That's what she said! Perceived mate value of clean and dirty humor displays

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A R T I C L E I N F O

A B S T R A C T

Humor is considered a valuable trait when evaluating potential mates, and women demonstrate a preference for men's ability to produce humor. Humor displays as a male mating strategy appear context-dependent, which suggests that women's preferences for certain humor may be contingent on their mating goals. One dimension of humor variability that could approximate men's long- (LTM) or short-term (STM) mating goals is communication of humor that is categorically clean or dirty, respectively, which could influence the humorists' desirability to women. Such displays may differentially signal sexual receptivity. Two studies tasked women with indicating interest in men who generated either clean or dirty humor. Across both studies clean humor producers were preferred when evaluating both the long- and short-term desirability of men, although this preference was larger for LTM evaluations. Study 2 also demonstrated that sociosexually unrestricted women (i.e., those with more permissive sexual attitudes) self-reported greater behavioral attraction toward dirty humorists, a preference mediated by their perceptions of dirty jokes as funnier. Dirty humor production in men and appreciation in women may facilitate respective STM goals. Results of this research provide further evidence that the specific mating context determines the appropriateness of humor use when used as a relational display.

1. Introduction

When identifying traits that constitute the ideal mate, people typically give special consideration to another person's sense of humor. A litany of research indicates humor is one of the most important traits people consider when evaluating another's mate value (Buss, 1989; Buss & Barnes, 1986; Feingold, 1992; Lippa, 2007). Such preferences are unsurprising, as humor facilitates social bonding through a reciprocal exchange of production (e.g., jokes) and appreciation (laughter), which serve to foster closeness and strengthen pair-bonds (e.g., Li et al., 2009; Van Vugt, Hardy, Stow, & Dunbar, 2014). Within romantic relationships, women have a considerable preference for humorous men (Bressler & Balshine, 2006; Greengross & Miller, 2011).

Despite women's desire for funny men, not all humor is created equal. Different types of humor vary in their appropriateness based on the desired relationship. Specifically, previous research has shown that women prefer specific humor types, possibly due to intentions communicated using specific types of humor. Women especially prefer humor that may connote benevolence (e.g., non-injurious intentions toward others), but this preference is most apparent when evaluating mates for their long-term potential given the importance of benevolence displays in that context (Barclay, 2010; DiDonato, Bedminster,

& Machel, 2013; Zeigler-Hill, Besser, & Jett, 2013). Jokes connoting this so-called benevolence could include those colloquially deemed "clean." However, given that certain types of humor may reflect interest in short-term sexual encounters (i.e., dirty jokes), women may shift preferences toward dirty humorists when interested in uncommitted sex. We sought to clarify how the different content of jokes becomes differentially preferable as a function of women's desired relationship context. Specifically, we sought to explore whether the use of dirty and clean jokes influences men's desirability in across different mating contexts.

1.1. Long-term and short-term mate preferences

Historically, mating has been a pluralistic endeavor for humans, with short-term (STM) and long-term mating (LTM) strategies serving different aspects of multi-faceted reproductive goals, necessitating careful mate selection. Individuals must prioritize certain traits in one context versus another based on that individual's primary goal in that context (Buss & Schmitt, 1993). In STM, which emphasizes focusing on offspring quantity or heritable fitness for one's offspring (e.g., physically healthy mates), individuals acquire multiple partners for uncommitted sexual encounters and prefer physically attractive mates

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who appear interested in STM themselves (Kenrick, Groth, Trost, & Sadalla, 1993; Li & Kenrick, 2006). For example, women prefer muscular and extraverted men in STM contexts, as such traits connote heritable fitness and a similar interest in such encounters (Brown & Sacco, 2017; Frederick & Haselton, 2007). Men prioritize features of women's bodies that connote fertility for STM (e.g., 0.7 waist-to-hip ratio), a preference that would enhance reproductive success (Confer, Perilloux, & Buss, 2010; Singh, 1993). Although women may ultimately incur the cost of reduced parental investment in STM, they also stand to benefit from preferring attractive men as short-term partners. Such men would likely possess good genes, and thus heritable fitness for resultant offspring to act as compensation for long-term partners of potentially lower physical mate value.

Conversely, the committed, monogamous pair-bonding of LTM shifts priorities for ideal mates. Despite men and women's continued prioritization of attractiveness, women emphasize additional traits that reliably connote men's access to resources (e.g., higher status, conspicuous displays) and willingness to invest in offspring (Jonason, Li, & Madson, 2012; Li, Bailey, Kenrick, & Linsenmeier, 2002). Nonetheless, benevolence remains the most important trait for LTM (Barclay, 2010; Li et al., 2002). Such benevolence signals the predictability and trustworthiness necessary for LTM, as those traits connote fidelity, simultaneously solving men and women's adaptive problems within that relationship context. For men, perceiving these cues would reduce concerns of extra-pair mating, thus reducing concerns of paternal uncertainty. Women's recognition of fidelity cues in men would facilitate identification of men less likely to divert resources from their pair-bond. Because of both the desirability signaled through men's humor use (Bressler & Balshine, 2006) and that humor connotes one's interest in forming a relationship (Li et al., 2009), women may ultimately be able to infer men's contextual mating intentions (i.e., relative receptivity to STM and LTM) based on their humor displays and therefore desire a type of humor consonant with a given context.

1.2. Women's mate selection through humor

Inherent differences in men's and women's reproductive biology have imposed considerable cost asymmetries in their sexual behavior and preferences. Men's minimal investment in reproduction is sperm provision, whereas reproduction is substantially costlier for women, considering their minimal investments include pregnancy and lactation, as well as slower reproductive rate from women's temporary removal from further reproduction during pregnancy. To offset these significantly greater costs to reproduction, women would have benefited by becoming choosier in mate selection, thereby reducing the likelihood of mating decisions that would reduce heritable fitness. Consequently, men's reproductive success would be contingent upon outcompeting other men on dimensions deemed valuable to "choosier" women (Trivers, 1972). In essence, women become the "buyers" in sexual marketplaces and select men, whereas men act as "sellers," by attempting to signal traits and abilities that would satisfy women's reproductive criteria vis-á-vis other men (Baumeister & Vohs, 2004). In fact, women have considerably more stringent criteria in partner selection compared to men by requiring higher minimal levels of desired traits in the service of offsetting the metabolic costs of reproduction (Kenrick et al., 1993).

