Check for updates

Article

Is Obesity Stigma Based on Perceptions of Appearance or Character? Theory, Evidence, and Directions for Further Study

Evolutionary Psychology
2015: 1–8
© The Author(s) 2015
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1474704915600565
evp.sagepub.com
SAGE

Florian van Leeuwen[1], David Francis Hunt[2], and Justin H. Park[2]

Abstract

Theoretical approaches to stigmatization have highlighted distinct psychological mechanisms underlying distinct instances of stigmatization. Some stigmas are based on inferences of substandard psychological character (e.g., individuals deemed untrustworthy), whereas others are based on perceptions of substandard physical appearance (e.g., individuals with physical deformities). These inferences and perceptions are associated with specific cognitive and motivational processes, which have implications for understanding specific instances of stigmatization. Recent theoretical approaches and empirical findings suggest that obesity stigma involves both inferences of substandard psychological character and perceptions of substandard physical appearance. We provide a review of the relevant evidence and discuss directions for future research.

Keywords

obesity stigma, pathogen avoidance, prejudice, stigmatization, attribution

Date received: February 22, 2015; Accepted: July 22, 2015

Introduction

Obesity imposes heavy costs on afflicted individuals and on societies more broadly. This is due in large part to the wide range of health problems associated with obesity. The World Health Organization has identified obesity comorbidities such as coronary heart disease, non-insulin-dependent diabetes, and osteoarthritis (World Health Organization, 2000). In the United Kingdom in 2007, the annual cost to the National Health Service for treating illnesses related to overweight and obesity was reported to be £4.2 billion (Butland et al., 2007). Worldwide, the economic cost of obesity is estimated to be 2.8% of the global gross domestic product (Dobbs et al., 2014). In addition to the direct costs associated with obesity, the pervasive stigmatization of obese people adds to obesity's toll. Notably, obesity stigma is *not* a useful means of reducing the prevalence of obesity—a study found that perceived discrimination actually resulted in weight gain in obese individuals (Jackson, Beeken, & Wardle, 2014). It does, however, lead to various negative psychological outcomes, including poor body image, self-esteem issues, anxiety, and depression (Puhl & Heuer, 2009). Weight-based discrimination and the psychological difficulties experienced by obese people may impede capable individuals from making economic and social contributions. Also, the negative psychological outcomes associated with obesity stigma impose economic costs on societies when dealing with these problems (e.g., mental health care for targets of obesity stigma). Thus, obesity stigma is not just a problem for the affected individuals—it imposes broader costs on societies.

To tackle obesity stigma, a thorough understanding of how and why humans sometimes exclude other humans is crucial. It has become increasingly clear that a complete understanding of stigmatization requires conceptual frameworks provided by evolutionary psychology. Based on recent theory and research on the factors underlying obesity stigma, we suggest that obesity stigma has two distinct psychological bases, which may contribute to its particular intensity and intractability. We review relevant theory and evidence, and we make suggestions for further research.

[1] Dynamique du Langage, University of Lyon, Lyon, France
[2] School of Experimental Psychology, University of Bristol, Bristol, United Kingdom

Corresponding Author:
Justin H. Park, School of Experimental Psychology, University of Bristol, Bristol BS8 1TU, United Kingdom.
Email: j.h.park@bristol.ac.uk

Creative Commons CC-BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 3.0 License (http://www.creativecommons.org/licenses/by-nc/3.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access page (https://us.sagepub.com/en-us/nam/open-access-at-sage).

Attribution Perspective on Obesity Stigma

Why would obese people be the target of maltreatment? More fundamentally, why are certain kinds of people stigmatized at all? While it has long been recognized that multiple factors contribute to stigmatization (e.g., Jones et al., 1984), psychological inquiry into stigmatization has been dominated by the *attribution perspective*. This perspective focuses on the beliefs held by perceivers with regard to the causes of various positive and negative outcomes—specifically, the extent to which perceivers believe that ''people get what they deserve.'' The attribution perspective can explain antipathy toward a wide range of negatively perceived targets. In short, those who are perceived to be responsible for their negative outcome (and thus deserve their plight) are more likely to be stigmatized (e.g., Weiner, Perry, and Magnusson, 1988). This account applies to obesity stigma as well. The belief that obese people lack willpower and are responsible for their weight is a strong predictor of antiobese attitudes (Crandall, 1994; Crandall et al., 2001; Crandall & Martinez, 1996; for a review, see Puhl & Brownell, 2003). The activation and suppression of such beliefs have consequences. For instance, one experiment found that participants provided with information highlighting biological (i.e., uncontrollable) causes of obesity subsequently reported less antipathy compared to control participants (Crandall, 1994). On the flipside, informing participants that obesity results primarily from overeating and lack of exercise was found to increase participants' implicit negativity toward obese people (Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003).

