Evolutionary Psychology

www.epjournal.net – 2009. 7(2): 146-159

Original Article

# Sex Differences in the Use of Indirect Aggression in Adult Canadians

Gail Moroschan, Psychology Department, University of Alberta, Edmonton, Canada. Email: gailm@ualberta.ca (Corresponding author).

Peter L. Hurd, Psychology Department, University of Alberta, Edmonton, Canada.

Elena Nicoladis, Psychology Department, University of Alberta, Edmonton, Canada.

**Abstract:** Evolutionary psychologists have argued that the emergence of language was associated with reducing direct physical aggression and easing social functioning in small groups. If this is so, then males should use verbal or indirect aggression more frequently than females since they engage in more direct aggression. A recent study found no significant differences between men and women's self-reports of indirect aggression in a U.K. sample. We administered the same questionnaire to 175 male and 311 female Canadian university students. Men in this population reported using indirect aggression more frequently than women. The Canadian participants generally reported using indirect aggression less frequently than the U.K. study sample did, particularly the women. These results suggest that there are cultural differences in adults' frequency of use of indirect aggression. We review a number of possible reasons to account for these different results.

**Keywords:** Sex differences, indirect aggression, self-reports.

## Introduction

Evolutionary biologists view aggression as a range of strategies with which an individual may solve the problem of competition (Archer, 1988; Riechert, 1998). Agonistic behaviors may allow an individual to gain access to limiting resources, such as food, territories, mates, or social dominance, and should therefore be under strong evolutionary selection. In addition to benefits, there can be high costs associated with physical aggression (Maynard Smith and Parker, 1976; Maynard Smith and Price, 1973) including harm to the aggressor (Geist, 1974). Physical attacks are not the only form of aggression. Other, more indirect or covert, acts can serve some of the same functions (Cairns, 1986; Little, Jones, Henrich, and Hawley, 2003). A number of different terms have been applied to these less direct forms of aggression, including relational (Crick and Grotpeter, 1995;

Little et al., 2003; Werner and Crick, 1999), covert (Björkqvist, Österman, and Lagerspetz, 1994), relational-appearing (Björkqvist et al., 1994), social aggression or social manipulation (Björkqvist et al., 1994; Crick and Grotpeter, 1995; Galen and Underwood, 1997), and verbal, indirect, hostile, or emotional aggression (see Björkqvist, 1992, for a review). While these different terms have different nuances (see Archer, 2001), we are primarily concerned with distinguishing between physical, verbal, and indirect aggression, following Björkqvist, Lagerspetz, and colleagues (1988, 1992a, 1992b, and 1994). Physical aggression involves physical contact with objects or another person—behaviors such as hitting, kicking, and pushing. Verbal aggression involves behaviors such as yelling, speaking hurtful remarks, and making threats. Indirect aggression is different from physical and verbal aggression in that it uses indirect methods to cause harm, sometimes without the aggressor being identifiable, and includes acts such as the manipulation of social environments to hurt the target. Behaviors of indirect aggression include damaging another's self-esteem or social status, using humor hurtfully, spreading rumors behind someone's back, damage to interpersonal relationships by excluding others from a group, purposeful manipulation of others, or secretive acts intended to harm another person socially or emotionally. Previous researchers have sometimes distinguished between different kinds of indirect or covert aggression and have labeled them with different terms. For our purposes in this paper, indirect aggression refers broadly to all acts intended to harm through use of social and/or emotional means.

Evolutionary psychologists have argued that a strong selection pressure in the evolution of language among humans' ancestors was the replacement of high-cost physical aggression with less damaging verbal and indirect means to negotiate status and power within a social group (e.g., Cairns, 1986; Locke and Bogin, 2006). If so, then one might predict that males would use indirect aggression more frequently than females (Locke and Bogin, 2006; cf. Cairns, 1986). Alternatively, the use of indirect aggression may have more to do with the vulnerability of the target. This would suggest that females would use more indirect aggression, as they value their social relationships higher than males do. Lagerspetz et al. (1988) found that 11- and 12-year old girls formed tighter friendships with other girls, while boys of the same age had very loose friendships with other boys of their cohort. If females tend to value close friendships more than males, then more indirect aggression aimed at gaining status through social means might be more effective for females. In fact, research on sex differences in the use of indirect aggression has yielded mixed results.

The majority of research on aggression has been done on school-aged children. Many studies show that young boys often use more physical aggression than young girls (e.g., Björkqvist, 1992, 1994; Björkqvist et al., 1992a, 1992b; Cairns, Cairns, Neckerman, Ferguson, and Gariépy, 1989; Crick and Grotpeter, 1995). Some studies of school-aged children show that girls are just as aggressive as boys, but that they use more indirect means than boys do (Björkqvist, 1992, 1994; Björkqvist et al., 1992a, 1992b; Cairns et al., 1989; Crick and Grotpeter, 1995; Lagerspetz and Björkqvist, 1994; Lagerspetz et al., 1988), while other studies have shown that adolescent boys use more relational aggression than girls (Little et al., 2003).

