that more points were taken away from Player 2 (the bully) than Player 1 (the victim).
- e. During this process, two participants were identified as having missing data on one of the participant trials (likely due to experimenter error while entering scores into the survey), meaning a difference score could not be calculated. For both of these cases, in order to retain the remaining data, scores were imputed to ensure that a difference score of 0 resulted.

- i. FIHLAA – missing score for Round 8 – Player 2
 - ii. TGJFB – missing score also for Round 8 – Player 2
 - f. Finally, the primary DV operationalization was created by summing the ten columns, producing a total difference in number of points taken from Player 1 (victim) relative to Player 2 (bully). Again, negative values indicated that more points were taken away from Player 2 than from Player 1.
 - i. code for first case: =SUM(IE2:IN2)
- 1.5** – Attention and random responding checks – file name: “Groves – diss – attention and random responding checks 1.5” (resulting $N = 164$, future files contain same N unless otherwise specified)
- a. Attentional and random responding were assessed by calculating the standard deviation for participants’ scores for each scale (i.e., within-participant standard deviations across items).
 - i. At this stage, several column headers were truncated for readability purposes.
 - b. The new SD columns were created following each scale, labeled as “[scale abbreviation] SD”
 - c. The first-case code for each scale is provided below:
 - i. Empathic Anger (EA SD): =STDEV(O2:U2)
 - ii. Anti-Bullying Attitudes (ABA SD): =STDEV(W2:AT2)
 - iii. Civic Engagement (CE SD): =STDEV(AV2:AY2)
 - 1. Due to the short-report nature of the measure (four items) and that none of the items were reverse worded, SD scores of zero were deemed appropriate and CE was therefore not included in the SD count calculation (see 1.5.e)
 - iv. Big-5 Short form (B5 SD): =STDEV(BA2:BJ2)
 - v. Just-World Beliefs (JWB SD): =STDEV(BA2:BJ2)
 - vi. General Media Habits Questionnaire
 - 1. GMHQ1 SD: =IFERROR(STDEV(BY2:CG2),””)
 - 2. GMHQ2 SD: =IFERROR(STDEV(CJ2:CR2),””)
 - 3. GMHQ3 SD: =IFERROR(STDEV(CU2:DC2),””)
 - 4. GMHQ4 SD: =IFERROR(STDEV(DG2:DL2),””)
 - 5. GMHQ5 SD: =IFERROR(STDEV(DO2:DT2),””)
 - 6. GMHQ6 SD: =IFERROR(STDEV(DW2:EB2),””)
 - a. Note: Participants reporting they did not play games bypassed this portion of the survey, therefore new code was included to remove errors in calculations resulting from missing values. These were automatically converted to missing SD calculations.

- vii. Buss-Perry Aggression Questionnaire (BPAQ SD):
=IFERROR(STDEV(ED2:FF2),"")
- viii. Interpersonal Reactivity Index (IRI SD): =STDEV(FH2:GK2)
- d. Again, cells were copied and pasted as values to remove the formulae
- e. Next, a count was created of the number of SD scores that each participant had. Participants were not required to answer any specific question so individuals missing scores on individual items, but not an entire scale, were included in the count.
 - i. A SD count for each scale was created for each participant, producing 12 columns (after excluding Civic Engagement) containing dichotomous scores (indicating that the SD for that participant, for that measure, was or was not equal to 0). These values were summed across all scales for each participant [code for first case: =SUM(JD2:JO2)], producing a count of the number of scales that participant provided the same response value for every item (i.e., the participant likely responded mindlessly; their TOT SDc score).
- f. The data set was then sorted by TOT SDc scores, identifying a total of 20 participants with at least one scale SD of 0. One participant had a TOT SDc score of 4, five participants had scores of 2, and fourteen had scores of 1.
 - i. Inspection of the SD counts for each scale (collapsed across participants) indicated that the bulk of the TOT SDc scores came from GMHQ items in which participants reported not having a second or third most-played/watched game/show. Participants were allowed to skip the video game portion of the GMHQ (scales 1-3) but not the TV/movie portion (4-6). Inspection of the TOT SDc scores of GMHQ scales 4-6 indicate that several participants listed a first or second show but not a third, some explicitly stating that they didn't watch anything else. For these reasons, participants with scale SDs of zero were evaluated on a case-by case basis (see Table 4). Edits were made to participant responses according to several a-priori decision making criteria:
 1. If SDs of zero identified participants who rated a GMHQ subscale (i.e., game/show/movie) as not existing (i.e., they do not play other games or watch other shows), the responses provided for that subscale were deleted.
 2. If zero SD scores occurred for non-GMHQ scales, all responses were converted to missing values. This criterion was established because all of the non-GMHQ scales that had SD zero scores either had reversed items, multidimensionality, or did not include a true mid-point (i.e., no participants in this

data set appear to have a truly neutral score on a given scale's dimension).

3. If no note is provided regarding the GMHQ subscale, but ratings were provided, no assumptions were made regarding whether the missing information corresponded to a lack of content exposure (i.e., no additional shows/games than those listed are watched/played) or for some other reason (e.g., participant error in providing the title, prematurely proceeding through the survey before completing the previous subscale). Therefore, these cases were left unaltered at this stage.

Table 4. *Invariant responding participant removals*

ID	TOT SDc score	Scales with SD of zero	Additional information used	Decision Made
VOA7B	4	JWB, GMHQ4-6	"I don't watch TV", "none", "none"	Content exposure ratings deleted, JWB scores deleted
OFOYD	2	EA ABA GMHQ1,		EA and ABA scores deleted Scores unaltered
R2VXA	2	GMHQ3	Games/shows were listed	Scores unaltered
91NTD	2	GMHQ5-6	Not enough information	Scores unaltered
F2WT1D	2	GMHQ2-3	Games/shows were listed	Scores unaltered Content exposure ratings deleted
8UANA	2	GMHQ2-3	"None", "None"	Content exposure ratings deleted
FS3HIA	1	IRI		IRI scores deleted
HLIQD	1	GMHQ2	Games/shows were listed	Scores unaltered
F3R7WC	1	GMHQ3	Games/shows were listed	Scores unaltered
FR8SEB	1	GMHQ3	Games/shows were listed	Scores unaltered
FLXOQA	1	GMHQ3	Games/shows were listed	Scores unaltered
FIHLAA	1	GMHQ4	Games/shows were listed	Scores unaltered
DEPXB	1	IRI		IRI scores deleted Content exposure ratings deleted
L2D8D	1	GMHQ3	"N/A"	Content exposure ratings deleted
P7HCD	1	GMHQ6	"I don't watch much TV"	Content exposure ratings deleted
ZT3AD	1	GMHQ5	Games/shows were listed	Scores unaltered Content exposure ratings deleted
75K0C	1	GMHQ3	"NA"	Content exposure ratings deleted
F1JRM B	1	GMHQ1	Games/shows were listed	Scores unaltered
FL00JD	1	GMHQ5	Games/shows were listed	Scores unaltered Content exposure ratings deleted
FJ5MYC	1	GMHQ3	"none"	Content exposure ratings deleted

Note: Bolded content identifies information used to mark participants for removal.

1.6 – Violent/prosocial content exposure calculations – file name: “Groves – diss – content exposure calculations 1.6”: file converted to SPSS format (.sav) for the rest of the data cleaning procedure.

- a. Before calculating content exposure scores, all variables were renamed to their final, analysis version.
 - i. Codebook file name: “Groves - diss - Study 1 Codebook”
- b. Next, participants who indicated no game played or no movie/TV show watched when completing the GMHQ were assigned a score of 0 for the game and TV show’s exposure duration and content rating measures. This was done because the final GMHQ calculations require summing the contentXexposure items together. Therefore, providing a 0 score for the subscales allows these participants’ data to represent non-exposure to violent or prosocial media.

Code:

- i. Code used:

```
RECODE GMHQ1.1 GMHQ1.2 GMHQ1.3 GMHQ1.4 GMHQ1.5
GMHQ1.6 GMHQ1.7 (SYSMIS=0).
EXECUTE.
```

```
RECODE GMHQ2.1 GMHQ2.2 GMHQ2.3 GMHQ2.4 GMHQ2.5
GMHQ2.6 GMHQ2.7 (SYSMIS=0).
EXECUTE.
```

```
RECODE GMHQ3.1 GMHQ3.2 GMHQ3.3 GMHQ3.4 GMHQ3.5
GMHQ3.6 GMHQ3.7 (SYSMIS=0).
EXECUTE.
```

```
RECODE GMHQ4.1 GMHQ4.2 GMHQ4.3 GMHQ4.4 (SYSMIS=0).
EXECUTE.
```

```
RECODE GMHQ5.1 GMHQ5.2 GMHQ5.3 GMHQ5.4 (SYSMIS=0).
EXECUTE.
```

```
RECODE GMHQ6.1 GMHQ6.2 GMHQ6.3 GMHQ6.4 (SYSMIS=0).
EXECUTE.
```

- c. Finally, violent and prosocial content exposure scores were calculated for the two content types:

- i. Video game violent content exposure code:

```
COMPUTE VVGexpo=(GMHQ1.1 * GMHQ1.2) + (GMHQ2.1 *
GMHQ2.2) + (GMHQ3.1 * GMHQ3.2).
EXECUTE.
```

- ii. TV/movie violent content exposure code:

COMPUTE VTV_{expo}=(GMHQ4.1 * GMHQ4.3) + (GMHQ5.1 * GMHQ5.3) + (GMHQ6.1 * GMHQ6.3).
EXECUTE.

- iii. Video game prosocial content exposure code:

COMPUTE PVG_{expo}=(GMHQ1.1 * GMHQ1.6) + (GMHQ2.1 * GMHQ2.6) + (GMHQ3.1 * GMHQ3.6).
EXECUTE.

- iv. TV/movie prosocial content exposure code:

COMPUTE PTV_{expo}=(GMHQ4.1 * GMHQ4.4) + (GMHQ5.1 * GMHQ5.4) + (GMHQ6.1 * GMHQ6.4).
EXECUTE.

- v. At this point in time, it was discovered that a coding error occurred when downloading the dataset from Qualtrics. Specifically, the codes provided by Qualtrics pertaining to participants' ratings of their time played were not correct (scores did not represent the sequential order of ratings provided, e.g., a score of 5 would reflect lots of time per week, while a score of 6 reflected very little time played per week). This scoring error is reflected in the printout of the full survey downloaded from Qualtrics titled: "Groves – diss – full Two-study_survey". Visual inspection of the remainder of the survey indicated that this was only an issue for the ratings of time spent playing each game or watching each movie/show. Therefore, a recode was conducted on each item to correct the error. The original analysis, creating the content-exposure items, was rerun after the recode. These changes were tested before implementation. The file was saved and a new file was created titled: "Groves – diss – content exposure calculations - corrected 1.6.2"

1. Code used

VGs: RECODE GMHQ1.1 GMHQ2.1 GMHQ3.1
(SYSMIS=SYSMIS) (0=0) (1=1) (6=2) (7=3) (8=4) (11=5)
(12=6) (5=7).

EXECUTE.

TV/movies: RECODE GMHQ4.1 GMHQ5.1 GMHQ6.1
(SYSMIS=SYSMIS) (0=0) (1=1) (2=2) (6=3) (7=4) (8=5)
(9=6) (10=7).

EXECUTE.

1.7 Reverse coding scales – file name: "Groves – diss – reverse codings 1.7"

- a. Reverse coding was conducted using the SPSS recode function, correlation matrices were consulted prior to and following each recode for verification purposes.

- b. EA item 7:

RECODE EA7 (SYSMIS=SYSMIS) (1=5) (2=4) (3=3) (4=2) (5=1).

EXECUTE.

- c. ABA items 1.4, 2.4, 3.4, 4.4, 5.4, and 6.4:

RECODE ABA1.4 ABA2.4 ABA3.4 ABA4.4 5.4 6.4 (SYSMIS=SYSMIS)
(1=5) (2=4) (3=3) (4=2) (5=1).

EXECUTE.

- d. Big 5 items:

RECODE B52 B54 B56 B58 B510 (7=1) (6=2) (5=3) (4=4) (3=5) (2=6) (1=7)
(SYSMIS=SYSMIS) INTO B52R

B54R B56R B58R B510R.

EXECUTE.

COMPUTE Extraver=B51+B56R.

EXECUTE.

COMPUTE Agreeable=B57+B52R.

EXECUTE.

COMPUTE Consc=B53+B58R.

EXECUTE.

COMPUTE EmoStab=B59+B54R.

EXECUTE.

COMPUTE Open=B55+B510R.

EXECUTE.

- e. BPAQ items 7 & 18:

RECODE BPAQ7 BPAQ18 (SYSMIS=SYSMIS) (1=7) (2=6) (3=5) (4=4)
(5=3) (6=2) (7=1).

EXECUTE.

- f. IRI items 3, 4, 7, 12, 13, 14, 15, 17, 19, 20, 21

RECODE IRI3 IRI4 IRI7 IRI12 IRI13 IRI14 IRI15 IRI17 IRI19 IRI20 IRI21
(SYSMIS=SYSMIS) (5=1) (4=2)

(3=3) (2=4) (1=5).

EXECUTE.

- g. Next, scales were averaged and labeled accordingly (EAmean, ABAMean, etc..)

- i. EA:

COMPUTE EAmean=mean(EA1,EA2,EA3,EA4,EA5,EA6,EA7).

EXECUTE.

- ii. CE:

COMPUTE CEmean=mean(CE1,CE2,CE3,CE4).

EXECUTE.

- iii. JWB – note, two items were created for the purposes of the current study and added to the JWB scale. Therefore, three versions of JWB were created, a mean of the original items (JWBmean), one of all items (JWB8mean), and one of the two new items (JWB2mean).

COMPUTE

JWBmean=mean(JWB1,JWB2,JWB3,JWB4,JWB5,JWB6).

EXECUTE.

COMPUTE

JWB8mean=mean(JWB1,JWB2,JWB3,JWB4,JWB5,JWB6,JWB7,JWB8).

EXECUTE.

COMPUTE JWB2mean=mean(JWB7,JWB8).

