

City University of New York (CUNY)

## CUNY Academic Works

---

School of Arts & Sciences Theses

Hunter College

---

Fall 1-6-2021

### A Conceptual Replication to Investigate the Hostile Priming Effect

Charlotte Basch  
*CUNY Hunter College*

[How does access to this work benefit you? Let us know!](#)

More information about this work at: [https://academicworks.cuny.edu/hc\\_sas\\_etds/663](https://academicworks.cuny.edu/hc_sas_etds/663)

Discover additional works at: <https://academicworks.cuny.edu>

---

This work is made publicly available by the City University of New York (CUNY).  
Contact: [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu)

A Conceptual Replication to Investigate the Hostile Priming Effect

by

Charlotte Basch

Submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts Psychology, Hunter College  
The City University of New York

2020

12/9/2020

Date

Jason Young

Thesis Sponsor

12/9/2020

Date

Rebecca Farmer Huselid

Second Reader

### **Abstract**

As psychology has progressed, the failure to replicate foundational studies in the field has resulted in the need for a thorough examination of replications and why they may fail. One such study that has failed to replicate is Srull and Wyer's 1979 study on hostile priming, which found that participants who were exposed to the hostile phrases rated the individual as more hostile. In 2018, McCarthy et al conducted a study spanning multiple countries that did not find a hostile priming effect. However there were some deviations from the original experiment in this study. As part of a larger re-evaluation of this effect, multiple exact and conceptual replications were conducted across the country, including the current study. A pilot study was conducted to create materials for the conceptual replication. The 20 pilot participants rated phrases in terms of hostility and the highest and lowest rated were developed into phrases used to prime the participants. In addition a vignette that was deemed moderately hostile was shown to participants, who rated the individual described in terms of hostility and related traits. While it was hypothesized that the effect would replicate, a series of Independent Samples t-tests found no differences in trait ratings between those primed with hostility and those who were not. Three additional samples from different conceptual replications were examined and also failed to find an effect. A series of two-way analyses of variance (ANOVA) tests were run to explore the role sex may have played in ratings on the various trait-ratings but because of the high proportion of females in the study, these results are not particularly robust. The results of this study further call into question the legitimacy of the hostile priming effect.

### **A Conceptual Replication to Investigate the Hostile Priming Effect**

People often like to believe that they are independent thinkers, unable to be influenced by outside sources and resistant to manipulation. However psychological research has indicated that people are, in fact, susceptible to having their thoughts affected (Loersch & Payne, 2014). One way in which people's thoughts may be shaped without their knowledge is priming. Priming is the phenomenon that occurs when a person is presented with a concept in some form and subsequently, on a separate task, there is a measurable difference in that person's perception or behavior related to the primed concept (Cameron, Brown-Iannuzzi, & Payne, 2012). Priming is related to cognitive accessibility, in which a prime brings a concept to mind and then makes it easier to apply information related to the concept to a new task. Priming impacts thoughts and behaviors because people believe that what they are thinking and feeling is related to the current situation or task and assume the accessible thoughts are their own instead of having been induced by the prior, cognitively activated prime (Loersch & Payne, 2014). The concept was first introduced in a 1951 paper by Karl Lashley about language production in which priming was viewed as a "preparedness of mental representations to serve a response function" (Bargh, & Chartrand, 2000). The concept of priming was next mentioned by Segal and Cofer (1960), who referred to an increased likelihood of using a concept on a new, unrelated task when it had already been used in a prior one (Segal & Cofer, 1960, as cited by Crano, Brewer, & Lac, 2014). While priming did not become the subject of social psychological experimentation until the late 1970s (Bargh, 2014), it has since become an important part of the field and one of the most widely studied topics.

One aspect of priming that has been extensively studied is its impact on impression formation, where the initial prime affects the judgment of a later-encountered individual. In

general, judgments of individuals can be based on qualities of the person being judged, qualities of the person doing the judging, and qualities of the situation (Quadflieg & Westmoreland, 2019). Impression formation is a subject that has been widely studied from numerous angles, not all of which are relevant to priming. A great deal of the impressions individuals form of others result from automatic processes, which are engaged in quickly and without conscious effort. The automatic processes use whatever available information one has to infer the target person's qualities (Bodenhausen & Morales, 2013). Often, exposure to others' behavior causes individuals to make spontaneous trait inferences, or to automatically ascribe traits to that person in order to explain their actions without the intention of doing so or the awareness of having done so (Moskowitz & Gill, 2013). Priming may influence these automatic processes by emphasizing the kind of information that is accessible to an individual when they are making a judgment (Loersch & Payne, 2014).

In one study (Bargh, Bond, Lombardi, & Tota, 1986) researchers divided 219 students into groups by asking them to report the types of people they tried to engage with and tried not to engage with, liked and did not like, and generally interacted with. They made a ranked list of traits for each of these categories. For example, someone might list that they preferred to interact with people who were funny, outgoing, etc; preferred not to engage with people who were loud, rude, etc; liked people who were warm, funny, etc; did not like people who were rude, inconsiderate, etc; and generally interacted with people who were talkative, smart, etc. Those who put kindness or a related concept first (or first or second in the case of who they generally interacted with) on their lists were classified as people who had kindness as a chronically accessible trait. People who never put kindness or related terms on any of their lists were classified as people who did not have kindness as a chronically accessible trait (i.e.,

“nonchronics” for kindness). The participants in each group were told that they were performing a reaction time task in front of a screen where they were supposed to identify where a dot was flashing. If the dot was to the left of the screen’s center, the participants were supposed to push a button labeled as ‘left’ and push the button labeled ‘right’ when the dot appeared to the right of the screen’s center. During this task words quickly flashed on the screen outside of the participants’ awareness. Half of the participants saw 80 out of 100 words related to kindness and 20 unrelated words (e.g. “number”) while the other half saw only unrelated words. Each participant then read a paragraph describing an individual engaging in ambiguously kind behaviors and rated the subject on traits related to kindness and unrelated traits (e.g. boring). The researchers found that both being a person who chronically activated a trait and being primed with a trait were related to being more likely to interpret an ambiguous behavior in terms of that trait. There was no evidence of an additive effect, where kindness chronics who were also primed did not have significantly higher ratings on kindness related traits than non-chronics who were primed. In other words, being a kindness chronic or being primed with the concept of kindness were both associated with viewing ambiguously kind behaviors as kind. The researchers also performed this experiment using shyness as the related trait and found similar results (Bargh, Bond, Lombardi, & Tota, 1986). The results of this study indicate that accessibility—whether long-term chronic vs short-term primed-- is the important factor, regardless of the source of the accessibility, highlighting the role of accessibility in priming.

Often in life, many impressions are not formed from actually encountering the individual themselves but via secondhand information. This is also true of judgments formed in studies that stem from priming. In daily life, and in research studies, exposure to a new individual can come in the form of simply hearing about someone without meeting them. In an experimental setting

the information is often a constructed description of a fictional person created by a researcher (e.g. Pryor & Ostrom, 1981). Neuroscientific studies using functional MRI measures have found that, in the brain, secondhand impression formation appears to show activation of the dorsal aspects of the medial prefrontal cortex (dmPFC), while judgments of the target are more associated with activation of the amygdala and posterior cingulate cortex (PCC) (Ames, Fiske, & Todorov, 2011). Priming is just one element of the expansive study of impression formation.

There are three types of priming effects that may influence a person's evaluation of a target: assimilation, anchoring, and correction. The first type of priming, assimilation, is in many ways the simplest. In this form of priming the person's judgment of the target is impacted by the prime in the direction that was intended. For example if the person is presented with words associated with kindness then the idea of kindness is more accessible to the individual. When making their judgment of a target, they would be more likely to judge the target as being more kind. Assimilation priming is demonstrated in the previously mentioned Bargh, Bond, Lombardi, and Tota (1986) study on kindness and shyness priming, where participants who were exposed to words related to kindness or shyness rated an ambiguous individual as more kind or shy.

However, if what is primed involves an extreme characteristic, this may result in the second type of priming, called "anchoring," and judgments may be rendered that are counter to the prime (DeCoster & Claypool, 2004). Anchoring occurs when extreme primes are used as a standard by which to compare against the person being judged, making it seem as though they have less of the primed trait (Herr, Sherman, & Fazio, 1983). For example priming widely known scientists such as Albert Einstein and Stephen Hawking, would likely lead to a target being judged as less intelligent as a result of anchoring priming. A Dutch study presented participants with primes of extremely hostile individuals (e.g. Stalin). When they were given a

vignette about an ambiguously hostile individual, these participants rated the target as lower in hostility. While the first two types of priming both lead to an intended effect, whether that is in the same or opposite direction of the prime, correction - the third type of priming - concerns unintended consequences. While the goal of priming necessitates people being unaware that someone is attempting to influence them, sometimes this is not the case. When people realize their impression was formed due to priming, an occurrence called "correction" is observed. If participants in studies figure out that the experimenters are attempting to influence them, attempts to effect assimilative or anchoring priming can result in correction (DeCoster & Claypool, 2004). Martin (1986) conducted multiple experiments in which participants were presented with purposefully obvious primes to demonstrate the concept of correction. In some cases the participants were interrupted before being able to complete the judgment task in order to impede the participants' ability to focus on the obviousness of the primes when engaging in the impression formation task. The other participants went directly from the priming task to the judgment task. He found that, as long as participants were not distracted by the experimenter's interruption, they chose not to apply the primed concepts to an ambiguous target. Another study found that when participants were reminded of the priming task, they were less likely to use the primed traits in their judgment of an ambiguous target compared to participants who were not reminded. Participants in this study put on headphones and were told they were being tested on auditory perception. During this task, participants heard a word related to a prime of either friendliness or dishonorability, then a tone, then an unrelated word, and so on. They were asked to write down whether the tone was low or high and also the word that preceded each tone. After a meaningless math task meant to conceal the study's purpose, half of the participants moved on to reading a vignette and judging its subject on the related traits. The other half of the

participants were reminded of the priming tasks via questions about how well they remembered the words and the tones. These participants were less likely to show an influence of the primed words on how they rated the subject compared to participants who were not reminded of the priming task (Strack, Schwarz, Bless, Kübler, & Wänke, 1993).