Some studies (Björkqvist et al., 1992a, 1992b; Cairns et al., 1989) suggest a developmental trend for aggression. Björkqvist et al. (1992a) studied Finns of four different age groups: 8-, 11-, 15-, and 18-year olds. Boys tended to display physical aggression the

most at ages 8 and 11. Verbal aggression increased by ages 11 and 15, and indirect aggression was used later on, during ages 11, 15, and 18. Girls displayed substantially less physical aggression than boys at all ages, and used slightly more verbal and indirect aggression than boys at ages 11, 15, and 18. Indirect aggression appears to require awareness and understanding of social relationships. As social intelligence increases with age, so should the ability to use indirect aggression effectively. Girls typically have tighter social relationships than boys do (Lagerspetz, et al., 1988) and therefore, are more able to use indirect measures of aggression to their advantage. Green, Richardson, and Lago (1996) directly tested whether the size of social networks of young adults predicted the rate of self-reported aggression. They found that the size of social networks did not predict the rate of direct or indirect aggression in females. However, males with high-density social networks used more indirect than direct aggression.

The few studies to examine the use of direct and indirect aggression in adults suggest that aggression does not necessarily decrease when compared to children's usage, but it is employed in subtler, and less direct forms. Björkqvist et al. (1994) showed that adult male Swedes used more direct relational-appearing aggression, such as criticizing work, while females used more indirect social manipulations such as gossiping. When measures of aggression were considered in these two categories, women were equally as aggressive as men. Sex differences were also found in bullying in an adult prison population in the U.K. (Ireland and Archer, 1996). Women reported perceiving more bullying overall and specifically more indirect bullying, whereas men reported perceiving more direct bullying than indirect methods, and less bullying overall.

Many studies of indirect aggression, especially in children, use peer-report methods rather than self-report, with the reasoning that since aggression is socially unacceptable, tests that rely on admissions of aggression will not be reliable. With peer-reports, peers can describe how often they have seen direct or indirect aggressive behavior in a fellow peer. However, the very nature of indirect aggression draws on the ability to remain anonymous, therefore, peer-reports may not capture the true amount of indirect aggressive behavior used by specific individuals, and self-report methods might be better at measuring indirect aggression.

Forrest, Eatough, and Shevlin (2005) asked British university students to report on the frequency with which they used, or were the targets of, indirect aggression. Indirect aggression was classified by three categories: social exclusion, use of malicious humor, and guilt induction. They found no sex differences on the frequency of self-reported indirect aggression in any of these categories or the overall frequency of using indirect aggression.

Why are there such varied results with regard to sex differences in the use of indirect aggression? One possibility is cultural differences in what qualifies as indirect aggression. To understand how such cultural differences might be manifested, we briefly review the literature related to sex differences on humor used aggressively. We focus on humor because more research has been done on humor than on social exclusion or guilt induction. For example, Baumeister, Stillwell, and Heatherton (1995) reported that guilt induction could serve several functions in interpersonal relationships, such as inducing action on the part of the other person or redistributing emotional distress. They did not, however, test for the possibility of sex differences in the use of guilt induction. Coyne and Archer (2004) reviewed the direct and indirect aggressive acts in television shows popular among British adolescents and found that females were portrayed as committing most of

the acts of indirect aggression, particularly in terms of social exclusion and malicious humor.

*Humor*

Humor may function to allow coping with stress, anxiety, and hostile or aggressive feelings in a socially acceptable way (Abel, 1998; McGhee and Lloyd, 1982; Woods, 1983). Using humor can be an effective way to gain status, particularly in a leadership role (Priest and Swain, 2002). Males have been shown to use humor more than females (Hay, 2000; Honeycutt and Brown, 1998; McGhee, 1974). This sex difference can be observed as young as the early school years (McGhee and Lloyd, 1982) and continues through adolescence (Führ, 2002) and into adulthood (e.g., Hay, 2000; Honeycutt and Brown, 1998). Some evidence comes from studies of class clowns, who use humor to challenge authority and reduce stress among classmates resulting from novel or strange situations (Hobday-Kusch and McVittie, 2002; Jewell, 2005). Class clowns are overwhelmingly boys (Damico and Pukey, 1978), probably because boys can use humor to gain prestige, particularly with other boys (Hobday-Kusch and McVittie, 2002; Suitor, Powers and Brown, 2004). Men are also more likely than women to use humor to negotiate status and cope with difficult situations (Hay, 2000). It should be noted that these sex differences are generally limited to humor production—few sex differences have been reported in humor appreciation (Martin and Kuiper, 1999; Azim, Mobbs, Jo, Menon, and Reiss, 2005).

