

*Unpacking Sex Differences: Investigating the Role of Indirect Aggression in Young Adults*

**An Honors Thesis (ANTH 414)**

**by**

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## **Abstract**

This project examines the use of indirect aggression in college-aged students to determine if there are sex-related differences associated with its use in modern-day societies, while also investigating whether these differences are a result of biological evolution or a product of cultural conditioning. Using evolutionary theory, this paper explores the historical adaptive problems that led to the development of direct and indirect aggression. While past evidence suggests that females continue to use indirect aggression more frequently than males, newer evidence suggests that males have adapted to using it as well. After analyzing preliminary results from a questionnaire, data indicates that while females are still more likely to engage in indirect aggression due to the lower costs associated with it and the reproductive benefits it has provided in human evolution, the use of indirect aggression by males is also prevalent. The paper also explores the cultural perceptions of sex differences in the use of indirect aggression using informal interview results to determine how they may perpetuate them. Ultimately, the research determines that sex differences in the use of indirect aggression are not only rooted in biology but also in societal standards.

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## Process Analysis Statement

Discovering a meaningful direction for my thesis that also demonstrated my passion for both cultural and biological anthropology was not an easy task. I began accumulating ideas for this project in the Fall at the start of the school year. At the time, I was also in a research methods class in which my peers and I were asked to focus on a topic within anthropology and practice collecting ethnographic data using different methods. While I appreciated the learning and growth I was able to achieve in this class, it also narrowed my field of vision for the kind of topics I could explore within anthropology. This research methods class was focused specifically on cultural anthropology, which I have always loved. However, as I began taking my project in multiple different directions, I struggled to stay engaged and passionate about the work I was producing. Luckily, at the time, I was also in a class that focused on the evolution of human behavior. I always found the lectures and readings in this class fascinating, and often found myself discussing the new information I had learned with my closest friends. I noticed how engaged I was in these conversations and my friends would often point out the passion I seemed to have regarding biological anthropology.

I began thinking of ways I could combine both the biological and cultural facets of anthropology into one project. As an anthropology student, I was interested in the evolution of human behavior, and as a woman, I was fascinated by the gender dynamics of our evolution. After reading a chapter in my textbook on the evolution of human aggression and a riveting in-class discussion on the topic, I decided to design a study that combined both the biological and cultural elements of aggressive human behavior.

In order to begin this project, I first had to conduct a lengthy and in-depth review of the literature on human aggression. The evolution of human aggression has been a topic of interest to

anthropologists for years, which explains the countless theories I had to analyze in order to understand the full scope of aggression in humans. After recognizing the many different avenues of research I could pursue, I realized I needed to narrow my focus to one specific topic within the reach of human aggression. Because I was specifically interested in the gender differences regarding the use of aggression, I began collecting information on the claims made by researchers in the past in relation to this topic. Many of these studies made the claim that while men are more physically and directly aggressive, women utilize an indirect approach in order to protect themselves (Campbell, 1999, Campbell, 2004). Because a mother's survival was more crucial in rearing offspring, females had to develop a form of aggression that did not jeopardize their bodily health. Instead of confronting their competitors up front, females began utilizing techniques such as social exclusion, manipulation, and gossip to target their opponents at a much lower cost to their physical well-being.

As I read through the results of study after study, I noticed a trend. The data collected in older research did not match the results of newer studies. I realized that studies that had been conducted in the past 10-20 years did not acknowledge this dichotomy between male and female aggression. In fact many of the newer studies indicated that the male use of indirect aggression was just as prevalent as its use by females. From this information, I decided to create a study in which I could measure the frequency of the use of indirect aggression by both males and females in order to compare them.

Though I was excited about this part of my thesis, I was still looking to include aspects of cultural anthropology in my work. While evolutionary theory points out the biological components that shaped human aggression, I have always been interested in the nature versus nurture debate. I decided that in order to understand and reveal the cultural components at play

when it comes to sex differences in the use of aggression, I could interview individuals about their views and experiences on this topic. These interviews highlighted the environmental factors that influence both males and females to use certain types of aggression. In a society that popularizes movies such as *Fight Club* and *Mean Girls*, it is not surprising that these social expectations of how males and females can or do behave affect our actual behavior.