To be sure, the attribution perspective has strengths—it is widely applicable and has demonstrable predictive utility (attributions of responsibility predict antipathy). But it has important limitations. First, it can offer theoretical traction only for characteristics and outcomes that are already known to be perceived negatively; it leaves unexplained the *origins* of the negative perceptions. In other words, while this perspective can explain the variation in the intensity of antipathy, it cannot explain why certain features are devalued in the first place (i.e., *why* overweight is commonly stigmatized while underweight is hardly ever stigmatized; Carr & Friedman, 2005; Fouts & Burggraf, 1999; Margulies, Floyd, & Hojnoski, 2008). Second, the attribution perspective has relatively little to say about the psychological content of the antipathy. Targets with stigmatizing conditions that are perceived to be controllable (e.g., obesity) have been found to elicit somewhat higher levels of anger and lower levels of pity (Weiner et al., 1988). However, people's emotional responses to stigmatized targets are far more textured, with specific emotions such as fear, anger, disgust, and contempt being evoked by different stigmatized groups (Cottrell & Neuberg, 2005). The attribution perspective neither predicts nor explains these qualitative aspects of antipathy. An evolutionary perspective offers theoretical tools to get past these limitations (Kurzban & Leary, 2001).

Multiple Psychological Mechanisms for Social Exclusion

Our starting point is the observation that beneath the apparent range of characteristics that can become stigmatized, there are distinct types of stigma. A half century ago, Goffman (1963) observed that people tend to be stigmatized for three reasons: for being a tribal out-group member, for possessing a character flaw, or for bearing a physical abnormality. These three reasons imply the operation of distinct psychological mechanisms underlying distinct types of antipathy. Building on Goffman's typology, Kurzban and Leary (2001) proposed an evolutionary psychological approach to stigmatization, mapping three domains of sociality in which social exclusion can occur (see Table 1). Because associating with others indiscriminately can impose fitness costs, humans have likely evolved mechanisms for selectively avoiding costly social interactions, which are present in mechanisms for (a) coalitional exploitation, (b) dyadic cooperation, and (c) pathogen avoidance—each with a distinct set of motives.

The existence of the stigma of tribal out-group membership can be explained by considering the kinds of behaviors that yield benefits and minimize costs of within-group cooperation and between-group competition (Kurzban & Leary, 2001). In short, for individuals who are part of a cooperative collective, it is beneficial to limit the number of individuals among which resources of the collective are shared by refusing membership to those who are poor cooperation partners (e.g., because of membership in another cooperative collective), and exploit individuals who are not part of the collective.

The existence of the stigma of character flaw can be explained by considering the kinds of individuals who should be excluded in order to avoid incurring costs in the context of dyadic cooperation. Kurzban and Leary (2001) suggested three characteristics that may indicate that an individual is a poor cooperation partner: (1) displaying unpredictable goals and behaviors, (2) having a history of cheating, and (3) having little social or economic resources. Individuals who are unpredictable may be relatively costly interaction partners as their intentions and preferences are more difficult to infer, thus complicating the coordination of cooperative interactions. Individuals who have a history of cheating may be relatively costly interaction partners as they might be more likely to cheat in future interactions. Individuals who have little social or economic resources may be relatively costly interaction partners as they may have little to contribute to the cooperation or may be unable to reciprocate.

The existence of the stigma of physical abnormality can be explained by considering the kinds of individuals who should be excluded in order to avoid costs associated with pathogenic infection. Disease-causing microbes have posed a threat to reproductive fitness throughout human (and prehuman) evolution, thus imposing strong selection pressures. In addition to physiological defenses (e.g., the vertebrate immune system), many animals have evolved behavioral defenses as well (Hart, 2011). These defenses facilitate avoidance of infectious entities

Table 1. Explanations, Evidence, and Hypotheses Pertaining to the Three Types of Stigma, and How They May Apply to Obesity Stigma.