EXECUTE.

iv. BPAQ:

COMPUTE

BPAQmean=mean(BPAQ1,BPAQ2,BPAQ3,BPAQ4,BPAQ5,BPAQ6,BPAQ7,BPAQ8,BPAQ9,BPAQ10,BPAQ11,BPAQ13,BPAQ12,BPAQ14,BPAQ15,BPAQ16,BPAQ17,BPAQ18,BPAQ19,BPAQ20,BPAQ21,BPAQ22,BPAQ23,BPAQ24,BPAQ25,BPAQ26,BPAQ27,BPAQ28,BPAQ29).

EXECUTE.

v. IRI – the total mean, as well as the subscales for PT (perspective taking), FS (fantasy scale), EC (empathic concern), and PD (personal distress).

COMPUTE

IRImean=mean(IRI1,IRI2,IRI3,IRI5,IRI6,IRI7,IRI8,IRI9,IRI10,IRI11,IRI12,IRI13,IRI14,IRI15,IRI16,IRI17,IRI18,IRI19,IRI20,IRI21,IRI22,IRI23,IRI24,IRI25,IRI26,IRI27,IRI28,IRI29,IRI30).

EXECUTE.

COMPUTE

IRImeanFS=mean(IRI1,IRI5,IRI7,IRI12,IRI16,IRI25,IRI28).

EXECUTE.

COMPUTE

IRImeanEC=mean(IRI2,IRI4,IRI9,IRI14,IRI19,IRI22,IRI24).

EXECUTE.

COMPUTE

IRImeanPT=mean(IRI3,IRI8,IRI15,IRI17,IRI23,IRI27,IRI30).

EXECUTE.

COMPUTE

IRImeanPD=mean(IRI6,IRI10,IRI13,IRI18,IRI20,IRI26,IRI29).

EXECUTE.

Lastly, the scale of the PA measure was reversed so that negative values reflect more punishment of the victim (Participant A) relative to the bully (Participant B; under column PA2). **Note:** a row with no data (row 1) after importing to SPSS was also deleted. “Groves – diss – study 1 – cleaned and coded”. Any additional preliminary calculations were conducted within R and include notes identifying them as such.

APPENDIX B. STUDY 1 INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Amae, Iowa 50014
515 294-4566

Date: 1/31/2017

To: Christopher Groves
W112 Lagomarcino

CC: Dr. Craig A Anderson
W112 Lagomarcino Hall

From: Office for Responsible Research

Title: Questionnaire and online interactions with others

IRB ID: 17-007

Approval Date: 1/30/2017

Date for Continuing Review: 1/29/2019

Submission Type: New

Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- Use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- Retain signed informed consent documents for 3 years after the close of the study, when documented consent is required.
- Obtain IRB approval prior to implementing any changes to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.
- Stop all research activity if IRB approval lapses, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- Complete a new continuing review form at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. Approval from other entities may also be needed. For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. IRB approval in no way implies or guarantees that permission from these other entities will be granted.

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 202 Kingland, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX C. PILOT AND STUDY 1 PARTICIPANT RESPONSE PATTERNS

Table 1.

Prosocial aggression task computerized participant response patterns in Pilot Study

Trial number	<u>Victimization Level</u>					
	<u>High</u>		<u>Moderate</u>		<u>Absent</u>	
	Participant A	Participant B	Participant A	Participant B	Participant A	Participant B
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	D	B	D	B	D	A
4	A	A	A	C	A	D
5	A	B	A	B	A	A
6	B	C	B	A	B	D
7	A	C	A	A	D	B
8	A	C	A	C	A	A
9	A	C	A	B	A	A
10	B	C	B	B	D	D

Note. Responses are as follows. A = cooperative, B = competitive, C = aggressive, D = helpful.

Table 2.

Prosocial aggression task computerized participant response patterns in Study 1

Trial number	<u>Victimization</u>			
	<u>Present</u>		<u>Absent</u>	
	Participant A	Participant B	Participant A	Participant B
1	A	A	A	A
2	A	A	A	A
3	D	B	D	A
4	A	A	A	D
5	A	B	A	A
6	B	C	B	D
7	A	C	D	B
8	A	C	A	A
9	A	C	A	A
10	B	C	D	D

Note. Responses are as follows. A = cooperative, B = competitive, C = aggressive, D = helpful.

APPENDIX D. EMPATHIC ANGER SCALE

Please rate the degree to which the following statements describe you on a 1 (does not describe me very well) to a 5 (describes me very well) scale.

- If I see that someone is feeling mad because he or she was mistreated, then I feel mad too.
- When I see someone feeling sad because he or she was hurt by another person, I feel angry.
- I feel angry for other people when they have been victimized by others.
- I feel angry for a person when his or her feelings have been hurt by someone else.
- I get angry when a friend of mine is hurt by someone else.
- When someone I know gets angry at someone else, I feel angry at that person too.
- When I see others being taken advantage of, I don't feel mad for them (R).

APPENDIX E. ANTI-BULLYING ATTITUDES SCALE

Verbal bullying

1 At the writing center you hear a student chant to another child, 'Teacher's pet, browner, suck-up, kiss-ass.' The child tries to ignore the remarks but sulks at his desk. You saw the same thing happen the other day.

2 Your class is getting ready to go to lunch and the kids are in line at the door. You hear a kid say to another child, 'Hey, give me your lunch money or I'll give you a fat lip.' The child complies at once. It is not the first time this has happened.

Physical bullying

3 A student brings a dinosaur-shaped eraser to school. He boasts that it was a prize from a game arcade. Another child goes over and smacks his head, demanding the eraser. The child refuses at first, but eventually gives in.

4 As your kids return from music class you see a student kick another child without provocation. Bruising is evident. The student has been known to indulge in this type of behavior before.

Social exclusion

5 During project time you overhear a child say to another, 'If you don't let me have the purple marker I won't invite you to my birthday party.' It is not the first time you have heard the child say this type of thing.

6 You have allowed the kids in your class to have a little free time because they've worked so hard today. You witness a kid say to another, 'No, absolutely not. I already told you that you can't play with us.' The student is isolated and plays alone for the remaining time with tears in her eyes. It is not the first time this child has isolated someone from playing.

1. How serious do you believe this event would be? 1 (not at all serious) 5 (very serious)
2. How sympathetic would you feel toward the (victim)? 1 (not at all sympathetic) 5 (very sympathetic)
3. How likely would you be to intervene in this situation? 1 (not at all likely) 5 (very likely)
4. How appropriate were the behaviors of the (bully) in this situation? 1 (not at all appropriate) 5 (very appropriate)

Note: The (victim) text will refer to the victim child in specific to each story (e.g., the child who was kicked, the child told they couldn't play with others). The (bully) text will refer to the bully child specific to each story (e.g., the child who demanded lunch money, the child who demanded the eraser).

APPENDIX F. CIVIC ENGAGEMENT SCALE

Please rate the frequency of doing the following 1 (never) 2 (have performed behavior but not within the last 12 months), 3 (had performed the behavior within the last 12 months)

1. Volunteered in my community
2. Done something to help raise money for a charitable cause
3. Taken part in a peaceful protest, march, or demonstration
4. Stayed informed on current events and politics

APPENDIX G. ABBREVIATED BIG FIVE PERSONALITY SCALE

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Disagree strongly = 1
 Disagree moderately = 2
 Disagree a little = 3
 Neither agree nor disagree = 4
 Agree a little = 5
 Agree moderately = 6
 Agree strongly = 7

I see myself as:

1. ____ Extraverted, enthusiastic.
2. ____ Critical, quarrelsome.
3. ____ Dependable, self-disciplined.
4. ____ Anxious, easily upset.
5. ____ Open to new experiences, complex.
6. ____ Reserved, quiet.
7. ____ Sympathetic, warm.
8. ____ Disorganized, careless.
9. ____ Calm, emotionally stable.
10. ____ Conventional, uncreative.

TIPI scale scoring ("R" denotes reverse-scored items): Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness: 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R.

APPENDIX H. JUST-WORLD BELIEFS SCALE

Below you will find various statements. Most likely, you will strongly agree with some statements, and strongly disagree with others. Sometimes you may feel more neutral. Read each statement carefully and decide to what extent you personally agree or disagree with it. Circle the number which corresponds to this judgment. Make sure you circle a number for every statement.

1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree, 6 = strongly agree

I think basically the world is a just place

I believe that, by and large, people get what they deserve

I am confident that justice always prevails over injustice

I am convinced that in the long run people will be compensated for injustices

I firmly believe that injustices in all areas of life (e.g., professional, family, politics) are the exception rather than the rule

I think people try to be fair when making important decisions

I think it's important for people to ensure that justice is served*

I think people should step in and do something when others are treated unfairly*

*Items developed for the purposes of the current study

APPENDIX I. GENERAL MEDIA HABITS QUESTIONNAIRE

1. What are your three most watched television shows?

a. Title #1: _____

How often do you watch this show? **Rarely:** 1 2 3 4 5 6 7 **:All the time**
 How violent is this show? **No violence:** 1 2 3 4 5 6 7 **:Extremely violent**
 How often do characters gossip, say sarcastic things, tease, or insult each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often do characters try to physically injure each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often are people kind to each other or help each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 To what degree is the main character of this show considered villainous or a criminal? **Never:** 1 2 3 4 5 6 7 **:Very much**
 To what degree is the main character of this show considered a hero or saves other vulnerable characters in this show? **Never:** 1 2 3 4 5 6 7 **:Very much**

b. Title #2: _____

How often do you watch this show? **Rarely:** 1 2 3 4 5 6 7 **:All the time**
 How violent is this show? **No violence:** 1 2 3 4 5 6 7 **:Extremely violent**
 How often do characters gossip, say sarcastic things, tease, or insult each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often do characters try to physically injure each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often are people kind to each other or help each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 To what degree is the main character of this show considered villainous or a criminal? **Never:** 1 2 3 4 5 6 7 **:Very much**
 To what degree is the main character of this show considered a hero or saves other vulnerable characters in this show? **Never:** 1 2 3 4 5 6 7 **:Very much**

c. Title #3: _____

How often do you watch this show? **Rarely:** 1 2 3 4 5 6 7 **:All the time**
 How violent is this show? **No violence:** 1 2 3 4 5 6 7 **:Extremely violent**
 How often do characters gossip, say sarcastic things, tease, or insult each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often do characters try to physically injure each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 How often are people kind to each other or help each other in this show? **Never:** 1 2 3 4 5 6 7 **:All the time**
 To what degree is the main character of this show considered villainous or a criminal? **Never:** 1 2 3 4 5 6 7 **:Very much**
 To what degree is the main character of this show considered a hero or saves other vulnerable characters in this show? **Never:** 1 2 3 4 5 6 7 **:Very much**

2. How often do you play video games? (*Mark one.*)

- Almost every day
 About 4 or 5 times a week
 About 2 or 3 times a week
 About once a week
 A couple of times a month
 About once a month
 Less than once a month
 I never play video games → **SKIP**
- } → **CONTINUE WITH #3**

3. What are your three most played video games?

a. Title #1: _____

- How often do you play this game? **Rarely:** 1 2 3 4 5 6 7 :**All the time**
- How violent is this game? **No violence:** 1 2 3 4 5 6 7 :**Extremely violent**
- How often do characters gossip, say sarcastic things, tease, or insult each other in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you try to physically injure creatures in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you try to physically injure players in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often are players/characters kind to each other or help each other in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you help others in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you play as a villainous or criminal character in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you play as a hero or save other vulnerable characters in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**

b. Title #2: _____

- How often do you play this game? **Rarely:** 1 2 3 4 5 6 7 :**All the time**
- How violent is this game? **No violence:** 1 2 3 4 5 6 7 :**Extremely violent**
- How often do characters gossip, say sarcastic things, tease, or insult each other in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you try to physically injure creatures in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you try to physically injure players in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often are players/characters kind to each other or help each other in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you help others in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you play as a villainous or criminal character in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**
- How often do you play as a hero or save other vulnerable characters in this game? **Never:** 1 2 3 4 5 6 7 :**All the time**

- c. Title #3: _____
- How often do you play this game? **Rarely:** 1 2 3 4 5 6 7 **:All the time**
- How violent is this game? **No violence:** 1 2 3 4 5 6 7 **:Extremely violent**
- How often do characters gossip, say sarcastic things, tease, or insult each other in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often do you try to physically injure creatures in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often do you try to physically injure players in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often are players/characters kind to each other or help each other in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often do you help others in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often do you play as a villainous or criminal character in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**
- How often do you play as a hero or save other vulnerable characters in this game? **Never:** 1 2 3 4 5 6 7 **:All the time**

APPENDIX J. BUSS-PERRY AGGRESSION QUESTIONNAIRE

Using this 5-point scale, indicate how uncharacteristic or characteristic each of the following statements is in describing you.

1 = extremely uncharacteristic of me, 2 = somewhat characteristic of me, 3 = neither uncharacteristic nor characteristic of me, 4 = somewhat characteristic of me, 5 = extremely characteristic of me

1. Some of my friends think I am a hothead.
2. If I have to resort to violence to protect my rights, I will.
3. When people are especially nice to me, I wonder what they want.
4. I tell my friends openly when I disagree with them.
5. I have become so mad that I have broken things.
6. I can't help getting into arguments when people disagree with me.
7. I wonder why sometimes I feel so bitter about things.
8. Once in a while, I can't control the urge to strike another person.
9. I am an even-tempered person.
10. I am suspicious of overly friendly strangers.
11. I have threatened people I know.
12. I flare up quickly but get over it quickly.
13. Given enough provocation, I may hit another person.
14. When people annoy me, I may tell them what I think of them.
15. I am sometimes eaten up with jealousy.
16. I can think of no good reason for ever hitting a person.
17. At times I feel I have gotten a raw deal out of life.
18. I have trouble controlling my temper.
19. When frustrated, I let my irritation show.

20. I sometimes feel that people are laughing at me behind my back.
21. I often find myself disagreeing with people.
22. If somebody hits me, I hit back.
23. I sometimes feel like a powder keg ready to explode.
24. Other people always seem to get the breaks.
25. There are people who pushed me so far that we came to blows.
26. I know that "friends" talk about me behind my back.
27. My friends say that I'm somewhat argumentative.
28. Sometimes I fly off the handle for no good reason.
29. I get into fights a little more than the average person.

