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Tattoos and Sexual Attraction

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TATTOOS AND SEXUAL ATTRACTION

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Department of Psychology

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By

Daniel J. Delaney

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Abstract

This study examines the affect tattoos play on sexual attraction. Due to many health risks which accompany the tattooing process, those who get tattoos without having any negative health effects would thus have healthier immune systems. Over thousands of years of tattooing and sexual mating, humans may have evolved to prefer mates with tattoos due to the fact that body modification signals biological quality. Unique from other research which links sexual attraction and body modification, this study had undergraduate participants rate a series of photos of individuals who did and did not display a tattoo. While we hypothesized that participants would rate photographs of people with a tattoo higher than photographs of people without a tattoo, the study found that those who originally did not have a tattoo—whether a tattoo was displayed on them or not— were found to be significantly more attractive than those who originally did have a tattoo.

Introduction

Tattoos have decorated members of different societies for millennia. The oldest known tattoos were found on the Ötzi Iceman found in the Ötztal Alps near Austria and Italy—tattoos which date back over five-thousand years. Likewise, Ancient Egyptian female figurines found in tombs from around 2000 B.C. depict tattoos on the body, as well as body art being discovered on the skin of the female mummies (Franklin-Barbajosa, 2004). Tattoo culture flourished, before European influence, in Polynesian culture. Both women and men in Pacific Islander traditional culture were tattooed, and many covered their whole bodies in tattoos (Utanga and Mangos, 2006). In fact, “when a Tahitian girl reached the age of sexual maturity, her buttocks were tattooed black, a tradition that continues among some today” (Franklin-Barbajosa, 2004, para. 6).

Today, tattoos have grown increasingly popular in Western Culture. For instance, some tattoo their bodies to show membership and allegiance to a group such as a branch of the military or a street gang. Tattoos can declare that one is a fan of a particular actor or actress, musical artist, or sports team. Furthermore, some people modify their bodies to pay tribute to a lost loved one. However, tattoos may also serve a deeper evolutionary purpose. Tattoos may signal biological quality, in turn making the tattooed individual more sexually attractive.

Zahavi (1975) argued that many species exhibit handicapping or costly behavior so that there is honest signaling of fitness and resources between mates. For instance, a male peacock’s feathers put him at more risk to predators, but signal to mates that he has been able to survive nonetheless—thus he is physically fit and adaptive despite the handicap. In humans, tattoos and other forms of body modification (piercings, scarification) may serve a similar function of honestly signaling to mates that one is healthy and genetically superior despite the risks one has put their body through.

The tattooing process comes with numerous health risks such as infections, blood-borne diseases, and the development of skin cancers. Varga et. al (2011) notes that “various dermatological diseases, either inflammatory (contact dermatitis granulomatous dermatitis or sarcoidosis), infections (impetigo, tuberculosis, hepatitis B and C or verrucae), or neoplastic in nature [*sic*], may be caused or triggered by different tattooing agents” (p. 994). More specifically, Ghorpade (2009) found several cases where diseases such as leprosy and tuberculosis were transmitted through unsanitary needles in the tattooing process. The tattooing process may cause “warts at the site of the tattoo, local streptococcal or staphylococcal infections, or systemic infections such as leprosy, tetanus, or subcutaneous fungal infections. Furthermore, the use of inadequately sterilized, blood-contaminated, tattoo needles can result in transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), syphilis, and human immunodeficiency virus (HIV)” (Ming-Der, Sheng-Yu, and Yuan-Bing, 2007, p. 539).

Because tattoos have long provided an environmental stressor on people’s immune systems, those who succeed in getting a tattoo without contracting or developing any diseases are people who have naturally healthier immune systems. Consequently, tattoos may signal biological quality. Individuals with “successful” (lack of disease) tattoos may broadcast to potential mates that they possess a robust immune system, and therefore healthier genes to pass onto offspring.

The first study to support this theory was by Singh and Bronstad (1997) who found that tattoo and scarifications of the stomachs of women in pre-industrialized nations correlated with the pathogen prevalence of that nation. The study—controlling for famine, polygyny, and social class stratification— showed that as disease became increasingly widespread, so would the practice of women scarring and tattooing their stomach region (Singh and Bronstad, 1997).

