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The influence of humor on desirability

Eric R. Bressler[a,*], Sigal Balshine[b]

[a]Department of Psychology, Westfield State College, P.O. Box 1630, Westfield, MA 01086-1630, USA
[b]Department of Psychology, McMaster University, Hamilton, Ontario, Canada, L8S 4K1

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Abstract

Humorous interaction is a ubiquitous aspect of human social behavior, yet the function of humor has rarely been studied from a Darwinian perspective. One exception is Miller's theory that one's ability to produce high-quality humor functioned as a fitness indicator, and hence, humor production and appreciation have evolved as a result of sexual selection. In this study, we examined whether there are sex differences in attraction to humorous individuals, and whether using humor influences perceptions of humorists' personality traits. We experimentally manipulated how humorous two-stimulus persons were perceived to be by presenting them with autobiographical statements that were either funny or not. Participants chose which person was a more desirable partner for a romantic relationship, and which individual was more likely to have several personality traits. Only women evaluating men chose humorous people as preferred relationship partners. For both sexes, humorous individuals were seen as less intelligent and trustworthy than their nonhumorous counterparts, but as more socially adept. These results are discussed in light of sexual selection theory.

Keywords: Sexual selection; Sex differences; Psychological courtship devices; Mate choice; Personality traits; Evolutionary psychology

1. Introduction

The capacities to produce and appreciate humor stand as two unique aspects of human psychology receiving little attention from evolutionary researchers despite their prevalence in

* Corresponding author. Tel.: +1 413 572 5719; fax: +1 413 572 8062.
E-mail address: ebressler@wsc.ma.edu (E.R. Bressler).

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human life. Humor is strongly influenced by social situations, being primarily produced and more readily appreciated in the presence of others (Chapman, 1973; Chapman & Chapman, 1974; Malpass & Fitzpatrick, 1959; Martin & Kuiper, 1999; Provine, 1993). Furthermore, humor is a highly valued social trait; most people would like to have a good sense of humor (Apte, 1987) and report preferring individuals with a good sense of humor as both friends and relationship partners (Goodwin, 1990; Hansen, 1977; Hewitt, 1958; Kenrick, Sadhalla, Groth, & Trost, 1990; Smith, Waldorf, & Trembath, 1990; Sprecher & Regan, 2002; Todosijevic, Snezana, & Arancic, 2003). These findings highlight the need for theories of the evolution of humor.

Several theories have been proposed to explain how humor might increase fitness (e.g., Alexander, 1986; Miller, 2000a; Weisfeld, 1993). Unfortunately, these theories remain largely untested. In this study, we tested an implication of one theory (Miller, 2000a) by experimentally manipulating humor and examining how interpersonal attraction is affected.

Miller suggests that humor has evolved as a result of intersexual selection, arguing that many human psychological traits–including humor–reveal underlying mutational load. Thus, phenotypic variation in these traits would provide information about the genetic quality of individuals who display them and would come to be important in mate choice (Miller, 1998, 2000a, 2000b, 2000c, 2001).

Miller argues that the influence of sexual selection on humor will be apparent in that men will produce humor more than women, particularly in mating contexts (Miller, 1998; 2000a, pp. 94–98). Findings that men tend to use humor more often than women do (McGhee, 1979), particularly in mixed-sex groups (Robinson & Smith-Lovin, 2001), and seem to use humor in intersexual advertising to a greater extent than do women (Simpson, Gangestad, Christensen, & Leck, 1999) support this contention. However, Miller also argues that because most human reproduction occurred in relatively long-term relationships, where the sexes may be equally discriminative of partner quality (Miller, 2000a, 2001, citing Kenrick et al., 1990, and Kenrick, Groth, Trost, & Sadhalla, 1993), sex differences in preferences for psychological courtship traits should be small or nonexistent (Miller, 2000a, pp. 94–98). Indeed, a meta-analysis of 34 studies that examined self-reported mating preferences for various traits found no sex difference in preference for partners with a "good sense of humor" (Feingold, 1992).