Type of Stigma	Tribal Out-Group	Character Flaw	Physical Abnormality
Motive for social exclusion	Obtain benefits and avoid costs of coalitional exploitation.	Avoid costly dyadic cooperation.	Avoid pathogenic infection.
Possible explanation of obesity stigma	Nonobese individuals perceive obese individuals to be a competing coalition. Therefore, to avoid the costs of coalitional exploitation, nonobese people may prefer to socialize with nonobese rather than obese individuals.	Obese individuals are seen as poor cooperation partners. Therefore, to avoid potentially costly dyadic interactions, people may prefer to socialize with nonobese rather than obese individuals.	Obese individuals are seen as a source of pathogens. Therefore, to avoid infection, people may prefer to socialize with nonobese rather than obese individuals.
Supporting evidence	Minimal. (a) Lund and Miller (2014) found that thin Americans primed with disease concerns implicitly excluded obesity from the American identity to a greater degree.	Substantial. (a) Obesity is associated with fitness costs (reduced health). (b) Obesity is perceived as controllable. (c) Obesity is associated with lack of self-control. (d) The degree to which obesity is perceived as controllable is associated with anti-obese attitudes. (e) Framing obesity as uncontrollable reduces obesity stigma. (f) Obesity is associated with low socioeconomic status (in some societies with obesity stigma).	Substantial. (a) Obesity involves increased risk of infection. (b) Obesity is frequently perceived as disgusting. (c) Obesity involves features that resemble cues of infection (skin discoloration and swelling). (d) Antiobese attitudes correlate with infection concerns. (e) Obesity is implicitly associated with infectious disease. (f) High infection concerns correlate with low criterion for classifying body shape as obese. (g) Obesity triggers desire to minimize physical contact. (h) Children associate obesity with contagion. (i) Salience of obesity stigma motivates obese individuals to appear hygienic.
Hypotheses for further research	Obesity stigma should resemble other tribal stigmas. (a) Membership in weight categories (e.g., obese vs. nonobese) should involve rituals that signal membership. (b) Members of obese and nonobese categories should desire avoiding members of the other category. (c) Obese individuals should be perceived as willing to cooperate with each other rather than with members of other weight categories. (d) Obese individuals should be motivated to discourage other obese individuals from defecting and joining a nonobese category. (e) There should be instances of intergroup conflict (between obese and nonobese), and salience of intergroup conflict should strengthen social identification with weight in-group.	(a) Obese individuals might be perceived as having unpredictable intentions. (b) Obesity stigma should be stronger in societies, where obesity is more strongly associated with low socioeconomic status. (c) Obesity stigma should be weak or absent in societies, where obesity is associated with wealth and social status. (d) Individuals who prove to be good cooperation partners should face reduced stigmatization. (e) Perceiving obese individuals as poor cooperation partners might be related to perceiving them as contagious.	(a) Obesity stigma should be stronger in societies with strong emphasis on pathogen avoidance. (b) Perceiving obese individuals as both contagious and poor cooperation partners might result in increased stigmatization. (c) Obese physique might be associated with multiple cues of infection (limited locomotion, heavy breathing, and increased sweating). (d) People might stigmatize obesity only when they have learned that obesity is associated with infection.

and may be responsible for some instances of social avoidance and exclusion in humans (Kurzban & Leary, 2001). Animals with behavioral defenses do not seem to perceive pathogens directly; rather, they respond to correlates of pathogens and symptoms of infection. With regard to pathogens harbored by other individuals, humans seem to be especially responsive to

visible symptoms of disease, such as lesions and disfigurements, which induce specific emotional (e.g., disgust) and behavioral (e.g., physical distancing) responses (Curtis, Aunger, & Rabie, 2004; Park, Van Leeuwen, & Chochorelou, 2013).

Because of the high costs associated with false negatives (failing to avoid contagious individuals), it is adaptive to be biased toward false positives (avoiding healthy individuals with cues associated with disease; Haselton & Nettle, 2006). Thus, the pathogen-avoidance perspective explains why people exhibit desires to avoid those perceived to harbor contagious disease (Bishop, 1991; Crandall & Moriarty, 1995) and why people with certain visually conspicuous physical abnormalities (scars, swellings, port-wine stains, cleft lips, or other disfigurements) are frequent targets of stigma, regardless of whether the abnormalities are actual symptoms of infection (Schaller & Park, 2011).

Multiple Motives for Obesity Stigma?

The attribution account of obesity stigma described above (i.e., that obesity stigma is driven by the belief that obese people are weak willed) seems to map onto the character-flaw stigma. Indeed, Weiner et al. (1988) distinguished between *physical* and *mental–behavioral* stigmas and placed obesity stigma in the latter category. While the attribution account of obesity stigma has received empirical support, it may explain only one part of obesity stigma.