Actually conducting the research was another story. First I had to receive IRB approval in order to conduct the study. This lengthy process took a few months (and a few different submissions). After completing and editing countless forms, I was finally able to begin research. In order to discover the frequencies of the use of indirect aggression in males and females, I created a questionnaire. This questionnaire consisted of 20 questions, all of which asked the participant to indicate how often in the past 12 months they had participated in a certain indirectly aggressive behavior. In order to calculate the frequency, I gave 5 answer options, all of which had scores tied to them. For example, a. *never* would equal a score of 1, and b. *once or twice* would equal a score of 2, etc. Then the scores from each of the 20 questions were totaled in order to compute a final score. The higher the score, the more frequently that individual used indirect aggression. From there, I could compare the scores of the males to the scores of the females by calculating a mean/minimum/maximum score for both sexes.

To explore the cultural perceptions of this topic I conducted interviews. Though it was a struggle to get a big enough sample size for both parts of the study, the results were fascinating. I especially enjoyed conducting the interviews, as I got to hear from individuals about their own experiences with aggression. Each of the interviews was audio recorded, and then transcribed. From there, I coded the transcriptions and identified common themes throughout all the interviews. Many participants pointed out experiences from their childhood that affected their

behavior, and how these experiences represented the stereotypes that often shape the way we think and live. What I found particularly noteworthy was that many of the same people who identified these cultural pressures to behave a certain way also stated that they believed the male tendency towards violent aggression was a result of genetics, highlighting how cultural stereotypes about male and female behavior are ingrained in our understanding of the world.

For me, completing this project deepened my understanding of sex differences and dynamics in our modern world, and expanded my knowledge of human behavior. I found that though females continue to use indirect aggression slightly more frequently than males, the male use of indirect aggression is prevalent and increasing. With an incoming generation of individuals who have shown their dedication to testing social stereotypes and pushing boundaries, I am not surprised that the sex differences in the use of aggression are changing and shifting.

## Introduction

This project explores the use of indirect aggression in college-aged students to investigate whether females use it more frequently than males. I used a questionnaire to help clarify the many conflicting studies that have both justified and refuted this claim (Buss & Shackelford, 1997; Campbell, 1999; Cross, 2010; Hess & Hagen, 2006; Moroschan et al., 2009). The cultural perceptions of these claimed differences are also examined using informal interviews to determine whether they are in turn perpetuating them.

Because this paper addresses a multitude of claims and questions, each requires explanation and clarification. The first question this paper aims to answer is whether college-age females use indirect aggression more than college-age males. Evolutionary theory can be used to sort out all the given information on this topic. First, aggression developed as a solution to solve certain adaptive problems. However, because males and females faced different adaptive problems, their solutions to these problems were not the same. It is likely that males developed direct aggression while females developed indirect aggression during the environment of evolutionary adaptiveness. During this time period, females favored indirect aggression while males favored violent aggression. However, as cultures and societies developed and changed, so did the use of aggression. While there has been no evidence to show that the female preference for indirect aggression has changed, there is evidence suggesting that the male use of indirect aggression has increased. Some studies even support the assertion that males now use indirect aggression just as much as females do, and that they no longer have a preference for direct aggression (Moroschan et al., 2009). Therefore, the first part of this research is aimed at revealing whether the sex differences in the use of aggression are still prevalent, or if males now use indirect aggression just as much as females.

The second question this paper aims to answer is whether the differences in the use of indirect aggression are a result of biology or culture. Turning back to evolutionary theory, evolutionary psychologists claim that during the environment of evolutionary adaptiveness, humans developed mechanisms in their brains to solve specific adaptive problems. Therefore, the mechanisms driving human aggression can be explained by the environmental problems they were meant to solve. Because men and women had to solve two different sets of problems, men developed mechanisms for violent aggression and women developed mechanisms for indirect aggression. However, it cannot be ignored that there are instances in research where men did not seem more disposed to violent aggression (Hess & Hagen, 2006). There are also instances where men actually have been shown to use more indirect aggression than females (Moroschan et al. 2009). This new information suggests a few things—first, the mechanisms in the male brain have continued to adapt as a result of changing environment, and second, the male brain has developed mechanisms for indirect aggression.