Thus, as disease becomes more prevalent in a culture, women would also commit more health-costly behaviors to show possible mates that they are healthier and can pass along genes which could allow their offspring to survive in a dangerous environment. In addition, this handicapping behavior could signal to potential mates that the women are healthy enough to survive childbirth. When environmental pressures increase, naturally successful species will exhibit adaptive behaviors to ensure the survival of the species. By women in these pathogen prevalent and pre-industrialized nations displaying behaviors which would signal more outwardly their genetic qualities and health, one would expect men to be more sexually attracted to these women. Here is a specific connection of women from different cultures displaying costly behaviors as well as superior biological quality.

Koziel, Kretschmer, and Pawlowski (2010) found that males with tattoos and piercings had significantly lower values on fluctuating body asymmetry, thus significantly higher body symmetry, than the control group who did not have tattoos or piercings. Females with body modification also had lower values of fluctuating asymmetry, but the difference was not statistically significant. Fluctuating asymmetry is how much a person deviates from bilateral symmetry. Those who have lower fluctuating asymmetry are thought to have a healthier genome that can control the development of a more normal phenotype under the stresses of the environment (Waddington 1957). Therefore, men and women who have tattoos and potentially have lower fluctuating body asymmetry, as suggested by the Koziel, Kretschmer, and Pawlowski (2010) study, could signal that they have higher genetic and biological quality.

A review of studies of symmetry by Wade (2010) shows that perceived attractiveness correlates with high body symmetry. Likewise, a study by Brown et. al (2005) showed that women prefer male dance partners with lower fluctuating body asymmetry. Thus according to

the Koziel, Kretschmer, and Pawlowski (2010) study, tattoos could attract sexual partners due to the signaling of biological quality. Naturally, humans have evolved to be sexually attracted to mates who signal their genetic fitness, as most species have. While humans do not make a conscious decision about who we are attracted to, we are instinctively drawn to mates who will pass on the healthiest genes to our offspring—so that our offspring will be able to adapt and survive in their environment, and pass along their genes as well.

Because tattooed individuals have lower fluctuating body asymmetry, we would expect them to be deemed more attractive. In accordance with this logic and these findings, Horne, Knox, Zusman, and Zusman (2007) found that 71.1% of women reported that they sometimes found visible tattoos on men attractive; in contrast 58.8% of men sometimes found women with visible tattoos attractive, and 40% of men found visible tattoos seldom/never attractive. Horne et al. (2007) suggest that this gender difference may be due to the fact that women have started to tattoo themselves only fairly recently in the history of Western culture. Women taking up tattooing—which traditionally in Western culture has been a masculine behavior which started with sailors, military men, and prisoners—may still be stigmatized by some (Dunlop, 2012). However, Mun, Janigo, and Johnson (2012) found that women “generally favored placing their tattoos on areas of the body that could be easily covered by clothing” (p. 138-139). As mentioned earlier, Singh and Bronstad (1997) found that the correlation of pathogen prevalence and increased tattoo and scarifications took place on the stomachs—an area easily covered by clothing—of women in pre-industrialized nations. The effect was not found to be the same for males. Thus, tattoos may still be attractive on women, just not in highly visible public areas of the body as Horne et al. suggested. Likewise, Horne et al. (2007) found that, in their participant pool of four hundred undergraduates, women had surpassed men in percentage of who had a

tattoo: 28.3% of women compared to 25.8% of men. As more women get tattoos, the signaling of biological quality may overcome any cultural stigmas when attracting potential sexual mates.

One way to see how those with tattoos could be deemed more attractive is to measure tattooed people's sexual behavior. Roberts and Ryan (2002) and Guéguen (2012) found that those with tattoos started having sex at a significantly younger age than those who had neither piercings nor tattoos. Likewise a study by Wohlrab, Stahl, Rammsayer, and Kappeler (2007) found that those with tattoos scored significantly higher compared to those without tattoos or piercings on the Sociosexual Orientation Inventory, a test which "measures the disposition of individuals towards promiscuity or the willingness to engage in uncommitted sex which is a key factor in relation to mating behaviour. High scores indicate a more promiscuous, unrestricted strategy, whereas individuals with low scores generally follow a more monogamous, restricted strategy" (Wohlrab, Stahl, Rammsayer, and Kappeler, 2007, p. 936). Therefore, those with tattoos are having sex for a larger proportion of their life, as well as with more partners when compared to those who do not have tattoos—and thus increasing their likelihood of passing on their genes to offspring. However, this may be due to the deviant culture which surrounds body modification and not due to those with tattoos being more sexually attractive.

