



From drug laws to recreational substance use: The adaptationist role of disgust sensitivity



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ABSTRACT

Disgust promotes evolutionary fitness by reducing contact with stimuli that pose pathogenic, sexual, and moral threats. One behavior that may be viewed as a threat to evolutionary fitness is substance use, which is associated with disease transmission, reproductive issues, and engagement in moral transgressions. However, the extent to which individual differences in disgust sensitivity are related to substance use is unclear. Across three studies, associations were examined among sexual, moral, and pathogen disgust sensitivity and beliefs and behaviors regarding substance use. Individuals with higher sexual and moral disgust sensitivity viewed drug laws as more important, endorsed greater punishment for breaking those laws, reported less engagement in substance use, and had lower intentions of engaging in future substance use. Greater sexual disgust was uniquely associated with stronger feelings of obligation to obey drug laws and fewer opportunities to engage in substance use offered by others. Furthermore, associations among sexual disgust, substance use intentions, and self-initiated behavior were partially mediated by beliefs about the harmfulness of substance use. Findings support the adaptationist role of disgust, and suggest that disgust sensitivity is an important individual difference in substance use beliefs and behaviors.

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1. Introduction

Substance use is an important public health concern that has prompted a long history of psychological inquiry (Hawkins, Catalano, & Miller, & 1992). Much of this work has sought to identify social contexts (Andrews, Tildesley, Hops, & Li, 2002), personality traits (Kotov, Gamez, Schmidt, & Watson, 2010), and emotional factors (Tschann et al., 1994) that account for variation in illicit drug use and abuse. One potentially important individual difference factor that has received considerably less empirically attention is disgust sensitivity. Disgust is an emotional response that is thought to motivate the avoidance of people and objects that pose reproductive, disease, or moral threats (Tybur, Lieberman, & Griskevicius, 2009). Thus, individuals who are more sensitive to disgust are more likely to engage in behaviors and endorse beliefs that limit contact with potential sexual, pathogen, and moral dangers (Deacon & Olatunji, 2007; Terrizzi, Shook, & McDaniel, 2013). Substance use is often viewed as a moral transgression (Robinson, Kurzban, & Jones, 2007), and many substances (e.g., drugs, alcohol, tobacco) contain toxins that contribute to the contraction of disease and decrease the likelihood of optimal reproduction (Kaushik, Kapila, & Praharaj, 2011). As such, disgust sensitivity may play an important role in

attitudes toward and engagement in substance use. The purpose of this research was threefold. The first aim was to determine the extent to which sexual, pathogen, or moral disgust sensitivity are associated with support for drug laws. The second aim was to test whether similar associations were found between disgust sensitivity and actual substance use. The third aim was to examine potential mediators of the anticipated links between disgust sensitivity and engagement in substance use.

1.1. Disgust: An adaptationist perspective

Disgust evolved to prevent contact with contaminants (e.g., ingesting rotten food) that could make the individual sick and endanger the organism's survival (Darwin, 1872). As such, disgust often leads to prophylactic behaviors (e.g., vomiting, gagging) intended to expel or avoid the potential contaminant. Disgust may be evoked by a variety of different stimuli such as ingesting sour milk, the smell of rotten garbage, the sound of someone clearing phlegm from his or her throat, the thought of two siblings having sex, and seeing a person steal (e.g., Haidt, McCauley, & Rozin, 1994). Given the diversity of stimuli that may induce disgust, adaptationist models propose that disgust has evolved to serve specialized functions within three different domains (see Tybur, Lieberman, Kurzban, & DeScioli, 2013, for a review). *Pathogen disgust* is hypothesized to have evolved as a means of reducing contact with pathogens, and subsequently motivates the avoidance of

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contaminating microorganisms and other disease causing agents, such as dead bodies, rotten food, and bodily fluids. In contrast, *moral disgust* is thought to have evolved as a means of reducing contact with social norm violators (e.g., liars, cheaters), and motivates the avoidance of individuals who commit moral transgressions as a means of reducing the likelihood of becoming the victim of deviant acts. *Sexual disgust* is thought to have evolved as a means of reducing contact with objects that impede healthy reproduction or individuals that have poor mate quality (e.g., promiscuous or unhealthy sexual partners, incest), and motivates the avoidance of sexual partners and behaviors that may jeopardize successful procreation. Thus, disgust prompts the avoidance of disease-bearing microbial pathogens, deviant others, and stimuli that pose reproductive threats, in order to maintain opportunities for survival and reproductive success.

Although disgust is a universally recognized emotion (Ekman & Keltner, 1970), there is substantial individual variability in sensitivity to disgust. Disgust sensitivity has been characterized as a stable personality trait that is thought to motivate avoidant social behaviors and endorsement of beliefs that limit contact with stimuli that pose pathogenic, sexual, and moral threats (Terrizzi et al., 2013). Empirical evidence supports this adaptationist perspective of disgust and suggests that disgust sensitivity is an important individual difference in social behavior and cognition. For instance, previous research has found that those who are more sensitive to disgust are more behaviorally avoidant (Deacon & Olatunji, 2007). Additionally, several studies have found that individuals with greater disgust sensitivity endorse social and political beliefs that support avoidance of outgroup members, who may have been an historical source of pathogens (e.g., Terrizzi et al., 2013).