One commodity men could offer to their partners is humor. Although research consistently indicates both men and women desire a partner with a sense of humor, women's selection criteria for humor are based specifically on men's ability to produce humor (Bressler, Martin, & Balshine, 2006; Buss, 1989; Lippa, 2007; Wilbur & Campbell, 2011). That is, women especially desire men who can make them laugh (Bressler & Balshine, 2006). In fact, humorous men typically report greater success in mate acquisition (Greengross & Miller, 2011; Guéguen, 2010), with women reporting more interest in funny men on dating sites (Wilbur & Campbell, 2011). Because of this interest in

humor from women, men typically display humor in the service of signaling their interest toward women who would, in turn, show appreciation for such displays via laughter (Li et al., 2009). Considering the sexual marketplace, women act as the "buyers" to the humor men "sell." Although humor itself is desirable, the type of humor men employ may further signal specific types of interests within a relational context. For example, affiliative humor, a benevolent humor style, can communicate interest in social bonding and social warmth, traits which tend to be preferred by women in long-term partners (Wilbur & Campbell, 2011).

1.3. Mating context and appropriate humor use

Despite humor's desirability in relationships, not all types of humor production are equivalently desirable, especially when considering different mating contexts. In fact, when tasked with deciding whether to use affiliative or aggressive humor when primed with STM or LTM, both women and men consistently reported utilizing affiliative humor across both contexts but downregulated their intentions to use aggressive humor in LTM (DiDonato & Jakubiak, 2016). This suggests an awareness in what constitutes appropriate or attractive humor for a context and that pursuing a long- or short-term mate requires different consideration for these displays. Other research has considered the attractiveness of specific interpersonal humors styles, or the underlying basis from which individuals generate humor. Affiliative humor, a style utilized to create positive social bonds, connotes warmth and competence to prospective mates, ultimately eliciting LTM desirability (DiDonato et al., 2013; Zeigler-Hill et al., 2013). Importantly, this favorability toward affiliative humor was most apparent among women's evaluation of male humorists, compared to men's evaluation of female humorists. Humorous, yet flippant, pick-up lines undermine men's attractiveness in LTM (Senko & Fyffe, 2010). Conversely, women find attractive, self-deprecating humorists more desirable than men whose humor deprecates others, especially within LTM contexts (Greengross & Miller, 2008; Lundy, Tan, & Cunningham, 1998).

Much like how different humor styles communicate prospective mates' contextual value, the content of men's jokes could convey considerable information about their sexual intentions that could provide a complementary cue to their desirability. Clean jokes are one analog to convey benevolence to another person, a trait deemed desirable in LTM (Barclay, 2010). Topics for such jokes could potentially include amusing observations of life. Importantly, such jokes' content would likely not be sexual, a potential analog for signaling disinterest in infidelity, and could convey sincerity in establishing a genuine connection (DiDonato et al., 2013; Lundy et al., 1998). Conversely, given the sexual nature of their content, dirty humor could be inappropriate in LTM. Such jokes could, at a minimum, communicate sexually permissive attitudes, or could even communicate actual interest in short-term sexual encounters, which women could find detrimental for LTM, as such jokes could communicate reduced interest in parental investment and proclivity toward infidelity (Jonason, Garcia, Webster, Li, & Fisher, 2015). Furthermore, dirty jokes could be disgusting, which would further elicit aversion from women, given their greater degree of sexual disgust compared to men (Tybur, Lieberman, & Griskevicius, 2009).

The clean-dirty distinction may suggest clean humorists would be especially desirable in LTM, as their humor would connote benevolence. However, this desirability could ultimately undermine their attractiveness in STM (see Brown and Sacco, in press). LTM desirability may communicate STM unsuitability because of perceived unwillingness to disentangle from partners (Jonason & Buss, 2012). Conversely, humorists utilizing dirty jokes may explicitly communicate interest in STM, implicating themselves as preferable in that context relative to humorists utilizing clean humor. Thus, dirty humor use may be a contemporary manifestation of explicit STM interest to facilitate STM. Since women tend to evaluate the humor displays of potential mates rather than produce humor themselves in a romantic context. We focus

our research on the contextual desirability of male humor producers and women's mate preferences within STM and LTM contexts.

1.4. Current research

The current research sought to understand a potential mating signal basis for dirty or clean jokes by considering their contextual desirability. Specifically, we sought to determine if the content of jokes similarly mapped onto previous findings indicating a domain-specific desirability for humor (e.g., DiDonato et al., 2013; DiDonato & Jakubiak, 2016). Because the desirability of a "sense of humor" is based on the notion of men's humor production and women's evaluation (Wilbur & Campbell, 2011), we specifically tested women's evaluations of men's humor displays using a hypothetical speed dating scenario. Two studies considered such desirability through specific consideration of LTM and STM contexts while also considering general attraction (Studies 1 and 2). Furthermore, we also sought to identify how individual differences in dispositional interest in STM, as indexed through sociosexual orientation, may similarly predict preferences for dirty joke tellers, given the possibility that it connotes interest in STM (Study 2).

2. Pilot study

Because our studies were interested in perceptions of clean versus dirty humor, we conducted a pilot study in which participants were tasked with evaluating the relative cleanliness and funniness of various jokes. This pilot study sought to identify two sets of jokes, such that "dirty" jokes were perceived as dirtier than "clean" jokes, but were equivocal in funniness a priori. This would allow us to infer that different evaluations of the selected jokes were due to variation on the dimension of cleanliness-dirtiness, rather than funniness. The jokes were selected from books and websites that advertised having "dirty" and "clean" jokes with an equivalent amount of both selected for a pretest. The number of jokes selected was chosen so that there were enough jokes that were significantly different on the advertised cleanliness or dirtiness but not significantly different on the dimension of funniness. This allowed for a selection of jokes similar in humor quality that were qualitatively different in content.