While the Singh and Bronstad (1997) and Koziel, Kretschmer, Pawlowski (2010) studies support the idea that tattoos can signal biological quality in both males and females, these studies fall short in actually seeing if participants find individuals with tattoos attractive. These studies are also correlational by only showing that biological quality and body modification covary, but these studies do not show a causal relationship between attractiveness and body modification or vice versa. Additionally, the Horne et al. (2007) study only asked participants of their opinions of the attractiveness of tattoos, instead of having participants actually rate images of individuals

with and without body modification. Furthermore, Horne et al. (2007) only found that women and men “sometimes” find tattoos attractive. What is meant by “sometimes” is unknown. “Sometimes” could mean ninety percent of the time, or it could mean twenty percent of the time. To improve upon this body of research, this study will take an experimental approach instead to see if images of tattooed people or people with tattoos digitally added will be rated more sexually attractive. In addition, because the majority of the research lumps piercing and tattooing into “body modification,” this study will focus solely on tattoos so to get a more pure and specific effect. Lastly, this body of previous research fails to acknowledge that there are different levels of sexual attraction characterized by short-term and long-term mating strategies. Therefore, the goal of this study is to answer these questions:

1) Will participants actually find pictures of individuals with tattoos more attractive than pictures of those without tattoos?

Both the Koziel et al. (2010) study and the Singh and Bronstad (1997) hypothesized that tattoos could signal biological quality, however none of the previous research that we know of actually had participants rate how attracted they were to different stimuli (individuals with and without tattoos). Likewise, research like the Horne et al. (2007) study only had participants rate their opinions of tattoos instead of actually being presented with different conditions. Thus we will use an experimental approach to see if biological quality is actually being signaled to potential mates– i.e. if tattooed people are actually found more attractive.

2) Will gender play a role, as it seems to do in other studies’ findings, on the processes of attraction and tattoos?

Both Koziel et al. (2010) and Singh and Bronstad (1997) found the main effect for only one gender. Koziel et al. (2010) found that males with body modification had lower values of fluctuating asymmetry when compared to controls, yet for females there was no significant difference on fluctuating asymmetry values between body modification and controls. The Horne et al. (2007) survey's findings support Koziel et al. (2010) with females self-reporting that they find tattoos more attractive on males compared to the males self-report of tattoos on females. However, the Singh and Bronstad (1997) study found the opposite with females in pre-industrialized nations driving the effect for higher levels of body modification correlating with higher levels of pathogen prevalence. Thus this study seeks to examine whether males with or without tattoos, females with or without tattoos, or both genders will be found more attractive.

3) Will participants rate on a scale of attraction pictures of individuals who were originally tattooed higher than pictures of individuals where tattoos were digitally added?

The Koziel et al. (2010) study suggests that males who have tattoos have higher biological quality. Thus those who are healthier seek handicapping behaviors to signal their health. Koziel et al. (2010) argued that body modification does not increase attractiveness, or in other words, tattoos and piercings do not cover up or balance asymmetry or emphasize parts of the body; but body modification only signals that one is healthier. Thus attractiveness levels would be similar for the same individual before and after modifying their body.

Therefore, we will test this hypothesis by seeing if those who originally had tattoos—with or without the tattoo being displayed—will be found to be more attractive than those who originally did not. We will go a step further by digitally adding tattoos to individuals who originally did not have tattoos to see if the “attractiveness- increase” hypothesis may be true.

4) Will individuals be more attracted to tattooed people for a long term or a short term mating strategy?