Though research shows that men are now utilizing the indirect approach when it comes to aggression, there is still a societal belief that men are more physically aggressive and that women are more subtle with their aggression. Because this cultural bias exists, it is important to evaluate how it affects male behavior, and how it may even affect the results of this research. Therefore, this paper explores the cultural perceptions of sex differences in the use of indirect aggression in college-age students to determine how societal beliefs may or may not be perpetuating them.

After conducting this research, it can be concluded that while females are more likely to engage in indirect aggression due to the lower costs associated with it and the reproductive benefits it has provided in our evolution, the use of indirect aggression by males is also



prevalent. These differences are not only rooted in our biological evolution but also in our societal standards.

### **Theory**

Human nature encompasses aggression, but the sources of male and female aggression vary, which can be clarified through an evolutionary lens. It has been claimed and supported in the past that direct aggression is typically favored by males, whereas females often opt for an indirect approach (Buss & Shackelford, 1997; Campbell, 1999). The use of indirect aggression is less taxing for the individuals who utilize it, boosting the likelihood of survival and reproduction for the aggressor. Evolutionary psychologists believe that female inclination toward indirect aggression, as opposed to physical aggression, stems from the lower risk levels associated with it and the reproductive advantages it offers.

To comprehend the adaptive importance of both forms of aggression, it is crucial to recognize the significant distinctions between direct aggression and indirect aggression. Direct aggression involves physical violence or verbal threats that intend to harm or intimidate someone. Such aggression is expensive since it is identifiable, meaning it is evident who initiated it. Conversely, indirect aggression includes actions such as spreading rumors, humiliation, and gossiping. This type of aggression aims to damage an individual's social reputation or create feelings of exclusion, self-consciousness, or embarrassment to lower their social status. While direct aggression is identifiable, indirect aggression is much harder to trace. Identifying the aggressor in such instances can be challenging, making indirect aggression a less costly option to use.

Understanding why humans display both forms of aggression, despite one form being less costly, is crucial in comprehending human behavior. According to evolutionary psychologists David Buss and Todd Shackelford's article "Human Aggression in Evolutionary Psychological Perspective," the psychological mechanisms underlying aggression are "solutions to particular adaptive problems of social living" (1997, p. 605). Buss bases this claim on the well-known evolutionary psychology theory that the mechanisms in our brains driving human behavior developed to solve specific environmental problems. Thus, the mechanisms driving human aggression can be explained by the problems that humans had to solve to adapt to their environment, such as "co-opting the resources of others, defending against attack, inflicting costs on same-sex rivals, negotiating status and power hierarchies, deterring rivals from future aggression, deterring mates from sexual infidelity, and reducing resources expended on genetically unrelated children" (Buss & Shackelford, 1997, p. 605). From this perspective, direct aggression may have been a more straightforward way to achieve these goals. As men faced more pressure to find solutions to these problems, they were more likely to develop mechanisms that drive violent aggression.

In his article "The Nature of Human Aggression," John Archer also supports the idea that human aggression is a response to competition for resources (2009, p. 203). He expands on the discussion of aggression by highlighting the cost-benefit dynamic of using aggression. According to Archer, when the benefits of aggression outweigh the costs, some type of aggression evolves (Archer, 2009, p. 204). This information can be utilized to explain the evolutionary differences in male and female methods of aggression. In her article "Staying Alive: Evolution, Culture, and Women's Intrasexual Aggression," Anne Campbell illustrates that females developed less costly forms of aggression because maternal care was more crucial to

offspring survival than paternal care (1999, p. 203). Therefore, the cost of performing violent aggression outweighed the benefits, and females developed less costly forms of aggression to solve social issues they faced during the environment of evolutionary adaptiveness (EEA), or “the ancestral environment to which a species is adapted” or “set of selection pressures that shaped an adaptation” (Bennett, 2018, p. 1). Another article co-authored by Campbell and Paula Stockley explained that men prefer young and attractive mates, while women favor men with status and rank (2013). Because males find dominance and status less attractive than females, women are less motivated to compete for those attributes, thus reducing their chances of using direct aggression. Additionally, as the death of a mother poses a greater danger to a child's survival than that of a father, selection favors females who avoid danger (Campbell, 2004, p. 18). Therefore, females who are less likely to put their lives at risk using direct aggression are more likely to attract male mates, thus increasing their fitness.