1.2. Disgust sensitivity and substance use

One topic that would seem to be related to disgust sensitivity but has received relatively little examination is recreational substance use, which may pose several distinct types of fitness-related threats. Many substances contain harmful toxins, and the use of certain substances often elicits disgust responses (e.g., the smell of tobacco or marijuana smoke, the bitter taste of alcohol). Additionally, those who use substances are at a greater likelihood of contracting and spreading infectious diseases (DeBeck et al., 2009; Gordon & Lowy, 2005; Wilson & DeHovitz, 1997). Thus, pathogen disgust sensitivity may be associated with substance use behaviors and beliefs.

Alcohol, marijuana, and tobacco use also pose several potential reproductive threats. Both male and female victims of sexual abuse (whether by known or unknown perpetrators) are often under the influence of drugs or alcohol during the time of the incident (e.g., Abbey, Saenz, & Buck, 2005), suggesting that certain forms of substance use may make individuals vulnerable for unwanted sexual contact. Substance use has also been directly linked with potential biological threats to healthy reproduction, as drug use is associated with infertility and reproductive issues in both men (Fronczak, Kim, & Barqawi, 2012) and women (e.g., Joesoef, Beral, Aral, Rolfs, & Cramer, 1993). Additionally, individuals rate substance users as being less healthy and less attractive compared to non-users (Clark, Klesges, & Neimeyer, 1992), which suggests that substance use may be an indicator of poor mate quality. As such, substance use beliefs and behaviors may be related to sexual disgust sensitivity.

Alcohol, tobacco, and illicit substance use are also typically viewed as moral and social transgressions (Killen, Leviton, & Cahill, 1991), and drug users are often stigmatized as social deviants (Room, 2005). Additionally, drug and alcohol use has been shown to play a direct, causal role in aggression, and those who engage in substance use are more likely to engage in delinquency and vandalism (Bushman, 1997; Ellickson, Tucker, & Klein, 2001). This research indicates that substance use itself may be a social transgression that increases the likelihood of engaging in other deviant behaviors and coming into contact with

deviant others. Accordingly, moral disgust sensitivity may be linked to beliefs about drug laws and engagement in substance use.

To date, no research has directly examined the intersection between disgust sensitivity and substance use. However, some evidence examining links among committed versus promiscuous sexual strategies and support for drug laws suggests that disgust sensitivity may be associated with beliefs about recreational substance use. Specifically, this research has shown that those with more committed sexual strategies (as indicated by lower sociosexuality, *higher sexual disgust*, and greater endorsement of conservative political attitudes about sexual issues) more strongly support laws that limit recreational drug use, potentially as means of reducing sexual promiscuousness and the affiliated threats to committed relationships (Kurzban, Dukes, & Weeden, 2010; Quintelier, Ishii, Weeden, Kurzban, & Braeckman, 2013). Linking sexual disgust with beliefs about drug laws is also consistent with the adaptationist view of disgust. Those who are more sensitive to sexual disgust are thought to endorse beliefs and engage in behaviors that reduce sexual contact with sub-optimal mates (Tybur et al., 2009). The promiscuousness and health concerns affiliated with substance use may indicate poor mate quality (Buss & Schmitt, 1993), and subsequently serve as input for the adaptive function of sexual disgust. Those who are more sensitive to sexual disgust may support drug laws to reduce contact with poor quality mates.

Although this research provides preliminary evidence that sexual disgust may be connected with beliefs about drug laws, there has not been a comprehensive examination of whether different forms of disgust sensitivity (moral, sexual, pathogen) are independently linked with beliefs about recreational drug use. Furthermore, the extent to which these associations extend to engagement in actual substance use has not been assessed. If disgust is meant to prompt the avoidance of stimuli that pose pathogenic, reproductive, and moral threats, those who are more sensitive to disgust across multiple domains may endorse greater support for drug laws, be less engaged in substance use, and be less inclined to seek out situations where substance use occurs to avoid the fitness costs affiliated with drug use and contact with drug users. Thus, a primary goal of this research was to examine whether multiple domains of disgust sensitivity are independently associated with beliefs about drug laws, actual engagement in substance use, and substance-seeking behaviors. Examining associations among disgust sensitivity and engagement in substance use may provide a more direct test of the adaptationist functions of disgust and simultaneously help explicate an important individual difference in recreational drug use and abuse.

1.3. Current research

The current research sought to systematically examine whether those who are more sensitive to pathogen, sexual, and moral disgust view personal substance use as harmful and threatening and are less likely to engage in substance use. Specifically, the current set of studies examined whether those who are more sensitive to pathogen, sexual, or moral disgust condemn other's drug use, feel a greater personal obligation to obey drug laws, report less frequent substance use during college, are less likely to seek out opportunities for substance use, and have lower intentions of using substances in the future. Based on previous work, it was expected that those who are more sensitive to disgust across domains would condemn others' drug use, endorse a greater obligation to personally obey drug laws, less frequently use substances during college, less frequently seek out opportunities for substance use, and have lower intentions of using substances in the future.

2. Study 1

The purpose of Study 1 was to examine whether disgust sensitivity across domains (pathogen, sexual, moral) was associated with a greater likelihood of endorsing beliefs concerning general support for drug laws (i.e., view them as important). Further, this study also sought to

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