Humans use multiple mating strategies to pass along genes. There are long-term mating strategies where individuals will seek a mate for a much longer period of time for the upbringing of offspring. This strategy is demonstrated in a long term marriage or bond where more time and resources are invested into progeny (Pedersen, Putcha-Bhagavatula, & Miller, 2011). On the other hand, the short term mating strategy is where one will have multiple sexual partners with little or no commitment, thus passing along genes to a higher quantity of offspring. In western culture, this is characterized by the “no strings attached” sexual relationships or the “one night stands.” Buss and Schmitt (1993) state that, “in human evolutionary history, both men and women have pursued short-term and long-term matings under certain conditions where the reproductive benefits have outweighed the costs” (p. 205). In this study, we will investigate whether those with tattoos are preferred more for long term or short term relationships when compared to controls.

Methods

Stimuli

Pictures of individuals with and without tattoos were collected. Only pictures were used where there were no visible piercings. Forty pictures (20 male, 20 female) were gathered with half of each gender’s set of pictures containing tattoos, and the other half without tattoos. Thus, there were ten photos of each gender with tattoos and ten photos of each gender without tattoos.

Photos were collected by putting an advertisement on Facebook asking for volunteers who were not from Eastern Illinois University and could offer a picture of themselves for a study on tattoos and attraction. Many volunteered photographs were friends, relatives, acquaintances or “friends

of friends” of the authors. While the photo collection process was not completely random, photos were accepted and used indiscriminately so that there would be no bias in selection where one group would be more purposefully or unconsciously chosen due to their attractiveness. The following photo selection criteria were used: those with tattoos had to have their body art showing, shown tattoos could not be in inappropriate places (as well as no inappropriate behaviors shown in the picture), all pictures had to show enough of the person (clothed, but at least face to hips), the people in the photos must be around “college aged” (18-25) so that they were around the same age of the participants rating the photos, and lastly photos were chosen of people in natural poses with an ordinary facial expression (i.e. not goofy, angry, and so on). Many of the photographs were collected off Facebook with the volunteer’s consent.

For each photo collected, an opposite digital alteration was created. For instance, for each picture of a person with a tattoo, there was also the same exact picture except with the tattoo digitally removed. Similarly, each original non-tattooed person would have the same exact photo but with a tattoo added. Popular tattoos such as quotes, birds, dream catchers, Celtic crosses, stars, trees, etc. taken from Google were added to the arms, wrists, necks, upper chests, rib cages and stomachs of photographs of individuals who never had a tattoo. Thus each person (or target) had a tattooed and non-tattooed version of their picture.

Participants

Sixty-three participants (55 female, 8 male) were recruited from an undergraduate introductory psychology course from Eastern Illinois University. Race and age information was not collected in the survey, however participants were recruited from a university where 73.52% of the students are Caucasian, 15.17% of the students are African American, 3.83% are Hispanic, and 7.48% are from other ethnicities (Eiu.edu). Thirty-eight percent of the participants indicated that

they had a tattoo. The subjects participated as part of a course research requirement. Two of the participant's data had to be excluded from analysis. Because the majority of target photographs were Caucasian, an African-American male indicated to the researchers how the study fell short by rating 0's for all target photographs. Thus, this participant's data had to be excluded due to irregular ratings on the photos. In addition, because only one homosexual completed the study, her data was also excluded.

Procedures

The target pictures were put on a survey software (Qualtrics) so that they would be presented to participants in random order. Likewise, whether the participant would be presented the tattoo or non-tattoo version of each target picture was randomized. Therefore, a series of twenty pictures of whichever sex the participant was attracted to were presented to the participant. To determine this, the survey asked for participant gender and sexual orientation to make sure the correct series of photographs was rated. However, only one participant (female) indicated that she was homosexual. She rated photos of women. All other participants rated photos of opposite sex persons.

Over the course of the survey, each participant rated five photographs of the "originally had a tattoo, and the tattoo is displayed" condition; five photographs of the "originally had a tattoo, but the tattoo is removed" condition; five photographs of the "originally never had a tattoo, and no tattoo is presented" condition; and lastly five photographs of the "originally never had a tattoo, but a tattoo is added" condition. The survey was set up so that each participant rated twenty different people, and only saw one version (tattoo displayed or not) of each person. Again, photos from these conditions were presented in random order. This way each participant was exposed to all four conditions, and rated one version of each target picture.