While these procedures were intentionally developed to test whether the effectiveness of priming can be manipulated, they can also explain why some studies of priming have been unable to find the expected effects. Martin (1986) explains that this occurs because a successful assimilative prime affects judgment because people have no reason to believe they are relying on anything other than their own perceptions of a target to form a conclusion. Thus, if they read a vignette and think of friendliness, it must be because they are reading about a friendly person. Once participants realize, in the case of Strack, Schwarz, Bless, Kübler, and Wänke (1993) by being reminded that the reason they are thinking about friendliness is because of an earlier task, then they are forced to rethink critically about why they may be perceiving the target as friendly. They may in fact conclude that they are being biased by the task to believe the person is friendly and view the person as less friendly in response. Whether or not an individual is aware that they are being primed is a key factor in the type of priming that would be observed.

There are different components of primes that researchers must take into account in an experimental setting. Two variations are particularly important. The first way primes can differ is their obviousness. Primes can be supraliminal, where subjects know about the prime but not that it is related to the next judgment task, or primes can be subliminal, where the prime is presented below the threshold of conscious awareness, often by being presented for less than 500ms (Elgendi, Kumar, Barbic, Howard, Abbott, & Cichocki, 2018). For supraliminal primes, researchers must make sure participants do not realize there is a connection between the priming

task and later tasks in the experiment. For subliminal primes, researchers must make sure the prime was truly outside of participants' conscious awareness (DeCoster & Claypool, 2004).

The second way that primes can differ is the specificity of the target of the prime. In order to evaluate the way priming influences impression formation, there must be a subject to form an impression of. That subject can be presented in two ways. The first way a target can be presented is in an ambiguous manner, meaning they can be interpreted in terms of more than one concept (e.g. Higgins, Rholes, & Jones, 1977). For example, a target could be presented as a student who makes jokes during class. The target's behavior could be interpreted as funny or disrespectful, depending on the concept primed. On the other hand, the person being judged could also be presented as vague, where they can be interpreted as either having or not having a specific trait (DeCoster & Claypool, 2004). An example of a vague target would be if the person being judged is doing standup comedy and they can be interpreted as being funny or not funny. The aims of the experiment can determine whether an ambiguous or vague prime is more appropriate. These concepts are crucial to understanding the methodological choices in impression formation priming research and the factors to consider when designing such studies.

It is easy to see how the phenomenon of impression formation is an important lens through which to view social cognition. Individuals base judgments of themselves and others on the cognitions most accessible at the moment, either through recent acquisition or recent use, instead of searching through all of their memories. In other words, once a judgment about a person is made, it is that judgment, rather than the original information used to make it, that affects future judgments about that person (Wyer et al., 1980). This field of study was greatly influenced by one 1979 experiment by Srull and Wyer. Prior research (e.g. Higgins, Rholes, & Jones, 1977) found results consistent with assimilative priming by providing traits directly to

participants. Participants in that study were shown a series of slides with colored backgrounds, each containing a neutral word (e.g. tree) and were instructed to name the color of the slide as quickly as possible. Before each slide the participant was also instructed to repeat a certain word after naming the color. The time between receiving the word from the experimenter and having to repeat the word was approximately 8-10 seconds. While six of the words were objects, the third, fifth, seventh, and eighth words were traits. After this task, participants were instructed to read a vignette about an ambiguous individual, Donald, and questioned about his personality. In pre-testing, the researchers constructed the vignette so that each sentence could be interpreted in terms of two opposite traits. For example, Donald was described as not wanting to rely on other people and keeping his distance from others. This could be viewed as either independence (a positively perceived trait) or aloofness (a negatively perceived trait). Participants were divided into four groups: those who had to remember positive traits that could be applied to Donald's behavior (e.g. independent), those who had to remember negative traits that could be applied to Donald's behavior (e.g. aloof), those who had to remember positive traits unrelated to Donald's behavior (e.g. neat), and those who had to remember negative words unrelated to Donald's behavior (e.g. clumsy). The study found that when asked to, for instance, describe Donald's personality as it relates to his social interactions, participants who saw the positive or negative applicable words were more likely to use those words. Those who did not use the exact words were still more likely to evaluate Donald as more positive or negative depending on their condition (Higgins, Rholes, & Jones, 1977).

    Srull and Wyer (1979) created an experiment to extend the effect found in prior research using vague supraliminal priming by providing behaviors exemplifying the traits they were studying and including other potentially relevant factors such as time between the priming and

judgment tasks, the number of items in the priming task, and the proportion of items relating to the primed trait. Their interpretation of previous research on assimilative priming and social judgment was that priming affects social judgment not through a direct change to evaluation but by changing the lens of interpretation for behavior. Once the behavior is interpreted on the basis of the prime, the impression of the person is consistent with the primed trait. According to the authors, this impression can also come to encompass related traits that were not themselves primed. For example, if the researchers were attempting to prime kindness participants may also come to believe that the target of the prime is also friendly.

Srull and Wyer's (1979) main hypothesis posited that participants would interpret ambiguous behaviors as more hostile if they had been primed with hostility-related information. The hostile effect would be stronger for more rather than fewer hostility-related items in the priming task and for a higher rather than lower proportion of the items in the priming task related to hostility. However they also hypothesized that a greater the length of time between priming and making judgments would decrease ratings of hostility, based on previous models of memory (Collins & Loftus, 1975; Wyer & Carston, 1979) which concluded that, as time passed, activated concepts become less salient and therefore less accessible, leading to less of an influence on later judgments.

Before examining the procedure of Srull and Wyer's study, it is useful to examine the trait of hostility itself. Hostility refers to a personality trait that encompasses aggressive actions, negative perceptions and thoughts, and negative emotions (Smith, 1992). Hostility can be displayed by a person's behavior, as in the descriptions from Srull and Wyer's study, or their words (MacGregor & Davidson, 2000). Studies (e.g. Gambone & Contrada, 2002) have shown that people also link hostility with expressing anger, denigrating others, feeling as though others

are treating them unfairly, and intent to harm others. Besides the presence of these factors, perceptions of hostility are also linked to stereotypes about groups or types of people (e.g. Otten & Stapel, 2007). For example, researchers found that when male and female actors portrayed the same verbal and non-verbal hostile acts participants believed that the female actors expressed more non-verbal hostility and less verbal hostility than male actors (MacGregor & Davidson, 2000). Because the components of hostility can often also be interpreted in terms of other traits, it can be difficult to interpret whether a person is behaving in a hostile matter or not. The act of arguing with an employee over store policy, for instance, might be considered to be hostile by some or brave by others. The vagueness of hostility as a trait allowed Srull and Wyer (1979) the ability to create a study with a target that was not inherently hostile or non-hostile and therefore to observe the effect of a hostility-related prime on participants' judgments of a target's hostility.

To conduct their experiment, Srull and Wyer (1979) recruited 96 introductory psychology students whose demographic information was not collected. The study was administered in groups of four to eight people. Participants were first presented with a task in which each item had four words that they needed to re-order to form into a three-word clause. The clauses would either be hostile (e.g. "leg break arm his") or neutral (e.g. "her found knew I") in their content. The researchers varied the number of clauses (30 or 60) and the proportion of hostile clauses (20% or 80%). Next the participants were scheduled to complete the next, supposedly unrelated, part of the study. The participants were split into three groups based on the amount of the time delay between the priming task and the judgment task. The participants either had no delay (completing the next task immediately following the clause task), a one hour delay (completing the next task one hour after the priming task), or a twenty-four hour delay (completing the next task at the same time on the next day). Then participants read a vignette describing a person

(Donald) engaging in ambiguously hostile behaviors, a task they were told was unrelated. After that they rated the individual on traits related and non-related to hostility. The participants also rated the individual behaviors that had been mentioned in the vignette on their hostility. To establish a base-line level of hostility associated with each of these behaviors, a prior group of students rated the behaviors that researchers then divided into three levels of hostility: ambiguous, high hostility, and low hostility. Lastly, the researchers measured whether subjects suspected the clause and paragraph tasks were related. Data were analyzed using Analyses of Variance (ANOVAs).

The experimenters found evidence for a hostile priming effect. Ratings of hostility for Donald, the target person described in the vignette, were higher for those participants who had been exposed to more, rather than fewer, hostility-related clauses. To a lesser extent, participants who had been presented with more hostility-related clauses also showed increased ratings of traits that were indirectly associated with hostility. Ratings of the ambiguous behaviors were also higher in hostility for those presented with the greater proportion of hostile clauses and with sixty clauses versus thirty. Thus, the length of priming task and proportion of items related to hostility were positively related to the hostile priming effect. In addition, the longer the interval between the priming and the ratings made of the target person, the less of an effect priming had, confirming the final prediction of the researchers. This study supported the idea that, once a trait is made accessible, it is indeed more likely to be used to make new judgments, especially when behavior is ambiguous (Srull & Wyer, 1979). Through supplementary research, the authors also concluded that the most important factor in impression formation influenced by priming is which trait categories are most accessible when the information about the individual being judged is first received and encoded into memory. They believed that the priming effect seems to occur

most strongly when the information about the target of the impression formation is first received and produces an indirect effect on later judgments (Srull & Wyer, 1980). Srull and Wyer's 1979 experiment is considered foundational in the study of priming and social judgment and is widely cited (McCarthy et al., 2018).

Since Srull and Wyer's (1979) study, there has been supporting and continuing research published over time. Using the same vignette developed for Srull and Wyer (1979), a group of European researchers (Philippot, Schwarz, Carrera, de Vries, & Van Yperen, 1991) presented participants with the names of individuals perceived as either hostile or friendly in the midst of neutral names. The participants were instructed to identify either the hostile or friendly individuals depending on their experimental group. The researchers again found a hostile priming effect. A Dutch sample was provided words related to hostility, read the Donald vignette, and rated him on Srull and Wyer's same traits. The results of this study also demonstrated that Donald was rated as more hostile than a control group (Stapel, Koomen, & Van der Pligt, 1997). The effect has also been found in other American samples (e.g. Wann & Branscombe, 1990).

There has also been an attempt to test the hostile priming effect with slight variations to the method. Using a more subliminal prime, where participants were instructed to detect whether a flash of a word on a screen was to the left or right of a middle point, researchers (Bargh & Pietromonaco, 1982) ran a similar experiment. Participants were either exposed to all non-hostile words, a condition in which 20 percent of words presented were hostile, or a condition in which 80 percent of words presented were hostile. After this task, participants read a vignette about a person performing ambiguously hostile behaviors and rated them on hostile and non-hostile traits. The proportion of hostile words they saw had an impact on participants' ratings of the

person and the hostility prime seems to have resulted in generally more negative ratings of the target person on other negative but non-hostile traits. The participants assigned to conditions that were exposed to the same words in the priming task but did not go on to see the vignette task were asked to identify the words they saw in the priming task, either by free recall or by looking through a list. Participants in the hostile priming condition who had to identify the words they saw incorrectly believed they had seen hostile words that were never displayed, indicating that participants were not aware of the exact words they saw but had processed what they had been presented in the priming task as hostile. In addition, another study found the hostile priming effect in a Japanese sample with both supraliminal and subliminal priming (Ikegami & Kawaguchi, 1989). Thus, it appears the hostile priming effect extends to more subtle forms of priming that may be outside of a person's awareness.