APPENDIX K. INTERPERSONAL REACTIVITY INDEX

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate value on the scale at the top of the page: 1, 2, 3, 4, or 5. When you have decided on your answer, select the corresponding value. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can.

Thank you.

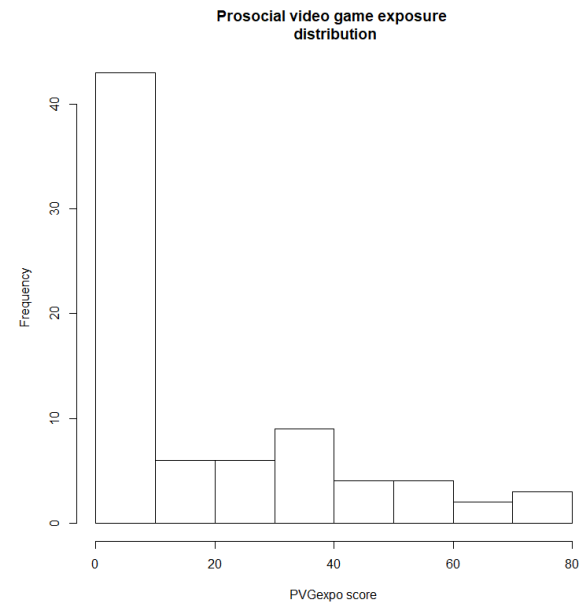
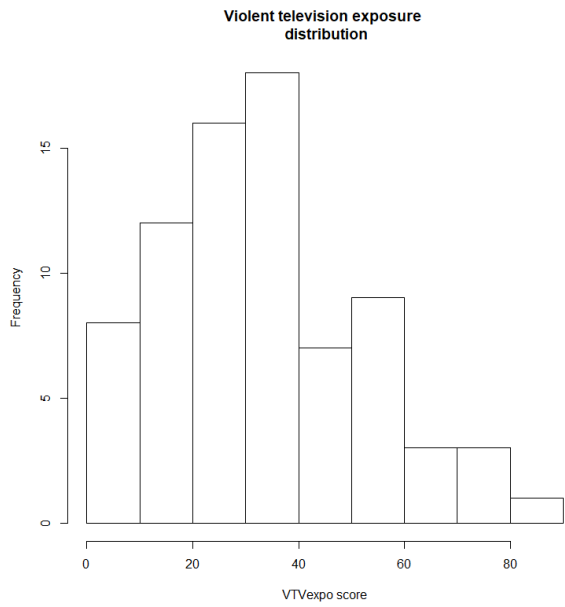
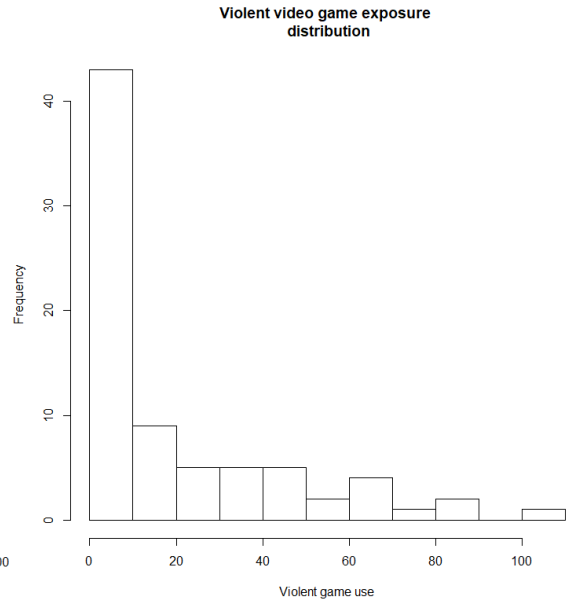
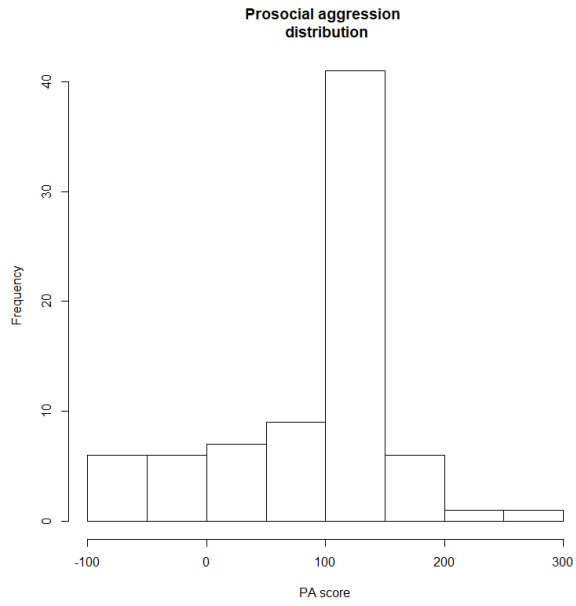
ANSWER SCALE:

Does not describe me very well = 1

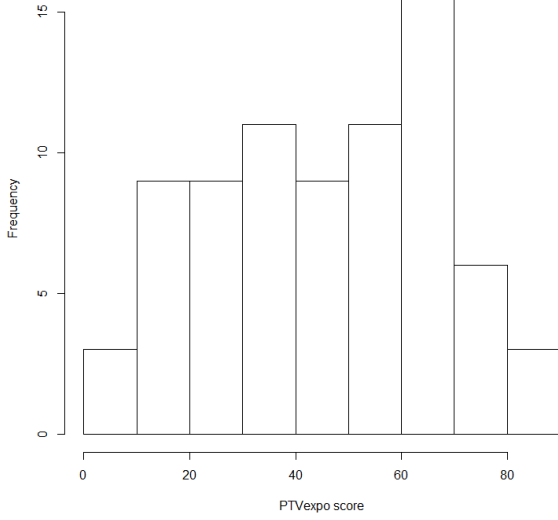
Describes me very well = 5

1. I daydream and fantasize, with some regularity, about things that might happen to me. (FS)
 2. I often have tender, concerned feelings for people less fortunate than me. (EC)
 3. I sometimes find it difficult to see things from the "other guy's" point of view. (PT) (-)
 4. Sometimes I don't feel very sorry for other people when they are having problems. (EC) (-)
 5. I really get involved with the feelings of the characters in a novel. (FS)
 6. In emergency situations, I feel apprehensive and ill-at-ease. (PD)
 7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (FS) (-)
 8. I try to look at everybody's side of a disagreement before I make a decision. (PT)
 9. When I see someone being taken advantage of, I feel kind of protective towards them. (EC)
 10. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD)
 11. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT)
- Self Report Measures for Love and Compassion Research: *Empathy*
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (FS) (-)
 13. When I see someone get hurt, I tend to remain calm. (PD) (-)
 14. Other people's misfortunes do not usually disturb me a great deal. (EC) (-)
 15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT) (-)
 16. After seeing a play or movie, I have felt as though I were one of the characters. (FS)
 17. Being in a tense emotional situation scares me. (PD)
 18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC) (-)
 19. I am usually pretty effective in dealing with emergencies. (PD) (-)
 20. I am often quite touched by things that I see happen. (EC)
 21. I believe that there are two sides to every question and try to look at them both. (PT)
 22. I would describe myself as a pretty soft-hearted person. (EC)
 23. When I watch a good movie, I can very easily put myself in the place of a leading character. (FS)
 24. I tend to lose control during emergencies. (PD)
 25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)
 26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (FS)
 27. When I see someone who badly needs help in an emergency, I go to pieces. (PD)
 28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT)

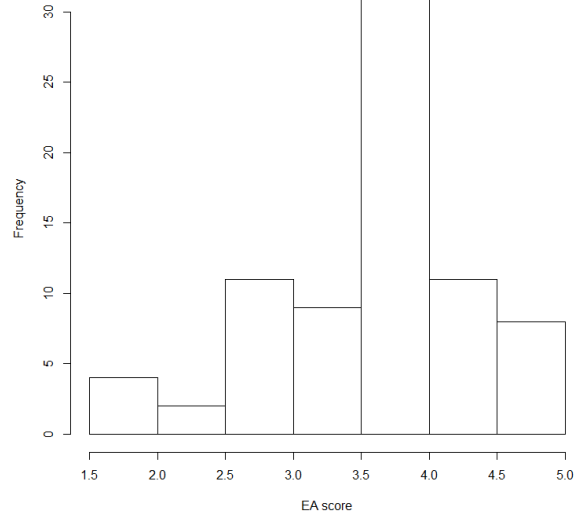
APPENDIX L. STUDY 1 SCALE DISTRIBUTIONS



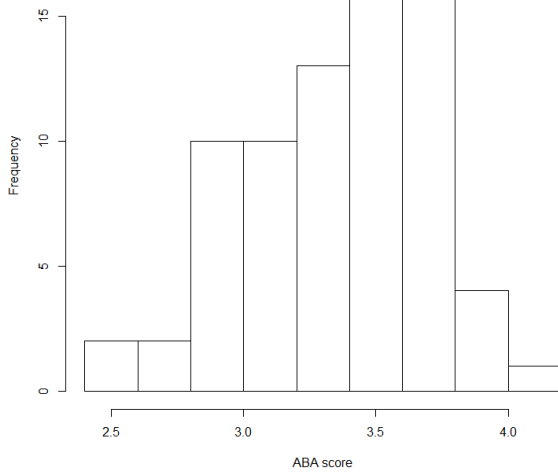
Prosocial television exposure distribution



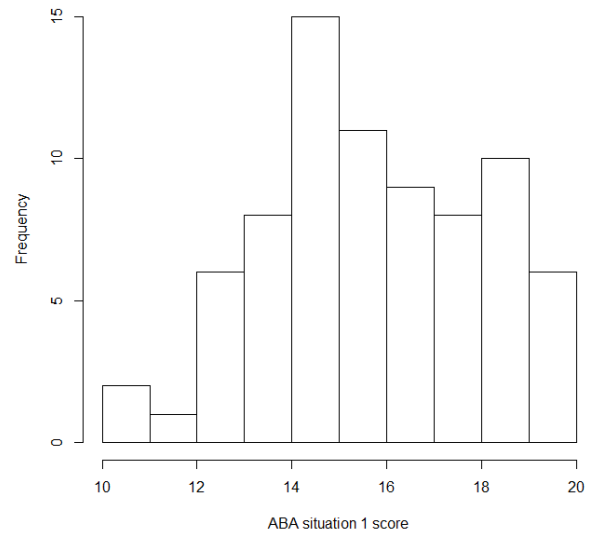
Empathic anger distribution



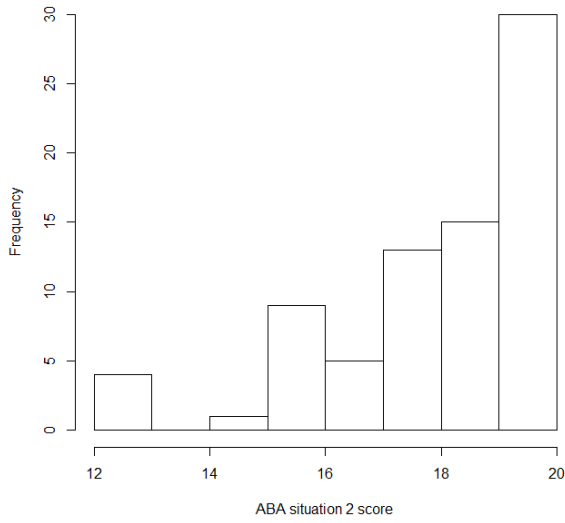
Antibullying attitudes distribution



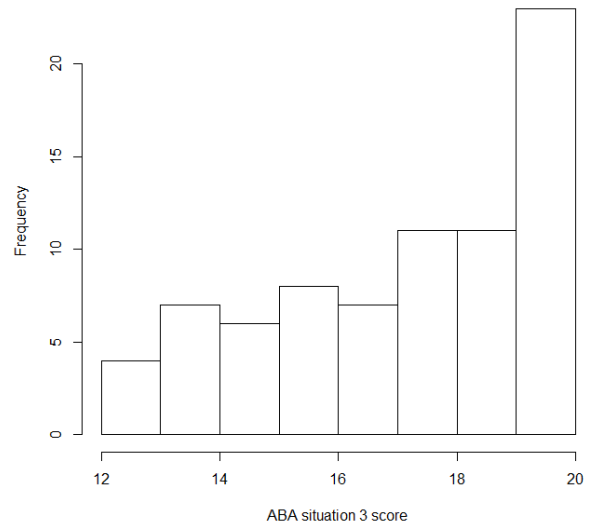
Antibullying attitudes sit. 1 distribution



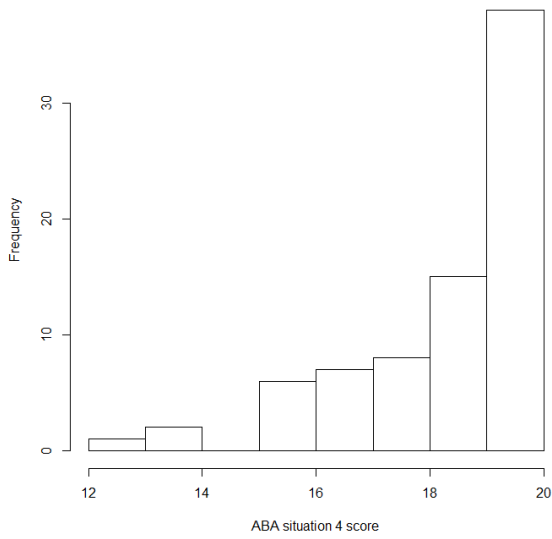
Antibullying attitudes sit. 2 distribution



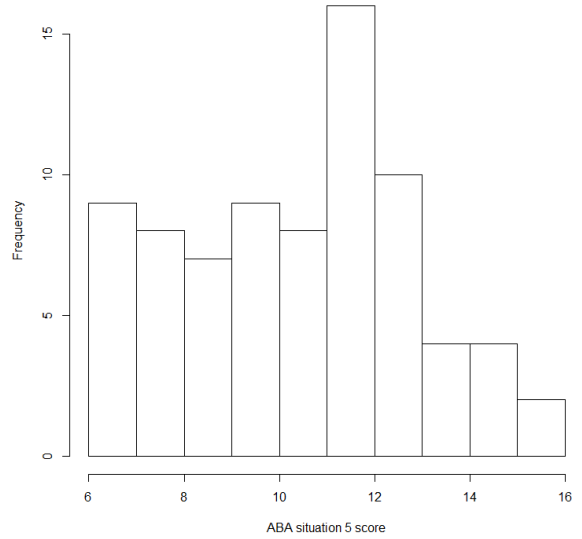
Antibullying attitudes sit. 3 distribution