While sex differences in humor production have been found in some studies, others report no sex differences. Sullivan (2002) reported no differences between mothers' and fathers' use of humor to cope with having a child with Down syndrome. Forrest et al. (2005) also reported no sex differences in using humor in an indirectly aggressive way. Both of these studies relied on self-reports and were run in Great Britain. It is not clear if sex differences are more likely to appear when observing actual behavior or asking for peer reports (e.g., Hay, 2000; Little et al., 2003; but see Honeycutt and Brown, 1998, who found sex differences with self-report measures). Alternatively, it is possible that there are cultural differences in the use of humor. For example, Kazarian and Martin (2004) found that Lebanese adults used less aggressive humor than Belgians.

We know of no evidence suggesting that Britons and Canadians use aggressive or malicious humor differently. However, there is some evidence that the use of humor more generally by Britons might be different from that by North Americans. For example, British advertising executives approve a broader use of humor in advertising than their American counterparts (Weinberger and Spotts, 1989). Similarly, a comparison of British and American beer ads showed that British ads used humor as the major source of appeal, while American ads used emotional or sexual appeal (Caillat and Mueller, 1996). These studies suggest that there might be differences in how humor is used in the two countries (see Coyne and Archer, 2004).

*The present study*

In this study, we measured the self-reported rates of indirect aggression among Canadian adults. We replicated Forrest et al.'s (2005) British questionnaire on a Canadian population. We chose Forrest et al.'s (2005) measure because it has strong psychometric properties and was designed to measure indirect aggression among adults. There are a number of cultural similarities between the United Kingdom and Canada. Canada is a

Commonwealth country and the majority of its citizens speak English. Canadians often use British spellings, rather than American spellings. Canadians also share many cultural similarities with Americans— standard oral Canadian English is only subtly different from standard oral American English (some small pronunciation differences and some different words). Caillat and Mueller (1996) review some of the outstanding cultural differences between the United Kingdom and the United States (such as individualism and use of direct or indirect speech). In our experience, most of those differences would apply to a United Kingdom-Canada comparison as well.

## Materials and Methods

### *Participants*

175 male and 311 female University of Alberta undergraduates participated in this study and received credit toward their introductory psychology class for their participation.

### *Materials*

We used one of the scales created by Forrest et al. (2005) to measure indirect aggression. They created 2 versions of the Indirect Aggression Scales (IAS): the Aggressor version (IAS-A) that measures usage of aggression towards someone else, and the Target version (IAS-T) that measures the experience of being a victim of indirect aggression. We used the IAS-A version only since we were interested in the use of aggressive behavior but not the experience of being a victim. Forrest et al. (2005) constructed the IAS using interviews and survey questions. The original IAS-A questionnaire consisted of 35 items but was reduced to 25 items after item analyses and factor analyses were conducted. We used these 25 items in our study. The use of this scale was granted ethical approval by the University of Alberta, Faculty of Arts, Science and Law Research Ethics Board.

### *Procedure*

The IAS-A was administered in mass testing in introductory psychology classes. The procedure was the same as in the Forrest et al. (2005) study. Participants read and signed consent forms at the beginning of the mass testing session indicating that they had been informed of their rights and could withdraw from the testing session at anytime without penalty. Participants received a paper version of the scale and were asked to indicate how often they had used the 25 listed behaviors in the past 12 months by using the following scale: *A = Never, B = Once or Twice, C = Sometimes, D = Often, and E = Regularly*. These answers were converted to numerical scores with A = 1, B = 2, C = 3, D = 4, and E = 5. With this method of scoring, the lowest possible score that an individual could receive was 25 and the highest possible score was 125. Names were not required on the forms, providing a high level of anonymity to the participants.

## Results

### *Validity of the IAS-A*

Forrest et al. (2005) constructed their scale with items that were based on information gathered during qualitative interviews. Interviewees were asked about personal experiences with indirect aggression over a variety of contexts. From these interviews

behaviors were listed and scale items were constructed, giving the scale high face validity. The internal construct validity of the IAS-A was assessed by Forrest et al. (2005) using Maximum Likelihood exploratory factor analyses on the original 35 items. This resulted in 3 factors that cumulatively accounted for 35.89% of the variance: factor 1 items were associated with malicious humor, factor 2 items were associated with social exclusion, and factor 3 items were associated with guilt induction. Ten items failed to load consistently on any one factor and did not make theoretical sense with the other items in each factor and were therefore removed. The remaining 25 items were split into 3 subscales: Social Exclusionary, 10 items; Malicious Humor, 9 items; and Guilt Induction, 6 items. See appendix for all items.

