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Moral disciplining: The cognitive and evolutionary foundations of puritanical morality

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Abstract

Why do many societies moralize apparently harmless pleasures, such as lust, gluttony, alcohol, drugs, and even music and dance? Why do they erect temperance, asceticism, sobriety, modesty, and piety as cardinal moral virtues? According to existing theories, this puritanical morality cannot be reduced to concerns for harm and fairness: It must emerge from cognitive systems that did not evolve for cooperation (e.g., disgust-based "purity" concerns). Here, we argue that, despite appearances, puritanical morality is no exception to the cooperative function of moral cognition. It emerges in response to a key feature of cooperation, namely that cooperation is (ultimately) a long-term strategy, requiring (proximately) the self-control of appetites for immediate gratification. Puritanical moralizations condemn behaviors which, although inherently harmless, are perceived as indirectly facilitating uncooperative behaviors, by impairing the self-control required to refrain from cheating. Drinking, drugs, immodest clothing, and unruly music and dance are condemned as stimulating short-term impulses, thus facilitating uncooperative behaviors (e.g., violence, adultery, free-riding). Overindulgence in harmless bodily pleasures (e.g., masturbation, gluttony) is perceived as making people slave to their urges, thus altering abilities to resist future antisocial temptations. Daily self-discipline, ascetic temperance, and pious ritual observance are perceived as cultivating the self-control required to honor prosocial obligations. We review psychological, historical, and ethnographic evidence supporting this account. We use this theory to explain the fall of puritanism in western, educated, industrialized, rich, and democratic (WEIRD) societies, and discuss the cultural evolution of puritanical norms. Explaining puritanical norms does not require adding mechanisms unrelated to cooperation in our models of the moral mind.

1. Introduction

Brueghel's painting, *The Fight Between Carnival and Lent* (1559), contrasts the vices and virtues of puritanical moral standards. On one side of the painting, "men and women dance, they crowd into a tavern, get drunk, play games, watch street theatre, ignore beggars, sneak inside for sex, play cruel tricks on others, gamble, eat, join masked processions, and make music; in short, they are unruly, profane, sexually promiscuous, spontaneous, and concerned with immediate gratification" (Martin, 2009, p. 9). On the other side of the painting, other "men and women work, attend church, give alms to beggars and the poor; in short they are orderly, sober, devout, and disciplined" (Martin, 2009, pp. 9–10). This side represents the values of "decency, diligence, gravity, modesty, orderliness, prudence, reason, self-control, sobriety, and thrift" (Burke, 1978, p. 213).

In recent decades, moral psychologists have identified a related cluster of moral norms. They have noted that many human societies praise chastity, temperance, and piety; condemn the immoderate enjoyment of sensual pleasures; and disapprove of the lack of religious and ritual observance (Graham et al., 2013; Haidt, 2007, 2012; Haidt & Joseph, 2007; Shweder, Mahapatra, & Miller, 1987, 1997). This constellation of moral values gained popularity in psychological and evolutionary approaches to morality as part of the so-called "purity" moral concerns (Graham et al., 2013; Haidt, 2007, 2012; Haidt & Joseph, 2004, 2007). The purity category, however, is a murky concept with no clear definition (Crone, 2022; Gray, DiMaggio, Schein, & Kachanoff, 2022; Kollareth, Brownell, Duran, & Russell, 2022). Reviewing 158 papers of the purity literature, Gray et al. (2022) show that moral psychologists understand purity in about nine different ways, often mixing distinct meanings in their definitions and operationalizations. To avoid confusions, we here use the term *puritanical morality* (or "puritanism") to refer to the ascetic, austere moralization of apparently victimless pleasures that humans crave for, such as eating, drinking, feasting, dancing, gambling, taking drugs, dressing indecently, having sex, or masturbating.

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Puritanical morality, more precisely, comprises the following constellation of moral norms:

(1) A moral condemnation of *bodily pleasures*. Christian morality, for example, condemns excessive indulgence in food and sex as the deadly sins of gluttony and lust (Adamson, 2004; Dabhoiwala, 2012; Hill, 2011). Psychologists have observed that many participants moralize unrestrained or unhealthy eating (Fitouchi, André, Baumard, & Nettle, 2022; Mooijman et al., 2018; Ringel & Ditto, 2019; Steim & Nemeroff, 1995), as well as sexual indulgences such as masturbation or oral sex (Fitouchi et al., 2022; Haidt & Hersh, 2001; Haidt, Koller, & Dias, 1993; Schein, Ritter, & Gray, 2016).