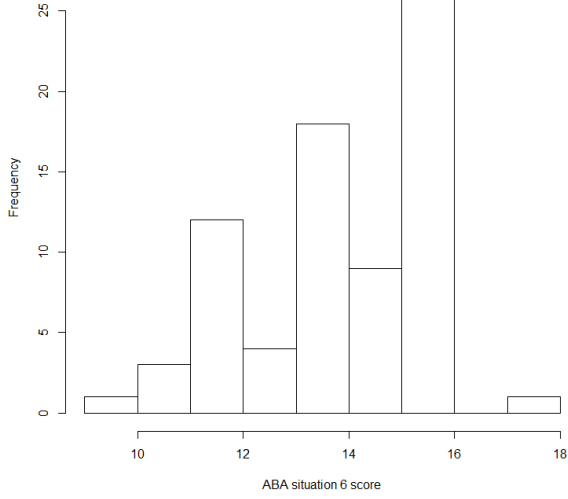
Antibullying attitudes sit. 4 distribution



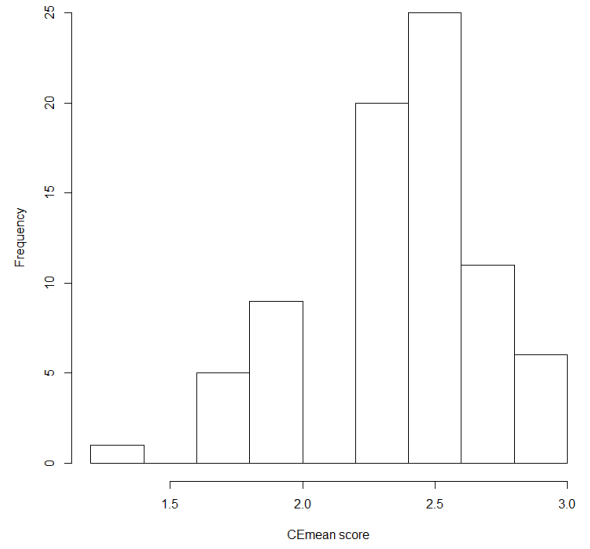
Antibullying attitudes sit. 5 distribution



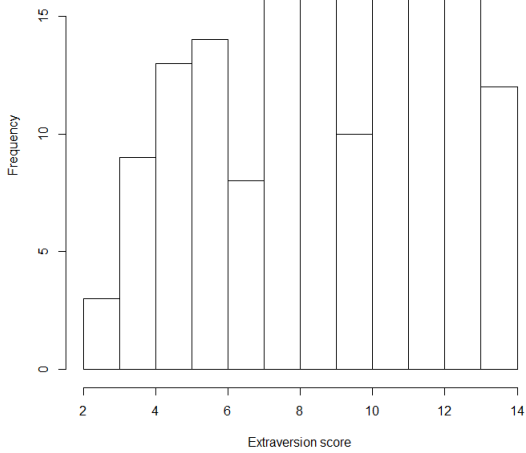
Antibullying attitudes sit. 6 distribution



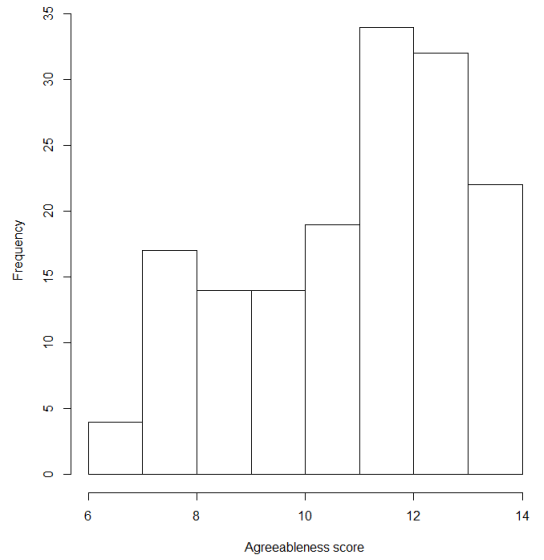
Civic engagement distribution

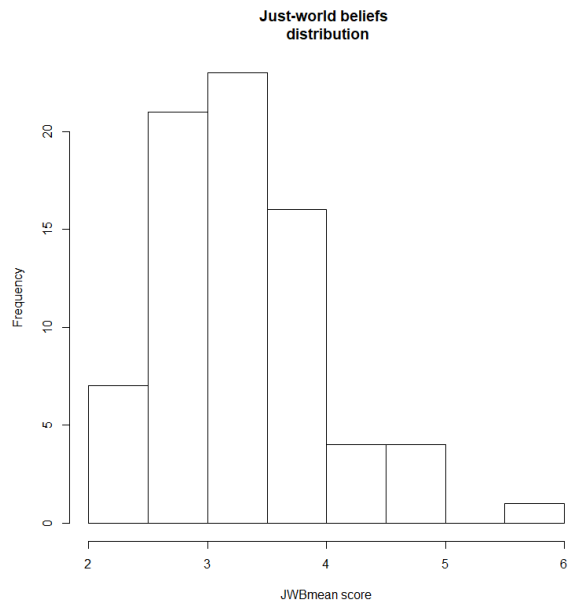
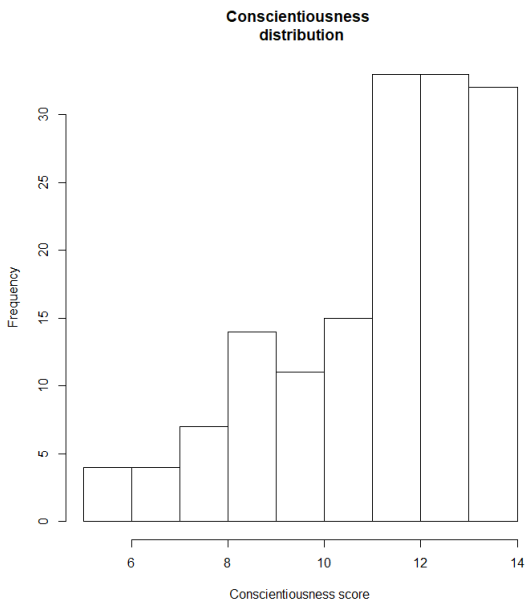
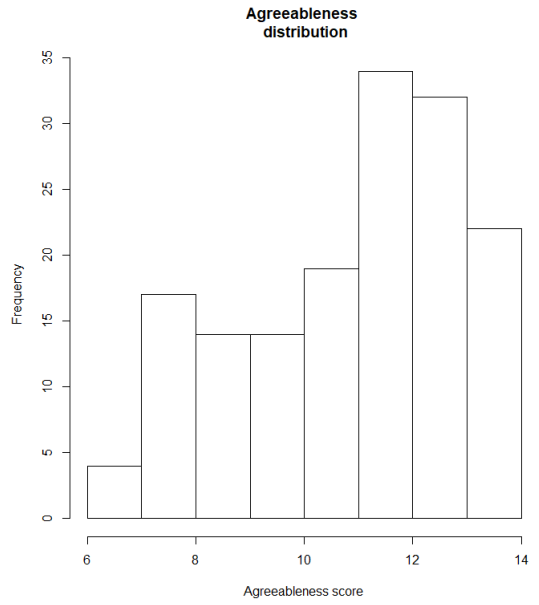
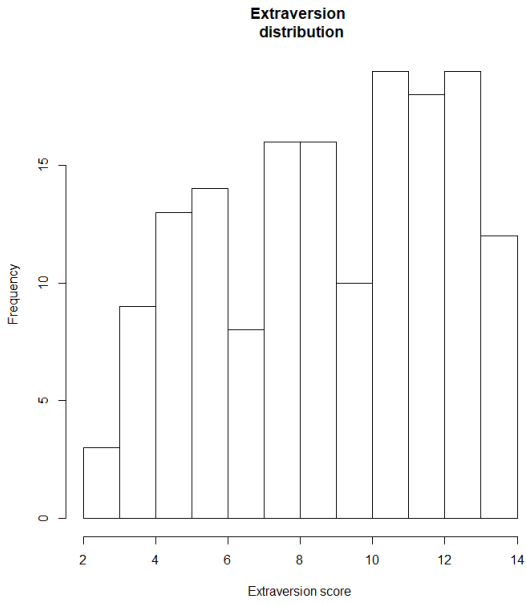


Extraversion distribution

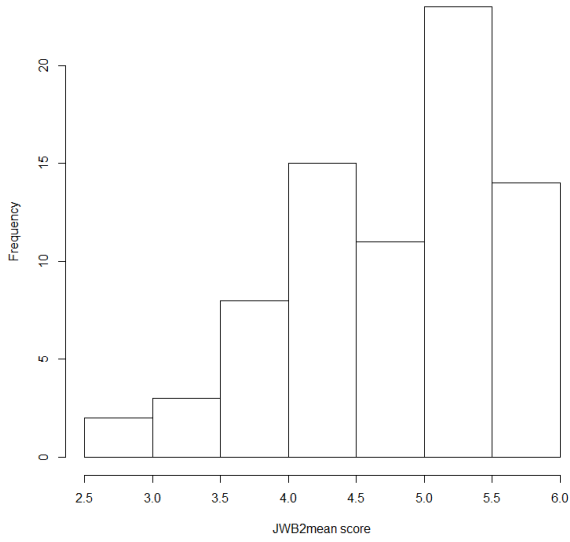


Agreeableness distribution

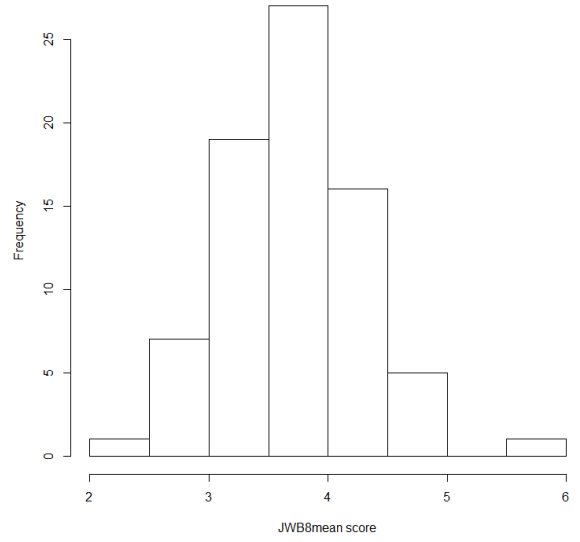




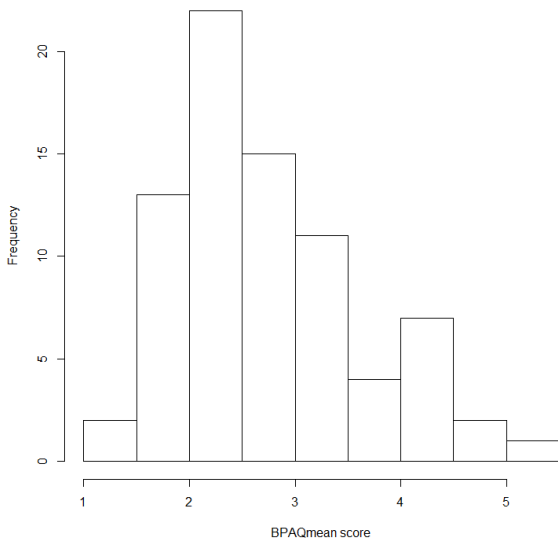
Just-world beliefs (2 new items) distribution



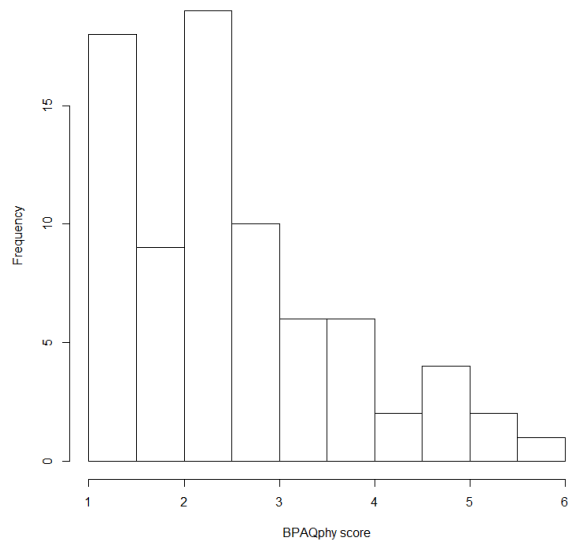
Just-world beliefs (all 8 items) distribution