2.1. Methods

2.1.1. Participants

A total of 105 participants completed this study (53 women, 51 men, one did not report; 78.1% White; M_{Age} = 36.98, SD = 10.98). Participants were recruited through Amazon's Mechanical Turk and paid $0.50 (US).

2.1.2. Materials and procedure

Participants were asked to evaluate 50 jokes from which we would ultimately choose clean and dirty equivocated in funniness but different in cleanliness. The jokes were presented one at a time in a randomized order. Participants were asked to indicate how funny each joke was (1 = *Not at All Funny*; 7 = *Very Funny*), and how dirty each joke was (1 = *Very Dirty*; 4 = *Neither Dirty nor Clean*; 7 = *Very Clean*).

2.2. Results

Given the design of our experiments below, we sought to acquire 8 jokes for our studies proper (4 dirty, 4 clean). As such, we used jokes' descriptive cleanliness and funniness ratings to select 4 dirty and 4 clean jokes that were highly dissimilar in ratings of cleanliness, but equivocal in funniness ratings. We then computed the average cleanliness and funniness ratings of the clean and dirty jokes, respectively. A paired samples *t*-test indicated that clean jokes (M = 5.80, SD = 0.99) were rated significantly cleaner than dirty jokes (M = 2.86, SD = 1.13), $t(104)$ = 21.72, $p < 0.001$, d = 2.77. Importantly, a paired samples *t*-

test demonstrated that dirty (M = 4.66, SD = 1.29) and clean jokes (M = 4.58, SD = 1.48) were rated equally funny, $t(104)$ = 0.63, p = 0.529, d = 0.05. See Appendix A for all joke stimuli selected for use in the main studies.

3. Study 1

Study 1 sought to identify the contextual desirability of dirty and clean humor use based on LTM and STM using a hypothetical speed dating paradigm. Because clean humor should connote the benevolence women desire in LTM (Li et al., 2002), we predict women would prefer men who tell clean jokes in LTM. Conversely, because dirty jokes could communicate interest in STM, which would signal greater interest in decoupling following a single act of intercourse (Jonason & Buss, 2012), we predicted dirty joke tellers would be preferred in STM.

Furthermore, this study sought to consider the interplay between preferences and how these preferences align with behavior. We provided a behavioral attraction analog to determine which type of humorist, either clean or dirty, would be selected by participants (Montoya, Kershaw, & Prosser, in press). Because of the overall advantage benevolent humor has in attracting mates (DiDonato et al., 2013; Zeigler-Hill et al., 2013), we predicted that clean humorists would ultimately elicit the highest attraction from women.

3.1. Method

3.1.1. Participants

We recruited 99 undergraduate women from a mid-sized public university in Southeastern U.S. in exchange for course credit. We excluded 4 women from the final analysis for not reporting heterosexual attraction, resulting in a final sample of n = 95 (M_{Age} = 21.00 years, SD = 3.86; 63.2% White). A small-medium effect-size power analysis (Cohen's f = 0.15, β = 0.80) indicated that 90 participants would sufficiently detect effects. We deliberately oversampled, expecting that some participants would not meet all study inclusion criteria.

3.1.2. Materials and procedure
3.1.2.1. *Jokes*. Participants viewed 8 male targets described as prospective speed dates represented by neutrally expressive facial images of similar physical attractiveness: 4 targets were paired with one of the dirty jokes from the pilot study and 4 targets were paired with one of the clean jokes. Participants assessed jokes for cleanliness and funniness. Presentation of the jokes was randomized with each unique identity presented with the jokes counterbalanced. Specifically, the study was programmed so that participants would view one of two counterbalances in which the targets told either a clean or dirty joke. One counterbalance had one target, for example, paired with a clean joke and the other had that same target paired with a dirty joke. Within these counterbalances of different targets paired with either a clean or dirty joke, the order of presentation for each target was randomized.

3.1.2.2. *Contextual desirability*. Participants indicated both the LTM and STM desirability of each target using two separate items, each on a 9-point Likert-type scale, one for the STM context and one for the LTM context (1 = *Not at All Desirable*; 5 = *Average*; 9 = *Very Desirable*; Brown and Sacco, in press).

3.1.2.3. *Behavioral attraction*. Although contextual desirability would sufficiently indicate the extent to which participants would find either type of humorist optimally attractive in a given context, it may not necessarily reflect an actual mate choice (Montoya et al., 2018). For example, simply deciding someone is attractive may not necessarily elicit behaviorally approaching the prospective mate (Montoya, Faiella, Lynch, Thomas, & DeLuca, 2015). Thus, we sought to consider an actual mating decision within a hypothetical speed dating scenario (e.g., Li et al., 2013). Participants indicated their willingness to provide their

phone number to each speed dater following the hypothetical sessions, a measure of behavioral attraction indicating willingness to get close to a target along a single 7-point Likert type scale (1 = *Very Unlikely*; 7 = *Very Likely*).

Consenting participants viewed 8 target men as speed dates and evaluated them. Following this procedure, participants provided demographic information and were debriefed.

3.2. Results

3.2.1. Manipulation checks

Our first analyses were manipulation checks to determine the overall cleanliness and dirtiness of the jokes. A paired samples *t*-test indicated participants found the clean jokes ($M = 5.27$, $SD = 1.08$) cleaner than the dirty jokes ($M = 2.84$, $SD = 0.95$), $t(94) = -18.94$, $p < 0.001$, $d = 2.38$. Further, the clean jokes ($M = 3.93$, $SD = 1.12$) were perceived as funnier than the dirty jokes ($M = 3.07$, $SD = 1.25$), $t(94) = -6.43$, $p < 0.001$, $d = 0.72$. While this is inconsistent with the results of our pretest, in which the clean jokes were rated as being equally funny as the dirty jokes, it is possible that the introduction of a mating scenario caused women to evaluate these jokes within a different context rather than simply rating the funniness of each joke. This would further align with research indicating women demonstrate more sexual disgust relative to men, which would be in the service of mitigating contact with undesirable mates (Tybur et al., 2009). Specifically, being asked to base their judgment of each target as a potential mate partner based on their humor production could have lead the women to judge each joke using more stringent criteria.