We also did a Maximum Likelihood factor analysis on the data we collected using the IAS-A. We cannot directly compare the eigen values or amount of variance accounted for between our data and Forrest et al.'s (2005) because their factor analyses were conducted on the original 35 items and our data uses the conclusive 25 items. However, we did find three factors with eigen values above one, just like the original factor analyses, and almost all of the items loaded on the same factors as Forrest et al. (2005) found. The few differences we found were only marginally numerically different from the Forrest et al. (2005) analyses. In order to compare our data with the data in the British study we grouped the items into the same subscales used by Forrest et al. (2005).

*Reliability of the IAS-A subscales*

Forrest et al. (2005) measured the reliability of the subscales of the IAS-A and found Cronbach's alpha coefficient to be 0.82 for the Social Exclusion items, 0.84 for items that focused on the use of Malicious Humor, and 0.81 for items regarding Guilt Induction. Using the same items as Forrest et al. (2005) did for each subscale, we calculated Cronbach's alpha coefficient for the data collected from our Canadian sample and found it to be similarly reliable: 0.86 for Social Exclusion, 0.85 for Malicious Humor, and 0.78 for Guilt Induction.

*Canadians: gender differences*

We were interested in seeing if there is a gender difference in how indirect aggression is conducted in Canada. The 3 subscales of the IAS-A categorize 3 different ways indirectly aggressive behavior can be performed and measured. Mean (standard errors) scores for the total indirect aggression scale and each subscale, are shown in Table 1. A 3 x 2 (Subscale x Gender) ANOVA, with the Subscale as a repeated measure was used. This revealed a main effect for gender, ($F$ (1, 484) = 21.22, $p < .01$) and a main effect for Subscale ($F$ (2, 968) = 383.73, $p < .01$). There was an interaction between gender and the subscales, ($F$ (2, 968) = 23.91, $p < .01$). Planned $t$-tests revealed significant differences between genders on all subscales, as summarized in Table 1.

**Table 1.** Average (*SE*) Scores on Indirect Aggression Scale for Canadian Students

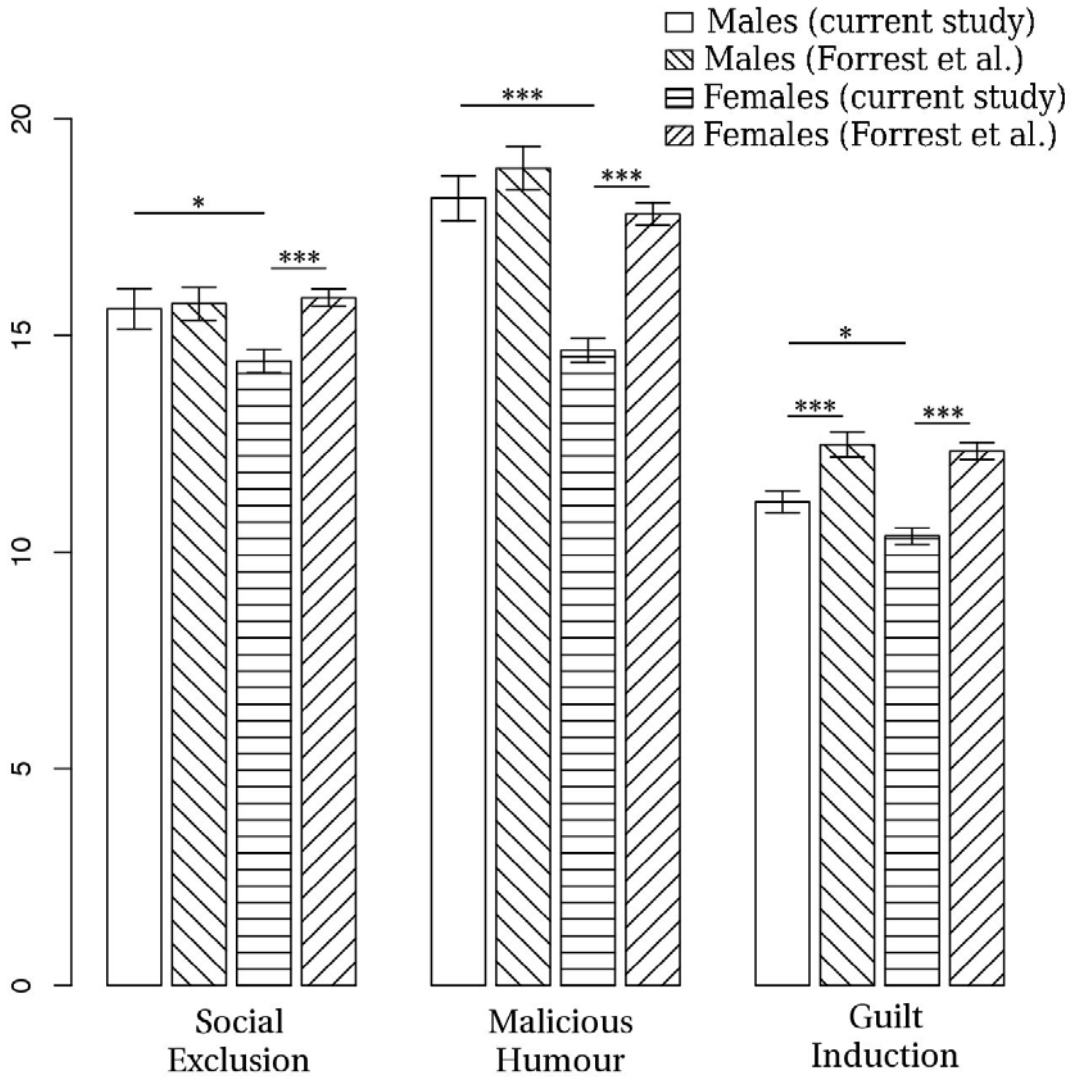
| | Men | Women | *t*-test |
|---|---|---|---|
| Overall (range: 25-125) | 44.9 (1.1) | 39.4 (0.6) | 4.61, $p < .0001$ |
| Social exclusion (range: 10-50) | 15.6 (0.5) | 14.4 (0.3) | 2.40, $p < .016$ |
| Malicious humor (range: 9-45) | 18.2 (0.5) | 14.7 (0.3) | 6.57, $p < .0001$ |
| Guilt induction (range: 6-30) | 11.2 (0.3) | 10.4 (0.2) | 2.30, $p < .022$ |