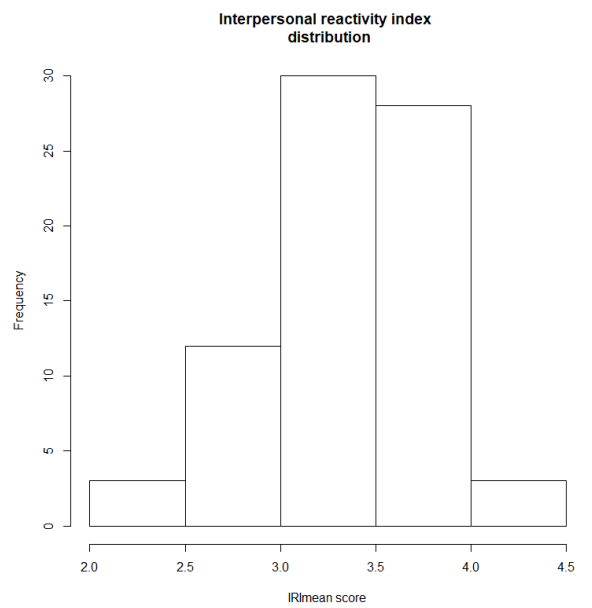
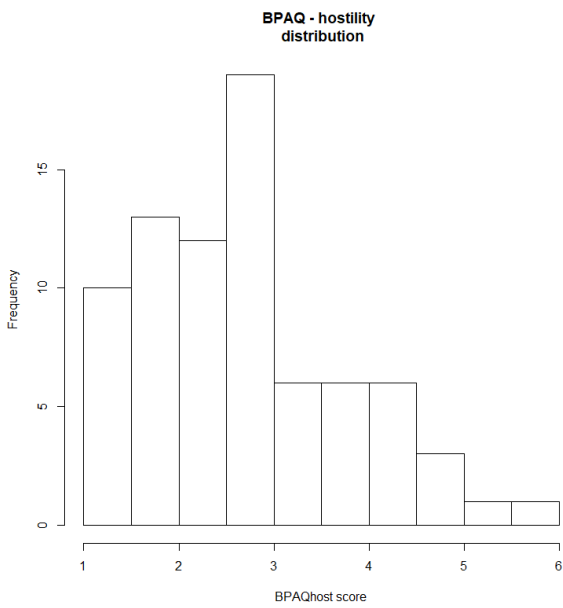
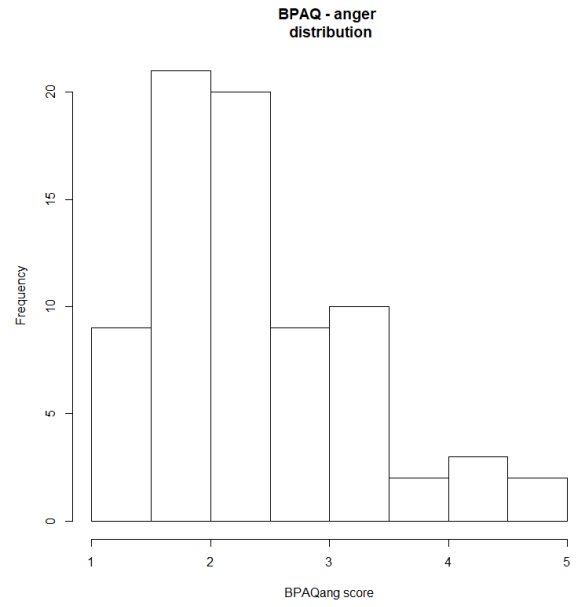
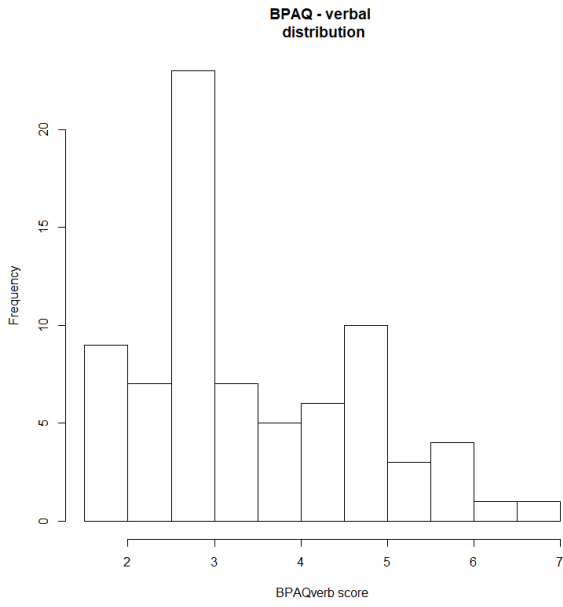


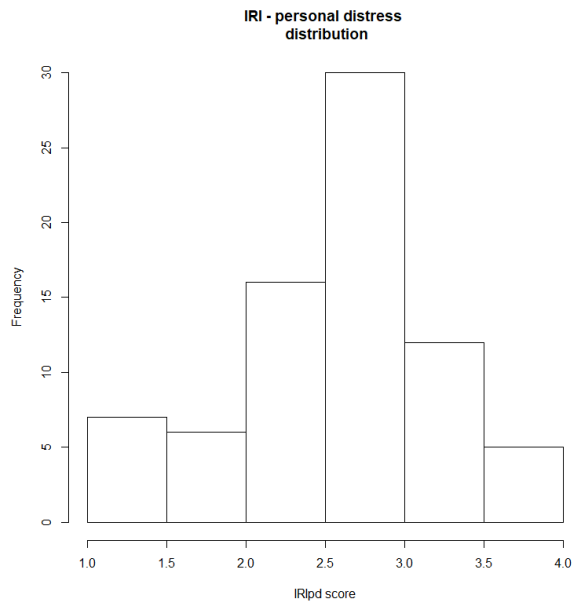
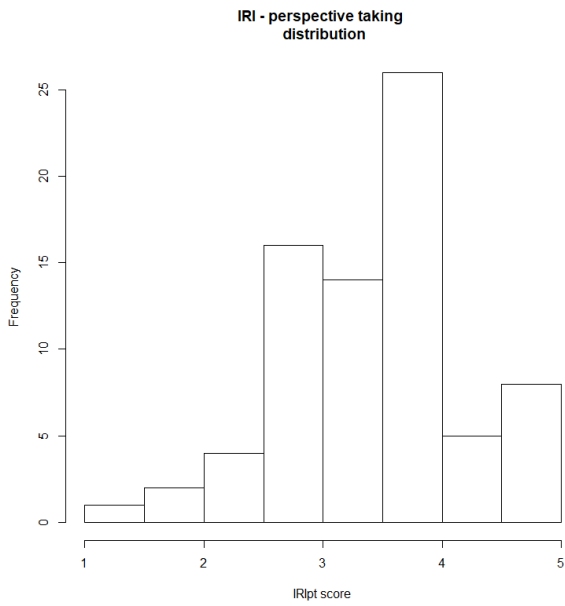
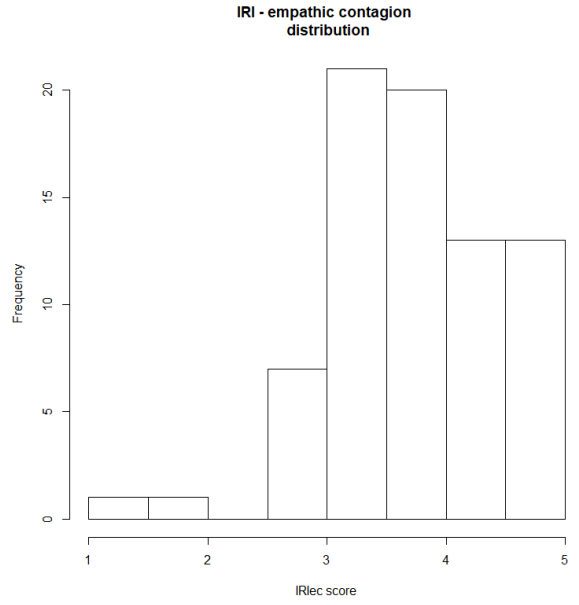
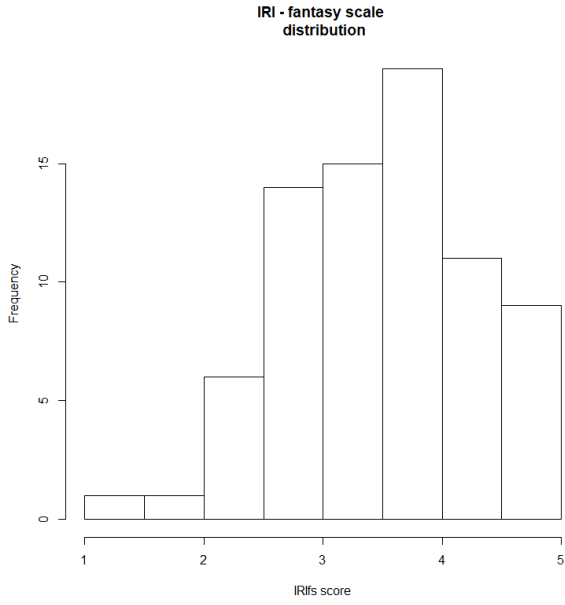
Buss-Perry aggression questionnaire distribution



BPAQ - physical distribution







APPENDIX M. PROSOCIAL AGGRESSION TASK INSTRUCTIONS

Interactions with Others Task (IOT) Instructions

In this part of the study, you will interact with two other participants, who are in different labs. You will be observing a point exchange task in which you will act as an Observer. The task consists of ten rounds. For each round, the two players take turns selecting one of four different point exchange options. These options are listed below.

- Option A: The person gives themselves 50 points and gives their opponent 50 points.
- Option B: The person gives themselves 60 points and gives their opponent 30 points.
- Option C: The person gives themselves 40 points and gives their opponent 10 points.
- Option D: The person gives themselves 40 points and gives their opponent 60 points.

The two players see four choices: A (50/50), B (60/30), C (40/10), and D (40/60).

Showing Player 2's choice.

(points)
A
B
C
D

You Earn:	50	60	40	40
Other Earns:	50	30	10	60

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
1	A: 100	A: 100
Totals		

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

After each round, you will be given the opportunity to select one of four options, which will take points away from Participant 1. You may also choose not to take any points away. Once you have made your selection for Participant 1, you can then make your selection for Participant 2. The available options are listed below:

- Option A: Take 0 points away from the participant.
- Option B: Take 10 points away from the participant.
- Option C: Take 25 points away from the participant.
- Option D: Take 50 points away from the participant.

In this example, **Player 1 chose option A (50/50)**, and **Player 2 chose option A (50/50)** as well. Now the Observer has four options which deduct different numbers of points:

A (-0), B (-10), C (-25), D (-50) from Participant #1.

Once you have made your choice, click “Submit your selection” to finalize your decision.

Removing points from Player 1 now.

(points) A B C D

Remove:	0	-10	-25	-50
---------	---	-----	-----	-----

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
1	A: 100	A: 100
Post 1		
Totals	100	100

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

There will be a total of 10 rounds in the task. Please inform the experimenter once the task is finished.

Points for this Round:

Points for this Round			
Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

- On the bottom right hand side of the screen, the points for each individual round are listed.
- The top row displays Player 1's choice A (50/50). Since Player 1 chose option A, 50 points are earned and 50 points are given to the other participant.
- The second row displays Player 2's choice, which is choice A (50/50) as well. Player 2 therefore earns 50 points and gives 50 points to the other participant.
- The Round Totals, for Player 1 and Player 2, add up to 100 points each, after round one.

Total Points Across All Rounds:

Total Points Across All Rounds		
Round	Player 1	Player 2
1	A: 100	A: 100
Post 1	-10	-10
Totals	90	90

- Displayed on the bottom left side of the screen are the Total Points Across All Rounds. In the first column Participant 1's points, for the first round, are displayed. He collected 100 points in round one.
- The row titled "Post 1" shows how many points the Observer deducted. In this case, the Observer deducted -10 points for each player.
- "Totals" displays the total points across all rounds. The image above illustrates the totals after the first round.

Example Task:

(1)

Showing Player 1's choice.

(points) A B C D

You Earn:	50	60	40	40
Other Earns:	50	30	10	60

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
Totals		

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2			
Round Total for Player 1:			
Round Total for Player 2:			

The first part of the task shows Player 1's choice. In this example, Player 1 chose option A, which will award himself 50 points and give 50 points to the other participant.

(2)

Showing Player 2's choice.

(points) A B C D

You Earn:	50	60	40	40
Other Earns:	50	30	10	60

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
1	A: 100	A: 100
Totals		

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

Player 2's choice is displayed. He chose option A, which will award himself 50 points and give 50 points to the other participant.

(3)

Removing points from Player 1 now.

(points) A B C D

Remove: 0 -10 -25 -50

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
1	A: 100	A: 100
Post 1	-10	
Totals	90	100

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

The Referee has now the opportunity to remove a specific amount of points from Player 1. In this example, the Referee chose Option B, deducting 10 points from Player 1. In the bottom left box, the Referee's choice is displayed under "Post 1", in the first column for Player 1.

(4)

Removing points from Player 2 now.

(points) A B C D

Remove: 0 -10 -25 -50

Submit your selection.

Total Points Across All Rounds

Round	Player 1	Player 2
1	A: 100	A: 100
Post 1	-10	-10
Totals	90	90

Points for this Round

Player	Earns	Gives	Choice
Player 1	50	50	A
Player 2	50	50	A
Round Total for Player 1:	100		
Round Total for Player 2:	100		

The Referee has now the opportunity to remove a specific amount of points from Player 2. In this example, the Referee chose Option B, deducting 10 points from Player 2. In the bottom left box, the Referee choice is displayed under "Post 1", in the second column for Player 2.

APPENDIX N. PROSOCIAL AGGRESSION TASK ROLE SELECTION SCREEN

Decision Making

Select a position:

[Player 1](#)

[Player 2](#)

[Observer](#)

APPENDIX O. PROSOCIAL AGGRESSION TASK IP ADDRESS SCREEN**Decision Making**

This computer's IP address is not registered for this role.