There have been several studies conducted to confirm that while males are more likely to be directly aggressive, females tend to prefer indirect aggression. One such study, conducted by Catherine Cross, examined sex differences in same-sex direct aggression by assessing willingness to take risks. The study utilized self-report data from 3,775 participants, with 1,514 being female. Respondents were asked to rate on a scale of 1 to 5 how likely they were to engage in impulsive risky behavior, such as driving too fast when upset. The findings revealed that males were more likely than females to engage in impulsive risky behavior, backing up the claim that such high-risk behaviors are less costly for males than for females (Cross, 2010).

While Cross's study on same-sex aggression provides important information on the adaptive significance behind female aggression, more research is needed on female aggression towards the opposite sex to fully understand the entire scope of aggression used by females.

Also, given that Cross's study exclusively centered on direct aggression, additional research is required to investigate whether females exhibit a greater tendency towards indirect aggression compared to males, as well as the involvement of impulsivity and risk-taking in such behavior.

Nicole Hess conducted two research studies that measured sex differences in the use of aggression. One of the studies evaluated interpersonal aggression among Aka hunter-gatherers of the Central African Republic, with a sample size of 100 individuals, including children, adolescents, and adults. In this study, each individual was shown photos of people in their community and asked whether or not they would commit a certain type of aggression. The results indicated a large male bias for violent aggression and an adult female bias for indirect aggression. In another study, using a sample of 255 young adults from college campuses, participants were given a scenario in which they were falsely accused of not pulling their weight in a group project by a student who had actually not participated in the group work. They were then asked whether they would gossip about the student, tell the teacher that that student hadn't done any work, punch the student, or threaten to punch the student if they falsely accused them again. The results showed that females were more likely to gossip or tell, whereas males were equally likely to punch/threaten as they were to gossip/tell, supporting the idea that females favor indirect aggression, whereas males do not have a preference for either type of aggression (Hess et al., 2010, p. 340; Hess & Hagen, 2006, p. 237).

Like Cross's research, Hess's study on the Aka also had limitations. Instead of using self-report data, this study relied on peer-report. In this type of study, certain members of the community are asked to report on the behavior of others. This is meant to eliminate bias, as someone reporting on their own behavior may choose to not disclose certain information. However, peer-report data ignores internal anger towards targets that an individual may not show

outwardly to their peers. Additionally, the population size was very small, and the study did not address how culture plays a role in the use of aggression. Therefore, cultural biases need to be accounted for before conducting research on sex differences in the use of aggression.

These numerous studies suggest that there may be a bias toward indirect aggression among females. However, these studies have certain limitations that researchers must consider. For example, many studies rely on self-report or peer-report data, which may be biased due to environmental factors. Additionally, a lot of research has been conducted on college-age students, and it cannot be generalized to all men and women. Therefore, more research is needed on children and adults to determine whether sex differences in aggression are pertinent across all ages. Furthermore, many studies on female aggression rely on data and evidence from other studies, and more research is needed to fully understand the nature of human aggression.

It is worth noting that not all evidence collected supports the idea that females favor indirect aggression over males. For instance, a study done by Gail Moroschan et al. administered a questionnaire assessing levels of indirect aggression to 175 male and 311 female Canadian college students (2009). The study found that males in this population reported using indirect aggression more frequently than females. Moroschan asserts that the data found from this study suggests cultural differences may play a large role in sex differences in aggression, and more research is needed to account for these norms.

Research strongly supports the evolutionary prediction that females prefer indirect aggression, as it is less costly and provides reproductive benefits. However, as previously mentioned, the limitations of the research may affect the results. Furthermore, there has been a lack of recent research exploring the extent of men's use of indirect aggression, and the studies that have examined this topic have contradicted the notion that men use indirect aggression less

frequently than women. This research contributes to the investigation of whether the assertion that only females have a biological inclination toward indirect aggression remains valid in today's societies.

## **Methods**

### **Questionnaire**

This study specifically looks at the use of same-sex aggression in males and females ranging from 18 to 23 years of age. Overall, 103 individuals completed the questionnaire. However, of those 103, only 95 were between the ages of 18 and 23. Of those 95 individuals, 62 indicated that they were born female and 31 indicated they were born male. Participants for this study were recruited through social media and email, as well as through in-person promotion.