3.2.2. Contextual desirability

We conducted a 2 (Joke Type: Dirty vs. Clean) × 2 (Mating Context: STM vs. LTM) repeated-measures ANOVA to determine contextual desirability of humorists. A Joke Type main effect indicated that clean humorists ($M = 3.20$, $SD = 1.72$) were perceived as more desirable than dirty humorists ($M = 2.51$, $SD = 1.56$), $F(1, 94) = 25.70$, $p < 0.001$, $\eta^2 = 0.215$. No main effect for Mating Context emerged, $F(1, 94) = 1.79$, $p = 0.184$, $\eta^2 = 0.019$. Effects were qualified by a significant Joke Type × Mating Context interaction, $F(1, 94) = 5.68$, $p = 0.019$, $\eta^2 = 0.057$. Simple effects tests indicated that clean humorists ($M = 3.36$, $SE = 0.19$) were more desirable in LTM than were dirty humorists ($M = 2.52$, $SE = 0.17$), $F(1, 94) = 28.02$, $p < 0.001$, $\eta^2 = 0.230$. Interestingly, clean humorists ($M = 3.04$, $SE = 0.16$) were also more desirable than dirty humorists in STM ($M = 2.50$, $SE = 0.15$), although this preference was not at as large as it was for LTM, $F(1, 94) = 14.88$, $p < 0.001$, $\eta^2 = 0.137$. Viewed another way, clean humorists were more desirable in LTM than STM, $F(1, 94) = 5.07$, $p = 0.027$, $\eta^2 = 0.051$. However, dirty humorists were not preferred in either LTM or STM, $F(1, 94) = 0.02$, $p = 0.881$, $\eta^2 = 0.000$. See Fig. 1.

3.2.3. Behavioral attraction

Along with assessing perceptions of desirability toward the targets, we also considered actual mate choice behaviors. Participants reported greater interest in giving their phone number to clean humorists ($M = 2.53$, $SD = 1.33$) rather than dirty humorists ($M = 1.91$, $SD = 1.01$), $t(94) = -5.60$, $p < 0.001$, $d = 0.51$.

3.3. Discussion

Results from this study provide initial evidence demonstrating how the content of men's humor displays differentially influence women's contextual mating interests and attraction. Women preferred clean humorists to dirty, with this preference being especially apparent for LTM. This preference is consonant with previous literature suggesting the importance of benevolence in displaying long-term mate quality (e.g., Barclay, 2010; Li et al., 2002), particularly as it relates to humor production (DiDonato et al., 2013). Clean humorists could have
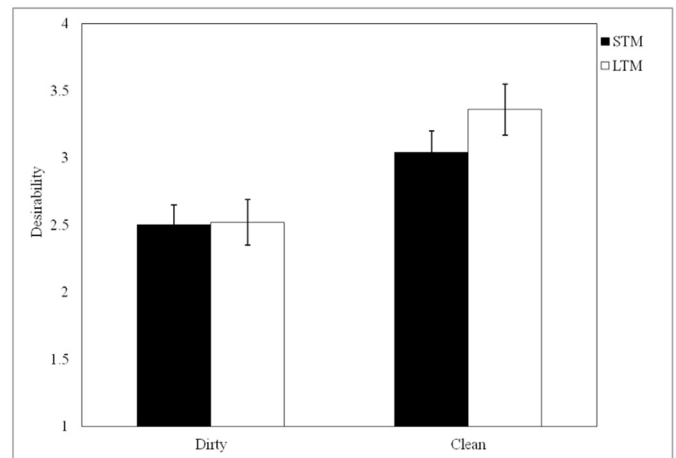

Fig. 1. Desirability of dirty and clean humorists in both short-term (STM) and long-term (LTM) contexts in Study 1.

communicated an interest in attempting to make a prospective mate laugh without necessarily looking to communicate sexual intentions immediately, indicating interest in a long- versus short-term mating relationship (Li et al., 2009). Women's generally greater reluctance toward STM could make them more receptive to jokes that are not overtly sexual (Schmitt, 2003). Importantly, compared to the dirty jokes, women could have inferred less proclivity toward infidelity from clean humorists, which would be consistent with women's LTM goals.

Contrary to hypotheses, dirty humorists were not more desirable in STM. Although these jokes could have communicated interest in uncommitted sexual encounters, women's general tendency to indicate lesser overall interest in STM, as shown in prior research, could have inhibited their interest toward dirty humorists (Schmitt, 2003). However, despite the preference for clean humorists in STM, the preference was nonetheless at a greatly reduced magnitude (i.e., half the effect size of the clean humor preference in LTM). This finding is consonant with previous work suggesting the overall importance of benevolent humor toward long-term partners, with individuals preferring and utilizing such humor in LTM contexts to a much greater extent than in STM (DiDonato et al., 2013; DiDonato & Jakubiak, 2016). This may also suggest tolerance toward dirty humor in STM contexts.

Although all women fluctuate in both LTM and STM interest (Buss & Schmitt, 1993), there are also pervasive differences at a dispositional level in women's STM and LTM preferences (Simpson & Gangestad, 1992). Such individual differences in STM interest, which were not considered in our first study, might explain why our first study did not find any specific preferences for targets displaying dirty humor. Women's general aversion to dirty humorists in both STM and LTM in Study 1 may be specific to women who initially display greater dispositional interest in LTM mating (Schmitt, 2003). However, women with dispositionally greater interest in STM may prefer dirty humorists to clean humorists, especially when evaluating the ST value of a potential mate. Study 2 sought to test for differences in dirty versus clean humorists while considering a unilateral attraction to humorists as predicted by dispositional interest in STM.