For many people, the most obvious and important aspect of obesity is its appearance. Not only is obesity considered to be physically unappealing (Harris, Harris, & Bochner, 1982; Neumark-Sztainer, Story, & Faibisch, 1998; Staffieri, 1967), improving physical attractiveness is a common motivation among those entering weight-loss programs (Brink & Ferguson, 1998). It thus seems plausible that, in addition to being seen as a character flaw, obesity is perceived as a physical abnormality—that is, obesity stigma may be encompassed by two of Goffman's (1963) categories.

While Kurzban and Leary (2001) noted that their model did not seem to adequately explain obesity stigma, they did speculate in an earlier version of their article that it may be rooted in motives for avoiding both poor interaction partners and pathogenic infection (R. Kurzban, personal communication, December 26, 2014). Research conducted in the past decade provides support for this conjecture—obesity stigma is a stigma of *both* character flaw and abnormal appearance, sprouting from psychological mechanisms pertaining to dyadic cooperation and pathogen avoidance.

Why would obese people be seen as poor partners for dyadic cooperation? One possibility is that individuals may learn to associate obesity with having limited economic resources. In developed countries, obesity tends to be associated with low socioeconomic status (McLaren, 2007). Another possibility is that obesity is perceived as a cue for unpredictability. To the extent that a perceiver believes that obesity is controllable and associates obesity with fitness costs, obesity might be interpreted as an indicator of unpredictable intentions. This process may resemble inferences of unpredictability for individuals engaging in blatantly self-destructive behaviors (e.g., alcoholics, criminals). Finally, as suggested by stereotypes commonly applied to obese people (e.g., lazy, undisciplined), obesity may be associated with cheating (i.e., freeriding, not reciprocating). For example, an obese individual doing manual labor may be perceived as a free rider due to receiving the same level of pay while contributing less work as a result of their lower physical fitness. Broadly, these kinds of perceptions of obesity align with the attribution perspective described above—that obese people are blameworthy for their outcome and thus deserve discrimination.

Why would obese people be seen as sources of pathogenic infection? Lieberman, Tybur, and Latner (2012) listed three reasons why pathogen-avoidance mechanisms may contribute to obesity stigma. First, humans may be responsive to deviations from prototypical morphology (i.e., what is considered culturally acceptable physique), and obesity may fall below the threshold of acceptability. Second, humans may be responsive to specific cues of infection such as skin discolorations and swollen body parts, and obese individuals may possess features that resemble those cues. As a result of the false-positive bias described above, features associated with obesity may be erroneously perceived as cues of infection. Third, obese individuals may actually present a greater risk of infection (Falagas & Kompoti, 2006), and individuals may learn to associate obesity with infection.

Evidence That Obesity Stigma Results From Pathogen Avoidance

A growing literature provides support for the hypothesis that pathogen-avoidance processes contribute to obesity stigma. Surveys of traits stereotypically associated with obesity have identified those related to character (e.g., lazy, undisciplined) and ill health (e.g., unattractive, unclean, unhealthy; Puhl, Schwartz, & Brownell, 2005). Several studies have found that perceptions of obesity mirror perceptions of pathogenic symptoms and other physical abnormalities. In one study, obese targets were found to arouse stronger discomfort with physical contact than nonphysical contact, resembling responses to infectious targets (Park et al., 2013). Other studies have found that individuals who are more concerned about contracting diseases tend to hold more negative attitudes toward obese people (Park & Isherwood, 2011; Park, Schaller, & Crandall, 2007). Park, Schaller, and Crandall (2007) also found that perceivers implicitly associate obese people with pathogen-relevant concepts; critically, a pathogen-salience manipulation was found to increase obesity–pathogen associations, whereas a work ethic–salience manipulation (intended to emphasize personal responsibility) was found to increase associations between obesity and pathogen-irrelevant negative concepts, which can be interpreted as evidence for the operation of two distinct mechanisms underlying obesity stigma.

Furthermore, heightened disease concerns lead to biased perceptions regarding body shape. In two studies by Miller and

Maner (2012), participants were first shown a series of images of overweight and average-weight individuals, and after a filler task were briefly presented with each image and asked to quickly categorize the target as "thin" or "fat." Results showed that participants with experimentally heightened pathogen concerns were more likely to categorize average-weight individuals as overweight (i.e., these participants applied a lower criterion for perceiving a target as overweight). In a study by Klaczynski (2008), children were asked to taste drinks ostensibly created by obese and average-weight children. After tasting the drinks, children gave lower taste ratings to the drinks ostensibly made by obese children; more tellingly, they believed that the drinks made by obese children were more likely to cause illness, especially among those who had, prior to tasting the drinks, read a story about an ill child who had infected other children by coughing (in the control condition, the ill child coughed but the other children did not become ill).