Even if most human reproduction has resulted from mutual mate choice in long-term relationships, we still find sexual dimorphism in many traits. The variance in reproductive success of ancestral men has likely exceeded that of ancestral women, due to desirable men's ability to acquire additional paternity through extra-pair copulation (Andersson, 1994, pp. 158–160) and to monopolize the reproductive potential of more than one woman (Daly & Wilson, 1983, p. 281). Under these circumstances, sexual selection might still have favored a greater preference for humor among women because male discriminativeness may have carried the cost of lost mating opportunities. In partial support of this idea, Lundy, Tan, and Cunningham (1998) found that women rated physically attractive individuals who used self-ridiculing humor as more desirable than similar individuals who did not use such humor, while men's ratings of desirability were unaffected by humor use. However, because Lundy et al. used only self-ridiculing humor and did not directly

compare the preference for humor between women and men, our knowledge of sex differences in attraction to humor is limited. This study investigated whether humor is more attractive to women than to men, and whether humor influences the humorist's perceived personality.

2. Method

2.1. Participants

Two hundred ten McMaster University undergraduate Psychology students (105 women and 105 men; mean age±S.E.=19.1±0.2 years) participated in this self-paced, computer-administered experiment for course credit. Five men and three women were later removed due to incomplete participation.

2.2. Procedures

After completing the informed consent process and providing basic demographic information (age, sex, and ethnicity), participants completed two tasks. In the first task, participants spent 5 min writing autobiographical descriptions of their thoughts or behaviour, to make it seem plausible that we had also collected the statements that they would encounter in the second task. In the second task, participants were repeatedly shown two facial photographs depicting two individuals of the same sex as each other and of equal physical attractiveness. Each of the two photographs was presented individually 8 times, for a total of 16 presentations in a series. Each time a photograph was presented, a statement that was ostensibly authored by the depicted individual was presented with it. One photographed individual in a series was presented with eight nonhumorous statements (nonhumorous individual), while the other individual was presented with five nonhumorous statements and three humorous statements (humorous individual). The humorous individual was presented with both humorous and nonhumorous statements because even very funny people are not always funny. After the participant had viewed all 16 presentations in a series, both photographs were displayed together along with a set of questions asking the participant to choose which individual was more humorous, desirable as a relationship partner, fun, friendly, popular, intelligent, confident, independent, honest, and trustworthy. After the participants answered these questions, they completed three more series with new pairs of photographs (always matched on sex and attractiveness) and statements, followed by the same forced-choice questions. Across the four series of presentations, each participant saw two pairs of attractive individuals and two pairs of unattractive individuals. Participants were exposed to one of two conditions: seeing only photographed individuals of the same sex as themselves (n=42 women and 41 men) or of the opposite sex (n=63 women and 64 men). Following their participation, participants were probed for knowledge of the experimental manipulation and debriefed; none reported being aware of the humor manipulation.

Table 1
Samples of humerous and nonhumerous statements

Sample nonhumorous statements
I wake up early on the weekend so I can get my work done by noon.
I enjoy giving people directions when they're lost. It's a quick, easy way to help someone out, and that feels good.
I've taken lessons on six different musical instruments, but I don't play any of them. I've never really wanted to be a musician, but my parents seem to think it was a good thing for me, so they always made me go to lessons.
Every year I go to a cabin my uncle owns and I go cross-country skiing.
I'd rather walk to school than take the bus. It's nicer to get some exercise.
I like having friends over for dinner. We make a nice meal for cheap, and if everyone helps, then it doesn't take much work to have a lot of food.
Sample humorous statements
I like the lottery because it's basically a tax on people who are bad at math.
Birthday cake is the only food you can blow on and spit on and everybody rushes to get a piece.
My high school was so rough we had our own coroner. We used to write essays like "What I Want to Be if I Grow Up."
Why do toasters have a setting on them that burns the toast to a horrible crisp that no one would eat?
I wrote a song once, but since I can't read music I don't know what song it is. When I listen to the radio, sometimes I wonder if I'm listening to my song.
When I was a kid, I had this blanket that I brought with me everywhere. I suppose I'm like a lot of people that way. Think I'm different from everyone else because I still miss my blanket.