4. Study 2

According to Life History Theory, variation in dispositional mating strategies, both between- and within-species, evolved as a response to environmental variation. Specifically, individuals living in an environment characterized as harsh and unpredictable are likely to benefit more from utilizing a fast life strategy, as such environments would increase the likelihood of mortality, thus necessitating earlier maturation and reproduction to mitigate the chance of dying before

reproduction (Ellis, Figueredo, Brumbach, & Schlomer, 2009). Conversely, individuals inhabiting a harsh, but predictable, environment may benefit from a slow life history strategy, which emphasizes delayed development and reproduction in the service of increased investment in offspring to ensure they can effectively navigate harsh environments before reproducing themselves. As such, human populations notably vary in life history dispositions, ensuring at least some conspecifics would be effective at reproduction regardless of environmental changes in harshness and unpredictability.

This natural variability in life-history orientation, conceptualized as sociosexual orientation, exerts considerable influence over various mate choices (Simpson & Gangestad, 1992), particularly as it relates to how individuals prioritize certain traits in mates. Those reporting greater interest in LTM possess what is called a restricted sociosexual orientation (i.e., slow life history), whereas those reporting greater interest in STM possess an unrestricted sociosexual orientation (fast life history). Sociosexually unrestricted individuals are particularly sensitive to characteristics of potential mates connoting good genes and an interest in STM themselves (e.g., facial symmetry, extraversion), suggesting a prioritization of mates who can satisfy STM goals (Brown & Sacco, 2017; Sacco, Hugenberg, & Sefcek, 2009). Unrestricted women would thus be sensitive various interpersonal signals indicative of men's sexual receptivity and interest in STM in the service of satisfying their relevant mating goals. Because dirty humor may be a potential means to signal sexual intent, it would be adaptive for unrestricted women to prefer dirty humorists rather than clean humorists, whose humor displays may connote interest in LTM (Jonason & Buss, 2012).

In replicating Study 1, we predicted similar findings of contextual preferences across all women (i.e., greater desirability toward clean humorists in LTM). However, through our extension of the previous study, given unrestricted women's interest in men who appear sexually receptive and similarly interested in STM (Brown & Sacco, 2017), we predicted that more sociosexually unrestricted women will indicate more behavioral attraction toward dirty humorists compared to sociosexually restricted women.

4.1. Method

4.1.1. Participants

We recruited 153 undergraduate women from a mid-sized public university in Southeastern U.S. for course credit. We excluded 16 women from the final analysis for not reporting heterosexual attraction, being older than 40 years (i.e., not in the typical age range for reproduction, see Brown and Sacco, in press; Brown and Sacco, 2018; Brown, Sacco, & Medlin, in press), or not reporting their age ($n = 137$; $M_{Age} = 20.76$ years, SD = 3.21; 59.9% White). A medium-effect-size power analysis for an ANCOVA that considers interactive effects ($f = 0.25$, $\beta = 0.80$) indicated 125 participants would sufficiently detect effects; we deliberately oversampled in the instance we had to exclude participants. Although part of this study is an exact replication of Study 1, due to the addition of an individual difference moderator for analyses, and the fact that the suggested sample size is larger than that of Study 1's, we considered this new power analysis as the basis of our sample size in Study 2.

4.1.2. Materials and procedures
4.1.2.1. Jokes, contextual desirability, and behavioral attraction. The participants viewed the same jokes and male targets as in Study 1. Further, they were asked to indicate the contextual desirability of the targets as well as indicate whether they would be willing to give their phone number to the targets.

4.1.2.2. Sociosexual orientation. Participants also indicated their dispositional interest in promiscuous mating strategies using the Sociosexual Orientation Inventory-Revised (SOI-R; Penke & Asendorpf, 2008). This 9-item measure is comprised of 3 subscales

assessing attitudes toward such strategies, previous sexual behaviors, and desire for such strategies (αs > 0.80). Higher scores on each subscale indicate unrestricted sociosexuality whereas lower scores indicate restricted sociosexuality.

Consenting participants first engaged in the hypothetical speed dating task by indicating the contextual desirability of targets and their behavioral attraction toward them before they completed SOI-R. This was followed by demographics and debriefing.

4.2. Results

4.2.1. Manipulation checks

Clean jokes ($M = 5.29$, $SD = 1.14$) were cleaner than dirty jokes ($M = 2.67$, $SD = 0.90$) and clean jokes ($M = 3.88$, $SD = 1.43$) were perceived as funnier than dirty jokes ($M = 3.18$, $SD = 1.39$), $ts >$ $|5.60|$, $ps < 0.001$, $ds > 0.49$.

4.2.2. Contextual desirability

We used a 2×2 repeated-measures ANOVA to determine contextual desirability. Clean humorists ($M = 2.92$, $SD = 1.65$) were more desirable than dirty humorists ($M = 2.45$, $SD = 1.51$), $F(1, 136) = 17.40$, $p < 0.001$, $\eta^2 = 0.113$. No main effect of Mating Context emerged, $F(1, 136) = 2.25$, $p = 0.136$, $\eta^2 = 0.016$. However, and consistent with Study 1, effects were qualified by a Joke Type × Mating Context interaction, $F(1, 136) = 4.68$, $p = 0.032$, $\eta^2 = 0.033$. Simple effects tests indicated no difference in desirability of dirty humorists for STM ($M = 2.44$, $SE = 0.12$) or LTM ($M = 2.47$, $SE = 0.13$), $F(1, 136) = 0.06$, $p = 0.805$, $\eta^2 = 0.000$. Clean humorists were more desirable in LTM ($M = 3.04$, $SE = 0.15$) than STM ($M = 2.80$, $SE = 0.13$), $F(1, 136) = 5.92$, $p = 0.016$, $\eta^2 = 0.042$. Clean humorists were more desirable than dirty in STM, $F(1, 136) = 11.25$, $p = 0.001$, $\eta^2 = 0.076$, as well as in LTM at a larger magnitude, $F(1, 136) = 18.00$, $p < 0.001$, $\eta^2 = 0.117$. See Fig. 2.