*Note*: Mean (*SE*) indirect aggression scores of overall test and subscales (with possible ranges) for male and female Canadians. *t*-tests indicate that males scored significantly higher than females on all measures ($df = 484$).

Figure 1 summarizes the scores of the males and females of the present study compared to the results of Forrest et al. (2005). When our sample is compared to the sample presented by Forrest et al. (2005), we find that Canadian females score lower than the Britons on all subscales: social exclusion ($t$ (694) = -4.33, $p < .001$), malicious humor ($t$ (694) = -8.20, $p < .001$) and guilt induction ($t$ (694) = -7.09, $p < .001$). The males in the present sample scored lower than those in the Forrest et al. (2005) sample on guilt induction ($t$ (350) = -3.42, $p < .001$), but did not differ in social exclusion ($t$ (350) = -0.20, $p = .84$) or malicious humor ($t$ (350) = -0.97, $p = .33$).

In summary, Canadians use less indirect aggression than Britons, particularly Canadian women, and Canadian men are more indirectly aggressive than Canadian women on all subscales.

**Figure 1.** Sex differences in the indirect aggression subscales, within and between a Canadian sample (current study) and a British sample (Forrest et al. study).




*Note:* $*p < 0.05$, $***p < 0.001$.

## Discussion

We found that an individual's gender influenced the self-reported frequency of indirectly aggressive behavior in Canadians. Males reported significantly higher rates of indirect aggression (social exclusion, malicious humor, and guilt induction) than females. These results differ from those reported by Forrest et al. (2005), who found no sex differences within any indirect aggression subtype. The Canadians in this study also generally reported significantly fewer acts of indirect aggression than did the British participants, particularly the females. Why did we get different results from Forrest et al. (2005)? We consider four possible sources for the differences in these two studies, in

roughly increasing order of likelihood.

First, it is possible that there are cultural differences in willingness to report indirect aggression. If so, the British adults might be more willing to report their own acts of indirect aggression than Canadians. Some studies have suggested that sex differences in self-report studies may be due to males being more comfortable with their aggression than females (e.g., Little et al., 2003). At the moment, we know of no reason to suspect that there should be differences between Britons and Canadians in terms of self-report biases. Nonetheless, it is clearly important to complement self-report data with other measures.