Using Srull and Wyer's (1979) priming task, later researchers were also able to induce social behavior consistent with rudeness. In one experiment, the participants were presented with a clause descrambling task where they either saw rudeness-related clauses or neutral clauses. The group exposed to rude clauses was more likely to interrupt another person and to do so more quickly than the control group (Bargh, Chen, & Burrows, 1996). The effect of priming on behavior was also found in an experiment (Herr, 1986) that focused on hostility. In Herr's (1986) experiment, participants were primed via exemplars of moderately hostile individuals, moderately non-hostile exemplars, and extremely hostile exemplars. The moderately hostile exemplar was intended to induce a hostile priming effect while the later two types were not intended to create a hostile priming effect. The moderately hostile exemplars included the rock star Alice Cooper. The moderately non-hostile individuals included Robin Hood, while the extremely hostile condition included individuals such as Charles Manson, who are so extreme

that other individuals seem non-hostile in comparison and an anchoring effect occurs. . They were instructed to read the Donald vignette, supposedly describing the person they were going to be playing a prisoner's dilemma game with and written by an acquaintance of the person they would be playing with. They rated Donald on hostility and related traits. Unsurprisingly the hostility primed group rated Donald as more hostile. When it came time to play the game with 'Donald,' in actuality another participant in the experiment, the participants who were "hostility primed" treated their partner with more hostility and played more competitively instead of cooperatively (Herr, 1986).

Experimental results supporting Srull and Wyer's (1979) conclusions have often been found in numerous studies of priming over the years. A meta-analysis of assimilative priming effects in impression formation, where participants are primed and then use the primed trait in their judgments of a target (DeCoster & Claypool, 2004) also supports Srull and Wyer's (1979) results, even though their 1979 study was excluded from their review. These researchers collected studies that first primed participants with specific traits and then had them make trait judgments about another person. They found small to medium assimilative priming effects and concluded that participants' judgments were affected by the prime. They also established that the traits directly being primed had the strongest impact but there was also carryover to traits that might be related to the primed trait. In other words, priming a trait not only influences a person's judgment of a target on the primed trait but impacts the entire impression of the target. These results indicate that, in addition to past research that demonstrates the hostile priming effect as a legitimate phenomenon, the effect has been found consistently.

There has also been research to understand what limits these kinds of priming effects. There are many factors that can reduce the effectiveness of the prime. Based on their meta-

analysis, DeCoster and Claypool (2004) noted that studies with awareness checks, where the researchers asked participants after the priming and judgment tasks whether they believed the priming task impacted their evaluations on the judgment task, had smaller effects. They attribute the smaller effect in studies with awareness checks to those studies having more experimental rigor. Consistent with what was found in the original study, effects were smaller when there was a delay between the prime and the judgments. When the subject of judgment is a real person rather than a written one, the priming effects are again smaller. The authors of the meta-analysis offered two potential explanations for the smaller effect for real targets instead of written ones. The first explanation contended that priming is actually a linguistic effect meant to synthesize what words are most important in conversation, which involves processing a large number of words very quickly. If this is true then it may be easier to apply priming to another linguistic task: reading about a target of judgment. The second explanation theorized that since most priming studies present primes by having participants read the words, it is easier for the prime to be used in tasks that are processed the same way, such as judgment tasks that involve reading about, as opposed to seeing, a target of judgment (DeCoster & Claypool, 2004). Lastly, and though it may seem obvious, in a study where participants were primed with traits that were either applicable or inapplicable to a person in a vignette they were then assigned to read, only the applicable primes affected judgment (Higgins, Rholes, & Jones, 1977).

Another way to increase or decrease the effectiveness of a hostility prime is to provide information about the target's social group or category. One aspect of a target that has been found to affect judgment is gender. Banaji, Hardin, and Rothman (1993) modified the hostile priming task to look for differences based on the gender of the judged target. Following a sentence descrambling task with either mostly hostile or non-hostile phrases, male and female

participants read a paragraph about a female, Donna, or a male, Donald, engaging in ambiguously hostile behavior and rated her or him on aggressiveness and other related traits. Aggressiveness is stereotypically more associated with males than females (e.g., MacGregor & Davidson, 2000) and may therefore be viewed as more applicable to a male rather than female target. Because of this gender stereotype, the researchers predicted that the hostile prime would be more effective when judging a male target than a female one. For those who received neutral clauses, ratings of Donna and Donald did not significantly differ. Regardless of the type of prime they received, participants rated Donna similarly on aggressiveness. However for individuals evaluating Donald, those primed with hostility rated him as significantly more aggressive than those who were not primed with hostility. The effect was observed for both male and female participants.

Similar effects have also been shown for ethnic and racial groups. A Dutch sample (Otten & Stapel, 2007) was presented with Srull and Wyer's (1979) priming task consisting of twenty six clauses. Due to differences between the Dutch and English languages, the task was modified slightly. Instead of presenting four words to be made into three word clauses, the researchers presented five words to be made into four word clauses. For the experimental group, fourteen phrases were hostile and twelve were non-hostile while the control group's clauses were all non-hostile. The Donald vignette was used but the name was varied to match the nationality of the target. The paragraph subject was noted as either being born in The Netherlands (like the participants), Surinam (whose immigrants to The Netherlands were considered to be stereotypically non-aggressive), or Morocco (whose immigrants to The Netherlands were considered to be stereotypically aggressive). The participants were instructed to judge the individual in the vignette on the same traits as those used in Srull and Wyer's (1979) study. They

found that being primed with hostility did not affect Dutch participants' judgments of a Dutch target. The researchers theorized that highlighting that the target was Dutch gave participants a stronger lens to view the behavior through than priming: knowing that the target was part of their ethnic group. Because of biases that lead people to regard members of their social groups more positively, the researchers posited that Dutch participants were less likely to view ambiguous behavior as hostile when it was performed by a fellow Dutch person regardless of how they had been primed. While the Surinamese target and the Dutch target were judged as equally non-hostile by the control group, the Surinamese target was judged as more hostile by the experimental group. Lastly the Moroccan target was already judged as more hostile compared to the other two groups for control participants and a hostile prime increased ratings of hostility further. Therefore outside social factors can be influential when judging another person as hostile.

Despite the amount of research that has been based on Srull and Wyer's (1979) study, there have also been some concerns raised about its conclusions. The previously mentioned meta-analysis of priming and impression formation (DeCoster & Claypool, 2004) concluded that there may have been an important statistical error in the original study. The authors of the meta-analysis observed abnormally small standard deviations relative to the size of the rating scale, especially when compared to similar research published just one year later by the same experimenters (Srull & Wyer, 1980). In addition, when comparing the effect sizes, the prior study's is far larger than the latter's. The disparities led DeCoster and Claypool (2004) to seriously question the validity of the 1979 study. They decided to leave Srull and Wyer's results out of their meta-analysis despite its importance to the field. Because of this potential error, as

well as a field-wide effort to replicate classic studies, Srull and Wyer's (1979) landmark study was judged to be in need of replication (McCarthy et al., 2018).

Fourteen years after DeCoster and Claypool's (2004) meta-analysis, a replication of Srull and Wyer's (1979) study was published. The replication (McCarthy et al., 2018) chose to just include one set of conditions that showed a strong assimilative priming effect, that is, the proportion of hostile items in the priming task. They did not vary the length of the priming task or the timing between the priming and the judgment tasks. Because of the potential statistical error, the researchers speculated that the original results might not be replicated. The McCarthy et al (2018) study was conducted in twenty six institutions from the United States, the Netherlands, England, Hungary, Portugal, Israel, France, Canada, Germany, Belgium, Austria, Sweden, and Turkey, and the data were submitted for a meta-analysis. Between the participating institutions there were a total of 6,404 participants, the majority of whom were women. The study was presented in conjunction with an attempted replication of a separate study and participants completed the materials for this study as well as an unrelated one. Due to the requirements of the other replication, the participants were between the ages of 18 and 25 and were tested in large lecture halls of fifty or more people at a time. The materials were mostly the same as the original study and were the same across locations. The clause descrambling task, which consisted of thirty clauses, contained either 20% or 80% hostile phrases. Because the materials describing the exact words used in the original sentences could not be located, these sentences were new to the replication.

In McCarthy et al (2018)'s study, participants began by completing the clause descrambling task. Next they read the same vignette that was used in the original study. However the name in the original paragraph (Donald) was changed to Ronald to avoid associations with

Donald Trump, a name in the current news that may have involved distracting associations. Then the participants assigned ratings to the same traits as those used in the original study. They also gave ratings of the same behaviors presented in the original experiment. This was the last task in the replication of Srull and Wyer's (1979) study and the participants moved on to the materials for the unrelated replication study.

The results of McCarthy et al (2018) did not match the marked difference between groups that Srull and Wyer (1979) found. Participants in the 80% hostile clauses condition had a higher average hostility rating of Ronald by .08 points on an eleven-point scale compared to the original study's 3.0 points. Nevertheless, the 95% confidence interval for hostility ratings excluded zero, meaning that it is very unlikely for there to be no effect of the prime. The effect sizes for the ratings about the vignette subject and the behaviors were also small. Thus the study was unable to replicate the large effects of the original experiment. Participants in the 80% hostile clauses condition had a lower average hostility rating of the individual behaviors they evaluated after the vignette and trait ratings tasks by .08 compared to the original study's higher rating by 3.0. Thus the behavioral rating part of the experiment showed an effect in the opposite direction of the original study. The authors theorize that the difference in results between this replication study and other studies of the hostile priming effect that have found more marked effects might be due to a publication bias, where other studies that find no or smaller effects do not get published. However there are two differences between the McCarthy et al (2018) study and the original that could have contributed to the differences in results. The recent study was conducted in a large group setting, which may have been distracting, as opposed to in small groups situated in a laboratory setting, as used in the original study. The location was noted as a potentially important deviation by one of the original researchers (McCarthy et al, 2018). Additionally, the recent

study did not test participants' awareness of the effect, which may be important since someone's awareness that they are being primed can produce a correction effect (Higgins, 1996). Without gathering data about whether participants realized the priming task was intended to influence their trait ratings in the vignette task, it is impossible to know if an effect was not found because it truly is not occurring or if it was not found because of a correction effect, in which participants realized they were being primed and reacted by deliberately trying not to use the primed trait in their judgments. The decreased magnitude of the hostile priming effect found in the replication study does cast doubt on the validity of the effect but could also reflect specific circumstances that weaken the hostile priming effect.