APPENDIX P. CODE USED FOR STUDY 1 ANALYSES

```

#Analyses for Pilot study and Study 1
#libraries: lm.beta effsize psych car

#Pilot study tests
Cond <- factor(GrovesDissPilot$Condition, labels=c("no provocation", "moderate
provocation", "high provocation"))
tapply(GrovesDissPilot$PA2, Cond, mean)
tapply(GrovesDissPilot$PA2, Cond, sd)

anova <- aov(PA2~Cond, dat=GrovesDissPilot)
summary(anova)
TukeyHSD(anova)

#Reverse coding the PA measure
CGstudy1$PA2 <- CGstudy1$PA*-1

#creating subscales for the BPAQ
CGstudy1$BPAQphy <- (BPAQ1+ BPAQ2+ BPAQ3+ BPAQ4+ BPAQ5+ BPAQ6+
BPAQ7+ BPAQ8+BPAQ9)/9
CGstudy1$BPAQverb <- (BPAQ10 +BPAQ11 +BPAQ12 +BPAQ13 +BPAQ14)/5
CGstudy1$BPAQang <- (BPAQ15 +BPAQ16 +BPAQ17 +BPAQ18 +BPAQ19 +BPAQ20
+BPAQ21)/7
CGstudy1$BPAQhost <- (BPAQ22 +BPAQ23 +BPAQ24 +BPAQ25 +BPAQ26 +BPAQ27
+BPAQ28 +BPAQ29)/8

#Producing histograms of measures in victim present condition

hist(program1$PA2, main="Prosocial aggression \n distribution", xlab="PA score")
hist(program1$VVGexpo, main="Violent video game exposure \n distribution",
xlab="VVGexpo score")
hist(program1$VTVexpo, main="Violent television exposure \n distribution",
xlab="VTVexpo score")
hist(program1$PVGexpo, main="Prosocial video game exposure \n distribution",
xlab="PVGexpo score")
hist(program1$PTVexpo, main="Prosocial television exposure \n distribution",
xlab="PTVexpo score")
hist(program1$EAmean, main="Empathic anger \n distribution", xlab="EA score")
hist(program1$ABAMean, main="Antibullying attitudes \n distribution", xlab="ABA score")
hist(program1$ABA1, main="Antibullying attitudes sit. 1 \n distribution", xlab="ABA
situation 1 score")
hist(program1$ABA2, main="Antibullying attitudes sit. 2 \n distribution", xlab="ABA
situation 2 score")
hist(program1$ABA3, main="Antibullying attitudes sit. 3 \n distribution", xlab="ABA
situation 3 score")

```

```

hist(program1$ABA4, main="Antibullying attitudes sit. 4 \n distribution", xlab="ABA
situation 4 score")
hist(program1$ABA5, main="Antibullying attitudes sit. 5 \n distribution", xlab="ABA
situation 5 score")
hist(program1$ABA6, main="Antibullying attitudes sit. 6 \n distribution", xlab="ABA
situation 6 score")
hist(program1$CEmean, main="Civic engagement \n distribution", xlab="CEmean score")
hist(program1$JWBmean, main="Just-world beliefs \n distribution", xlab="JWBmean
score")
hist(program1$JWB2mean, main="Just-world beliefs (2 new items) \n distribution",
xlab="JWB2mean score")
hist(program1$JWB8mean, main="Just-world beliefs (all 8 items) \n distribution",
xlab="JWB8mean score")
hist(program1$BPAQmean, main="Buss-Perry aggression questionnaire \n distribution",
xlab="BPAQmean score")
hist(program1$BPAQphy, main="BPAQ - physical \n distribution", xlab="BPAQphy score")
hist(program1$BPAQverb, main="BPAQ - verbal \n distribution", xlab="BPAQverb score")
hist(program1$BPAQang, main="BPAQ - anger \n distribution", xlab="BPAQang score")
hist(program1$BPAQhost, main="BPAQ - hostility \n distribution", xlab="BPAQhost
score")
hist(program1$IRImean, main="Interpersonal reactivity index \n distribution",
xlab="IRImean score")
hist(program1$IRImeanFS, main="IRI - fantasy scale \n distribution", xlab="IRIfs score")
hist(program1$IRImeanEC, main="IRI - empathic contagion \n distribution", xlab="IRIec
score")
hist(program1$IRImeanPT, main="IRI - perspective taking \n distribution", xlab="IRIpt
score")
hist(program1$IRImeanPD, main="IRI - personal distress \n distribution", xlab="IRIpd
score")

```

#Creating the simple regression formulae

```

PVGexpolm <- lm(data=CGstudy1, PA2~PVGexpo)
PTVexpolm <- lm(data=CGstudy1, PA2~PTVexpo)
EAmeanlm <- lm(data=CGstudy1, PA2~EAmean)
ABAmeanlm <- lm(data=CGstudy1, PA2~ABAmean)
CEmeanlm <- lm(data=CGstudy1, PA2~CEmean)
JWBmeanlm <- lm(data=CGstudy1, PA2~JWBmean)
JWB8meanlm <- lm(data=CGstudy1, PA2~JWB8mean)
JWB2meanlm <- lm(data=CGstudy1, PA2~JWB2mean)
BPAQmeanlm <- lm(data=CGstudy1, PA2~BPAQmean)
IRImeanlm <- lm(data=CGstudy1, PA2~IRImean)
IRImeanFSlm <- lm(data=CGstudy1, PA2~IRImeanFS)
IRImeanEClm <- lm(data=CGstudy1, PA2~IRImeanEC)
IRImeanPTlm <- lm(data=CGstudy1, PA2~IRImeanPT)
IRImeanPDlm <- lm(data=CGstudy1, PA2~IRImeanPD)

```

```

BPAQphylm <- lm(data=CGstudy1, PA2~BPAQphy)
BPAQverblm <- lm(data=CGstudy1, PA2~BPAQverb)
BPAQanglm <- lm(data=CGstudy1, PA2~BPAQang)
BPAQhostlm <- lm(data=CGstudy1, PA2~BPAQhost)

```

```

PVGexpolmbeta <- lm.beta(PVGexpolm)
PTVexpolmbeta <- lm.beta(PTVexpolm)
EAmeanlmbeta <- lm.beta(EAmeanlm)
ABAmeanlmbeta <- lm.beta(ABAmeanlm)
CEmeanlmbeta <- lm.beta(CEmeanlm)
JWBmeanlmbeta <- lm.beta(JWBmeanlm)
JWB8meanlmbeta <- lm.beta(JWB8meanlm)
JWB2meanlmbeta <- lm.beta(JWB2meanlm)
BPAQmeanlmbeta <- lm.beta(BPAQmeanlm)
IRImeanlmbeta <- lm.beta(IRImeanlm)
IRImeanFSlmbeta <- lm.beta(IRImeanFSlm)
IRImeanEClmbeta <- lm.beta(IRImeanEClm)
IRImeanPTlmbeta <- lm.beta(IRImeanPTlm)
IRImeanPDIlmbeta <- lm.beta(IRImeanPDlm)

```

```

BPAQphylmbeta <- lm.beta(BPAQphylm)
BPAQverblmbeta <- lm.beta(BPAQverblm)
BPAQanglmbeta <- lm.beta(BPAQanglm)
BPAQhostlmbeta <- lm.beta(BPAQhostlm)

```

```

summary(VVGexpolmbeta)
summary(VTVexpolmbeta)
summary(PVGexpolmbeta)
summary(PTVexpolmbeta)
summary(EAmeanlmbeta)
summary(ABAmeanlmbeta)
summary(CEmeanlmbeta)
summary(JWBmeanlmbeta)
summary(JWB8meanlmbeta)
summary(JWB2meanlmbeta)
summary(BPAQmeanlmbeta)
summary(IRImeanlmbeta)
summary(IRImeanFSlmbeta)
summary(IRImeanEClmbeta)
summary(IRImeanPTlmbeta)
summary(IRImeanPDIlmbeta)
summary(BPAQphylmbeta)
summary(BPAQverblmbeta)
summary(BPAQanglmbeta)
summary(BPAQhostlmbeta)

```

```
#program 1 (victimization present; Conditions 1 & 2)
program1 <- subset(CGstudy1, Condition < 3)
```

```
program1$BPAQphy <- (program1$BPAQ1+ program1$BPAQ2+ program1$BPAQ3+
program1$BPAQ4+ program1$BPAQ5+ program1$BPAQ6+ program1$BPAQ7+
program1$BPAQ8+program1$BPAQ9)/9
program1$BPAQverb <- (program1$BPAQ10 +program1$BPAQ11 +program1$BPAQ12
+program1$BPAQ13 +program1$BPAQ14)/5
program1$BPAQang <- (program1$BPAQ15 +program1$BPAQ16 +program1$BPAQ17
+program1$BPAQ18 +program1$BPAQ19 +program1$BPAQ20 +program1$BPAQ21)/7
program1$BPAQhost <- (program1$BPAQ22 +program1$BPAQ23 +program1$BPAQ24
+program1$BPAQ25 +program1$BPAQ26 +program1$BPAQ27 +program1$BPAQ28
+program1$BPAQ29)/8
```

```
program1$ABA1 <- (program1$ABA1.1+ program1$ABA1.2 +program1$ABA1.3+
program1$ABA1.4)
program1$ABA2 <- (program1$ABA2.1+ program1$ABA2.2 +program1$ABA2.3+
program1$ABA2.4)
program1$ABA3 <- (program1$ABA3.1+ program1$ABA3.2 +program1$ABA3.3+
program1$ABA3.4)
program1$ABA4 <- (program1$ABA4.1+ program1$ABA4.2 +program1$ABA4.3+
program1$ABA4.4)
program1$ABA5 <- (program1$ABA5.1+ program1$ABA5.2 +program1$ABA5.3+
program1$ABA5.4)
program1$ABA6 <- (program1$ABA6.1+ program1$ABA6.2 +program1$ABA6.3+
program1$ABA6.4)
```

```
#Constructing the models
```

```
VVGexpolmC1 <- lm(data=program1, PA2~VVGexpo)
VTVexpolmC1 <- lm(data=program1, PA2~VTVexpo)
PVGexpolmC1 <- lm(data=program1, PA2~PVGexpo)
PTVexpolmC1 <- lm(data=program1, PA2~PTVexpo)
EAmeanlmC1 <- lm(data=program1, PA2~EAmean)
ABAMeanlmC1 <- lm(data=program1, PA2~ABAMean)
CEmeanlmC1 <- lm(data=program1, PA2~CEmean)
JWBmeanlmC1 <- lm(data=program1, PA2~JWBmean)
JWB8meanlmC1 <- lm(data=program1, PA2~JWB8mean)
JWB2meanlmC1 <- lm(data=program1, PA2~JWB2mean)
BPAQmeanlmC1 <- lm(data=program1, PA2~BPAQmean)
IRImeanlmC1 <- lm(data=program1, PA2~IRImean)
IRImeanFSlmC1 <- lm(data=program1, PA2~IRImeanFS)
IRImeanEClmC1 <- lm(data=program1, PA2~IRImeanEC)
IRImeanPTlmC1 <- lm(data=program1, PA2~IRImeanPT)
IRImeanPDlmC1 <- lm(data=program1, PA2~IRImeanPD)
```

```

ABA1lmC1 <- lm(data=program1, PA2~ABA1)
ABA2lmC1 <- lm(data=program1, PA2~ABA2)
ABA3lmC1 <- lm(data=program1, PA2~ABA3)
ABA4lmC1 <- lm(data=program1, PA2~ABA4)
ABA5lmC1 <- lm(data=program1, PA2~ABA5)
ABA6lmC1 <- lm(data=program1, PA2~ABA6)
BPAQphylm <- lm(data=program1, PA2~BPAQphy)
BPAQverblm <- lm(data=program1, PA2~BPAQverb)
BPAQanglm <- lm(data=program1, PA2~BPAQang)
BPAQhostlm <- lm(data=program1, PA2~BPAQhost)

```

```

#Converting them to lm.beta formulas in order to provide standardized betas
VVGexpolmC1betaC1 <- lm.beta(VVGexpolmC1)
VTVexpolmC1betaC1 <- lm.beta(VTVexpolmC1)
PVGexpolmC1betaC1 <- lm.beta(PVGexpolmC1)
PTVexpolmC1betaC1 <- lm.beta(PTVexpolmC1)
EAmeanlmC1betaC1 <- lm.beta(EAmeanlmC1)
ABAMeanlmC1betaC1 <- lm.beta(ABAMeanlmC1)
CEmeanlmC1betaC1 <- lm.beta(CEmeanlmC1)
JWBmeanlmC1betaC1 <- lm.beta(JWBmeanlmC1)
JWB8meanlmC1betaC1 <- lm.beta(JWB8meanlmC1)
JWB2meanlmC1betaC1 <- lm.beta(JWB2meanlmC1)
BPAQmeanlmC1betaC1 <- lm.beta(BPAQmeanlmC1)
IRImeanlmC1betaC1 <- lm.beta(IRImeanlmC1)
IRImeanFSlmC1betaC1 <- lm.beta(IRImeanFSlmC1)
IRImeanEClmC1betaC1 <- lm.beta(IRImeanEClmC1)
IRImeanPTlmC1betaC1 <- lm.beta(IRImeanPTlmC1)
IRImeanPDlmC1betaC1 <- lm.beta(IRImeanPDlmC1)

```

```

BPAQphylmbetaC1 <- lm.beta(BPAQphylm)
BPAQverblmbetaC1 <- lm.beta(BPAQverblm)
BPAQanglmbetaC1 <- lm.beta(BPAQanglm)
BPAQhostlmbetaC1 <- lm.beta(BPAQhostlm)

```

```

ABA1lmC1beta <- lm.beta(ABA1lmC1)
ABA2lmC1beta <- lm.beta(ABA2lmC1)
ABA3lmC1beta <- lm.beta(ABA3lmC1)
ABA4lmC1beta <- lm.beta(ABA4lmC1)
ABA5lmC1beta <- lm.beta(ABA5lmC1)
ABA6lmC1beta <- lm.beta(ABA6lmC1)

```

```

summary(VVGexpolmC1betaC1)
summary(VTVexpolmC1betaC1)
summary(PVGexpolmC1betaC1)
summary(PTVexpolmC1betaC1)
summary(EAmeanlmC1betaC1)