A second possibility is that demographic differences between the samples may explain some of the differences in the two populations. British adults might feel a higher degree of perceived threat than Canadian adults. The population density of Nottingham (where the Forrest et al. (2005) study was conducted) was 3579.0 people per square kilometer, while the population density of Edmonton (where the present study was carried out) was 974.0 people per square kilometer (2001 census data from respective countries). Crowding and associated factors may increase the perceived risk of violence (Choldin, 1978; Kposowa, Breault, and Harrison, 1995). The responses to density may differ between the sexes, as they do in rhesus monkeys, where males use more coping mechanisms (such as huddling together) as population density increases, while females increase all forms of aggression (Judge and de Waal, 1997). According to the British Home Office report on crime (www.homeoffice.gov.uk) and Correctional Service Canada (www.csc-scc.gc.ca) the percentage of inmates that were female was higher in Britain than in Canada in 2004 (5.7% vs. 3.1%, respectively), and the percentage of inmates that were female and serving life sentences, was also higher in Britain than in Canada in the same year (5.0% vs. 2.4% respectively). To the extent that criminal activity is related to aggressive behavior, it is possible that Britons, and particularly women, are more aggressive overall (i.e., both direct and indirect aggression) than Canadians as a result of a higher perception of threat due to a higher population density. To confirm this possibility, it would be minimally necessary to compare the rates of direct aggression between the two countries.

A third possible explanation for the differences between our study and that of Forrest et al. (2005) is that there may be cultural differences in the time spent in same-sex groups. Men and women use humor in a teasing and aggressive way more often when they are in same-sex groups than when they are in mixed-sex groups (Hay, 2000). If British adults spend more time in same-sex groups than Canadians, then they might report higher levels of indirect aggression than Canadians. Future research needs to examine the relationship between time spent in same-sex versus mixed-sex groups, and look at the various forms of aggression that is observed while controlling for the gender of the interlocutors.

Finally, it is possible that we found differences in self-report frequencies relative to Britons because there are cultural differences in what counts as aggressive behavior, and in what is considered appropriate behavior for men and women. We know aggressive humor can differ by culture (Kazarian and Martin, 2004; Weller, Amitsour, and Pazzi, 1976) so it seems likely that aspects of indirect aggression might be affected by culture. This possibility seems the most likely and may follow some of the United Kingdom-United States cultural differences observed by other researchers (e.g., Caillat and Mueller, 1996). An analogous conclusion can be drawn from the research on emotional expression. There are similarities across cultures as to how some emotions are expressed (e.g., Darwin,

1872/1924), particularly those emotions that are expressed in infancy (e.g., Malatesta, Culver, Tesman, and Shepard, 1989). However, different cultures use emotions differently in order to regulate interpersonal relationships (see, for example, Lutz and White, 1986). By analogy, we might expect aggression to be a common human trait, but how it gets expressed could be highly culture-specific. Such subtle differences between closely related cultures and populations likely represent phenotypic plasticity; the behavioral differences are culturally contingent manifestations of the same underlying strategy. The expected costs and benefits to differing degrees of aggression are not exactly the same in the two cultural backgrounds, but the life-history strategy is the same. For example, it is possible that there is an evolved tendency for men to use more indirect aggression that women (e.g., Locke and Bogin, 2006), which is why we see male adolescents use more indirect aggression than females (Little et al., 2003). However, with the effect of socialization (which could differ by culture), the absolute frequencies of their use change. For example, British adolescents watch many TV shows in which female characters use a lot of indirect aggression (Coyne and Archer, 2004). So, it is possible that sex differences in the frequency of indirect aggression will emerge as a result of socialization, adjustment by each individual in the perceived optimally effective level of indirect aggression. Differences between cultures in the perception of an act may be investigated by scoring how subjects in the two cultures perceive the same scenario depicting a potential act of indirect aggression. Cross-cultural developmental studies of aggressive behavior would be required to assess how differences between cultures develop with age in comparison to differences between the sexes. We predict that sex differences would develop first, and that culture effects would appear later, after the physiological differences were established.

Before closing, it is important to note that this study relied on self-report data of some behaviors that are not necessarily considered socially acceptable (see also Green et al., 1996). We do not know if we have a valid measure of the frequency of indirect aggression. However, echoing Green et al. (1996), we are confident that the comparisons of the relative use of indirect aggression are solid. Future research on indirect aggression should also include behavioral measures.

Individuals ought to use whatever behavioral strategy they judge to be most probable to achieve the desired outcome while minimizing the risk of the least desired outcomes. This choice of behavior ought to depend upon understanding of cultural norms and ability, including the social intelligence required for indirect aggression, as well as the perceived costs and benefits of failure and success. Further work investigating the ability, real or perceived, and desirability to use indirect aggression, may identify the proximate factors that account for variation in the use of this behavior.

**Acknowledgements:** We thank Jaime Werne for helping run participants as well as NSERC funding to the second and third authors.

**Received 17 December 2008; Revision submitted 12 February 2009; Accepted 23 March 2009**

## References

Abel, M.H. (1998). Interaction of humor and gender in moderating stress and outcomes.

*The Journal of Psychology, 132*, 267-276.