One way to determine if the hostile priming effect is truly valid is to perform a conceptual rather than exact replication of Srull and Wyer's (1979) study. Replication has become a more important topic in psychology as many attempts to replicate foundational studies have failed (Stanley & Spence, 2014). A replication experiment is a study where the procedure is repeated in order to verify the results. Replication serves multiple functions in the service of uncovering the potential flaws in older studies. In addition to examining hypotheses and generalizing results to other populations, replication studies can protect against fraud, outcomes that occur as a result of sampling error, and artifacts (Schmidt, 2009). Depending on the source, there can be many categories of replication but the most generally agreed upon are exact and conceptual replications. An exact replication aims to make the procedure and materials as similar to the original study as possible, where the original operationalization is being tested as well as the hypotheses (Crandall & Sherman, 2016). This is the route taken in McCarthy et al's 2018 replication of Srull and Wyer's (1979) experiment. On the other hand, a conceptual replication seeks to answer the same question but varies the variables, population, or design. This type of

replication attempts to retest hypotheses by varying some element of the operationalizations used (Crandall & Sherman, 2016). While the concepts of different forms of replication are themselves simple, their interpretation is not. When a replication does not succeed it might seem logical to equate the failure to disproving the existence of an effect. However doing so would be ignoring the complex factors that may explain a failure to replicate an effect.

Because sampling and measurement error are present in all studies and can impact the results of a replication, a replication failure is not necessarily indicative that the hypotheses behind the research are incorrect. In 2014, two researchers created a series of computer simulations to demonstrate the effect of measurement error on research. Because they used a computer simulation instead of an experiment in the real world where the true size of an effect cannot be known, the researchers were able to decide upon a true value. They conducted four versions of this simulation, with the true correlation values of .10, .20, .30, and .40. The researchers programmed the computer to run through many permutations of an experiment attempting to discern the effect. They found that there were multiple failures to get a successful result. These failures lead to the authors concluding that measurement error can explain low rates of replication success (Stanley & Spence, 2014). Therefore the best way to examine the validity of an effect is to conduct a meta-analysis (Fabrigar & Wegener, 2016). While having a meta-analysis is a strength of the 2018 exact replication of Srull and Wyer (1979), it is still just one way to approach testing the hostile priming effect. Consequently a conceptual replication might provide insight into the hostile priming effect's validity.

Srull and Wyer's (1979) study, as well as the attempt to closely replicate it in 2018, have limitations that can be addressed. Since the original study took place forty years ago it may be beneficial to update the materials and develop them at the study's location instead of using

materials developed by another person at a different time and in a different place. Both experiments lacked attention checks to make sure participants were truly engaging in the study task. Addressing these factors and the previously noted deviations of the 2018 replication, both a close and conceptual replication were conducted in the present study in order to clarify the nature of the hostile priming effect. Given the importance of analyzing data from multiple samples, this experiment is part of a larger series of close and conceptual replications on this topic that will be included in a meta-analysis.

The current study involved a close and conceptual replication. The close replication was conducted in order to see if the findings of this study mirror those of previous studies, while the conceptual replication was conducted for the reasons outlined previously. By replicating Srull and Wyer's (1979) study with an environment free of distraction and new materials, it is expected that participants primed with hostility will rate an ambiguous target as more hostile. It is also expected that participants who are primed will assign higher ratings on hostility-related traits.

## **Method**

### **General summary of procedures**

While the materials for the close replication were taken from the McCarthy et al (2018) study, a pilot study was conducted to develop the materials for the conceptual replication. The pilot study involved participants rating hostile and non-hostile clauses to determine the most and least hostile clauses and evaluating two vignettes describing the ambiguously hostile behavior of the target person in the vignette. This study was administered to participants alone in a quiet room via a computer survey in order to address the potential issues with the setting of McCarthy et al (2018). Once participants were randomly assigned to either the close or conceptual

replication condition and then into the hostile or non-hostile priming condition, they began the clause descrambling task. Next, they read the vignette and rated the ambiguously hostile subject on hostility and related traits, either those from McCarthy et al (2018) or unique traits developed for the conceptual replication. Then participants participated in an attention check that depended on them reading the study's instructions. This addressed the second major flaw in McCarthy et al (2018). Lastly participants were debriefed and told the true purpose of the study.

### **Pilot Study**

#### **Participants**

Participants in the pilot study were 20 students from introductory psychology courses at a large urban college. Their participation fulfilled a portion of a course research requirement. These participants were recruited using the SONA system, an online tool for students to browse through the studies being conducted and sign up for timeslots. A description of the procedure was shown to participants on this website and they chose when to participate in the study.

#### **Materials**

**Clause Rating Task.** In order to develop the materials for the main conceptual replication study, all participants were shown 100 three-word phrases, fifty of which described hostile behaviors and fifty of which described non-hostile behaviors. They rated these phrases on a zero to ten point scale with zero representing “not at all aggressive” and ten representing “extremely aggressive.” Each phrase was shown on its own page and hostile phrases were interspersed among the non-hostile phrases. Examples of hostile phrases included “push him down” and “break her arm” while examples of non-hostile phrases included “take the subway” and “make your bed.”

**Vignette.** Participants were presented with two vignettes based on Srull and Wyer's (1979) Donald vignette describing an individual's ambiguously hostile behavior and then asked to rate the hostility of each individual. Because of the potential association of the name 'Donald' with Donald Trump, the subject of one vignette was named 'Sam' and the other was named 'Alex'. Such ambiguous behaviors included actions like complaining to employees about high prices or crossing the street to avoid homeless people asking for money. Each vignette was ten sentences long. They rated each individual on a zero to ten point scale with zero representing "not at all hostile" and ten representing "extremely hostile."

### **Procedure**

Participants were seated in front of a computer in a distraction-free room. The pilot study took approximately thirty minutes to complete. Participants were able to proceed from task to task at their own pace. First, participants were presented with the 100 phrases and were asked to rate how aggressive each phrase was. Then the participants read two ten-sentence vignettes based on Srull and Wyer's (1979) Donald vignette describing an individual's ambiguously hostile behavior, and rated each individual on how hostile the participant perceived them to be. After the study was finished, they were told the purpose of the pilot study and how it would contribute to the main study.

### **Main Study**

#### **Participants**

Participants in the main study were 132 students from introduction to psychology courses at a large urban college. Their participation partially fulfilled a course research requirement (Mean age = 20.01, 75.76% female). These participants were recruited using the SONA system, an online tool for students to browse through the studies being conducted and sign up for

timeslots. A description of the procedure was shown to participants on this website and they chose when to participate in the study.

## **Materials**

**Conceptual replication clause descrambling task.** Priming for participants in the main study was achieved using a descrambling clauses task based on Srull and Wyer's 1979 study. The materials for this task were developed from the results of the pilot study. The twenty-four phrases rated highest on aggression and the thirty words rated lowest on aggression were developed into the clause descrambling task. In order to create the clauses, a fourth word that could form another clause that still conveyed the hostile or non-hostile nature of the clause was added. For example, "smother the man" in the pilot study became "smother the man person" in the main study. Then the four words were put in a random order (e.g. "smother man the person"). In this task, participants were presented with thirty four-word sets in random order and asked to form a clause with three of the words. From each four-word set, two clauses could be constructed. For example, if the words were "sleeps cat the walks" participants could either have constructed the clause "the cat sleeps" or the clause "the cat walks." In the hostile priming condition, twenty-four of the sets were hostile and six of the sets were non-hostile. In the control condition all clauses were not hostile.

**Close replication clause descrambling task.** Just as in the conceptual replication, the close replication groups were primed using a descrambling clauses task identical to that used in McCarthy et al (2018).

**Conceptual replication vignette.** For the main study, the conceptual replication task used the particular ten-sentence vignette from the pilot study selected because the individual in

the vignette (“Alex”) was rated by pilot study participants as being moderately hostile and the mean and median hostility ratings of the vignettes were greater than two and less than eight.

**Close replication vignette.** The ten-sentence vignette with an ambiguously hostile subject (“Ronald”) used in McCarthy et al’s (2018) study was shown to participants in the close replication condition.

**Conceptual replication trait ratings.** Based on Srull and Wyer’s 1979 study, participants were asked how well hostility and eight other related traits described the subject of the vignette. Eight related traits, with two being positive, were used to match the guidelines given to submit this data for meta-analysis. The related traits were friendly, aggressive, kind, rude, selfish, cold, careless, and self-centered. They were presented with a zero (‘not at all’) to ten (‘extremely’) scale.

**Close replication trait ratings.** The trait ratings for the close replication were judged on the same scale as the traits in the conceptual replication. The participants still rated the subject of the vignette on hostility and related traits. The related traits were smart, angry, honest, unfriendly, outgoing, and dislikable. The traits were from McCarthy et al (2018).

**Attention check.** To make sure participants were reading and following the instructions, they were instructed to answer two unrelated questions (“Watching TV is a hobby of mine” and “Playing video games is a hobby of mine.”) with “completely disagree” on a scale from “completely disagree” to “completely agree.” They were also instructed to honestly answer two unrelated questions about their reading habits (“Reading books is a hobby of mine” on the same ratings scale and “How many books have you read for pleasure in the past year?”).

**Suspicion check.** This task first asked participants to write what they believed the purpose of the study was. Next they were instructed to respond ‘yes’ or ‘no’ to whether they

believed the tasks were related. Lastly, they were asked to what extent (from “not influenced at all” to “influenced a lot”) they believed they were influenced by the clause descrambling task in their ratings of the vignette’s subject.

### **Procedure**

Participants were randomly assigned to participate in the close or conceptual replication conditions. Participants were then randomly assigned to a hostile priming condition or a control condition. Participants viewed the clauses, vignettes, and trait ratings associated with the type of replication they were assigned to. Participants were told they were completing unrelated tasks. The experiment took approximately thirty minutes to complete. Participants were able to proceed from task to task at their own pace. Participants were seated in front of a computer in a distraction-free room. First the participants were assigned to descramble thirty clauses where either all of the clauses described non-hostile behaviors (control condition) or twenty-four of the thirty clauses presented described hostile behaviors and six clauses described non-hostile behaviors (hostile priming condition). Next, participants read the vignette and rated how well hostility and eight additional related traits described the individual. Participants next completed the attention check task. After this, demographic information was gathered. Lastly, participants completed the suspicion check. After the study was completed, they were informed about the true purpose of the study.