```

```
summary(ABAmeanlmC1betaC1)
summary(CEmeanlmC1betaC1)
summary(JWBmeanlmC1betaC1)
summary(JWB8meanlmC1betaC1)
summary(JWB2meanlmC1betaC1)
summary(BPAQmeanlmC1betaC1)
summary(IRImeanlmC1betaC1)
summary(IRImeanFSlmC1betaC1)
summary(IRImeanEClmC1betaC1)
summary(IRImeanPTlmC1betaC1)
summary(IRImeanPDlmC1betaC1)
summary(BPAQphylmbetaC1)
summary(BPAQverblmbetaC1)
summary(BPAQanglmbetaC1)
summary(BPAQhostlmbetaC1)
summary(ABA1lmC1beta)
summary(ABA2lmC1beta)
summary(ABA3lmC1beta)
summary(ABA4lmC1beta)
summary(ABA5lmC1beta)
summary(ABA6lmC1beta)
```

```
#alphas
```

```
EAscale <- data.frame(EA1, EA2, EA3, EA4, EA5, EA6, EA7)
alpha(EAscale)
```

```
ABAscale <- data.frame(ABA1.1,ABA1.2,ABA1.3,ABA1.4,ABA2.1,ABA2.2,
  ABA2.3,ABA2.4,ABA3.1,ABA3.2,ABA3.3,ABA3.4,
  ABA4.1,ABA4.2,ABA4.3,ABA4.4,ABA5.1,ABA5.2,
  ABA5.3,ABA5.4,ABA6.1,ABA6.2,ABA6.3,ABA6.4)
alpha(ABAscale)
```

```
CEscale <- data.frame(CE1, CE2, CE3, CE4)
alpha(CEscale)
```

```
JWBscale <- data.frame(JWB1, JWB2, JWB3, JWB4, JWB5, JWB6)
JWBscale8 <- data.frame(JWB1, JWB2, JWB3, JWB4, JWB5, JWB6, JWB7, JWB8)
```

```
alpha(JWBscale)
alpha(JWBscale8)
```

```
BPAQscale <- data.frame(BPAQ1,BPAQ2,BPAQ3,BPAQ4,BPAQ5,
  BPAQ6,BPAQ7,BPAQ8,BPAQ9,BPAQ10,
  BPAQ11,BPAQ12,BPAQ13,BPAQ14,BPAQ15,
  BPAQ16,BPAQ17,BPAQ18,BPAQ19,BPAQ20,
  BPAQ21,BPAQ22,BPAQ23,BPAQ24,BPAQ25,
```

```

BPAQ26,BPAQ27,BPAQ28,BPAQ29)
alpha(BPAQscale)

IRIScale <- data.frame(IRI1,IRI2,IRI3,IRI4,IRI5,
  IRI6,IRI7,IRI8,IRI9,IRI10,
  IRI11,IRI12,IRI13,IRI14,IRI15,
  IRI16,IRI17,IRI18,IRI19,IRI20,
  IRI21,IRI22,IRI23,IRI24,IRI25,
  IRI26,IRI27,IRI28,IRI29,IRI30)
alpha(IRIScale)

#Creating room group assignments, means, SDs, t-test, and plot

CGstudy1$roomCond <- ifelse(CGstudy1$Condition==1 | CGstudy1$Condition==3,1,0)
tapply(PA2, CGstudy1$roomCond, mean)
tapply(PA2, CGstudy1$roomCond, sd)
t.test(PA2~CGstudy1$roomCond)
roomFact <- factor(CGstudy1$roomCond, labels=c("surveys first", "task first"))
boxplot(PA2~roomFact
  , data=CGstudy1, xlab = "room condition", ylab="Prosocial Aggression", main="Effect of
Room Assignment on Prosocial Aggression")

#Creating victimization present/absent factor
CGstudy1$victimPresent <- ifelse(CGstudy1$Condition < 3, 1, 0)
victimFactor <- factor(CGstudy1$victimPresent,
  levels=c(0,1),labels=c("no victimization", "victimization present"))
boxplot(PA2~victimFactor,
  data=CGstudy1, xlab = "victimization presence condition",
  ylab="Prosocial Aggression",
  main="Effect of Victim Presence on Prosocial Aggression")
#testing variance differences
var.test(PA2~victimFactor)
#Conducting t-test of Study 1 manipulation - Welch's used because of unequal variances
t.test(PA2~victimFactor)
cohen.d(PA2, victimFactor)
#SD,means of groups, and effect size calculation
tapply(PA2, victimFactor, mean)
tapply(PA2, victimFactor, sd)

#Plotting group differences
boxplot(PA2~victimFactor, data=program1, xlab = "victimization condition",
  ylab="Prosocial Aggression", main="Effect of Victimization on Prosocial Aggression")

#transformations
program1$PA3 <- sqrt(program1$PA2+100)
program1$PA3 <- log(program1$PA2+100)

```



```
VVGexpolmC13 <- lm(data=program1, PA3~VVGexpo)
VTVexpolmC13 <- lm(data=program1, PA3~VTVexpo)
PVGexpolmC13 <- lm(data=program1, PA3~PVGexpo)
PTVexpolmC13 <- lm(data=program1, PA3~PTVexpo)
EAmeanlmC13 <- lm(data=program1, PA3~EAmean)
ABAmeanlmC13 <- lm(data=program1, PA3~ABAmean)
CEmeanlmC13 <- lm(data=program1, PA3~CEmean)
JWBmeanlmC13 <- lm(data=program1, PA3~JWBmean)
JWB8meanlmC13 <- lm(data=program1, PA3~JWB8mean)
JWB2meanlmC13 <- lm(data=program1, PA3~JWB2mean)
BPAQmeanlmC13 <- lm(data=program1, PA3~BPAQmean)
IRImeanlmC13 <- lm(data=program1, PA3~IRImean)
IRImeanFSlmC13 <- lm(data=program1, PA3~IRImeanFS)
IRImeanEClmC13 <- lm(data=program1, PA3~IRImeanEC)
IRImeanPTlmC13 <- lm(data=program1, PA3~IRImeanPT)
IRImeanPDlmC13 <- lm(data=program1, PA3~IRImeanPD)
```

```
ABA1lmC13 <- lm(data=program1, PA3~ABA1)
ABA2lmC13 <- lm(data=program1, PA3~ABA2)
ABA3lmC13 <- lm(data=program1, PA3~ABA3)
ABA4lmC13 <- lm(data=program1, PA3~ABA4)
ABA5lmC13 <- lm(data=program1, PA3~ABA5)
ABA6lmC13 <- lm(data=program1, PA3~ABA6)
```

```
BPAQphylm3 <- lm(data=program1, PA3~BPAQphy)
BPAQverblm3 <- lm(data=program1, PA3~BPAQverb)
BPAQanglm3 <- lm(data=program1, PA3~BPAQang)
BPAQhostlm3 <- lm(data=program1, PA3~BPAQhost)
# to lm.beta
VVGexpolmC1betaC13 <- lm.beta(VVGexpolmC13)
VTVexpolmC1betaC13 <- lm.beta(VTVexpolmC13)
PVGexpolmC1betaC13 <- lm.beta(PVGexpolmC13)
PTVexpolmC1betaC13 <- lm.beta(PTVexpolmC13)
EAmeanlmC1betaC13 <- lm.beta(EAmeanlmC13)
ABAmeanlmC1betaC13 <- lm.beta(ABAmeanlmC13)
CEmeanlmC1betaC13 <- lm.beta(CEmeanlmC13)
JWBmeanlmC1betaC13 <- lm.beta(JWBmeanlmC13)
JWB8meanlmC1betaC13 <- lm.beta(JWB8meanlmC13)
JWB2meanlmC1betaC13 <- lm.beta(JWB2meanlmC13)
BPAQmeanlmC1betaC13 <- lm.beta(BPAQmeanlmC13)
IRImeanlmC1betaC13 <- lm.beta(IRImeanlmC13)
IRImeanFSlmC1betaC13 <- lm.beta(IRImeanFSlmC13)
IRImeanEClmC1betaC13 <- lm.beta(IRImeanEClmC13)
IRImeanPTlmC1betaC13 <- lm.beta(IRImeanPTlmC13)
IRImeanPDlmC1betaC13 <- lm.beta(IRImeanPDlmC13)
```



```
BPAQphylmbetaC13 <- lm.beta(BPAQphylm3)
BPAQverblmbetaC13 <- lm.beta(BPAQverblm3)
BPAQanglmbetaC13 <- lm.beta(BPAQanglm3)
BPAQhostlmbetaC13 <- lm.beta(BPAQhostlm3)
```

```
ABA1lmC1beta3 <- lm.beta(ABA1lmC13)
ABA2lmC1beta3 <- lm.beta(ABA2lmC13)
ABA3lmC1beta3 <- lm.beta(ABA3lmC13)
ABA4lmC1beta3 <- lm.beta(ABA4lmC13)
ABA5lmC1beta3 <- lm.beta(ABA5lmC13)
ABA6lmC1beta3 <- lm.beta(ABA6lmC13)
```

```
summary(VVGexpolmC1betaC13)
summary(VTVexpolmC1betaC13)
summary(PVGexpolmC1betaC13)
summary(PTVexpolmC1betaC13)
summary(EAmeanlmC1betaC13)
summary(ABAMeanlmC1betaC13)
summary(CEmeanlmC1betaC13)
summary(JWBmeanlmC1betaC13)
summary(JWB8meanlmC1betaC13)
summary(JWB2meanlmC1betaC13)
summary(BPAQmeanlmC1betaC13)
summary(IRImeanlmC1betaC13)
summary(IRImeanFSlmC1betaC13)
summary(IRImeanEClmC1betaC13)
summary(IRImeanPTlmC1betaC13)
summary(IRImeanPDlmC1betaC13)
```

```
summary(BPAQphylmbetaC13)
summary(BPAQverblmbetaC13)
summary(BPAQanglmbetaC13)
summary(BPAQhostlmbetaC13)
```

```
summary(ABA1lmC1beta3)
summary(ABA2lmC1beta3)
summary(ABA3lmC1beta3)
summary(ABA4lmC1beta3)
summary(ABA5lmC1beta3)
summary(ABA6lmC1beta3)
```

APPENDIX Q. STUDY 2 DATA CLEANING PROCEDURE

Raw data downloaded from Qualtrics – labeled “Groves - diss - RAW DATA - numeric - Communications study_June 3, 2018_20.18” (starting $N = 222$; This would be considered the 1.0 document). Only changes made to this file were to remove the two unnecessary header rows (row 2 and 3). The procedure for cleaning Study 2’s data was identical to Study 1.

- 1.1** – “Groves – diss2 - missing data removed 1.1” (resulting $N = 176$) – Forty-six cases in this file had no data and were therefore deleted. These cases were due to either technical errors (e.g., failure to enter the correct data into beginning page of survey -> restart survey), survey tests (e.g., experimenter entered data as a test of the survey), or participant no-shows (i.e., survey started, but participant did not arrive).
- a. Total of 46 removed

- 1.2** – “Groves – diss2 – suspicious Ps removed 1.2” (resulting $N = 155$)

- a. Twenty participants were rated with suspicion scores of 5. Of these, 19 indicated they did not believe the other “participants” in the study were real and were therefore removed.

Table 1. *Suspicion rating = 5*

ID	RA note	Removal? (1=yes, 0=no)
990QA	Didn't think the players were real.	1
F5XJQB	She thought the players weren't real and that the whole thing was simulated.	1
2CRSA	Didn't believe the other participants were real	1
XQCIB	Thought players weren't real.	1
FQTV A	He did not think the participants were real	1
F05GZB	While not specifically saying what about the supposed person, I think it's still relevant as her responses would then but unnatural.	1
FK72EA	The participant did not think that the other participants were real.	1
FEG40B	She brought up how she didn't think the participants were real in the study and it was just designed to look that way.	1

FVBYIB	Thought something was a little weird but couldn't pinpoint anything specific	0
374DB	Participant admitted to not interacting as observer in a genuine manner, did not register that other participants could be real.	1
SX8RB	he didn't think the people were real. Also half way through the study he had to go to the bathroom really bad so I let him leave and come back for a few mins.	1
FQI4BA	If she thought the people weren't real, she likely didn't take the task seriously.	1
Q2VXA	Definitely thought players were computers	1
7DM5B	Thought that the other participants might not be real.	1
L8CPA	Thought they were robots	1
FKOMUA	Yes, thought that there weren't actually other people. If the participant didn't think she was interacting with real people then her responses were not genuine.	1
FT96QA	Thought the other participants were not real	1
FGAKRA	She indicated that the other participants in the study were not real because she just had a suspicion that they weren't. She also said that the more she participates in psychology studies, the more she distrusts that the deception / condition is "real".	1
2QIWA	Yes, she didn't think there were other people interacting, all fake. I think this would have affect her responses because if you don't think the interaction is real, you might respond differently than if it was	1

- b. Another 8 participants were recorded with suspicion ratings of 4. Of these, two participants indicated suspecting that the other players were computer controlled and were removed.
- c. A remaining 3 participants were given suspicion ratings of 3. Inspection of the experimenter notes did not indicate that suspicion was a problem in any remaining cases.
 - i. Total of 21 participants removed.

Table 2. *Suspicion Rating = 4*

ID	RA note	Removal? (1=yes, 0=no)
F2E57A	She suspected a player was a computer since it never responded when the other player was "aggressive" towards it.	1
FOM1HA	She felt like Julie was influenced by an outside source so that is why she started to not cooperate. It relates to Julie's choices, but I don't think the participant made the decisions she did based on Julie's situation.	0
F9419B	Thought she was supposed to react towards a certain participant but didn't give any indication that she thought the other players weren't real	0
EV50B	thought maybe we were measuring reaction to levels of competitiveness	0
FY924A	Participant felt as though maybe it was computer controlled, that the participants had already done it and that's why the choices were coming in so fast, or that the other players wanted to get done quickly, so she didn't really pay much attention to her choices, but rather just rushed through it.	1
MVDDA	Questioned the purpose of the task. Also did not want responses to be wrote down.	0
2J4PB	They talked about how the perspective we take and the response we read had something to do with our interaction - didn't give it that much thought though I don't think her being the observer did affect the results. I mean she thought it was meant for her to be in that condition, but she did continue to think the other participants were real. That being said, she may have figured out her	0
F0M3FB	position wasn't random, but she definitely did the task correctly for condition B and probably didn't change her responses or behavior because of that. She also said she tried her best to keep them even, used terms like "aggressive one" and "cooperative one"	0

1.3 – “Groves – diss2 – confused Ps removed 1.3” (resulting $N = 147$)

- a. A column was created to the right of the “Did you find any of the study instructions confusing?” column. Cases were coded as 1 to be removed if a) experimenters indicated that the participant seemed significantly confused about study procedures or b) study procedures were not followed as indicated in the confusion and suspicion notes.

Table 3. *Confused participant/procedure error removals*

ID	“Did you find any of the study instructions confusing?”	“Did you think that there was anything strange or unusual about the study? Anything we might not be telling you?”	“Provide justification for your suspicion rating.”
EV50B	Yes, the survey. (He accidentally took it before the task)	thought maybe we were measuring reaction to levels of competitiveness	thought maybe we were measuring reaction to levels of competitiveness
OPUVA	Confused about the point system	General suspicion about the study	Generally suspicious since it was a psych study. Nothing specific though

IHKAA	Forgot whose note he read	No	Not suspicious at all She didn't seem to care what was going on, she seem like she was in a hurry. Also the survey still continued to the questions about the interaction with the other participants without stopping. And she filled that portion out before doing the task.
FW6CDA	The task instructions were confusing, too many choices.	No.	Didn't give any reason to be suspicious. No reaction or stating that something was strange.
FI49MA	The task instructions were confusing.	I don't, no	No suspicion. They said that they had just randomly deducted points because, they didn't understand the task.
FVBYIB	Did not understand the game at all. he didn't understand the purpose of the raffle	no	
4NUQB	Kind of, did not really understand the task instructions and thought it was worded in a weird way	no	He didn't seem suspicious
F8JCEB	way	No	No suspicion

Note: Bolded content identifies information used to mark participants for removal.