4.2.3. Moderation analyses

Although SOI-R is often regarded as a single unitary construct, the correlations between each individual subscale varied to a considerable degree, ranging from $r = 0.28$ to 0.54, suggesting the components of the singular construct may be more distinct in this sample. Thus, consistent with previous literature (e.g., O'Connor et al., 2014), we considered all three subscales of SOI-R separately in the same model to test for interactive effects with both humor appreciation and attraction. Specifically, we utilized a single ANCOVA with each of the SOI subscales as separate covariates to test for separate interactive effects with the subscales in one model. This afforded us the opportunity to understand the nuance of sociosexuality with respect to the results while controlling for the family-wise error rate. Specifically, we utilized one-
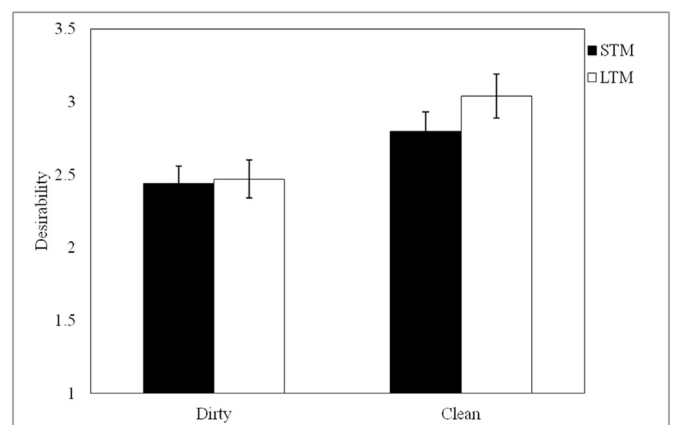
Fig. 2. Desirability of dirty and clean humorists in both short-term (STM) and long-term (LTM) contexts in Study 2.

way repeated measures custom model ANCOVAs with both funniness and attraction as the dependent variables (comparing dirty versus clean humorists) and all three components of SOI-R as continuous predictors to test for interactive effects.

4.2.3.1. Funniness. Our first analysis was to determine the extent to which funniness would be moderated by sociosexuality. Dirty jokes may signal sexual receptivity, which would suggest that appreciation of such humor could serve as an ingratiation strategy in the service of acquiring a short-term mate. Effects for the funniness ANCOVA were qualified by a significant Target Humor × Attitudes interaction, $F(1, 132) = 7.43, p = 0.007, \eta^2 = 0.117$. No other interactions emerged for Desire or Behavior, $Fs < 1.50, ps > 0.240$. We decomposed the 2-way interaction by individually correlating women's sociosexual attitudes scores with the perceived funniness of both dirty and clean jokes. A positive correlation between attitudes and dirty humor appreciation indicated that women whose attitudes were sociosexually unrestricted found dirty jokes funnier, $r(135) = 0.324, p < 0.001$. Conversely, no relation emerged for sociosexual attitudes and appreciation for clean humor, $r(135) = 0.124, p = 0.149$.

4.2.3.2. Behavioral attraction. Our second analysis considering sociosexuality considered attraction toward dirty and clean humorists. Unlike contextual desirability, which specifically tasks participants to indicate how desirable targets would be in a given context, considering sociosexuality and this behavioral attraction measure affords us the opportunity to consider actual attraction behaviors as a function of a dispositional motive. An initial main effect indicated that women were more attracted to clean humorists than dirty, $F(1, 132) = 13.91, p < 0.001, \eta^2 = 0.095$. Effects were further qualified by a marginal Humor Type × Attitudes interaction, $F(1, 132) = 2.81, p = 0.096, \eta^2 = 0.021$. Furthermore, no interactions emerged for desires and behavior, $Fs < 0.01, ps > 0.950$. Because of the degree of non-significance in the latter two interactions, the discrepancy with attitudes, and the fact that the interactions for perceived funniness emerged in a similar capacity, we found it prudent to decompose this interaction by individually correlating women's attraction to both types of humorists with sociosexual attitudes. A positive correlation indicated that women with unrestricted attitudes were more attracted to dirty humorists, $r(135) = 0.253, p = 0.003$, whereas no relation emerged for clean humorists, $r(135) = 0.064, p = 0.458$. This suggests that, despite a general attraction to clean humorists, dispositional mating motives heighten preferences for those whose humor displays may signal consonant mating goals.

4.2.4. Mediation analysis

Following an interest indicator framework (Li et al., 2009), socio-sexually unrestricted women's attraction to dirty humorists may be rooted in their ingratiating attitudes toward targets. Dirty joke appreciation may be the mechanism for unrestricted women's interest in such targets, necessitating a mediation analysis. We calculated difference scores for both funniness and attraction ratings for the difference between clean and dirty humorists with higher scores indicating favorability toward clean humorists. Importantly, because only unrestricted attitudes appeared to predict these perceptions and preferences, we only considered that facet as the basis of our mediation analysis.

We submitted our data to Model 4 of the PROCESS Macro (Hayes, 2013) using 5000 bootstraps, with attitudes as the predictor, attraction as the outcome, and funniness as the mediator. The data entered into Model 4 were difference scores calculated for clean and dirty jokes for humor appreciation and behavioral attraction, such that we subtracted the scores of dirty jokes from those of clean jokes. Within these difference scores, higher scores reflect a greater favorability toward clean jokes. Conversely, greater favorability toward dirty jokes be reflected by lower scores (i.e., negative scores). Women with more sociosexually unrestricted attitudes reported greater appreciation toward dirty jokes

($b = -0.12$, SE = 0.05, $p = 0.027$). This appreciation predicted heightened attraction toward dirty humorists ($b = 0.41$, SE = 0.05, $p < 0.001$). An indirect test for the effect of attitudes on attraction indicated that funniness mediated the link, 95% CI [−0.09, −0.01]. Importantly, funniness fully mediated this link, as evidenced by the direct effect's confidence intervals including zero, 95% CI [−0.09, 0.03].