### **Results**

For the purposes of the present report, only the data from the conceptual replication conditions were analyzed. Of the 66 participants, 47 passed the attention check, leaving 22 participants in the hostile priming condition and 25 participants in the control condition. The participants ranged in age from 18 to over 50, with a mean age of 19.73 and 85.37% of

participants were between the ages of 18 and 20. The participants in the conceptual replication consisted of 37 females and 6 males. Six participants did not provide an age and four participants did not indicate their sex. An independent samples t-test was conducted to compare mean ratings of hostility in the hostile priming and control conditions. Participants in the hostile priming condition ( $M = 7.10$ ,  $SD = 2.10$ ) and the control condition ( $M = 7.00$ ,  $SD = 2.08$ ) did not differ in their mean hostility ratings,  $t(43) = .16$ ,  $p > .05$ . Thus, it appears the predicted hostile priming effect was not obtained.

In addition, independent samples t-tests were run to compare the mean ratings of the related traits (see Table 1). There was not a significant difference between mean ratings of aggressiveness in the hostile priming condition ( $M = 7.50$ ,  $SD = 1.67$ ) and the control condition ( $M = 6.40$ ,  $SD = 2.65$ ),  $t(43) = 1.62$ ,  $p > .05$ . Likewise there was not a significant difference between mean ratings of rudeness in the hostile priming condition ( $M = 8.00$ ,  $SD = 1.75$ ) and the control condition ( $M = 8.32$ ,  $SD = 1.65$ ),  $t(43) = -.63$ ,  $p > .05$ . There was not a significant difference between mean ratings of selfishness in the hostile priming condition ( $M = 8.00$ ,  $SD = 2.22$ ) and the control condition ( $M = 7.76$ ,  $SD = 2.15$ ),  $t(43) = .37$ ,  $p > .05$ . There was not a significant difference between mean ratings of coldness in the hostile priming condition ( $M = 7.25$ ,  $SD = 2.36$ ) and the control condition ( $M = 7.24$ ,  $SD = 2.07$ ),  $t(43) = .02$ ,  $p > .05$ . There was not a significant difference between mean ratings of self-centeredness in the hostile priming condition ( $M = 8.14$ ,  $SD = 1.85$ ) and the control condition ( $M = 7.88$ ,  $SD = 2.39$ ),  $t(43) = .69$ ,  $p > .05$ . There was not a significant difference between mean ratings of carelessness in the hostile priming condition ( $M = 6.10$ ,  $SD = 2.63$ ) and the control condition ( $M = 5.12$ ,  $SD = 2.62$ ),  $t(43) = 1.24$ ,  $p > .05$ . There was not a significant difference between mean ratings of unfriendliness (the reverse scoring of

friendliness) in the hostile priming condition ( $M = 8.15$ ,  $SD = 1.66$ ) and the control condition ( $M = 8.00$ ,  $SD = 1.38$ ),  $t(43) = .33$ ,  $p > .05$ . Lastly, there was not a significant difference between mean ratings of unkindness (the reverse scoring of kindness) in the hostile priming condition ( $M = 8.85$ ,  $SD = 1.69$ ) and the control condition ( $M = 8.72$ ,  $SD = 1.14$ ),  $t(43) = .31$ ,  $p > .05$ . Overall there were no significant differences in ratings of Alex based on priming condition.

Further exploratory analyses were conducted. A series of two-way analyses of variance (ANOVA) tests were run to explore the role sex may have played in ratings on the various trait-ratings of Alex, the vignette subject, made after priming (see Table 2). On average, females rated Alex as more selfish ( $M = 8.26$ ,  $SD = 1.87$ ) compared to males ( $M = 5.17$ ,  $SD = 2.48$ ),  $F(1, 37) = 12.64$ ,  $p < .05$ . Similarly, females rated Alex as more cold ( $M = 7.80$ ,  $SD = 1.59$ ) compared to males ( $M = 3.67$ ,  $SD = 2.25$ ),  $F(1, 37) = 29.97$ ,  $p < .05$ . There were also sex differences observed for mean ratings of carelessness, with females rating Alex as more careless ( $M = 5.91$ ,  $SD = 2.64$ ) compared to males ( $M = 3.67$ ,  $SD = 2.42$ ),  $F(1, 37) = 4.12$ ,  $p = .05$ . For self-centeredness, once again females on average provided higher ratings ( $M = 8.37$ ,  $SD = 1.90$ ) compared to males ( $M = 5.50$ ,  $SD = 2.74$ ),  $F(1, 37) = 9.95$ ,  $p < .05$ . However, this did not hold for all traits. There was no significant difference in ratings of hostility between males ( $M = 6.17$ ,  $SD = 3.76$ ) and females ( $M = 7.31$ ,  $SD = 1.64$ ),  $F(1, 37) = 1.54$ ,  $p > .05$ . Similarly there was no significant difference in ratings of aggressiveness between males ( $M = 5.83$ ,  $SD = 2.99$ ) and females ( $M = 7.17$ ,  $SD = 2.04$ ),  $F(1, 37) = 2.19$ ,  $p > .05$ . Males ( $M = 7.67$ ,  $SD = 2.58$ ) and females ( $M = 8.29$ ,  $SD = 1.49$ ) did not significantly differ in their ratings of rudeness,  $F(1, 37) = .67$ ,  $p > .05$ . Ratings of unfriendliness did not significantly differ between males ( $M = 8.00$ ,  $SD = .63$ ) and females ( $M = 8.09$ ,  $SD = 1.58$ ),  $F(1, 37) = .01$ ,  $p > .05$ . Lastly, males ( $M = 8.83$ ,  $SD = 1.17$ ) and

females ( $M = 8.74$ ,  $SD = 1.46$ ) did not significantly differ in their ratings of unkindness,  $F(1, 37) = .04$ ,  $p > .05$ . Overall a more negative perception of Alex on certain traits was observed for women, regardless of their experimental condition.

### **Comparing the Hunter sample with a selection of other samples in this replication study**

In order to gain more insight into the results obtained from participants at Hunter College, three additional samples that were part of the multisite replication study were analyzed using the same statistical procedures as the current sample. These samples were chosen because their materials were in English, the variables were clearly labeled, and they were in a downloadable file format. The samples were taken from the following locations: Athens, Ohio; Salt Lake City, Utah; and Coventry, England.

#### ***Athens Ohio***

The Athens, Ohio sample contained 58 participants, reduced to 45 after eliminating participants who failed the attention check. The participants were 86.67% female, with a mean age of 18.75. In order to compare these results, independent samples t-tests were run to compare the mean ratings of hostility and the related traits (see Table 3). There was no significant difference in ratings of hostility between participants in the hostile priming condition ( $M = 7.50$ ,  $SD = 1.95$ ) and the control condition ( $M = 7.26$ ,  $SD = 2.36$ ),  $t(43) = .37$ ,  $p > .05$ . There was also no significant difference in ratings of aggressiveness between participants in the hostile priming condition ( $M = 7.68$ ,  $SD = 1.43$ ) and the control condition ( $M = 6.64$ ,  $SD = 2.88$ ),  $t(43) = 1.38$ ,  $p > .05$ . Similarly, there was no significant difference in ratings of the target as confrontational between the hostile priming ( $M = 5.14$ ,  $SD = 2.83$ ) and control ( $M = 5.70$ ,  $SD = 2.55$ ) groups  $t(43) = -.70$ ,  $p > .05$ . Ratings of the target as antagonistic

were likewise similar between the experimental ( $M = 6.05$ ,  $SD = 2.48$ ) and control ( $M = 6.61$ ,  $SD = 1.85$ ) groups,  $t(43) = -.87$ ,  $p > .05$ . The hostile priming group ( $M = 8.55$ ,  $SD = 1.14$ ) and control group ( $M = 7.87$ ,  $SD = 1.69$ ) did not differ in their ratings of unfriendliness,  $t(43) = 1.57$ ,  $p > .05$ . Lastly, ratings of the trait ‘inconsiderate’ did not significantly differ between the experimental ( $M = 8.77$ ,  $SD = 1.19$ ) and control ( $M = 8.87$ ,  $SD = 1.46$ ) groups,  $t(43) = -.24$ ,  $p > .05$ .

All but one of the two-way ANOVAs that incorporated sex into the analyses failed to find significant results (see Table 4). Females ( $M = 7.26$ ,  $SD = 2.22$ ) and males ( $M = 8.17$ ,  $SD = 1.47$ ) had similar ratings of hostility,  $F(1, 41) = .90$ ,  $p > .05$ . Similarly, females ( $M = 7.33$ ,  $SD = 2.11$ ) and males ( $M = 6.33$ ,  $SD = 3.50$ ) did not differ in their ratings of aggressiveness,  $F(1, 41) = 1.06$ ,  $p > .05$ . Ratings of the trait ‘confrontational’ did not differ between females ( $M = 5.44$ ,  $SD = 2.62$ ) and males ( $M = 5.33$ ,  $SD = 3.27$ ),  $F(1, 41) = .01$ ,  $p > .05$ . Yet when analyzing sex differences in ratings of the subject as confrontational, an interaction between sex and condition was observed (see Table 5). For participants in the control condition the average ratings of males ( $M = 7.33$ ,  $SD = 2.52$ ) were significantly higher than the average ratings of females ( $M = 4.79$ ,  $SD = 2.78$ ). However for participants in the hostile priming condition, the average ratings of females ( $M = 6.05$ ,  $SD = 2.37$ ) were significantly higher than the average ratings of males ( $M = 3.33$ ,  $SD = 2.52$ ),  $F(1, 41) = 5.35$ ,  $p < .05$ . There was no significant difference between ratings of the target as antagonistic between females ( $M = 6.41$ ,  $SD = 2.00$ ) and males ( $M = 5.83$ ,  $SD = 3.31$ ),  $F(1, 41) = .35$ ,  $p > .05$ . Likewise, ratings of unfriendliness did not vary between females ( $M = 8.13$ ,  $SD = 1.40$ ) and males ( $M = 8.67$ ,  $SD = 2.00$ ),  $F(1, 41) = .68$ ,  $p > .05$ . Finally, ratings of the trait ‘inconsiderate’

did not differ between females ( $M = 8.79$ ,  $SD = 1.34$ ) and males ( $M = 9.00$ ,  $SD = 1.26$ ),  $F(1, 41) = .12$ ,  $p > .05$ .