For each picture, a participant was asked to rate three different questions/ scenarios on a scale from 0 -100 (0 being not all, 100 being definitely):

1. If conditions were right, how likely would you consider going on a date with this person?
2. If conditions were right, how likely would you consider a “fling” with this person?
3. If condition were right, how likely would you consider a long term relationship with this person?

After all the pictures were rated, participants were asked if they recognized anyone in the photographs, which none did. Next, came two probe questions to see if they knew what we were testing: “What do you think we were testing for?” and “Did you notice anything about the pictures?” The participants then had room to type a few sentences to answer these questions. Also, the survey asked the participants if they had a tattoo. The tattoo probing questions did show that ten of the participants became aware of the large number of tattooed individuals in the photos while taking the study. However, only three participants guessed by the end of the study that the study was exploring some factor about tattoos and attraction. Because each participant rated only one version (tattooed or not) of each target photograph, we do not think that the awareness the participants had of the tattoos affected the study’s results.

Results

For each participant, we took the mean rating of all photographs rated within each condition. In other words, each participant had four scores representing their average rating of each type of photograph (originally without tattoos and no tattoo displayed, originally without tattoos but tattoos added, originally owned a tattoo but tattoos removed, and originally owned a tattoo and tattoo displayed). These variables were constructed for each of the three rating types

“fling”, dating, long-term). The design of the study was 2 (actual tattoo status) by 2 (tattoo displayed or not) factorial design.

A two-way analysis of variance for repeated measures was conducted on female’s ratings of male target’s “fling” desirability, dating desirability, and long term relationship desirability. Females’ ratings of male targets who originally did not have a tattoo, whether or not a tattoo was displayed, were significantly more desirable than those who originally did have a tattoo, (Fling: $F(1, 53) = 141.10, p < .001, \eta^2 = .73$; Dating: $F(1, 53) = 223.21, p < .001, \eta^2 = .81$; Long term: $F(1, 53) = 205.04, p < .001, \eta^2 = .80$). No significant results were found for displayed status (whether tattoos were displayed or not), or for the interaction between actual tattoo status by tattoo-displayed status (All $F < 1$, except for the interaction effect for short-term or fling, $F(1, 53) = 2.11$). (See Table 1)

Next, a two-way analysis of variance for repeated measures was conducted on male’s ratings of female target’s “fling” desirability, dating desirability, and long term relationship desirability. Like the females, males rated female targets who originally did not have a tattoo, whether or not a tattoo was displayed, as significantly more desirable than those who originally did have a tattoo, (Dating: $F(1, 6) = 6.80, p = .04, \eta^2 = .53$; Long term: $F(1, 6) = 9.40, p = .02, \eta^2 = .61$). However, no significant results were found for the male’s ratings of female’s fling desirability (although the means were in the same direction; $F(1, 6) = .61, p = .47$). Also, no significant results were found for displayed status (whether tattoos were displayed or not), or for the interaction between actual tattoo status by tattoo-displayed status (All $F < 1$ except for the main effect for display of tattoo, $F(1, 6) = 2.23$). (See Table 2)

Table 1. Female’s Ratings of Male Targets: Means with (Standard Deviation)

	Originally did not have tattoo/ not displayed	Originally did not have tattoo/ tattoo displayed	Originally had tattoo/ tattoo removed	Originally had tattoo/ tattoo displayed
Short-term desirability	33.42 (18.97)	36.79 (19.47)	18.21 (14.63)	17.12 (13.10)
Total mean	35.11*		17.67	
Dating desirability	49.86 (19.33)	50.05 (18.45)	27.10 (16.15)	25.72 (15.91)
Total mean	49.96*		26.41	
Long-term desirability	42.44 (19.84)	42.39 (21.23)	20.20 (15.72)	18.84 (13.67)
Total mean	42.42*		19.52	

* $p < .05$, Originally without tattoo compared to originally with tattoo

Table 2. Male's Ratings of Female Targets: Means with (Standard Deviation)