The questionnaire was created using BSU Qualtrics online and consisted of 20 questions (See Appendix A). The link to the questionnaire was posted or shared and anyone willing to participate could click on the link and complete it. Each participant was asked to give consent before completing the questionnaire. All questions inquired into how many times the individual participated in a certain activity. Each activity was centered around a particular act of indirect aggression. For example, the first question asked the participant how often in the past 12 months have you talked about someone of the same sex behind their back. Each participant was given 5 multiple choice options (a. *never*, b. *once or twice*, c. *sometimes*, d. *often*, e. *regularly*). To analyze the data from this questionnaire, each answer choice was given a numerical value (a=1, b=2, c=3, d=4, e=5). The values of the answers to each question were totaled once the questionnaire was completed to give that participant a score. The higher the score, the more likely that person is to use indirect aggression. From there, all the scores from the males were

averaged and the same was done for the scores from the females. A maximum and minimum score for both males and females was also determined.

## **Interviews**

Those who participated in the interviews were males and females between the ages of 18 and 23. Overall, 12 people completed the interview. Of those 12, 7 were male and 5 were female. Participants for the interviews were recruited through in-person promotion.

These interviews were completed in person, and the audio was digitally recorded. Each participant was asked to give consent before completing the interview. The interviews were short and only consisted of 5 questions, each of which was aimed at uncovering the cultural beliefs about aggression, and the differences in the use of aggression between males and females. The questions were as follows:

1. Do you think men or women are more physically aggressive, why?
2. Do you think men or women gossip more, why?
3. Are there differences in the use of aggression between men and women, why or why not?
4. Do you believe sex differences are a result of genetics or environment?
5. Are sex differences in the use of aggression universal cross-culturally or do they differ from culture to culture?

From there, the audio was transcribed and then coded to reveal any similarities between the answers. Common themes were identified from the various interviews to determine the role cultural beliefs play in upholding the differences in the use of aggression between males and females.

## Results

### Questionnaire

The questionnaire was aimed at revealing whether or not there are sex differences in the use of indirect aggression in college-age students. Previous studies on this topic have yielded conflicting evidence, as demonstrated by Cross's study (2010), which indicated that men are more prone to engaging in risky behavior, including direct aggression, compared to women. In contrast, Hess & Hagen's study (2006) suggests that females are more inclined to react to situations through gossip, while males are equally likely to use indirect aggression as they are to use direct aggression. And lastly, Moroschan et al.'s (2009) findings suggest that males are actually more predisposed to employing indirect aggression than females. Therefore, this questionnaire was meant to discover if there still is a drastic difference in the amount of indirect aggression used by males and females, or if that difference is starting to disappear.

From the data collected, a few different scores were generated, as shown below in Table 1. For reference, the lowest possible score was 20 and the highest possible score was 100. The higher the person scored, the more frequently they use indirect aggression.

<i>Sex</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>
<i>Male</i>	32.91	21.00	48.00
<i>Female</i>	35.84	23.00	70.00

Table 1. Sex differences in the use of indirect aggression.



Results showed that the average score for males was lower than the average score for females, with the male average being 32.91 and the female average being 35.84. These mean scores are, however, not that significantly different. The minimum score for males was also just slightly lower than the minimum score for females. However, the difference in the maximum score is very interesting. While the highest any male scored for the use of indirect aggression was 48.00, the highest any female scored was 70.00. The second-highest any female scored was 53.00, which again was higher than the second-highest any male scored which was 46.00.

### **Interviews**

The results of the interviews for both sexes were very similar and interviews from both males and females included identical codes. For the first question asked, “Do you think men or women are more physically aggressive,” every person interviewed answered that they thought men were more physically aggressive. For the second question asked, “Do you think men or women gossip more,” every participant answered that they believed women gossiped more. When asked to explain why they believed these differences in the use of aggression existed, it was common among all participants to explain both the “genetic” aspect and the “environmental” component which contribute to these differences. All participants said they believed men were wired to be more aggressive. Many participants mentioned testosterone playing a role in men’s physically aggressive behavior. One male participant stated that “being aggressive is part of being a man.” Another male participant explained that “men are born bigger and stronger” and therefore men “are naturally more aggressive.” Out of the 7 males who were interviewed, 5 of them discussed how they believed being physically aggressive is a natural aspect of being male.