2.3. Materials

Seventy-six 'autobiographical' statements were created for this study or drawn from popular sources (such as the Internet). Most statements contained a one- to four-sentence description of behavior or preferences. The content was intended to be either humorous (18 statements) or not (58 statements). Prior to the experiment, 10 independent raters (5 men and 5 women, mean age$\pm$S.E.=20.2$\pm$0.6 years) judged the funniness of each statement using a seven-point scale (1=*not funny at all*, 7=*extremely funny*). The humorous statements (mean rating$\pm$S.E., range=3.5$\pm$0.15, 2.4–4.4) were rated as more humorous than the nonhumorous statements [1.5$\pm$0.07, 1.0–3.0; $t(74)=17.4$, $p<.0001$]. The humorous statements employed a variety of humor types; see Table 1 for examples.

Photographs of the faces of 40 individuals (drawn from a larger database of 127 photographs of McMaster University undergraduates) who were looking directly into the camera with neutral expressions were used as stimuli. Prior to the experiment, 10 independent raters (6 men and 4 women, mean age$\pm$S.E.=18.9$\pm$0.4 years) rated the physical attractiveness of each of the 127 photographs using a seven-point scale (1=*not at all attractive*, 7=*extremely attractive*). From these 127, we selected the 10 most attractive men (mean rating$\pm$S.E., range=4.1$\pm$0.1, 3.8–4.8), the 10 least attractive men (2.3$\pm$0.1, 1.9–2.8), the 10 most attractive women (4.5$\pm$0.2, 4.1–5.8), and the 10 least attractive women (2.6$\pm$0.2, 1.7–3.2). Each attractiveness-by-sex group of stimuli contained eight to nine individuals of European ancestry and one to two individuals of non-European ancestry.

Statements, photographs, and questions were presented to participants on IBM personal computers via a Visual Basic (v. 6) program. The program randomized (1) which of the

Table 2
Results of Principal Components Analysis with Varimax rotation on attributions of personality traits

	Component		
	1	2	3
Popular	0.75	−0.22	0.14
Fun	0.80	−0.07	0.28
Friendly	0.73	0.21	−0.20
Trustworthy	0.11	0.86	−0.06
Honest	−0.16	0.80	0.03
Independent	−0.09	0.06	0.84
Confident	0.33	−0.11	0.73

40 pictures were used in each series of trials (constrained to match for sex and attractiveness), (2) which member of a pair was presented with humorous statements, (3) the order of presentation of both photographs and statements, (4) the side of the screen on which each picture was displayed during the question phase, and (5) the order in which questions were presented. Due to a program error, some participants did not see one of the questions across all trials; thus, sample sizes vary slightly between comparisons.

2.4. Statistical analyses

To examine the perceptions of the humorists, we summed the number of times that each participant chose the humorous individual for each question across the four series of trials. Each participant therefore contributed a data point for each question ranging from zero to four. Some of the measured personality traits were related, and hence, we performed principal components analysis with varimax rotation on the responses to the eight personality traits. The rotated factor plot revealed three components: a "socially adept" component (friendly/popular/fun), an "independent/confident" component, and a "trustworthy/honest" component—which cumulatively accounted for 68% of the variance within the matrix (see Table 2). Intelligence did not load highly onto any one component and was thus analyzed separately. To represent the three components for analysis, we averaged the total number of choices for the humorous individuals across each personality trait that loaded highly onto each of these respective components. For example, participants' choices for the humorous individual as most "socially adept" was the average of their total number of choices for the humorous individual across the "fun," "popular," and "friendly" questions.