Archer, J. (1988). *The behavioral biology of aggression*. Cambridge University Press, Cambridge.

Archer, J. (2001). A strategic approach to aggression. *Social Development, 10*, 267-271.

Azim, E., Mobbs, D., Jo, B., Menon, V., and Reiss, A.L. (2005). Sex differences in brain activation elicited by humor. *Proceedings of the National Academy of Sciences, 102*, 16496-16501.

Baumeister, R.F., Stillwell, A.M., and Heatherton, T.F. (1995). Personal narratives about guilt: Role in action control and interpersonal relationships. *Basic and Applied Social Psychology, 17*, 173-198.

Björkqvist, K. (1992). New trends in the study of female aggression. In K. Björkqvist and P. Niemelä (Eds.), *Of mice and women: Aspects of female aggression* (pp. 3-16). San Diego, CA: Academic Press.

Björkqvist, K. (1994). Sex differences in physical, verbal, and indirect aggression: A review of recent research. *Sex Roles, 30*, 177-188.

Björkqvist, K., Lagerspetz, K.M.J., Kaukiaianen, A. (1992a). The development of direct and indirect strategies in males and females. In K. Björkqvist and P. Niemelä (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51-64). San Diego, CA: Academic Press.

Björkqvist, K., Lagerspetz, K.M.J., Kaukiaianen, A. (1992b). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior, 18*, 117-127.

Björkqvist, K., Österman, K. and Lagerspetz, K.M.J. (1994). Sex differences in covert aggression among adults. *Aggressive Behavior, 20*, 27-33.

Caillat, Z. and Mueller, B. (1996). Observations: The influence of culture on American and British advertising: An exploratory comparison of beer advertising. *Journal of Advertising Research, 36*, 79-88.

Cairns, R.B. (1986). An evolutionary and developmental perspective on aggressive patterns. In C. Zahn-Walker and E. M. Cummings (Eds.), *Altruism and aggression: biological and social origins* (pp. 58-87). Cambridge University Press

Cairns, R.B., Cairns, B.D., Neckerman, H.J., Ferguson, L.L., Gariépy, J.L. (1989). Growth and aggression: 1. Childhood to early adolescence. *Developmental Psychology, 25*, 320-330.

Choldin, H.M. (1978). Urban density and pathology. *Annual Review of Sociology, 4*, 91-113.

Coyne, S.M. and Archer, J. (2004). Indirect aggression in the media: A content analysis of British television programs. *Aggressive Behavior, 30*, 254-271.

Crick, N.R. and Grotpeter, J.K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.

Damico, S.B. and Pukey, W.W. (1978). Class clowns: A study of middle school students. *American Education Research Journal, 15*, 391-398.

Darwin, C. (1924). *The expression of emotion in man and animals.* D. Appleton and Company, New York. (Original work published 1872)

Forrest, S., Eatough, V. and Shevlin, M. (2005). Measuring adult indirect aggression: The development and psychometric assessment of the indirect aggression scales. *Aggressive Behavior, 31*, 84-97.

Führ, M. (2002). Coping humor in early adolescence. *Humor, 15*, 283-304.

Galen, B.R. and Underwood, M.K. (1997). A developmental investigation of social aggression among children. *Developmental Psychology, 33*, 589-600.

Geist, V. (1974). On fighting strategies in animal combat. *Nature, 250*, 354.

Green, L.R., Richardson, D.R., and Lago, T. (1996). How do friendship, indirect, and direct aggression relate? *Aggressive Behavior, 22*, 81-86.

Hay, J. (2000). Functions of humor in the conversations of men and women. *Journal of Pragmatics, 32*, 709-742.

Hobday-Kusch, J. and McVittie, J. (2002). Just clowning around: Classroom perspectives on children's humor. *Canadian Journal of Education, 27*, 195-210.

Honeycutt, J.M. and Brown, R. (1998). Did you hear the one about?: Typological and spousal differences in the planning of jokes and sense of humor in marriage. *Communication Quarterly, 46*, 342-352.

Ireland, J.L. and Archer, J. (1996). Descriptive analysis of bullying in male and female adult prisoners. *Journal of Community Applied Social Psychology, 6*, 35-47.

Jewell, P. (2005). Humor in cognitive and social development: Creative artists and class clowns. *International Education Journal, 6*, 200-205.

Judge, P.G. and de Waal, F.B.M. (1997). Rhesus monkey behavior under diverse population densities: Coping with long-term crowding. *Animal Behaviour, 54*, 643-662.

Kazarian, S.S. and Martin, R.A. (2004). Humor styles, personality, and well-being among Lebanese university students. *European Journal of Personality, 18*, 209-219.