Additionally, a large percentage of the participants, both male and female, discussed the different ways boys and girls are raised in American culture that contribute to differences in the use of aggression. 10 of the 12 participants mentioned that males are encouraged to participate in sports and are allowed to rough house as children, whereas females are less frequently encouraged to participate in sports and told not to rough house. One female participant pointed out the consequences she would face for being physically aggressive, stating “I would be punished if I acted aggressive, you know if I was like yelling or wrestling with my siblings, but my brothers were allowed to do whatever they wanted.” Every one of the female participants had a similar story explaining how they were raised to avoid physical aggression and were taught to deal with problems in other ways. It is also interesting to point out that 5 of the male participants and 4 of the female participants noted that they have observed sex differences in the use of aggression. When asked why they believed that males were more physically aggressive or why they believed females gossiped more, these 9 participants explained that they have seen more men act physically aggressive than they have females and that they have heard or experienced more females gossip than they have seen men gossip.

### **Discussion**

The results of the questionnaire provide evidence that an individual’s biological sex does impact the frequency of indirect aggression used. Females reported higher levels of indirect aggression in each category calculated (mean, minimum, maximum). However, the difference in frequency of engaging in indirect aggression between males and females is not drastic. Young adult males are using indirect aggression almost as much as young adult females according to the average scores for males (32.91) and females (35.84). The minimum scores for the males and females were also very close. However, the maximum score for females (70.00) was much

higher than the maximum score for males (48.00), indicating that though most average young adult males and females use indirect aggression a similar amount, there are some females who are using indirect aggression way more frequently than the average person.

However, when looking at the results from the questionnaire, there are multiple things to keep in mind. First, there may be differences in willingness to report aggression. These differences could be based on culture, age, biological sex, or gender. For example, a study conducted with the Aka Foragers found a male bias across all ages for physical aggression and an adult female bias for indirect aggression (Hess et al., 2010). This study was done using peer reports and looked into the use of aggression in children, adolescents, and adults. While studies such as these report data from all age groups, the research covered in this paper was done on individuals between the ages of 18-23. Data across all ages may indicate a larger difference in the use of indirect aggression than data from only young adults. Young children and adults may be more or less willing to share information on their behavior than young adults.

Hess's study was also done using peer reports from individuals in a culture very different from that of the participants in this study. While a study done on the Aka Foragers indicates a large male preference for direct aggression and a female preference for indirect aggression, a study done in Canada by Moroschan et. al indicates that males use indirect aggression just as much, if not more, than females (2009). Conflicting results from these studies suggest that culture influences aggressive human behavior. Certain cultures may promote physical aggression among men while others do not. In places where physical aggression is less encouraged, it is likely that any research done would indicate a similar frequency of indirect aggression use between males and females.

The results from the interviews indicate that there is a cultural standard for men to be more physically aggressive and for women to be more indirectly aggressive. Numerous aspects of this research are impacted by this cultural belief. Exploring how this cultural belief may have affected the results of the questionnaire, it is likely that the men who participated in the questionnaire under-reported their use of indirect aggression as a result of cultural expectations. Whether or not the males were aware of their bias, the cultural stereotypes discovered in the interviews, particularly that women gossip more than men and are more passive in their use of aggression, may have caused the males to not fully indicate the extent of their use of indirect aggression out of fear of seeming less masculine.

It is important to note that while the data from the interviews conveyed a cultural belief that males are much more physically aggressive and that females are much more indirectly aggressive, the results from the questionnaire indicate that males use indirect aggression almost as much as females do. This may be a result of a few different factors. First, the questionnaire was anonymous and the interviews were not. Males may have been more willing to share their use of indirect aggression when taking an anonymous quiz than when being interviewed face to face. Results from the interviews indicated that males believe being physically aggressive is “part of being a man” whereas gossiping is a “catty” thing that women partake in. This cultural belief may have caused the males who participated to exclude any experience they have with indirect aggression from the interview conversations. Though the interviews showed that males (and females) believe that men are more physically aggressive and rarely gossip and that women are more indirectly aggressive, the questionnaire results did not indicate that these cultural beliefs are actually true. The results of the questionnaire suggest that males use indirect aggression almost as much as females on average. This inconsistency suggests that the notion of

men being more physically aggressive and women being more inclined towards indirect aggression is not necessarily accurate, but rather is reinforced and upheld by cultural stereotypes and beliefs. These cultural beliefs are most likely playing a role in most data collected regarding aggression, accounting for differences in results across studies.