(2) A strong valorization of *temperance* and *self-discipline*. In various countries, a substantial share of participants moralize lack of self-control (Mooijman et al., 2018), general hedonism (Saroglou & Craninx, 2021), and reluctance to needless effort (Celniker et al., 2023; Tierney et al., 2021), whereas similar values are preached across world religions (see sect. 1.1). In medieval and early modern Western societies, for instance,

> self-discipline in all spheres of life was prized as the ultimate mark of civilization … Only beasts and savages gave "unrestrained liberty" to "the cravings of nature" – civilized Christians were rather "to bring under the flesh; bring nature under the government of reason, and, in short bring the body under the command of the soul." The mental and physical government of fleshly appetites was the very foundation of the whole culture of discipline. (Dabhoiwala, 2012, pp. 26–27)

(3) Condemnations of entertainments such as alcohol, drug use, gambling, and certain forms of music and dances. These are widespread both in cross-national surveys (Lugo, Cooperman, Bell, O'Connell, & Stencel, 2013; Poushter, 2014; Weeden & Kurzban, 2013), and in the explicit moral codes of various societies (e.g., *Buddhism*: Najjar, Young, Leasure, Henderson, & Neighbors, 2016; Sterckx, 2005, pp. 223–224; *Hinduism*: Doniger, 2014, pp. 263–270; *traditional Europe*: Burke, 1978; Martin, 2009; Partridge & Moberg, 2017; Wagner, 1997; *Arab-Muslim societies*: Michalak & Trocki, 2006; Otterbeck & Ackfeldt, 2012).

(4) Moral demands of *modesty*, which regulate decency in clothing, speech, and attitudes. In traditional Arab-Muslim societies, for example, when entering the public sphere, women must be veiled, lower their gaze, and avoid body ornaments (Antoun, 1968; Beckmann, 2010; Mernissi, 2011), whereas similar restrictions appear in other puritanical cultures (e.g., Puritans' austere clothing: Bremer, 2009; Hindu India: Stephens, 1972, p. 4; Jewish *Tznihut* dress: Andrews, 2010; ancient Christian veiling: Tariq, 2014).

(5) Moral prescriptions of a *pious lifestyle*, requiring the diligent observance of religious rituals, such as fasting, daily prayers, meditations, effortful pilgrimages, or dietary restrictions (see sect. 1.1).

This definition of puritanism comprises many core elements of purity, which is often defined by moral psychologists as including moralizations of lust, gluttony (Haidt & Graham, 2007; Mcadams et al., 2008), clothing, prayer, meditation, temperance, self-control (Graham, Haidt, & Nosek, 2009; Horberg, Oveis, Keltner, & Cohen, 2009; Koleva, Graham, Iyer, Ditto, & Haidt, 2012), drugs, alcohol, and certain kinds of music (Helzer & Pizarro, 2011; Horberg et al., 2009) – all of which are central to puritanism as defined here. However, because of its heterogeneity (Kollareth et al., 2022), the purity category is broader than puritanism as we define it. In particular, purity also includes concerns for physical contamination, often operationalized by weird or abnormal behaviors (Gray & Keeney, 2015; Kupfer, Inbar, & Tybur, 2020), such as pouring urine on oneself (Chakroff, Russell, Piazza, & Young, 2017), touching poop barehanded (Dungan, Chakroff, & Young, 2017), or eating pizza off a dead body (Clifford, Iyengar, Cabeza, & Sinnott-Armstrong, 2015). We do not include this subclass of purity in our definition of puritanism because, as researchers have noted, these contamination-related concerns appear distinct from those labeled here as puritanical (see Crone, 2022; though see sect. 6.1.1).

Why, then, do many societies develop puritanical values? Answering this question requires resolving two puzzles.

1.1. The puzzle of association

First, puritanism consists of apparently heterogenous moral concerns, governing domains as various as sex, food, clothing, self-discipline, entertainments, and ritual observance. Yet despite their heterogeneity, these moral concerns tend to co-occur and cohere in the most culturally successful moral traditions, which cover almost 80% of the world's population (Hackett & McClendon, 2017) – from Hinduism (Doniger, 2014, pp. 363–370; Hatcher, 2017; Menon, 2013; Nag, 1972, p. 236; Stephens, 1972, p. 4; Vatuk & Vatuk, 1967, pp. 108–112) to Christianity (Bremer, 2009; Burke, 1978; Dabhoiwala, 2012; Gaca, 2003; Gorski, 2003; Partridge & Moberg, 2017; Spiegel, 2020; Wagner, 1997) to Buddhism (Harvey, 2000; Keown, 2003, pp. 78, 93; Mann, 2011; Sterckx, 2005, pp. 223–224; Stunkard, LaFleur, & Wadden, 1998) to Chinese religions (Brokaw, 2014; Csikszentmihalyi, 2009; Slingerland, 2014, p. 76; Suiming, 1998; Tiwald, 2020; Yü, 2021, pp. 36–40, 82, 216) to Arab-Muslim societies (Garden, 2014, pp. 83, 89, 76; Mernissi, 2011; Michalak & Trocki, 2006; Otterbeck & Ackfeldt, 2012, pp. 231–233;

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Rehman, 2019) and ancient Greco-Roman spiritualities (Gaca, 2003; Langlands, 2006).