### *Salt Lake City, Utah*

The Salt Lake City, Utah sample contained 65 participants, reduced to 54 after eliminating participants who failed the attention check. The participants were 57.41% female, with a mean age of 20.20. Again independent samples t-tests were run to compare the mean ratings of hostility and the related traits (see table 6). Participants in the hostile priming condition ( $M = 6.88$ ,  $SD = 2.86$ ) and the control condition ( $M = 6.79$ ,  $SD = 2.11$ ) did not differ significantly in their ratings of hostility,  $t(52) = .15$ ,  $p > .05$ . There was no significant difference in ratings of unfriendliness in the experimental ( $M = 7.31$ ,  $SD = 2.74$ ) and control ( $M = 6.57$ ,  $SD = 3.21$ ) conditions,  $t(52) = .90$ ,  $p > .05$ . Additionally, ratings of rudeness did not significantly differ between participants in the hostile priming condition ( $M = 7.96$ ,  $SD = 2.27$ ) and the control condition ( $M = 8.04$ ,  $SD = 2.06$ ),  $t(52) = -.13$ ,  $p > .05$ . Participants in the hostile priming group ( $M = 8.73$ ,  $SD = 1.61$ ) did not rate the target as more or less unkind than those in the control condition ( $M = 8.21$ ,  $SD = 1.85$ ),  $t(52) = 1.09$ ,  $p > .05$ . Ratings of the target as 'inconsiderate' did not differ between the experimental ( $M = 9.12$ ,  $SD = .99$ ) and control ( $M = 8.79$ ,  $SD = 1.57$ ) groups,  $t(52) = .91$ ,  $p > .05$ . Finally, participants in the hostile priming condition ( $M = 8.34$ ,  $SD = 2.10$ ) did not differ in their ratings of the target as thoughtless compared to participants in the control condition ( $M = 8.43$ ,  $SD = 1.87$ ),  $t(52) = -.15$ ,  $p > .05$ .

Additionally, a series of two-way ANOVA tests were run to examine sex differences in this sample (see Table 7). While this sample had the closest numbers of male and female participants, the majority of participants were still female. On average, females rated the subject as more hostile ( $M = 7.77$ ,  $SD = 2.16$ ) than males ( $M = 5.57$ ,  $SD = 2.35$ ),  $F(1, 50) =$

15.14,  $p < .05$ . There was also an interaction between sex and condition when the ratings of hostility were analyzed (see table 8). Males in the hostile priming condition ( $M = 4.44$ ,  $SD = 2.35$ ) rated the target as significantly less hostile than males in the control condition ( $M = 6.29$ ,  $SD = 2.13$ ). However females in the hostile priming condition ( $M = 8.18$ ,  $SD = 2.22$ ) rated the target as significantly more hostile than females in the control condition ( $M = 7.29$ ,  $SD = 2.05$ ),  $F(1, 50) = 5.05$ ,  $p > .05$ . On average, females also rated the subject as more unfriendly ( $M = 8.16$ ,  $SD = 2.05$ ) than males ( $M = 5.26$ ,  $SD = 3.28$ ),  $F(1, 50) = 14.04$ ,  $p < .05$ . Females had higher mean ratings of rudeness ( $M = 8.58$ ,  $SD = 1.96$ ) than males ( $M = 7.22$ ,  $SD = 2.17$ ),  $F(1, 50) = 5.75$ ,  $p < .05$ . In addition, females had higher mean ratings of inconsiderateness ( $M = 9.29$ ,  $SD = .78$ ) than males ( $M = 8.48$ ,  $SD = 1.73$ ),  $F(1, 50) = 4.92$ ,  $p < .05$ . Lastly females gave the subject higher average ratings of thoughtlessness ( $M = 8.87$ ,  $SD = 1.91$ ) than males ( $M = 7.74$ ,  $SD = 1.89$ ),  $F(1, 50) = 4.54$ ,  $p < .05$ . However females ( $M = 8.74$ ,  $SD = 1.50$ ) and males ( $M = 8.09$ ,  $SD = 2.00$ ) rated the target as similarly unkind,  $F(1, 50) = 1.23$ ,  $p > .05$ .

### *Coventry, England*

The Coventry, England sample contained 71 participants, reduced to 49 after eliminating participants who failed the attention check. The participants were 85.71% female, with an average age of 20.16. As with the other samples, independent samples t-tests were run to compare the mean ratings of hostility and the related traits (see table 9). Participants in the hostile priming condition ( $M = 6.46$ ,  $SD = 2.19$ ) did not differ in their ratings of hostility compared to participants in the control condition ( $M = 6.20$ ,  $SD = 2.77$ ),  $t(47) = .26$ ,  $p > .05$ . Average ratings of aggressiveness in the experimental group ( $M = 5.83$ ,  $SD = 1.99$ ) did not significantly differ from average ratings in the control group ( $M = 5.60$ ,  $SD = 2.45$ ),  $t(47) = .37$ ,  $p > .05$ . Similarly, mean ratings of unfriendliness did not differ between

participants in the hostile priming ( $M = 8.04$ ,  $SD = 1.73$ ) and control ( $M = 7.48$ ,  $SD = 2.50$ ) groups,  $t(47) = .91$ ,  $p > .05$ . Ratings of the target as ‘dislikable’ did not differ between the hostile priming ( $M = 7.63$ ,  $SD = 1.72$ ) and control ( $M = 7.64$ ,  $SD = 2.41$ ) groups,  $t(47) = -.03$ ,  $p > .05$ . Participants in the experimental condition ( $M = 7.96$ ,  $SD = 1.27$ ) and control condition ( $M = 7.92$ ,  $SD = 1.58$ ) did not differ significantly in their ratings of the target as unkind  $t(47) = .09$ ,  $p > .05$ . Average ratings of the target as ‘inconsiderate’ did not differ between participants in the hostile priming condition ( $M = 8.38$ ,  $SD = 2.04$ ) and participants in the control condition ( $M = 7.88$ ,  $SD = 1.69$ ),  $t(47) = .93$ ,  $p > .05$ . Lastly, there was not a significant difference in the ratings of the target as thoughtless between the hostile priming ( $M = 8.04$ ,  $SD = 1.83$ ) and control ( $M = 8.00$ ,  $SD = 1.73$ ) conditions,  $t(47) = .08$ ,  $p > .05$ .

Again two-way ANOVA tests were run. Analysis of the Coventry sample did not reveal any sex differences in trait ratings (see table 10). Females ( $M = 6.40$ ,  $SD = 2.49$ ) did not differ from males ( $M = 5.86$ ,  $SD = 2.55$ ) in their average ratings of the target’s hostility,  $F(1, 45) = .26$ ,  $p > .05$ . Additionally, the average ratings of aggressiveness did not differ between females ( $M = 5.74$ ,  $SD = 2.18$ ) and males ( $M = 5.57$ ,  $SD = 2.64$ ),  $F(1, 45) = .02$ ,  $p > .05$ . Females ( $M = 7.98$ ,  $SD = 2.08$ ) and males ( $M = 6.71$ ,  $SD = 2.29$ ) did not differ significantly in their ratings of unfriendliness,  $F(1, 45) = 2.91$ ,  $p > .05$ . Similarly, ratings of the target as unkind did not differ between females ( $M = 8.05$ ,  $SD = 1.41$ ) and males ( $M = 7.29$ ,  $SD = 1.38$ ),  $F(1, 45) = 1.64$ ,  $p > .05$ . Female participants ( $M = 8.29$ ,  $SD = 1.77$ ) did not differ from male participants ( $M = 7.14$ ,  $SD = 2.27$ ) in their ratings of the target as inconsiderate,  $F(1, 45) = 2.51$ ,  $p > .05$ . Lastly, females ( $M = 8.10$ ,  $SD = 1.78$ ) and males ( $M = 7.57$ ,  $SD = 1.72$ ) did not differ in their ratings of the target as thoughtless,  $F(1, 45) = .64$ ,  $p > .05$ .

### ***Comparison of results across samples***

All samples had mostly female participants. There were no significant differences in ratings of hostility between the hostile priming and control conditions in any of the samples. While each sample had different related traits, there were also no significant differences in traits ratings between the conditions in any sample. Thus, in the four examined samples, no hostile priming effect was observed. The results concerning sex differences varied by sample. The most similar sex differences results to the current study were found in the Salt Lake City sample. Ratings of multiple traits were found to be higher in female participants than male participants, like in the current sample. However the Salt Lake City sample, as well as the Athens sample found an interaction between sex and condition, which was not found in the current study. Analyses of the Athens sample only found sex differences for one additional trait, while analyses of the Coventry sample found no sex differences.

### **Discussion**

The conceptual replication portion of this study did not find a hostile priming effect when participants were presented with hostile stimuli and then asked to judge a target described in a paragraph as exhibiting ambiguously hostile actions. There were no significant differences between the hostile priming and the control group in ratings hostility or the eight related traits. The failure to replicate falls in line with McCarthy et al's (2018) results. Female participants also tended to rate the subject as more selfish, cold, careless, and self-centered than male participants, regardless of priming. The results of the exploratory analyses do not correspond to McCarthy et al's (2018) results or the results of any other study on hostile priming.

This study had many limitations. The trait ratings of participants, regardless of condition, were relatively high so it is possible that the ambiguously hostile behaviors performed by the vignette subject were not ambiguous enough. There was a fair amount of missing data in this

sample. The trait rating data was mostly complete, with only one participant failing to rate Alex on kindness. However, sex and age had multiple instances of missing data. It is possible that participants did not wish to disclose this information or that they just forgot to answer those questions. Participants typed in their own age and selected 'male' or 'female' to indicate sex, so it is unlikely participants were confused about how to provide age and sex data. Since the participants were from introductory psychology courses, they were also mostly female and under the age of 20. The findings concerning sex differences in particular, may be affected by the small number of males in the sample. In addition, only one of the three additional samples analyzed found similar sex differences. However the sample sharing this effect did have the best balance of male and female participants. Because the higher ratings by female participants on some of the related traits was not expected, no data were collected that may explain this phenomenon. The literature on hostile priming does not contain any instances of similar results with female participants reading about a male subject. It is unclear what the sex effects, discovered in this and at least one other sample, may or may not be attributed to. If there was another replication attempt, it might benefit from asking participants more questions about their ratings on various traits or by having male and female vignette subjects. On the other hand, having a larger, more balanced sample in terms of sex may eliminate the effect. It is also possible that these sex differences are unique to the particular studies and materials examined.