Given humans' strong motivations for social inclusion (Baumeister & Leary, 1995), it is reasonable to expect that targets of stigma will modify their behaviors to reduce the likelihood of exclusion. The specific behaviors they engage in may map on to the underlying reason for the stigma. Thus, to the extent that perceivers associate obesity with contagious disease, obese individuals may be aware of this and may attempt to convince others that they are not sources of contagion. Indeed, research has found that reminding obese individuals of their stigma triggers motivations to appear clean and hygienic (Neel, Neufeld, & Neuberg, 2013).

More support for the role of pathogen-avoidance processes in obesity stigma comes from research on the relation between weight bias and disgust. Disgust may play a role in stigmatization not only because it plays a key role in pathogen avoidance (Curtis, de Barra, & Aunger, 2011; Oaten, Stevenson, & Case, 2009), but also because it contributes to moralization (Rozin, 1999; Tybur, Lieberman, Kurzban, & DeScioli, 2013). Research has shown that obesity is frequently perceived as disgusting (Lieberman, Tybur, & Latner, 2012; Masicampo, Barth, & Ambady, 2014; Vartanian, 2010; Vartanian, Thomas, & Vanman, 2013) and that anti-obese attitudes correlate with individual differences in disgust sensitivity (Lieberman et al., 2012; O'Brien et al., 2013; Vartanian, 2010). In one study, Vartanian (2010) assessed disgust reactions to obese people (and 15 other social groups) and found that obese people evoke high levels of disgust (behind only drug addicts and smokers). Vartanian (2010) also assessed perceived control of body weight and found that while both disgust and perceived control predicted attitudes toward obese people, disgust fully mediated the effect of perceived control. Recent research suggests that the relation between disgust sensitivity and antiobesity attitudes may involve pathogen-relevant disgust specifically (Lieberman et al., 2012).

In sum, a substantial amount of evidence indicates that inferences based on appearance and pathogen-avoidance concerns contribute to antipathy toward obese people.

Alternative Perspectives and Directions for Further Research

It has been noted that obesity stigma is more intense and pervasive than many other stigmas (Latner & Stunkard, 2003). We have suggested that this may be because, unlike many other stigmatizing conditions, obesity stigma has more than one underlying basis, which may result in obese people facing particularly intense negative prejudice or being subject to exclusion from a broader range of social interactions. Future research might consider this issue more rigorously and investigate how the two motives (avoiding poor interactions partners and avoiding pathogens) may interact. Research could examine whether the two motives are additive (i.e., activating both motives intensifies the stigma response in line with adding the two effects), multiplicative (activating both motives intensifies the stigma response more than would be expected from adding the two effects), or redundant (activating both motives does not increase the stigma response beyond what is observed with a single motive). Related questions are whether people who hold both motives stigmatize obesity across wider social contexts, more readily (e.g., for less obese targets), or more intensely (e.g., desiring larger personal distance).

Above, we described the motives for avoiding poor cooperators and pathogens as independent contributors to obesity stigma (see Table 1 for specific hypotheses pertaining to these motives). However, these motives may be related in the case of obesity stigma. For instance, obesity may be associated with unpredictability specifically because obese people are perceived as harming their own health. More specifically, there may be instances in which harboring (or being perceived to harbor) an infection is associated with having unpredictable intentions, as individuals may become infected due to promiscuous unprotected sex, poor cleaning of wounds, or general failure to engage in hygiene behaviors. Individuals who engage in such infection-facilitating behaviors might be perceived as having unpredictable intentions as they appear to lack a pathogen-avoidance motivation.

Also, the different ways in which the two mechanisms contribute to obesity stigma may have implications for whether particular individuals hold antiobese attitudes and whether obesity stigma is present in a particular society. We have suggested that for individuals who perceive obesity as a controllable condition, obesity may be interpreted as self-destructive behavior and thus be an indicator of unpredictable intentions. Further research may test whether such a process contributes to obesity stigma. More generally, to the extent that obesity stigma derives from perceptions of obese individuals as poor cooperation partners, obese individuals who are known to be reliable cooperation partners should face less social exclusion. Societies in which obese individuals are protected from employment discrimination and better able to demonstrate their ability may have lower levels of obesity stigma. As mentioned above, there might be different ways in which pathogen-avoidance processes could contribute to obesity stigma. Further research could examine whether obesity stigma is driven by perceived

abnormality, specific infection-connoting cues, and/or learned associations between body weight and pathogenic disease, which may depend on the cultural context.