Kposawa, A.J., Breault, K.D., and Harrison, B.M. (1995). Reassessing the structural covariates of violent and property crimes in the USA: A county level analysis. *British Journal of Sociology, 46*, 79-105.

Lagerspetz, K.J.M. and Björkqvist, K. (1994). Indirect aggression in boys and girls. In L.R. Huesmann (Ed.), *Aggressive behavior: Current perspectives* (pp. 131-150). NY: Plenum.

Lagerspetz, K.J.M., Björkqvist, K. and Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-year-old children. *Aggressive Behavior, 14*, 403-414.

Little, T.D., Jones, S.M., Henrich, C.C., and Hawley, P.H. (2003). Disentangling the "whys" from the "whats" of aggressive behavior. *International Journal of Behavioral Development, 27*, 122-133.

Locke, J.L. and Bogin, B. (2006). Life history and language: Selection in development. *Brain and Behavioral Sciences, 29*, 301-311.

Lutz, C. and White, G.M. (1986). The anthropology of emotions. Annual Review of *Anthropology, 15*, 405-436.

Malatesta, C.Z., Culver, C., Tesman, J.R. and Shepard, B. (1989). The development of emotion expression during the first two years of life. *Monographs of the Society for Research in Child Development, vol. 54* (serial no. 219).

Martin, R.A. and Kuiper, N. (1999). Daily occurrence of laughter: Relationships with age, gender and Type A personality. *Humor: International Journal of Humor Research, 12*, 355-384.

Maynard Smith, J. and Parker, G.A. (1976). The logic of asymmetric contests. *Animal Behaviour, 24*, 159-175.

Maynard Smith, J. and Price, G.R. (1973) The logic of animal conflict. *Nature, 246*, 15-18.

McGhee, P.E. (1974). Development of children's ability to create the joking relationship. *Child Development, 45*, 552-556.

McGhee, P.E. and Lloyd, S. (1982). Behavioral characteristics associated with the development of humor in young children. *The Journal of Genetic Psychology, 141*, 253-259.

Priest, R.F. and Swain, J.E. (2002). Humor and its implications for leadership effectiveness. *Humor, 15*, 169-189.

Riechert, S.E. (1998). Game theory and animal contests. In L.A. Dugatkin and H.K. Reeve (Eds.), *Game theory and animal behavior* (pp. 64-93). Oxford University Press, New York.

Suitor, J.J., Powers, R.S., and Brown, R. (2004). Avenues to prestige among adolescents in public and religiously affiliated high schools. *Adolescence, 39*, 229-241.

Sullivan, A. (2002). Gender differences in coping strategies of parents of children with Down syndrome. *Down Syndrome Research and Practice, 8*, 67-73.

Weinberger, M.G. and Spotts, H.E. (1989). Humor in U.S. versus U.K. TV commercials: A comparison. *Journal of Advertising, 18*, 39-44.

Weller, L., Amitsour, E. and Pazzi, R. (1976). Reactions to absurd humor by Jews of eastern and western descent. *Journal of Personality and Social Psychology, 98*, 159-163

Werner, N.E. and Crick, N.R. (1999). Relational aggression and social-psychological adjustment in a college sample. *Journal of Abnormal Psychology, 108*, 615-623.

Woods, P. (1983). Coping at school through humor. *British Journal of Sociology of Education, 4*, 111-124.

**Appendix.** Items in the IAS-A organized by subscale

| Subscale | Item number | Item |
|---|---|---|
| Malicious Humor | 2. | Used sarcasm to insult them. |
| | 9. | Made negative comments about their physical appearance. |
| | 12. | Imitated them in front of others. |
| | 14. | Played a nasty practical joke on them. |
| | 15. | Done something to try and make them look stupid. |
| | 18. | Intentionally embarrassed them around others. |
| | 22. | Made fun of them in public. |
| | 23. | Called them names. |
| | 24. | Criticised them in public. |
| Social Exclusionary | 4. | Withheld information from them that the rest of the group is let in on. |
| | 5. | Purposefully left them out of activities. |
| | 6. | Made other people not talk to them. |
| | 7. | Excluded them from a group. |
| | 10. | Used private in-jokes to exclude them. |
| | 13. | Spread rumours about them. |
| | 17. | Made them feel that they don't fit in. |
| | 19. | Stopped talking to them. |
| | 21. | Omitted them from conversations on purpose. |
| | 25. | Turned other people against them. |
| Guilt Induction | 1. | Used my relationship with them to try to get them to change a decision. |
| | 3. | Tried to influence them by making them feel guilty. |
| | 8. | Used their feelings to coerce them. |
| | 11. | Used emotional blackmail on them. |
| | 16. | Pretended to be hurt and/or angry with them to make them feel bad about him/herself. |
| | 20. | Put undue pressure on them. |