There were also procedural problems in the study's design. Firstly, 21.67% of participants failed the attention check, leaving a smaller sample and showing that a significant percentage of participants were not paying attention to the instructions. One potential explanation for the high rate of failure in the attention check is that for the students that

participated in this study, their participation was the result of filling a research requirement that involves completing multiple studies. Since they are merely trying to fulfill a requirement, some participants may not have been invested in participating and simply rushed through the instructions in order to minimize the amount of time spent completing the study. The participants also may have assumed that since the questions pertained to their own opinions and lives, reading the instructions was not necessary. It is also impossible to know whether some participants who did not read the instructions only passed the attention check because the required answers happened to correspond to their true sentiments. 74.47% participants realized the tasks were related. This allowed for the potential that participants realized they were being primed and engaged in correction. Given that the participants were all psychology students, it is possible they would be more likely to be savvy to the research design and realize the tasks were related than other types of participants. In addition, it is possible that in their studies they had come across Srull and Wyer's (1979) study. Perhaps this replication needed more tasks to obscure the relatedness of the tasks or a stronger cover story.

Given that this study is part of a larger meta-analysis, drawing conclusions about the hostile priming effect from only the Hunter sample of data would not be appropriate. As noted above, one failure to replicate does not necessarily discount an effect. The meta-analysis across the 34 of data collection sites will shed more light on whether or not this failure to replicate is a pattern, indicating that even after addressing the differences between Srull and Wyer's (1979) and McCarthy et al's (2018) studies, the hostile priming effect does not hold up to replication. It is also possible that the results from this sample and materials are an anomaly. However if the results of the meta-analysis are consistent with the failure to replicate found in the current study, there would be ramifications for impression formation research as a whole. Srull and Wyer's

(1979) study on hostile priming and impression formation has influenced studies in areas ranging from ratings of job applicants after exposure to sexual music (Carpentier, 2014) to behavior towards stereotyped groups by priming stereotyped traits (Bargh, Chen, & Burrows, 1996).

Throughout the past four decades and even now, research continues to be based on and explained by the findings of Srull and Wyer's (1979) experiment. If the hostile priming effect does not replicate, the assumptions and conclusions of those studies will have to be re-examined. It is also possible that neither McCarthy et al's (2018) replication nor this replication correctly identified the important factors in the hostile priming effect. Perhaps the scrambled clauses task is too obvious to participants and a subliminal priming method, such as flashing words on a screen too quickly to be consciously perceived, might produce different results. If a greater effort was made to obscure the relatedness of the priming and trait rating tasks, the results might also be different. While the sex imbalance in the current sample do impede the ability to make definitive conclusions about its effect on the hostile priming effect, it is possible that sex differences play a role in the reception to hostile priming and what kind of related words are salient for female participants.

On the other hand, if the meta-analysis finds a hostile priming effect, then location, testing awareness of the effect, and attention checks are important factors in determining the robustness of the hostile priming effect. Further study would be needed to more clearly examine how these factors come into play in impression formation outside of the laboratory. While the current conceptual replication of Srull and Wyer's (1979) hostile priming study did not find a hostile priming effect, it has yet to be determined whether the effect will hold under meta-analysis.

## References

- Ames, D. L., Fiske, S. T., & Todorov, A. T. (2011). Impression formation: A focus on others' intents. In J. Decety & J. T. Cacioppo (Eds.), *The Oxford handbook of social neuroscience*. (pp. 419–433). New York, NY: Oxford University Press. Retrieved from <http://search.ebscohost.com.proxy.wexler.hunter.cuny.edu/login.aspx?direct=true&db=psyh&AN=2013-01017-028&site=ehost-live>
- Banaji, M. R., Hardin, C., & Rothman, A. J. (1993). Implicit stereotyping in person judgment. *Journal of Personality and Social Psychology*, *65*(2), 272–281. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.65.2.272>
- Bargh, J. A. (2014). The historical origins of priming as the preparation of behavioral responses: Unconscious carryover and contextual influences of real-world importance. In D. C. Molden (Ed.), *Understanding priming effects in social psychology* (pp. 218-233). New York, NY, US: Guilford Press.
- Bargh, J. A., Bond, R. N., Lombardi, W. J., & Tota, M. E. (1986). The additive nature of chronic and temporary sources of construct accessibility. *Journal of Personality and Social Psychology*, *50*(5), 869–878. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.50.5.869>
- Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle. *Handbook of research methods in social and personality psychology*, *2*, 253-285.
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of personality and social psychology*, *71*(2), 230.

- Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. *Journal of personality and Social psychology*, 43(3), 437.
- Bodenhausen, G. V., & Morales, J. R. (2013). Social cognition and perception. In H. Tennen, J. Suls, & I. B. Weiner (Eds.), *Handbook of psychology: Personality and social psychology.*, Vol. 5, 2nd ed. (pp. 225–246). Hoboken, NJ: John Wiley & Sons Inc.
- Retrieved from  
<http://search.ebscohost.com.proxy.wexler.hunter.cuny.edu/login.aspx?direct=true&db=psyh&AN=2012-28461-011&site=ehost-live>
- Cameron, C. D., Brown-Iannuzzi, J. L., & Payne, B. K. (2012). Sequential priming measures of implicit social cognition: A meta-analysis of associations with behavior and explicit attitudes. *Personality and Social Psychology Review*, 16(4), 330-350.
- Carpentier, F. R. D. (2014). When sex is on the air: Impression formation after exposure to sexual music. *Sexuality & Culture*, 18(4), 818-832.
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, 82(6), 407–428. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0033-295X.82.6.407>
- Crandall, C. S., & Sherman, J. W. (2016). On the scientific superiority of conceptual replications for scientific progress. *Journal of Experimental Social Psychology*, 66, 93–99. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1016/j.jesp.2015.10.002>
- Crano, W. D., Brewer, M. B., & Lac, A. (2014). *Principles and methods of social research*. Routledge.

- DeCoster, J., & Claypool, H. M. (2004). A Meta-Analysis of Priming Effects on Impression Formation Supporting a General Model of Informational Biases. *Personality and Social Psychology Review*, 8(1), 2–27.
- Elgendi, M., Kumar, P., Barbic, S., Howard, N., Abbott, D., & Cichocki, A. (2018). Subliminal Priming-State of the Art and Future Perspectives. *Behavioral Sciences (Basel, Switzerland)*, 8(6), Behavioral sciences (Basel, Switzerland), May 30, 2018, Vol.8(6).
- Fabrigar, L. R., & Wegener, D. T. (2016). Conceptualizing and evaluating the replication of research results. *Journal of Experimental Social Psychology*, 66, 68–80. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1016/j.jesp.2015.07.009>
- Gambone, G. C., & Contrada, R. J. (2002). Patterns of self- and other-representation in trait hostility. *Journal of Social and Clinical Psychology*, 21(5), 546–565. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1521/jscp.21.5.546.22620>
- Herr, P. M. (1986). Consequences of priming: Judgment and behavior. *Journal of Personality and Social Psychology*, 51(6), 1106–1115. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.51.6.1106>
- Herr, P. M., Sherman, S. J., & Fazio, R. H. (1983). On the consequences of priming: Assimilation and contrast effects. *Journal of Experimental Social Psychology*, 19(4), 323– 340.
- Higgins, E. T. (1996). Activation: Accessibility, and salience. *Social psychology: Handbook of basic principles*, 133-168.
- Higgins, E. Tory, Rholes, William S., & Jones, Carl R. (1977).Category accessibility and impression formation. *Journal of Experimental Social Psychology*, 13 (2), 141-154.

Ikegami, T. (1993). Positive-negative asymmetry of priming effects on impression formation.

*European Journal of Social Psychology*, 23(1), 1–16. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1002/ejsp.2420230102>

Loersch, C., & Payne, B. K. (2014). Situated inferences and the what, who, and where of priming. *Social Cognition*, 32(Supplement), 137-151.

MacGregor, M. W., & Davidson, K. (2000). Men's and women's hostility is perceived differently. *Journal of Research in Personality*, 34(2), 252–261. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1006/jrpe.1999.2268>

Martin, L. L. (1986). Set/reset: Use and disuse of concepts in impression formation. *Journal of personality and social psychology*, 51(3), 493.

McCarthy, R. J., Skowronski, J. J., Verschuere, B., Meijer, E. H., Jim, A., Hoogesteyn, K., ... & Barbosa, F. (2018). Registered replication report on Srull and Wyer (1979). *Advances in Methods and Practices in Psychological Science*, 1(3), 321-336.

Moskowitz, G. B., & Gill, M. J. (2013). Person perception. In D. Reisberg (Ed.), *The Oxford handbook of cognitive psychology*. (pp. 918–942). New York, NY: Oxford University Press. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1093/oxfordhb/9780195376746.013.0058>

Otten, S., & Stapel, D. A. (2007). Who is this Donald? How social categorization affects aggression-priming effects. *European Journal of Social Psychology*, 37(5), 1000-1015.

Philippot, P., Schwarz, N., Carrera, P., de Vries, N., & Van Yperen, N. W. (1991). Differential effects of priming at the encoding and judgment stage. *European Journal of Social Psychology*, 21(4), 293–302. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1002/ejsp.2420210403>

- Pryor, J. B., & Ostrom, T. M. (1981). The cognitive organization of social information: A converging-operations approach. *Journal of Personality and Social Psychology*, 41(4), 628–641. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.41.4.628>
- Schmidt, S. (2009). Shall we really do it again? The powerful concept of replication is neglected in the social sciences. *Review of General Psychology*, 13(2), 90–100. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/a0015108>
- Smith, T. W. (1992). Hostility and health: Current status of a psychosomatic hypothesis. *Health Psychology*, 11(3), 139–150. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0278-6133.11.3.139>
- Strull, T. K., & Wyer, R. S. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, 37(10), 1660–1672. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.37.10.1660>
- Strull, T. K., & Wyer, R. S. (1980). Category accessibility and social perception: Some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology*, 38(6), 841–856. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1037/0022-3514.38.6.841>
- Stanley, D. J., & Spence, J. R. (2014). Expectations for replications: Are yours realistic?. *Perspectives on Psychological Science*, 9(3), 305-318.
- Stapel, D. A., Koomen, W., & Van der Pligt, J. (1997). Categories of category accessibility: The impact of trait concept versus exemplar priming on person judgments. *Journal of Experimental Social Psychology*, 33(1), 47-76.

Strack, F., Schwarz, N., Bless, H., Kübler, A., & Wänke, M. (1993). Awareness of the influence as a determinant of assimilation versus contrast. *European journal of social psychology*, 23(1), 53-62.