We analyzed whether the average number of choices for the humorous individual deviated from that expected by chance using one-sample t tests. We examined group differences between the sexes and between the same-sex/opposite-sex conditions using ANOVA and independent samples t tests. For all dependent variables, we first examined whether the attractiveness of the photographed individuals interacted with the sex of the participant or the condition in which they participated. With one exception (discussed below), the attractiveness of the photographed individuals did not interact significantly with any other factors.

Thus, unless otherwise noted, all analyses are collapsed across the levels of attractiveness. All tests were two tailed and used α=.05. All analyses were conducted using SPSS (v. 11) for Macintosh.

3. Results

3.1. Was humor successfully manipulated?

We performed two manipulation checks. First, using the humor ratings of all statements provided by the independent judges, we calculated the mean humor rating of the eight statements presented with a given stimulus individual. Then, for every pair of stimulus individuals, we calculated the difference between the mean humor rating of the statements presented with the humorous individuals and that of the nonhumorous individual. This average was greater than zero (indicating that the humorous individuals had a higher humor score) in 833 of 840 pairs of stimulus individuals. The average difference score$\pm$S.E. was 0.74$\pm$0.01.

Our second manipulation check examined participants' attributions of humor. Individuals presented with humorous statements were chosen as the more humorous individual more often than expected by chance [one-sample t test, mean number of times chosen$\pm$S.E.=2.98$\pm$0.06, $t(193)$=16.0, $p<.0001$]. This was true within each group of participants: women viewing opposite sex [2.91$\pm$0.11, $t(55)$=8.14, $p<.0001$], women viewing same sex [3.00$\pm$0.16, $t(38)$=6.09, $p<.001$], men viewing opposite sex [3.03$\pm$0.09, $t(60)$=11.1, $p<.0001$], and men viewing same sex [3.00$\pm$0.15, $t(37)$=6.85, $p<.001$]. There were no between-group differences in the tendency to choose the humorous individual as more humorous (ANOVA, all $F<0.30$, all $p>.60$).

3.2. Were humorous individuals considered more desirable relationship partners, and did the sexes respond differently to humorous individuals?

Only women viewing men chose the humorous individual as the more desirable relationship partner more often than expected by chance [one-sample t test, $t(60)$=5.79, $p<.0001$; Fig. 1]. Women viewing other women were not more likely to choose the humorous individual [$t(35)$=1.66, p=.11; Fig. 1], nor were men evaluating either sex [men evaluating women: $t(58)$=0.36, p=.72; men evaluating men: $t(36)=-0.20$, p=.85; Fig. 1].

We found a main effect of participant sex on choices for the humorous individuals as preferred partners [ANOVA, $F(1,189)$=9.38, p=.003]. The main effect of condition was nonsignificant [$F(1,189)$=2.64, p=.11], as was the interaction between the sex of the participant and condition [$F(1,189)$=1.13, p=.29]. However, planned post hoc t tests suggest that the main effect of sex was driven primarily by women who participated in the opposite sex condition; women evaluating men showed a greater preference for humorous relationship partners than did men evaluating women [independent samples t test, $t(118)$=3.23, p=.002; Fig. 1] and women evaluating women [$t(95)$=2.05, p=.043]. There were no differences

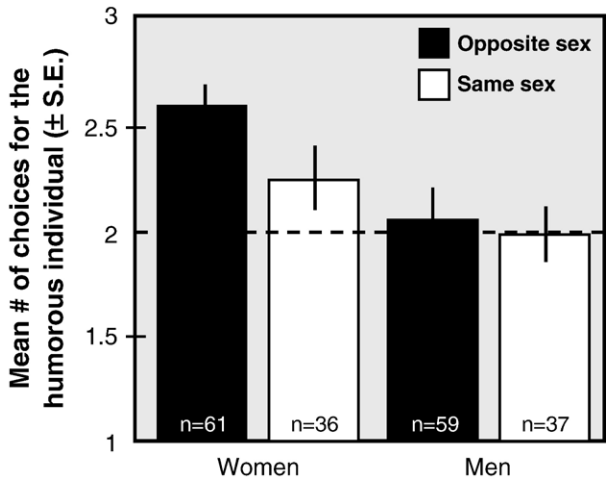

Fig. 1. Mean number of times the humorous individual was chosen as the preferred romantic relationship partner by women and men viewing the opposite or the same sex. The dashed line represents the number of choices for the humorous individual expected by chance.