With regard to cross-cultural differences in obesity stigma, to the extent that obesity stigma derives from perceiving obese individuals as poor cooperation partners because they have little resources, the stigma should be stronger in societies where obesity is associated with low socioeconomic status and weaker in societies where obesity is associated with wealth. In addition, to the extent that obesity stigma derives from perceiving obese individuals as contagious, the stigma should be stronger in societies that emphasize pathogen avoidance. Furthermore, as media coverage of salient infectious diseases may increase contagion-minimizing behaviors (Hamamura & Park, 2010), obesity stigma might intensify during periods with increased coverage of infectious disease in the media.

A counterargument to the pathogen-avoidance model is the observation that overweight is sometimes associated with health, wealth, and higher social status (McLaren, 2007), which invites debate as to whether an obese body shape is necessarily a cue for contagious disease. Although there is variability across cultures in the intensity of obesity stigma, there appear to be few societies without obesity stigma (Brewis, Wutich, Falletta-Cowden, & Rodriguez-Soto, 2011; Marini et al., 2013), and the anthropological record suggests that obesity is rarely considered sexually attractive (Brown & Konner, 1987). Furthermore, even if humans have a predisposition to perceive obesity as a cue for pathogenic infection, obesity need not always be perceived as a cue for infection. For example, in environments in which poverty and food shortage are prevalent, people may learn to perceive individuals with heavier bodies as good (or bad) partners for dyadic exchange, as such individuals may be wealthier and less prone to famine (or ungenerous). To fully address this issue demands a thorough consideration of the morphology of humans throughout evolutionary history and the range of physical appearances that humans are capable of perceiving as normal (or desirable) under diverse ecological conditions.

We have relied on Goffman's (1963) typology and Kurzban and Leary's (2001) explication to argue that because obesity stigma does not neatly fit into any one of the three types of stigma, it may have two distinct bases. However, even though obesity stigma does not appear to resemble typical tribal outgroup stigmas, obesity stigma may involve some coalitional psychology (Lund & Miller, 2014). Further research could examine to what extent obesity stigma is driven by motives for coalitional exploitation (see Table 1).

In addition, it is possible that the tripartite perspective is incomplete—it is possible that obesity stigma derives from an as yet unidentified motive. There may be a fourth type of stigma, such as the stigma associated with being inferior in a social-status hierarchy (Sidanius & Pratto, 1999), which may be associated with characteristics that are not explained by the above perspective. As obesity is associated with low social status in certain societies, obesity stigma in these societies might result in part from hierarchy-related motives. We await further theoretical development on the psychology of stigmatization.

Conclusion

Obesity stigma involves both a response to a specific kind of abnormal physical appearance and inferences about undesirable psychological traits. Theoretical approaches and empirical findings suggest that obesity stigma may sprout from motivations for avoiding individuals who are infectious and individuals who are poor partners for cooperation. Further research may examine whether these motives are related and whether obesity stigma results from additional motives.

Acknowledgments

We thank Robert Kurzban for his helpful comments on an earlier version of this article.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497–529.

Bishop, G. D. (1991). Lay disease representations and responses to victims of disease. *Basic and Applied Social Psychology*, *12*, 115–132.

Brewis, A. A., Wutich, A., Falletta-Cowden, A., & Rodriguez-Soto, I. (2011). Body norms and fat stigma in global perspective. *Current Anthropology*, *52*, 269–276. doi:10.1086/659309

Brink, P. J., & Ferguson, K. (1998). The decision to lose weight. *Western Journal of Nursing Research*, *20*, 84–102.

Brown, P. J., & Konner, M. (1987). An anthropological perspective on obesity. *Annals of the New York Academy of Sciences*, *499*, 29–46.

Butland, B., Jebb, S., Kopelman, P., McPherson, K., Thomas, S., Mardell, J., & Parry, V. (2007). *Tackling obesities: Future choices—Project report* (2nd ed.). London, England: Foresight. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf

Carr, D., & Friedman, M. A. (2005). Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *Journal of Health and Social Behavior*, *46*, 244–259.

Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to "prejudice." *Journal of Personality and Social Psychology*, *88*, 770–789. doi:10.1037/0022-3514.88.5.770

Crandall, C. S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology*, *66*, 882–894.

Crandall, C. S., D'Anello, S., Sakalli, N., Lazarus, E., Wieczorkowska, G., & Feather, N. T. (2001). An attribution-value model of prejudice: Anti-fat attitudes in six nations. *Personality and Social Psychology Bulletin*, *27*, 30–37.

Crandall, C. S., & Martinez, R. (1996). Culture, ideology, and antifat attitudes. *Personality and Social Psychology Bulletin*, *22*, 1165–1176.