Quadflieg, S., & Westmoreland, K. (2019). Making sense of other people's encounters: Towards an integrative model of relational impression formation. *Journal of Nonverbal Behavior*. <https://doi-org.proxy.wexler.hunter.cuny.edu/10.1007/s10919-019-00295-1>

Wann, D. L., & Branscombe, N. R. (1990). Person perception when aggressive or nonaggressive sports are primed. *Aggressive Behavior*, 16(1), 27–32. [https://doi-org.proxy.wexler.hunter.cuny.edu/10.1002/1098-2337\(1990\)16:1<27::AID-AB2480160104>3.0.CO;2-L](https://doi-org.proxy.wexler.hunter.cuny.edu/10.1002/1098-2337(1990)16:1<27::AID-AB2480160104>3.0.CO;2-L)

Wyer, R. S., & Carlston, D. E. *Social cognition, inference and attribution*. Hillsdale, N.J.: Erlbaum, 1979.

Wyer, R. S., Srull, T. K., Hastie, R., Ostrom, T. M., Ebbesen, E. B., Wyer, R. S., ... & Carlson, D. E. (1980). The processing of social stimulus information: A conceptual integration. *Person memory: The cognitive basis of social perception*, 227-300.

Table 1

Hunter College sample results of priming effects

<b>Trait</b>	<b>Hostile Priming Condition</b>	<b>Control Condition</b>
<b>Hostile</b>	n = 21	n = 26
	M = 7.10	M = 7.00
	SD = 2.10	SD = 2.08
<b>Aggressive</b>	n = 21	n = 26
	M = 7.50	M = 6.40
	SD = 1.67	SD = 2.65
<b>Kind (Reverse-Scored)</b>	n = 21	n = 25
	M = 8.85	M = 8.72
	SD = 1.69	SD = 1.14
<b>Friendly (Reverse-Scored)</b>	n = 21	n = 26
	M = 8.15	M = 8.00
	SD = 1.66	SD = 1.38
<b>Rude</b>	n = 21	n = 26
	M = 8.00	M = 8.32
	SD = 1.75	SD = 1.65
<b>Selfish</b>	n = 21	n = 26
	M = 8.00	M = 7.76
	SD = 2.22	SD = 2.15
<b>Cold</b>	n = 21	n = 26
	M = 7.25	M = 7.24
	SD = 2.36	SD = 2.07

<b>Careless</b>	n = 21	n = 26
	M = 6.10	M = 5.12
	SD = 2.63	SD = 2.62
<b>Self-Centered</b>	n = 21	n = 26
	M = 8.14	M = 7.88
	SD = 1.85	SD = 2.39

Table 2

Hunter College sample Sex Differences in Trait Ratings

<b>Trait</b>	<b>Female</b>	<b>Male</b>
<b>Selfish</b>	n = 35	n = 6
	M = 8.26	M = 5.17
	SD = 1.87	SD = 2.48
<b>Cold</b>	n = 35	n = 6
	M = 7.80	M = 3.67
	SD = 1.59	SD = 2.25
<b>Careless</b>	n = 35	n = 6
	M = 5.91	M = 3.67
	SD = 2.64	SD = 2.42
<b>Self-Centered</b>	n = 35	n = 6
	M = 8.37	M = 5.50
	SD = 1.90	SD = 2.74
<b>Hostile</b>	n = 35	n = 6
	M = 7.31	M = 6.17

	SD = 1.64	SD = 3.76
<b>Aggressive</b>	n = 35	n = 6
	M = 7.17	M = 5.83
	SD = 2.04	SD = 2.99
<b>Rude</b>	n = 35	n = 6
	M = 8.29	M = 7.67
	SD = 1.49	SD = 2.58
<b>Friendly (Reverse-Scored)</b>	n = 35	n = 6
	M = 8.09	M = 8.00
	SD = 1.58	SD = .63
<b>Kind (Reverse-Scored)</b>	n = 35	n = 6
	M = 8.74	M = 8.83
	SD = 1.46	SD = 1.17

Table 3

Athens, OH sample results of priming effects

<b>Trait</b>	<b>Hostile Priming Condition</b>	<b>Control Condition</b>
<b>Hostile</b>	n = 22	n = 23
	M = 7.50	M = 7.26
	SD = 1.95	SD = 2.36
<b>Aggressive</b>	n = 22	n = 23
	M = 7.68	M = 6.64
	SD = 1.43	SD = 2.88

<b>Confrontational</b>	n = 22	n = 23
	M = 5.14	M = 5.70
	SD = 2.83	SD = 2.55
<b>Antagonistic</b>	n = 22	n = 23
	M = 6.05	M = 6.61
	SD = 2.48	SD = 1.85
<b>Friendly (Reverse-Scored)</b>	n = 22	n = 23
	M = 8.55	M = 7.87
	SD = 1.14	SD = 1.69
<b>Considerate (Reverse-Scored)</b>	n = 22	n = 23
	M = 8.77	M = 8.87
	SD = 1.19	SD = 1.46

Table 4

Athens, OH sample Sex Difference in Trait Ratings

<b>Trait</b>	<b>Female</b>	<b>Male</b>
<b>Hostile</b>	n = 39	n = 6
	M = 7.26	M = 8.17
	SD = 2.22	SD = 1.47
<b>Aggressive</b>	n = 39	n = 6
	M = 7.33	M = 6.33
	SD = 2.11	SD = 3.50
<b>Confrontational</b>	n = 39	n = 6
	M = 5.44	M = 5.33

	SD = 2.62	SD = 3.27
<b>Antagonistic</b>	n = 39	n = 6
	M = 6.41	M = 5.83
	SD = 2.00	SD = 3.31
<b>Friendly (Reverse-Scored)</b>	n = 39	n = 6
	M = 8.13	M = 8.67
	SD = 1.40	SD = 2.00
<b>Considerate (Reverse-Scored)</b>	n = 39	n = 6
	M = 8.79	M = 9.00
	SD = 1.34	SD = 1.26

Table 5

Athens, OH sample Sex Differences by Condition

	<b>Female</b>	<b>Male</b>
<b>Control</b>	n = 19	n = 3
	M = 4.79	M = 7.33
	SD = 2.78	SD = 2.52
<b>Hostile Priming</b>	n = 20	n = 3
	M = 6.05	M = 3.33
	SD = 2.37	SD = 2.89

Table 6

Salt Lake City, UT sample results of priming effects

<b>Trait</b>	<b>Hostile Priming Condition</b>	<b>Control Condition</b>
<b>Hostile</b>	n = 26	n = 28

	M = 6.88	M = 6.79
	SD = 2.86	SD = 2.11
<b>Unfriendly</b>	n = 26	n = 28
	M = 7.31	M = 6.57
	SD = 2.74	SD = 3.21
<b>Rude</b>	n = 26	n = 28
	M = 7.96	M = 8.04
	SD = 2.27	SD = 2.06
<b>Kind (Reverse-Scored)</b>	n = 26	n = 28
	M = 8.73	M = 8.21
	SD = 1.61	SD = 1.85
<b>Considerate (Reverse-Scored)</b>	n = 26	n = 28
	M = 9.12	M = 8.79
	SD = .99	SD = 1.57
<b>Thoughtful (Reverse-Scored)</b>	n = 26	n = 28
	M = 8.34	M = 8.43
	SD = 2.10	SD = 1.87

Table 7

Salt Lake City, UT sample Sex Differences in Trait Ratings

<b>Trait</b>	<b>Female</b>	<b>Male</b>
<b>Hostile</b>	n = 31	n = 23
	M = 7.77	M = 5.57
	SD = 2.16	SD = 2.35

<b>Unfriendly</b>	n = 31	n = 23
	M = 8.16	M = 5.26
	SD = 2.05	SD = 3.28
<b>Rude</b>	n = 31	n = 23
	M = 8.58	M = 7.22
	SD = 1.96	SD = 2.17
<b>Considerate (Reverse-Scored)</b>	n = 31	n = 23
	M = 9.29	M = 8.48
	SD = .78	SD = 1.73
<b>Thoughtful (Reverse-Scored)</b>	n = 31	n = 23
	M = 8.87	M = 7.74
	SD = 1.91	SD = 1.89
<b>Kind (Reverse-Scored)</b>	n = 31	n = 23
	M = 8.74	M = 8.09
	SD = 1.50	SD = 2.00

Table 8

Salt Lake City, UT sample Sex Differences by Condition

	<b>Female</b>	<b>Male</b>
<b>Control</b>	n = 14	n = 14
	M = 7.29	M = 6.29
	SD = 2.05	SD = 2.13
<b>Hostile Priming</b>	n = 17	n = 9
	M = 8.18	M = 4.44

	SD = 2.22	SD = 2.35
--	-----------	-----------

Table 9

Coventry, England sample results of priming effects

<b>Trait</b>	<b>Hostile Priming Condition</b>	<b>Control Condition</b>
<b>Hostile</b>	n = 24	n = 25
	M = 6.46	M = 6.20
	SD = 2.19	SD = 2.77
<b>Aggressive</b>	n = 24	n = 25
	M = 5.83	M = 5.60
	SD = 1.99	SD = 2.45
<b>Unfriendly</b>	n = 24	n = 25
	M = 8.04	M = 7.48
	SD = 1.73	SD = 2.50
<b>Dislikable</b>	n = 24	n = 25
	M = 7.63	M = 7.64
	SD = 1.72	SD = 2.41
<b>Kind (Reverse-Scored)</b>	n = 24	n = 25
	M = 7.96	M = 7.92
	SD = 1.27	SD = 1.58
<b>Considerate (Reverse-Scored)</b>	n = 24	n = 25
	M = 8.38	M = 7.88
	SD = 2.04	SD = 1.69

<b>Thoughtful (Reverse-Scored)</b>	n = 24	n = 25
	M = 8.04	M = 8.00
	SD = 1.83	SD = 1.73

Table 10

Coventry, England sample Sex Differences in Trait Ratings

<b>Trait</b>	<b>Female</b>	<b>Male</b>
<b>Hostile</b>	n = 42	n = 7
	M = 6.40	M = 5.86
	SD = 2.49	SD = 2.55
<b>Aggressive</b>	n = 42	n = 7
	M = 5.74	M = 5.57
	SD = 2.18	SD = 2.64
<b>Unfriendly</b>	n = 42	n = 7
	M = 7.98	M = 6.43
	SD = 2.08	SD = 2.30
<b>Dislikable</b>	n = 42	n = 7
	M = 7.79	M = 6.71
	SD = 2.03	SD = 2.29
<b>Kind (Reverse-Scored)</b>	n = 42	n = 7
	M = 8.05	M = 7.29
	SD = 1.41	SD = 1.38
<b>Considerate (Reverse-Scored)</b>	n = 42	n = 7
	M = 8.29	M = 7.14

	SD = 1.77	SD = 2.27
<b>Thoughtful (Reverse-Scored)</b>	n = 42	n = 7
	M = 8.10	M = 7.57
	SD = 1.78	SD = 1.72