4.3. Discussion

We replicated Study 1 by demonstrating that women prefer clean humorists in both mating contexts, albeit demonstrating greater prioritization of clean humorists in LTM. However, attitudinally unrestricted women reported behavioral attraction toward humorists eliciting a preference toward dirty jokes. This preference could have been the result of perceiving dirty humorists as possessing similar mating interests, an effect consonant with previous research demonstrating that unrestricted women prefer male faces whose personalities communicate interest in promiscuous mating strategies (Brown & Sacco, 2017).

Attitudinally unrestricted women's preference for dirty humorists was mediated by appreciation of such humor. These women found the dirty jokes to be funnier, which would potentially serve to ingratiate oneself with the humorist. The resulting attraction could be the product of a mutual interest in such humor connoting attitudinal similarity (Montoya & Horton, 2013; Zeigler-Hill et al., 2013) that importantly indicates similar interest in relationship dissolution before either party decides to commit to the other (Jonason & Buss, 2012).

5. General discussion

These studies contribute to a growing body of findings indicating the importance of contextual appropriateness of humor displays in mate attraction. Specifically, we found that women prefer clean humorists across both mating contexts, with an especially larger preference in LTM, and report greater attraction toward them. The especially large preference for clean humorists in LTM is consistent with our hypotheses, as this could be a product of recognizing the benevolence necessary for long-term pair-bonds and a reduced proclivity toward infidelity, thus mitigating potential concerns of a prospective mate diverting resources from their mate and offspring. Clean humor displays could indicate these men's greater potential or interest in relationship commitment and investment, as evidenced by previous research showing that benevolent humor displays signal warmth and competence necessary for LTM (DiDonato et al., 2013).

Also consistent with our hypotheses, women with sociosexually unrestricted attitudes communicated greater attraction toward dirty humorists. This preference could be rooted in perceptions of such humorists as being especially sexually receptive and therefore interested in STM, thus implicating these humorists as capable of decoupling following a sexual encounter (Jonason & Buss, 2012). Conversely, sociosexual attitudes did not predict women's preferences for clean humorists, a finding that is also theoretically sensible. Although clean humorists were more desirable in LTM contexts, unrestricted women could this desirability is limited to that context. That is, clean humorists may not appear receptive to short-term sexual encounters, which would undermine their desirability to women who typically prefer them (Brown and Sacco, in press). Furthermore, this elevated attraction to dirty humorists is mediated by an appreciation for dirty jokes, as evidenced by perceptions of such jokes as funny. This could serve as an ingratiation strategy to ultimately facilitate the social bonding necessary for unrestricted women's mating goals (see Sacco, Brown, May, & Medlin, 2018).

The finding that women did not prefer dirty humorists more in STM relative to LTM, as well as the overall preference for clean humorists in both contexts, is partially inconsistent with our hypotheses. Specifically, the finding that women prefer ostensibly benevolent

humorists and that there is a general motivation to engage in bene-volent humor use across contexts is consistent with previous research (e.g., DiDonato et al., 2013). Our results nonetheless ultimately align with those findings while critically considering how individual differences in sociosexuality influence these preferences. That is, women appear to favor cues connoting LTM desirability over those connoting STM desirability, even when considering STM contexts specifically. Our findings extend these previously established findings by demonstrating that dispositional interest in STM further shifts preferences for different displays. Specifically, we found that women with unrestricted sexual attitudes emphasize the value of dirty humor as a cue to high-quality STM encounters while de-emphasizing the costs of such humor as a threat to LTM. Given such women are more disinterested in LTM, these shifts in emphasis would be adaptive in the service of facilitating optimum STM opportunities.

One major strength of these studies, compared to previous studies, is their inclusion of a distinction between participants' reported mate preferences and their actual choices (Eastwick & Finkel, 2008), which we tested through the contextual desirability measures and an index of their desire to gravitate toward the targets. Although these reported preferences do ultimately predict actual mate choices (Li et al., 2013), the distinction between affective and behavioral components of attraction is still critical to determine at what point selection will occur (Montoya et al., 2015). Our data provided this distinction demonstrating that, although clean humorists were selected overall, a shift to gravitate toward dirty humorists was nonetheless apparent among sociosexually unrestricted women. Interestingly, we found that attraction among unrestricted women is rooted in an ingratiation strategy. That is, unrestricted women appreciated dirty jokes, which operated as the mechanism for their attraction.

5.1. Limitations and future directions

Although our studies are internally consistent and theoretically sensible, they are not without limitations. First, we only considered women's individual differences in STM as the basis of attraction toward dirty humorists. Future research would benefit from experimentally manipulating participants' interest in contextual mating strategies to determine their causal influence on humor preferences (DiDonato & Jakubiak, 2016). If temporally activated interest in STM aligns with the findings for dispositional interest, as was found in sociosexually unrestricted women, such mating motives should upregulate unrestricted women's attraction toward dirty humorists in the service of facilitating short-term sexual encounters. Conversely, activating LTM motives should further heighten the preference for clean humorists by sociosexually restricted women with considerable derogation of dirty humorists. Given that individual differences in women's interest in STM can be influenced by situational factors, that ultimately heightens preferences for men possessing heritable fitness (Sacco, Young, Brown, Bernstein, & Hugenberg, 2012), future research would benefit from considering how this temporal shift in mating interest could influence preferences for different humorists. For example, future research could acutely activate interest in STM through a mating prime before tasking women to indicate their interest in the humorists, who could ultimately communicate a similar attraction toward dirty humorists as women with unrestricted sociosexual attitudes.