between women evaluating women and men evaluating men [$t(71)=1.36$, $p=.18$]. Finally, men chose humorous women as the more desirable partner as often as they chose humorous men [$t(94)=0.37$, $p=.71$].

3.3. Did humor alter participants' perceptions of the humorist's personality?

The interaction terms between the sex of the subject and the condition in which they participated were nonsignificant for each of the personality variables ($p>.30$). Thus, to examine humor's effects on personality attributions, we collapsed across the sex and condition.

The experimental manipulation of humor caused both positive and negative perceptions of the humorists. Humorous individuals were chosen as socially adept (average of fun, friendly, and popular) more often than expected by chance [2.48 ± 0.05, one-sample t test, $t(209)=9.02$, $p<.0001$]. Humorous individuals were chosen as the more independent or confident individual at chance levels [2.06 ± 0.06, $t(209)=1.08$, $p=.28$]. However, humorous individuals were less likely to be chosen as intelligent [1.73 ± 0.07, $t(193)=-3.84$, $p<.0001$] than expected by chance.

For personality traits, the only interaction was between the attractiveness of the stimulus and the sex of the participant in attributions of trustworthiness/honesty towards the humorous individual [repeated-measures ANOVA, $F(1,202)=7.19$, $p=.008$]. Specifically, women were particularly disinclined to attribute trustworthiness/honesty to humorous individuals that were unattractive compared with those that were attractive [paired t test, $t(102)=2.82$, $p=.006$; see descriptive statistics below]. However, trustworthiness/honesty was still attributed to humorous individuals of both levels of attractiveness less often than expected by chance by both sexes [because there were two series of trials for each level of attractiveness, the chance expectation for these comparisons=1; women viewing attractive stimuli: 0.88 ± 0.06,

one-sample t test, $t(102)=-2.06$, $p=.04$; women viewing unattractive stimuli: 0.65 ± 0.06, $t(102)=-6.15$, $p<.0001$; men viewing attractive stimuli: 0.78 ± 0.06, $t(102)=-4.00$, $p<.0001$; men viewing unattractive stimuli: 0.82 ± 0.06, $t(102)=-2.99$, $p=.004$].

3.4. Were the nonhumorous statements aversive?

Because we used a forced-choice design, any observed preference for humorous individuals may represent an aversion to the nonhumorous statements rather than an attraction to the humorous statements. To test this possibility, 14 McMaster University undergraduates (5 men and 9 women) rated all 76 statements on the extent to which they displayed the presence or lack of 13 personality traits (intelligent, smart, confident, independent, introspective, popular, friendly, fun, creative, clever, witty, trustworthy, and honest) using a seven-point scale (1=*strong lack of trait*, 4=*statement provides no information about trait*, 7=*strong presence of trait*). We calculated an index of how attractive or aversive each statement was by averaging across all raters and all traits for each statement. We examined whether the nonhumorous statements received lower ratings (were more aversive) on average than the humorous statements and found no difference [nonhumorous statements: 4.10 ± 0.05; humorous statements: 3.98 ± 0.09; $t(74)=1.23$, $p=.22$].

4. Discussion

Our results suggest that humor can positively affect desirability as a relationship partner, but this effect is most likely to occur when men use humor and are evaluated by women. We found no evidence that men prefer humorous women as partners, nor that women consider humorous women more desirable partners. This limitation of the influence of humor on desirability to situations where fitness indicators are predicted to be important suggests a role for sexual selection in the evolution of humor.