This association, suggested by qualitative data, is consistent with psychological evidence. Studies find that moralizations of gluttony, sexual indulgences, lack of self-control, intoxicant use, and certain types of music, are intercorrelated (Fitouchi et al., 2022; Kurzban, Dukes, & Weeden, 2010; Lynxwiler & Gay, 2000; Mooijman et al., 2018; Quintelier, Ishii, Weeden, Kurzban, & Braeckman, 2013; Steim & Nemeroff, 1995; Tierney et al., 2021). Condemnations of lack of self-control, intoxicant use, hedonism, sexual indulgences, and immodesty are all associated with religiosity (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015; Jacquet et al., 2021; Mooijman et al., 2018; Moon, Wongsomboon, & Sevi, 2021; Najjar et al., 2016; Saroglou & Craninx, 2021; Stylianou, 2004; Weeden & Kurzban, 2013), which is itself related, across countries, to the moralization of piety (Abrams, Jackson, Vonasch, & Gray, 2020; Tamir, Connaughton, & Salazar, 2020). At a deeper level, experimental evidence indicates that different puritanical norms are intuitively intertwined in people's mind. Experimental studies of "implicit puritanism" across cultures ($N > 6{,}000$) show that Indian, American, Australian, and English participants all implicitly associate violation of one puritanical norm (work-related self-discipline) with violations of another puritanical norm (sexual restraint), by misremembering individuals described as violating one norm as also violating the other (Tierney et al., 2021).

Hence the first puzzle of puritanism: Why do moralizations of bodily pleasures, self-discipline, entertainments, clothing, and piety often develop in concert?

1.2. The puzzle of morality without cooperation

The second puzzle of puritanical morality concerns its relation to cooperation. Most evolutionary theories of morality share the ultimate hypothesis that moral cognition is an adaptation to the challenges of cooperation recurrent in human social life (Alexander, 1987; André, Fitouchi, Debove, & Baumard, 2022; Baumard, André, & Sperber, 2013; Boehm, 2012; Curry, 2016; Haidt, 2012; Stanford, 2018; Tomasello, 2020). This hypothesis explains the vast majority of moral intuitions and norms found across human societies, such as condemnations of theft, murder, violence, unfairness, and the promotion of justice, loyalty, reciprocity, or respect for property and authority (Baumard, 2016; Boehm, 2012; Curry, Jones Chesters, & Van Lissa, 2019a; Hofmann, Wisneski, Brandt, & Skitka, 2014; Purzycki et al., 2018).

In this context, puritanical morality appears as an "odd corner of moral life" (Haidt & Joseph, 2004, p. 60). If moral cognition evolved for cooperation, moral condemnations should only target cheating behaviors, such as lying, theft, free-riding, betrayal of coalition partners, or suffering inflicted on innocent people. Yet the behaviors typically moralized by puritanical values are not, at first sight, clearly related to cooperation. For example, in medieval Christianity (Dabhoiwala, 2012), Neo-Confucian China (Suiming, 1998, p. 16), or Victorian England (Seidman, 1990), indulgence in sexual pleasure is condemned not only when it amounts to cheating other people in a cooperative interaction, such as in adultery,[1] but also in a range of victimless manifestations, such as in masturbation, or too frequent or licentious sex within marriage:

> A huge body of teaching grew up in support of the notion that bodily desire was inherently shameful and sinful … Even in marriage, men and women had to be constantly on their guard against sinning through immoderate, unchaste, or unprocreative sex. (Dabhoiwala, 2012, pp. 7–8)

In moral psychology, famous vignette studies have echoed this apparent harmlessness of sexual sins, finding that American and Brazilian participants condemn "purity violations," such as masturbating in a chicken carcass, even though these actions do not in themselves cause any harm to other individuals (Haidt et al., 1993; Haidt & Hersh, 2001; Horberg et al., 2009).