- b. An additional column “TaskUnclear”, was created to identify instances where the participants noted confusion about the purpose of the task (not necessarily the procedure; usually in reference to not understanding what the observer is “supposed to do”). This column was created to the left of the “Did you find any of the study instructions confusing?” column. Participants were identified as “confused” (code = 1) when indicating clearly that they did not understand the purpose of the task. Those who indicated that they found the task “a little” or “a bit” confusing were coded as 0. Those who indicated that the task was confusing, but only at first, were also coded as 0. Thirteen participants indicated some degree of confusion about the purpose of the task. These participants were not removed.
- c. All cases listed in Table 3 were removed – information used to mark cases for exclusion is bolded.
 - i. Eight cases total were removed.

1.4 – “Groves – diss2 – DV calculations 1.4” (resulting $N = 147$; future files contain same N unless otherwise specified)

- a. The headers of the DV columns (BZ through CS) were truncated to make coding easier.
- b. A second set of columns was created to include the recoded DV measure so that it properly reflects the points removed (0, 10, 25, or 50, instead of the current code of 1, 2, 3, or 4)
 - i. Excel code for first case:

$$=IF(BZ2=1,0,IF(BZ2=2,10,IF(BZ2=3,25,IF(BZ2=4,50,""))))$$
 1. This was done because the differences between point values is non-linear, requiring that each response should not have equal weight in an aggregated analysis.
 2. After the columns were created, all cells were copied and pasted as text, removing the formulae)
- c. Next, the values removed from each participant were differenced for each round to create a metric of participants’ relative point removals for the two ostensible participant players. The resulting 10 columns (one for each trial) were created to the right of the original (raw) DV column data.
 - i. Excel code for first case, first trial: $=SUM(GQ2,-GR2)$
 - ii. Again, after the columns were created, all cells were copied and pasted as text.
- d. Finally, the primary DV operationalization was created by summing the ten columns, producing a total difference in number of points taken from Player 1 (victim) relative to Player 2 (bully). Again, negative values indicated that more points were taken away from Player 2 than from Player 1.
 - i. code for first case: $=SUM(IE2:IN2)$

1.5 – “Groves – diss2 – IV calculations 1.5”

- a. Four columns were provided by Qualtrics that identified participant essay conditions and needed to be condensed. A new column was created summing the four columns, this column was then used to calculate the vulnerability condition (current code: female vulnerable = 1, female non-vulnerable = 2, male vulnerable = 3, male non-vulnerable = 4; recoded so vulnerable = 1 and non-vulnerable = 0).
 - i. Summing column code: $=SUM(AA2:AE2)$
 - ii. Recode code: $=IF(AE2=4,0,IF(AE2=2,0,1))$
- b. Next, all variables were renamed to their final, analysis version.
 - i. Codebook file name: “Groves - diss - Study 2 Codebook”
- c. Next, the two columns currently identifying participant conditions (PerspCond and VulnCond) were combined into a 4-level IV column. This was done by creating 4 columns corresponding to each condition and then summing them.

- i. Cond1: =IF(AND(AA2=1,AK2=1),1,"")
- ii. Cond2: =IF(AND(AA2=1,AK2=0),2,"")
- iii. Cond3: =IF(AND(AA2=2,AK2=1),3,"")
- iv. Cond4: =IF(AND(AA2=2,AK2=0),4,"")
- v. Condition: =SUM(W2:Z2)
- vi. Therefore the condition values correspond to the following:
 1. = take other's perspective & target vulnerable
 2. = take other's perspective & target non-vulnerable
 3. = take objective perspective & target vulnerable
 4. = take objective perspective & target non-vulnerable

1.6 – “Groves – diss2 – random responding checks 1.6”

- a. Attentional and random responding were assessed by calculating the standard deviation for participants' scores for each scale (i.e., within-participant standard deviations across items).
- b. Two participants, (IDs: 5AV5B and F9KYZA) provided no responses for the Participant A essay ratings, producing an error when calculating their SD. Therefore, a score of 0 was imputed for these cases.
 - i. Note: Participants were able to complete items pertaining to Participant B's essay, but no participants actually read Participant B's essay. Therefore, a SD score was not calculated for this scale.
- c. As in Study 1, a TOT SDc score was calculated, providing a count of the number of scales (Participant A's task behavior, Participant B's task behavior, and Participant A's essay ratings) with standard deviation scores of zero.
- d. Seven participants had either 1 or 2 scales that they had provided invariant responses for. Because all of these scales are multidimensional (several of which are diametrically opposed), it is unlikely that invariant responses reflect true participant attitudes. These responses were, therefore, deleted.
 - i. Note, this alteration is reflected only in the version of the dataset with all values copied and pasted as text.

Table 4. *Invariant responding participant removals*

ID	TOT SDc score	Scales with SD of zero	Decision Made
F9KYZA	2	Part A essay, Part B behavior	Scores deleted
		Part A behavior, Part B behavior	Scores deleted
BKB2A	2	Part A behavior, Part B behavior	Scores deleted
53I7A	2	behavior	
FVBYIB	1	Part A behavior	Scores deleted
5AV4B	1	Part A essay	Scores deleted
OGDXB	1	Part B behavior	Scores deleted
OOFFA	1	Part B behavior	Scores deleted

Note: Bolded content identifies information used to mark participants for removal.

No scales were required to be reverse coded. The final change made prior to creating the final data set was to reverse the scale of the PA measure so that negative values reflect more punishment of the victim (Participant A) relative to the bully (Participant B; under column PA2).

The finalized version of the data set was saved as a new file titled “Groves – diss – study 2 – cleaned and coded”

APPENDIX R. STUDY 2 INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 2/3/2017

To: Christopher Groves
W112 Lagomarcino

CC: Dr. Craig A Anderson
W112 Lagomarcino Hall

From: Office for Responsible Research

Title: Communication in online interactions

IRB ID: 17-006

Approval Date: 2/3/2017 **Date for Continuing Review:** 2/2/2019

Submission Type: New **Review Type:** Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- **Retain signed informed consent documents for 3 years after the close of the study**, when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 202 Kingland, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX S. STUDY 2 MANIPULATION CHECKS

The following questions inquire about the other two participants in the study. To the best of your ability, please rate the other participants on the following statements using the scale of 1 (strongly disagree) to 7 (strongly agree) scale. As a reminder, none of your responses will be seen by the other two participants.

The following questions refer to Participant A

1. This participant was helpful.
2. This participant was rude.
3. This participant was cooperative.
4. This participant was kind.
5. This person was aggressive.
6. This participant was competitive.
7. If I were to do this task again, I would like to interact with this person.
8. This person deserves to win the gift card.
9. This person should be punished for how they acted in the task.

The following questions refer to Participant B

1. This participant was helpful.
2. This participant was rude.
3. This participant was cooperative.
4. This participant was kind.
5. This person was aggressive.
6. This participant was competitive.
7. If I were to do this task again, I would like to interact with this person.
8. This person deserves to win the gift card.
9. This person should be punished for how they acted in the task.

APPENDIX T. PARTICIPANT ROLES AND NAMES HANDOUT

The survey you will be taking refers to the two participants in the study as Participant A and Participant B. Because the task itself uses the first name and last initial of participants, we've written down the names of the participants so you know who Participant A and B refer to. You can find these names below.

Participant A refers to Eric S.

Participant B refers to Jeff B.

The survey you will be taking refers to the two participants in the study as Participant A and Participant B. Because the task itself uses the first name and last initial of participants, we've written down the names of the participants so you know who Participant A and B refer to. You can find these names below.

Participant A refers to Erica S.

Participant B refers to Julie B.

APPENDIX U. CODE USED FOR STUDY 2 ANALYSES

```

#libraries used: gplots
#Preliminary analyses
mean(DissStudy2$PAhelp, na.rm=TRUE)
mean(DissStudy2$PBhelp, na.rm=TRUE)
sd(DissStudy2$PAhelp, na.rm=TRUE)
sd(DissStudy2$PBhelp, na.rm=TRUE)
t.test(DissStudy2$PAhelp,DissStudy2$PBhelp, paired=TRUE)

mean(DissStudy2$PArude, na.rm=TRUE)
mean(DissStudy2$PBrude, na.rm=TRUE)
sd(DissStudy2$PArude, na.rm=TRUE)
sd(DissStudy2$PBrude, na.rm=TRUE)
t.test(DissStudy2$PArude,DissStudy2$PBrude, paired=TRUE)

mean(DissStudy2$PAcoop, na.rm=TRUE)
mean(DissStudy2$PBcoop, na.rm=TRUE)
sd(DissStudy2$PAcoop, na.rm=TRUE)
sd(DissStudy2$PBcoop, na.rm=TRUE)
t.test(DissStudy2$PAcoop,DissStudy2$PBcoop, paired=TRUE)

mean(DissStudy2$PAkind, na.rm=TRUE)
mean(DissStudy2$PBkind, na.rm=TRUE)
sd(DissStudy2$PAkind, na.rm=TRUE)
sd(DissStudy2$PBkind, na.rm=TRUE)
t.test(DissStudy2$PAkind,DissStudy2$PBkind, paired=TRUE)

mean(DissStudy2$PAaggr, na.rm=TRUE)
mean(DissStudy2$PBaggr, na.rm=TRUE)
sd(DissStudy2$PAaggr, na.rm=TRUE)
sd(DissStudy2$PBaggr, na.rm=TRUE)
t.test(DissStudy2$PAaggr,DissStudy2$PBaggr, paired=TRUE)

mean(DissStudy2$PAcomp, na.rm=TRUE)
mean(DissStudy2$PBcomp, na.rm=TRUE)
sd(DissStudy2$PAcomp, na.rm=TRUE)
sd(DissStudy2$PBcomp, na.rm=TRUE)
t.test(DissStudy2$PAcomp,DissStudy2$PBcomp, paired=TRUE)

mean(DissStudy2$PALike, na.rm=TRUE)
mean(DissStudy2$PBlike, na.rm=TRUE)
sd(DissStudy2$PALike, na.rm=TRUE)
sd(DissStudy2$PBlike, na.rm=TRUE)
t.test(DissStudy2$PALike,DissStudy2$PBlike, paired=TRUE)

mean(DissStudy2$PAwin, na.rm=TRUE)

```

```
mean(DissStudy2$PBwin, na.rm=TRUE)
sd(DissStudy2$PAwin, na.rm=TRUE)
sd(DissStudy2$PBwin, na.rm=TRUE)
t.test(DissStudy2$PAwin,DissStudy2$PBwin, paired=TRUE)
```

```
mean(DissStudy2$PApunish, na.rm=TRUE)
mean(DissStudy2$PBpunish, na.rm=TRUE)
sd(DissStudy2$PApunish, na.rm=TRUE)
sd(DissStudy2$PBpunish, na.rm=TRUE)
t.test(DissStudy2$PApunish,DissStudy2$PBpunish, paired=TRUE)
```

```
tapply(DissStudy2$PAcommSrs, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommNice, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommRude, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommAloof, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommShy, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommTimid, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommAssert, vulnFact2, mean, na.rm=TRUE)
tapply(DissStudy2$PAcommAggr, vulnFact2, mean, na.rm=TRUE)
```

```
tapply(DissStudy2$PAcommSrs, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommNice, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommRude, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommAloof, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommShy, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommTimid, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommAssert, vulnFact2, sd, na.rm=TRUE)
tapply(DissStudy2$PAcommAggr, vulnFact2, sd, na.rm=TRUE)
```

```
t.test(DissStudy2$PAcommNice,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommRude,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommAloof,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommShy,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommTimid,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommAssert,DissStudy2$vulnFact2)
t.test(DissStudy2$PAcommAggr,DissStudy2$vulnFact2)
```

#Preliminary work: factor creation

```
genderFactor <- factor(DissStudy2$gender, levels=c(1,2),labels=c("male","female"))
table(genderFactor)
```

```
DissStudy2$condVuln2 <- ifelse(DissStudy2$Condition==1 | DissStudy2$Condition==3,1,0)
vulnFact2 <- factor(DissStudy2$condVuln2, levels=c(0,1),labels=c("non-
Vulnerable","Vulnerable"))
```

```
perspFact2 <- factor(DissStudy2$PerspCond, levels=c(1,2),labels=c("Imagine Other","Stay Objective"))
```

```
DissStudy2$vulnFact <- ordered(DissStudy2$PA2, levels=c(0,1),labels=c("non-Vulnerable","Vulnerable"))
```

```
#Study 2 analyses:
```

```
ANOVAOneway <- aov(PA2 ~ Condition, data=DissStudy2)
ANOVA22 <- aov(PA2 ~ perspFact2*vulnFact2, data=DissStudy2)
ANOVA2x2x2 <- aov(PA2 ~ perspFact2 * vulnFact2 * gender, data=DissStudy2)
summary(ANOVAOneway)
summary(ANOVA22)
summary(ANOVA2x2x2)
```

```
#descriptives
```

```
tapply(PA2, condVuln2, mean)
tapply(PA2, condVuln2, sd)
```

```
tapply(PA2, PerspCond, mean)
tapply(PA2, PerspCond, sd)
```

```
#Plots
```

```
plotmeans(PA2~perspFact2,
  main="Effect of Perspective Taking on Prosocial Aggression",
  xlab="Perspective Taking Manipulation",
  ylab="Prosocial Aggression",
  ylim=c(0, 130))
```

```
plotmeans(PA2~perspFact2,
  main="Effect of Vulnerability Manipulation on Prosocial Aggression",
  xlab="Vulnerability Manipulation",
  ylab="Prosocial Aggression",
  ylim=c(0, 130))
```