Humor is not consistently associated with positive perceptions, as might be expected if there were a humor "halo effect," such as that found with physical attractiveness (Dion, Berscheid, & Walster, 1972; Nisbett & Wilson, 1977). Humorous individuals were seen as more socially adept, but as less trustworthy/honest and intelligent. Indeed, given the forced-choice design, this makes the relationship findings more compelling: Women chose funny men as relationship partners despite often rating them as less honest and intelligent.

This last result conflicts with the suggestion of Miller (2000b) that humor functions to signal intelligence; however, this study may not be a critical test of Miller's hypothesis. Our participants may not have used the term "intelligence" in the same way that Miller does. While Miller uses the term to refer to general intelligence, it seems possible that participants may have interpreted the term as synonymous with "scholarly" or "educated," for example. Given the sophomoric nature of some of our humorous statements, it is not surprising that participants did not ascribe "intelligence" to our humorous individuals. However, this makes our results even more supportive of the contention that humor is attractive: Women preferred humorous men as relationship partners, even when the humor

they used was unsophisticated. Additional post hoc analysis showed no relationship between humor quality (based on preratings) and favorable judgments. These nonsignificant results may be accounted for by the fact that the humor in this study showed a restricted range of quality. Examinations of the influence of different types of humor (including more erudite forms) on person perception and desirability would be a valuable addition to this research area.

Although our study supports Miller's theory that humor plays a role in mate choice (Miller, 2000a), it did not support the notion that humor plays an equal role in men's and women's mate choice (Miller, 2000a, pp. 94–98; 2001). Prior work (Feingold, 1992) suggests that men value a "good sense of humor" in prospective mates as much as women do. Our findings appear to conflict with these prior studies. There are at least three potential explanations that may resolve this conflict. First, in many of the prior studies, participants were asked to either list the traits they prefer in a partner or were asked to rank order a number of traits presented to them on a list (e.g., Hewitt, 1958; Goodwin, 1990; Todosijevic et al., 2003). As both methods (rank ordering or listing) remove some information about the magnitude of preference, they render comparisons between the sexes less sensitive: While a rank-ordered preference for humor by men may not differ from that of women, the absolute importance of humor when choosing a mate may nevertheless differ between the sexes. These differences may have affected our results. For example, although paired photographs were prematched on physical attractiveness, participants may have had idiosyncratic opinions of which individual was more attractive, variance that would be expected to influence men's choices more than women's.

A second explanation is that men's and women's preferences for humorous partners may vary as a function of the anticipated costs of the relationship. Short- versus long-term mating preferences are known to vary on a number of dimensions and may do so for humor as well, as Miller (2000a) has suggested. Unfortunately, we do not know how our participants were interpreting our "romantic relationship partner" question in this regard.

A third explanation is that men and women may mean different things by "good sense of humor." For example, this phrase may refer to individuals who produce high-quality humor or to those who appreciate the humor of others. Men may prefer women who signal appreciation of their humor because humor appreciation may signal sexual interest. Research by Grammer and Eibl-Eibesfeldt (1990) has shown that when women and men engaged in natural conversation, the extent to which a woman laughed during the conversation was predictive of both her interest in dating the man and the man's interest in dating her, while men's laughter was not related to either's interest in future interaction. Very little is known about how various humor-related behaviors contribute to our classification of others' sense of humor (Martin, 1998; Martin & Lefcourt, 1984; although see also Bippus, 2000). To our knowledge, no research has investigated whether men and women differ systematically in the extent to which they attend to these behaviors or prefer them in others. If humor has evolved as a signal of mate quality, then the failure to notice high-quality humor may have higher costs for women than for men due to women's relatively higher costs of mating. Conversely, if signals of the appreciation of humor–through laughter and smiling–have predicted sexual interest, then compared with women, men may more strongly prefer partners who are receptive to their humor due to their higher

correlation between copulatory frequency and reproductive success (Andersson, 1994; see also Haselton & Buss, 2000).

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