### **Limitations**

As previously mentioned, one limitation of this research is that it was done using self-report. Like many other studies done on the use of aggression using self-report, the results may be slightly biased. The interviews for this study highlighted some of those biases, and the data from the questionnaire must be analyzed while keeping those biases in mind.

Another limitation of this study is that the sample sizes for both the questionnaire and interviews were modest. The questionnaire was completed by 113 individuals overall. However, some of those individuals were not between the ages of 18 and 23, and therefore their responses could not be included in the analysis. Also, only 12 individuals were interviewed about cultural beliefs on aggression. However, the answers of each participant interviewed were all strikingly similar, indicating that their answers to the questions are most likely common beliefs held among other young adults.

This study is also limited by the demographics of those who participated. Most of the participants for the questionnaire were recruited from 3 universities, (Ball State University, Purdue University, and Indiana University) all of which are located in Indiana. In addition, all 12 individuals who participated in the interviews were recruited from Ball State University. While it is not likely that the beliefs of these participants differ from the beliefs of those in other states across America, it is important to note that the results of this study cannot be generalized to all

young adults across the world. This study was conducted in a WEIRD (white, educated, industrialized, rich, democratic) population (Azar, 2010, pg. 11). Because of this, the data collected cannot account for the beliefs and practices of those not included in such a population.

### **Conclusion**

While the results of this study are meant to clarify whether or not young adult females still use indirect aggression more frequently than young adult males, more research needs to be conducted on this topic to fully understand sex differences in the use of indirect aggression. The reach of this study was limited as a result of time, funding, and resources. It would be beneficial in the future for others who have the resources to continue this research in a few different ways.

First, by expanding the overall sample size, researchers would be able to get a more definite answer as to whether or not young adult females still engage in indirect aggression more than young adult males. Second, it would also be beneficial to expand the demographic of the sample. Results from a questionnaire and/or interviews including young adults from all backgrounds instead of just WEIRD populations may reveal different cultural beliefs or dynamics that may be impacting the use of indirect aggression for both males and females. In addition, conducting smaller studies on different age groups may reveal the age at which cultural beliefs begin to play a role in the use of aggression.

While past research based on evolutionary theory may indicate a large female preference for indirect aggression based on reproductive benefits and a large male preference for direct aggression based on solving environmental problems, not all research supports these claims. This study found that while females do still engage in indirect aggression slightly more than males, the male use of indirect aggression is still prevalent. These results, in comparison to previous

research, indicate that human behavior may be changing. Though females are still more likely to engage in indirect aggression due to the lower costs associated with it and the reproductive benefits it has provided in our evolution, the use of indirect aggression by males is now also widespread. Ultimately, this study determined that sex differences in the use of indirect aggression are not only rooted in biology and evolution but also in cultural beliefs and norms.

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## Appendix A

### Questionnaire

How Often Have you Participated in each activity in the past 12 months?

1. Talked about someone of the same sex behind their back (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
2. Started a rumor about someone of the same sex (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
3. Talked about or criticized someone of the same sex's appearance either to them or to others (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
4. Excluded someone of the same sex you didn't like from a group activity (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
5. Gave someone of the same sex the silent treatment (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
6. Glared at someone of the same sex (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
7. Acted like you are friends with someone of the same sex that you actually don't really like (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
8. Criticized someone of the same sex for their sexual behavior publicly or privately (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
9. Shared an incriminating secret about someone of the same sex to someone else without the person's permission (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)

10. Given someone of the same sex a backhanded compliment (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
11. Withheld information from someone of the same sex to make them appear incompetent publicly later on (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
12. Commented on someone of the same sex's appearance that may have lowered their confidence or self-esteem (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
13. Made a disturbed face towards someone of the same-sex to incite feelings of discomfort or make them self-conscious (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
14. Played the victim in a situation where you may have actually hurt the feelings of someone of the same sex (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
15. Involved yourself in the relationship of someone of the same sex by telling their partner questionable things that may persuade them to leave that person (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
16. Indirectly referenced someone of the same sex on social media publicly in a harmful way (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
17. Posted a picture online that made someone of the same sex look bad in any way (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
18. Embarrassed someone of the same sex in front of potential partners in order to increase your chances of getting with them (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)