Crandall, C. S., & Moriarty, D. (1995). Physical illness stigma and social rejection. *British Journal of Social Psychology*, *34*, 67–83. doi:10.1111/j.2044-8309.1995.tb01049.x

Curtis, V., Aunger, R., & Rabie, T. (2004). Evidence that disgust evolved to protect from risk of disease. *Proceedings of the Royal Society of London B*, *271*, S131–S133. doi:10.1098/rsbl.2003.0144

Curtis, V., de Barra, M., & Aunger, R. (2011). Disgust as an adaptive system for disease avoidance behaviour. *Philosophical Transactions of the Royal Society B*, *366*, 389–401. doi:10.1098/rstb.2010.0117

Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., . . . Spatharou, A. (2014). *Overcoming obesity: An initial economic analysis—Discussion paper*. Retrieved from http://www.mckinsey.com/∼/media/McKinsey/dotcom/Insights/Economic-20Studies/How%20the%20world%20could%20better%20 fight-20obesity/MGI_Overcoming_obesity_Full_report.ashx

Falagas, M. E., & Kompoti, M. (2006). Obesity and infection. *The Lancet Infectious Diseases*, *6*, 438–446. doi:10.1016/S1473-3099(06)70523-0

Fouts, G., & Burggraf, K. (1999). Television situation comedies: Female body images and verbal reinforcements. *Sex Roles*, *40*, 473–481. doi:10.1023/A:1018875711082

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice Hall.

Hamamura, T., & Park, J. H. (2010). Regional differences in pathogen prevalence and defensive reactions to the "swine flu" outbreak among East Asians and Westerners. *Evolutionary Psychology*, *8*, 506–515.

Harris, M. B., Harris, R. J., & Bochner, S. (1982). Fat, four-eyed and female: Stereotypes of obesity, glasses and gender. *Journal of Applied Social Psychology*, *6*, 503–516.

Hart, B. L. (2011). Behavioural defences in animals against pathogens and parasites: Parallels with the pillars of medicine in humans. *Philosophical Transactions of the Royal Society B*, *366*, 3406–3417. doi:10.1098/rstb.2011.0092

Haselton, M. G., & Nettle, D. (2006). The paranoid optimist: An integrative evolutionary model of cognitive biases. *Personality and Social Psychology Review*, *10*, 47–66. doi:10.1207/s15327957pspr1001_3

Jackson, S. E., Beeken, R. J., & Wardle, J. (2014). Perceived weight discrimination and changes in weight, waist circumference, and weight status. *Obesity*, *22*, 2485–2488. doi:10.1002/oby.20891

Jones, E. E., Farina, A., Hastorf, A. H., Markus, H., Miller, D. T., & Scott, R. A. (1984). *Social stigma: The psychology of marked relationships*. New York, NY: Freeman.

Klaczynski, P. A. (2008). There's something about obesity: Culture, contagion, rationality, and children's responses to drinks "created" by obese children. *Journal of Experimental Child Psychology*, *99*, 58–74. doi:10.1016/j.jecp.2007.08.005

Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, *127*, 187–208. doi:10.1037//0033-2909.127.2.187

Latner, J. D., & Stunkard, A. J. (2003). Getting worse: The stigmatization of obese children. *Obesity Research*, *11*, 452–456. doi:10.1038/oby.2003.61

Lieberman, D. L., Tybur, J. M., & Latner, J. D. (2012). Disgust sensitivity, obesity stigma, and gender: Contamination psychology predicts weight bias for women, not men. *Obesity*, *20*, 1803–1814. doi:10.1038/oby.2011.247

Lund, E. M., & Miller, S. L. (2014). Is obesity un-American? Disease concerns bias implicit perceptions of national identity. *Evolution and Human Behavior*, *35*, 336–340. doi:10.1016/j.evolhumbehav.2014.03.004

Margulies, A. S., Floyd, R. G., & Hojnoski, R. L. (2008). Body size stigmatization: An examination of attitudes of African American preschool-age children attending head start. *Journal of Pediatric Psychology*, *33*, 487–496. doi:10.1093/jpepsy/jsm 082

Marini, M., Sriram, N., Schnabel, K., Maliszewski, N., Devos, T., Ekehammar, B., . . . Nosek, B. A. (2013). Overweight people have low levels of implicit weight bias, but overweight nations have high levels of implicit weight bias. *PLoS ONE*, *8*, e83543. doi:10.1371/journal.pone.0083543