	Originally did not have tattoo/ not displayed	Originally did not have tattoo/ tattoo displayed	Originally had tattoo/ tattoo removed	Originally had tattoo/ tattoo displayed
Short-term desirability	40.65 (27.42)	40.87 (27.67)	40.59 (32.20)	36.58 (25.87)
Total mean	40.76		38.59	
Dating desirability	48.29 (24.42)	47.08 (25.35)	46.71 (25.37)	42.65 (23.46)
Total mean	47.69*		44.68	
Long-term desirability	44.79 (22.86)	40.99 (24.54)	41.02 (25.31)	33.32 (20.49)
Total mean	42.89*		37.17	

* $p < .05$, Originally without tattoo compared to originally with tattoo

Discussion

The results of the study are opposite of what the Singh and Bronstad (1997) and the Koziel et al. (2010) study would have predicted. Because Koziel et al. found that men with body modification (tattoos and piercings) had lower fluctuating asymmetry (FA), past research on FA and biological quality would suggest that those with tattoos would be rated more attractive. Likewise, the Singh and Bronstad (1997) findings aligned with the biological quality theory in that the amount of body modification of women in pre-industrialized nations correlated positively with the pathogen prevalence of that nation when controlling for socioeconomic status. However, in this study female participants rated men who originally did *not* have tattoos significantly more attractive, whether or not a tattoo was added to the picture, than the men who

originally did have tattoos, whether or not a tattoo was added to them (*See Table 1*). Similarly, the same patterns were found for men's ratings of the female targets (*See Table 2, =*).

The results of this study have a number of possible implications. For one, this study suggests that the biological quality of those with tattoos is not being signaled. If the findings of the Koziel et al. (2010) study and the Bronstad and Singh (1997) hold true that those with body modification do in fact have higher biological quality, then this study suggests that those with tattoos are not signaling their health. The Zahavi (1975) Honest Signaling Handicap Hypothesis calls not only for the organism to survive the handicapping behavior, but also that this demonstration of health be signaled to a possible mate. Therefore, the Honest Signaling Hypothesis is a two way street— that the handicap behavior be performed and survived, and that the potential mate actually recognize the signal which is being sent. Of course this recognition is not a conscious decision, but an impulsive feeling of attraction. Obviously, this study shows that both females and males are not recognizing the biological quality of the tattooed individual.

This lack of “receiving the signal” could be due to the environment which we were testing our subjects. As Singh and Bronstad (1997) found, body modification becomes more prevalent and significant when there is also a prevalence of pathogens in the environment. Yet, the participants we studied are fortunate enough to have access to superior healthcare compared to the individuals who inhabit the disease prevalent pre-industrialized nations in the Singh and Bronstad (1997) study. Therefore, this study and the Singh and Bronstad (1997) study suggest that environmental pressures, in this case pathogen prevalence, will influence mate selection preference. Thus, when there is an increase of an environmental pressure, the biological quality of those with body modification may then be signaled to potential mates. However, we should note again that the condition of targets who originally had tattoos but with their tattoos digitally

removed still were rated significantly less attractive. If this condition (originally with tattoos but removed) was rated equal to the two conditions of the originally without tattoos, then the study would suggest that the biological quality is just not being signaled. However, the results show that, on the contrary, individuals with tattoos—with the tattoo showing or not—are less attractive than their counterparts, and therefore may have lesser biological quality.

If the results of this study implicate that those with tattoos have lesser biological quality, then we must then refer back to the Koziel et al. (2010) and Singh and Bronstad (1997) study. The outcomes of this research may be used as a theoretical replication of these past studies in which the Koziel et al. (2010) and Singh and Bronstad (1997) results were not shown to hold true. In other words, the past research was disproved. On the other hand, one could use this study's findings to narrow down the effect of the Koziel et al. (2010) and the Singh and Bronstad (1997). Both of these studies used body modification in general—in that, they used not just tattoos, but they studied piercings and scarification as well. Therefore, perhaps only other body modification techniques drive the effects in the Koziel et al. (2010) and Singh and Bronstad (1997) studies. Future research should then see how individuals with piercings compare on ratings of attractiveness to individuals without piercings.