19. Were not accepting of someone new of the same sex into your friend group (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)
20. Talked about someone of the same sex's sexual behavior with someone of the opposite sex (a. never, b. once or twice, c. sometimes, d. often, and e. regularly)

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 Institutional Review Board (IRB)  
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**BALL STATE  
 UNIVERSITY**

**DATE:** February 7, 2023

**TO:** Robert Phillips

**FROM:** Ball State University IRB

**RE:** IRB protocol # 1987409-1

**TITLE:** Sex Differences in the Use of Indirect Aggression in College Students

**SUBMISSION TYPE:** New Project

**BOARD DECISION:** APPROVED

**PROJECT STATUS:** ACTIVE

**DECISION DATE:** February 7, 2023

**REVIEW TYPE:** Expedited: This protocol has been determined by the IRB to meet the definition of minimal risk.

The Institutional Review Board has approved your New Project for the above protocol, effective on February 7, 2023. Your project falls into the Expedited Category indicated below. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an expedited study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record. All research under this protocol must be conducted in accordance with the approved submission and in accordance with the principles of the Belmont Report.

**Your project falls under the indicated Expedited Categories:**

	<b>Category 1:</b> Clinical studies of drugs and medical devices
	<b>Category 2:</b> Collection of blood samples by Finger stick, Heel stick, Ear stick, or Venipuncture
	<b>Category 3:</b> Prospective collection of biological specimens for research purposes by noninvasive means
	<b>Category 4:</b> Collection of data through Non-Invasive Procedures Routinely Employed in Clinical Practice, excluding procedures involving Material (Data, Documents, Records, or Specimens) that have been collected, or will be collected solely for non-research purposes (such as medical treatment or diagnosis)
	<b>Category 5:</b> Research involving materials that have been collected or will be collected solely for non-research purposes.
	<b>Category 6:</b> Collection of Data from Voice, Video, Digital, or Image Recordings Made for Research Purposes
x	<b>Category 7:</b> Research on Individual or Group Characteristics or Behavior or Research Employing Survey, Interview Oral History, Focus Group, Program Evaluation, Human Factors, Evaluation, or Quality Assurance Methodologies
	<b>Category 8:</b> Continuing review of research previously approved by the convened IRB
	<b>Category 9:</b> Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories 2-8 do not apply but the

IRB has determined and documented at a convened meeting that the research involves no greater than minimal risk and no additional risks have been identified.
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**Categories where the IRB has decided to downgrade protocol to Expedited review:**

<b>Category 1:</b> Continuing review of research previously approved by the convened IRB, where research activities are limited to data analysis only.
<b>Category 2:</b> Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories two (2) through eight (8) research involves no greater than minimal risk and no additional risks have been identified.
<b>Category 3:</b> Protocol modifications have resulted in the protocol becoming minimal risk and qualifying for Expedited review.

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any of these notifications must be addressed in writing and submitted electronically to IRBNet ([www.irbnet.org](http://www.irbnet.org)). Please reference your IRB protocol number 1987409-1 in any communication to the IRB regarding this project. Be sure to allow sufficient time for review and approval of requests for modification or continuation. If you have questions, please contact the Office of Research Integrity at [orihelp@bsu.edu](mailto:orihelp@bsu.edu) or Sena Lim, HRPP manager at 765-285-5034 or [slim2@bsu.edu](mailto:slim2@bsu.edu).

In the case of an adverse event and/or unanticipated problem, you will need to submit written documentation of the event to IRBNet under this protocol number and you will need to directly notify the Office of Research Integrity (<http://www.bsu.edu/irb>) **within 5 business days**. If you have questions, please contact the Office of Research Integrity at [orihelp@bsu.edu](mailto:orihelp@bsu.edu) or Sena Lim, HRPP manager at 765-285-5034 or [slim2@bsu.edu](mailto:slim2@bsu.edu).

Please note that all research records must be retained for a minimum of three years after the completion of the project or as required under Federal and/or State regulations (ex. HIPAA, FERPA, etc.). Additional requirements may apply.