Masicampo, E. J., Barth, M., & Ambady, N. (2014). Group-based discrimination in judgments of moral purity-related behaviors: Experimental and archival evidence. *Journal of Experimental Psychology: General*, *143*, 2135–2152. doi:10.1037/a0037831

McLaren, L. (2007). Socioeconomic status and obesity. *Epidemiologic Reviews*, *29*, 29–48. doi:10.1093/epirev/mxm001

Miller, S. L., & Maner, J. K. (2012). Overperceiving disease cues: The basic cognition of the behavioral immune system. *Journal of Personality and Social Psychology*, *102*, 1198–1213. doi:10.1037/a0027198

Neel, R., Neufeld, S. L., & Neuberg, S. L. (2013). Would an obese person whistle Vivaldi? Targets of prejudice self-present to minimize appearance of specific threats. *Psychological Science*, *24*, 678–687. doi:10.1177/0956797612458807

Neumark-Sztainer, D., Story, M., & Faibisch, L. (1998). Perceived stigmatization among overweight African-American and Caucasian adolescent girls. *Journal of Adolescent Health*, *23*, 264–270.

Oaten, M., Stevenson, R. J., & Case, T. I. (2009). Disgust as a disease-avoidance mechanism. *Psychological Bulletin*, *135*, 303–321. doi:10.1037/a0014823

O'Brien, K. S., Daníelsdóttir, S., Ólafsson, R. P., Hansdóttir, I., Fridjónsdóttir, T. G., & Jónsdóttir, H. (2013). The relationship between physical appearance concerns, disgust, and anti-fat prejudice. *Body Image*, *10*, 619–623. doi:10.1016/j.bodyim.2013.07.012

Park, J. H., & Isherwood, E. (2011). Effects of concerns about pathogens on conservatism and anti-fat prejudice: Are they mediated by moral intuitions? *Journal of Social Psychology*, *151*, 391–394. doi:10.1080/00224545.2010.481692

Park, J. H., Schaller, M., & Crandall, C. S. (2007). Pathogen-avoidance mechanisms and the stigmatization of obese people.

Evolution and Human Behavior, *28*, 410–414. doi:10.1016/j.evolhumbehav.2007.05.008

Park, J. H., Van Leeuwen, F., & Chochorelou, Y. (2013). Disease-avoidance processes and stigmatization: Cues of substandard health arouse heightened discomfort with physical contact. *Journal of Social Psychology*, *153*, 212–228. doi:10.1080/00224545.2012.721812

Puhl, R. M., & Brownell, K. D. (2003). Psychosocial origins of obesity stigma: Toward changing a powerful and pervasive bias. *Obesity Reviews*, *4*, 213–227.

Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: A review and update. *Obesity*, *17*, 941–964.

Puhl, R. M., Schwartz, M. B., & Brownell, K.D. (2005). Impact of perceived consensus on stereotypes about obese people: A new approach in reducing bias. *Health Psychology*, *24*, 517–525. doi:10.1037/0278-6133.24.5.517

Rozin, P. (1999). The process of moralization. *Psychological Science*, *10*, 218–221.

Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters). *Current Directions in Psychological Science*, *20*, 99–103. doi:10.1177/0963721411402596

Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. Cambridge, England: Cambridge University Press.

Staffieri, J. R. (1967). A study of social stereotypes of body image in children. *Journal of Personality and Social Psychology*, *7*, 101–104.

Teachman, B. A., Gapinski, K. D., Brownell, K. D., Rawlins, M., & Jeyaram, S. (2003). Demonstrations of implicit anti-fat bias: The impact of providing causal information and evoking empathy. *Health Psychology*, *22*, 68–78. doi:10.1037/0278-6133.22.1.68

Tybur, J. M., Lieberman, D., Kurzban, R., & DeScioli, P. (2013). Disgust: Evolved function and structure. *Psychological Review*, *120*, 65–84. doi:10.1037/a0030778

Vartanian, L. R. (2010). Disgust and perceived control in attitudes toward obese people. *International Journal of Obesity*, *34*, 1302–1307. doi:10.1038/ijo.2010.45

Vartanian, L. R., Thomas, M. A., & Vanman, E. J. (2013). Disgust, contempt, and anger and the stereotypes of obese people. *Eating and Weight Disorders*, *18*, 377–382. doi:10.1007/s40519-013-0067-2

Weiner, B., Perry, R. P., & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology*, *55*, 738–748.

World Health Organization. (2000). *Obesity: Preventing and managing the global epidemic—Report of a WHO consultation*. Retrieved from http://www.who.int/nutrition/publications/obesity/WHO_TRS_894/en/