Future research and replications of this study should also try to collect more male participants to complete the study. Because of an uneven ratio of females to males at this university, only eight males completed the survey. Then, after having to exclude one of the male's (see above), only data for seven males were analyzed. Therefore the results for the male's ratings of females are somewhat inadequate, and at least ten to fifteen more males should take the survey. However, there are still significant results for the males' ratings of female target photographs which follow the same pattern as the females' ratings (*See Table 2*). Interestingly,

the only rating which we did not find to be statistically significant was the males' ratings of female targets on short term relationship desirability (or "fling" desirability). This finding holds true to past research that males are less picky than females when picking mates for short term mating strategies due to the fact that males invest much less resources and time to short term relationships (Pedersen, Putcha-Bhagavatula, & Miller, 2011). In other words, males only need to invest the resources needed for copulation, and therefore the benefits outweigh the mating risks in a short term mating strategy for men.

Future research should also use a much better method for collecting target photographs. As stated before, the researchers of this study collected photos of tattooed and non-tattooed individuals by putting out advertisements on Facebook, asking relatives and friends who owned or did not own a tattoo, and lastly asking friends if they knew anyone (a friend or relative) who could donate a photograph to the study. Naturally, this method could succumb to unconscious biases for its lack of scientifically randomized selection. While the researchers accepted all the individuals who donated pictures so that bias could not play too large an effect, the way the pictures were collected is still not the preferred method—and thus this study only gives preliminary results which entail the need for future research. One must ask: does this sample of pictures of males and females with tattoos accurately represent the tattooed population? Did the sample of pictures of the non-tattooed individuals properly represent the non-tattooed population? Because we just collected ten pictures of males with tattoos and ten pictures of females with tattoos, maybe we just happened to select a less attractive group of people of tattooed people, compared to non-tattooed people. In future studies, a larger collection of photographs as well as a more random selection of the pictures would make for a more representative sample.

One evident drawback of the non-randomization selection of the photographs was the lack of minorities in the target pictures. While there were several Hispanic individuals, most of the pictures were Caucasian. While the researchers focused on making sure that each picture was not obscene, that each picture controlled for piercings, and that for each picture an accurate rating of attraction could be made (face and part of the body were showing); we failed to ensure that each minority would be represented in the target photographs. This oversight resulted in unfairness to the minorities who then completed our study. While most of the minorities still completed the survey to the best of their ability—and a few just politely commented to the researchers about the blunder—one of the male African-American participants (as mentioned earlier) rated 0's or 10's (out of 100) for every single picture that he rated. This participant also indicated his feelings to the researchers. With future experiments selecting target photographs randomly, as well as selecting a larger number of photographs, then this study will be made more accessible to all participants and thus will gain more reliable results.

Another improvement to this study would be the selection of tattoos to be placed on target photographs. The tattoos which were selected to be digitally added to target photographs in the “originally without tattoos but tattoo added” condition were just popular neutral designs such as dream catchers, anchors, Celtic crosses, feathers, quotes, and tribal tattoos. However, an actual survey of which tattoo designs are most popularly used would be useful to then use the same ratio in our target photographs. Furthermore, past research and surveys of where tattoos are most likely placed on males and females should be implemented in this study so that the tattoos look more authentic as well as representative of the tattoo community. For instance, if only five percent of females have a tattoo on their shoulder, then none or only one of the female target photographs should contain a shoulder tattoo.

In addition, each photograph could be more standardized. Even though in this study we selected only photographs where most of the face and body could be seen and which the photograph could not be deemed as obscene or inappropriate, the participants in the photographs were wearing a range of different clothes and doing a range of different activities. Future studies should standardize their photographs so that there is the same background in the photos, target individuals all wear a white shirt, all targets look directly at the camera, and lastly the same proportion of the body can be seen. However, many tattoos come in places which can be covered by clothing. By standardizing the photos, then many of the tattoos cannot be displayed. One advantage of this study is that the pictures of the individuals with tattoos were used where the picture was taken in a setting which the individual felt comfortable to expose his or her tattoo; and thus in a setting where the individual could attract a potential mate.

Without a doubt, future research will need to explore how tattoos as well as all body modification effects attraction along with the biological quality of these individuals. Needless to say, this study should be viewed as a preliminary study with robust results to the role tattoos play in attraction. As already mentioned, future studies should reinforce the current study by using a more scientific method when collecting target photographs. Still, this study found significant results that those who originally have a tattoo were found to be considerable less attractive than those who originally were tattoo free.

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