The hypothetical nature of the task is also a limitation of these studies, which reduces their ecological validity. Future research on this topic might benefit from conducting a field study where women's decisions regarding their preference for men based on humor produced can actually impact their mating opportunities. One way this might be achieved is by utilizing a real speed dating format and having female participants base their choices of dates solely on humor produced (Finkel & Eastwick, 2008). Another potential outlet could include tasking women with evaluating videos of stand-up comics telling dirty or clean jokes and having them indicate their appreciation for the comics' material as well as their attraction to them. This would afford researchers to assess judgments solely based on the humor display, thus illuminating the signaling function of dirty and clean humor specifically.

A further limitation of these studies is the reliance on self-report. Although these studies assessed behavioral attraction in the form of willingness to engage a prospective mate, discrete attraction behaviors were not assessed. These self-reports could have ultimately been a product of socially desirable responding and may not actually reflect women's appreciation of dirty humor. Future research would benefit from considering attraction behaviors that could assess more automatic responses to the humor, including laughter, smiling, and behavioral approach (Montoya et al., 2018). Participants may smile more authentically at the humorists to whom they are most attracted. That is, whereas individuals may smile at prospective mates to appear polite (i.e., non-Duchenne smiles), participants may generate more authentic smiles when attracted to a mate (i.e., Duchenne smile; Ekman, Davidson, & Friesen, 1990).

Consonant with an interest indicator perspective (Li et al., 2009), women should also laugh more at the humorists to whom they are most attracted. Future research could record women's interactions with humorous men, in an actual speed dating session, whereby coders could identify the number of instances participants elicit a Duchenne smile by identifying when specific facial muscles contract. In a more precise fashion, participants could evaluate the speed daters in the current paradigm while having the muscular activity in their faces recorded to identify the intensity of their smiles and therefore their enjoyment (Jaques, McDuff, Kim, & Picard, 2016). Participants may also position themselves to have closer proximity to humorous confederates based on the type of humor they display, which is a reliable indicator behavioral attraction. Future research could consider a scenario that affords participants the opportunity to determine their proximity to a target (Kawakami, Phills, Steele, & Dovidio, 2007). Sociosexually unrestricted women could potentially desire greater physical closeness to dirty humorists than restricted women.

Despite the jokes utilized in these studies being equivocally humorous, one potential caveat to our findings could be that women found the jokes utilized by dirty humorists offensive or sophomoric. Perceptions could have precluded participants from perceiving these men as possessing a level of mental sophistication or social etiquette necessary for mating (Howrigan & MacDonald, 2008; Miller, 2000). Because of this possibility, future research would benefit from identifying whether such qualities of jokes may impede men's desirability in a given mating context. Specifically, a study could task women with evaluating men in a similar paradigm who used jokes in varying levels of offensiveness. It would seem sensible to predict that inoffensive jokes would be more desirable, which would align with the results in these studies. Another potential issue with the humor utilized in these studies could be that these jokes may not typically represent content that one would utilize when attempting to attract a mate. Future research could consider jokes that could be more typical in such scenarios (see DiDonato et al., 2013). Nonetheless, for women seeking short-term sexual encounters, identification of men as sexually receptive through dirty humor along may suffice, regardless of whether its structure and content is typical for mate attraction.

Another fruitful avenue of our research includes considering attractiveness of prospective mates. Both studies utilized men of similar, average attractiveness when actual speed dating scenarios have participants of more variable attractiveness. Because women place a strong emphasis on attractiveness in STM (Kenrick et al., 1993), it may be possible that they tolerate dirty humorists if such humorists could provide residual benefits of good genes, creating a desirable tradeoff for these women. For example, women find muscular men sexy in STM (Frederick & Haselton, 2007), but acknowledge considerable costs from continued association past STM (e.g., dominance). Attractive dirty humorists would provide reproductive benefits yet could be disengaged

when necessary. Previous research also shows attractive men using unconventional types of humor are deemed more desirable (Lundy et al., 1998); similar principles may apply to dirty jokes.

6. Conclusions

Selecting a humorous mate is typically a priority for people, although the content of one's humor is critical in communicating desirability for a given context. The current program of studies contributed to the understanding of humor production in a mating context by demonstrating a potential adaptive basis to the cleanliness of a joke used to convey interest. These studies lend support to past research in evolutionary and personality psychology, providing support for a sexual selection account of humor as well as demonstrating how dispositional differences in a personality variable (sociosexual orientation) influence mate preference based on humor production.

Appendix A. Dirty and clean jokes

Dirty jokes

1. A man walked into the doctor's office and said: 'Doctor, I have five penises.'
   'I see,' said the doctor. 'How do your trousers fit?'
   'Like a glove.'
2. What did the elephant say to the naked man?
   'Cute, but can you breathe through it?'
3. A college professor said there would be no excuses for handing in an assignment late.
   'What about extreme sexual exhaustion?' asked one student cheekily.
   The professor replied: 'I guess you'll just have to write with your other hand.'
4. Two drunks were sitting at the bar, staring into their drinks.
   One said: 'Hey, you ever seen an ice cube with a hole in it before?'
   The other said: 'Sure. I've been married to one for eighteen years.'

Clean jokes

1. I once gave my husband the silent treatment for an entire week, at the end of which he declared, "Hey, we're getting along pretty great lately!"
2. A couple are sitting in their living room, sipping wine.
   Out of the blue, the wife says, "I love you."
   "Is that you or the wine talking?" asks the husband.
   "It's me," says the wife. "Talking to the wine."
3. I was bending over to wipe up a spill on the kitchen floor when my wife walked into the room behind me.
   "See anything you like?" I asked suggestively.
   "Yeah," she said. "You doing housework."
4. A first-grade teacher can't believe her student isn't hyped up about the Super Bowl.
   "It's a huge event. Why aren't you excited?"
   "Because I'm not a football fan. My parents love basketball, so I do too," says the student.
   "Well, that's a lousy reason," says the teacher. "What if your parents were morons? What would you be then?"
   "Then I'd be a football fan."

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