Similarly, puritanical values condemn immoderate indulgence in food pleasure, even when gluttony doesn't involve failing in one's duty to share food, or to respect others' property (e.g., medieval Christianity: Adamson, 2004; Hill, 2011; India: Vatuk & Vatuk, 1967; European antiquity: Coveney, 2006; Gaca, 2003). The Christian sin of gluttony, for example, condemns the failure to control the food appetite in itself – whether by eating too much, failing to wait for the proper time to eat, eating too eagerly, or craving foods that are too tasty (Adamson, 2004; Hill, 2007, 2011). Psychologists, too, observe that participants moralize inherently harmless eating practices, such as eating fatty rather than healthy foods (Fitouchi et al., 2022; Mooijman et al., 2018; Oakes & Slotterback, 2004; Steim & Nemeroff, 1995).

Besides food and sex, puritanical values prescribe industrious self-discipline even when idleness would be harmless and effort unproductive (Indian, American, Australian, and English participants: Tierney et al., 2021; Uhlmann, Poehlman, Tannenbaum, & Bargh, 2011; American, French, and South-Korean participants: Celniker et al., 2023; early modern China: Yü, 2021). They condemn alcohol, drugs, and gambling, when the latter are widely considered "victimless crimes" (Boyd & Richerson, 2001; Ellis, 1988; Stylianou, 2010). And their strict regulations of mundane activities, such as music, dance, or clothing appear, to our modern eyes, as needlessly austere restrictions (see Moon et al., 2021).

Hence the second puzzle of puritanism: If the function of morality is cooperation – as the prominence of cooperative norms in the human moral landscape suggests (Curry, Mullins, & Whitehouse, 2019b; Hofmann et al., 2014; Purzycki et al., 2018) – why do humans moralize victimless lifestyle choices with respect to sex, food, drinking, clothing, self-discipline, and ritual observance?

This apparent disconnect between puritanical morality and cooperation has sparked intense debates about the cognitive architecture of morality, opposing unitary models of moral cognition to theories dividing morality into distinct cognitive domains (Beal, 2020; Graham et al., 2013; Schein & Gray, 2018). Unitary theories argue that all moral judgments are produced by a single, functionally unified cognitive mechanism. In particular, the theory of dyadic morality maintains that all moral judgments stem from perceptions of dyadic harm – that is, from perceptions that an "agent" intentionally causes suffering to a "patient" (Gray, Waytz, & Young, 2012, 2014; Schein & Gray, 2015, 2018). Other unitary theories argue that all moral judgments are outputs of fairness computations, tracking violations of mutual benefit between cooperative partners (André et al., 2022; Baumard, 2016; Fitouchi, André, & Baumard, in press).[2] By contrast, theories based on distinct cognitive domains – such as moral foundations theory – maintain that moral cognition is composed of multiple, functionally distinct, domain-specific mechanisms, some of which track stimuli unrelated to harm or fairness (Graham et al., 2013). In these debates, purity moralizations have appeared as critical arguments against unitary theories. If harmless behaviors can be morally condemned, scholars have

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argued, there must be in the mind some mechanisms that generate moral judgments despite not functioning for cooperation (Haidt, 2012). Accordingly, puritanical morality has so far been explained by psychological mechanisms unrelated to cooperation, such as pathogen avoidance and conflicts of reproductive interests (sect. 2).

1.3. The moral disciplining theory of puritanism

Here, we propose that puritanical morality does target cooperation, and is reducible to concerns for harm or fairness. Psychologists and evolutionary scientists have long noted that reciprocal and reputation-based cooperation require self-control – the ability to delay gratification, by resisting temptations of immediate rewards (Ainslie, 2013; Axelrod, 1984; Hofmann, Meindl, Mooijman, & Graham, 2018; Manrique et al., 2021; Stevens, Cushman, & Hauser, 2005). Historians and social scientists, meanwhile, have repeatedly stressed that puritanical groups seem obsessed with the cultivation of self-control (Csikszentmihalyi, 2009; Dabhoiwala, 2012; Eisner, 2014; Gaca, 2003; Gorski, 2003; Luttmer, 2000; Menon, 2013; Oestreich, Oestreich, & Koenigsberger, 1982; Rehman, 2019; Seidman, 1990; Spiegel, 2020; Walzer, 1963, 1982; Weber, 1968; Yü, 2021). Connecting these insights, we propose that puritanism develops from folk-psychological beliefs that restraining indulgence in victimless pleasures would improve people's self-control, thus facilitating cooperative behaviors.

Our argument goes as follows. People perceive that meeting prosocial obligations often requires self-control (sect. 3.1). Refraining from violent behaviors, they perceive, sometimes requires resisting aggressive impulses. Abstaining from adultery sometimes requires resisting sexual temptations. In collective work, doing one's fair share of effort can require overcoming lazy desires. Meanwhile, people perceive, not only that cooperation requires self-control, but also that some behaviors *alter* self-control (sect. 3.2). They perceive that alcohol and drugs make people impulsive, precipitating antisocial behaviors – such as adultery, violence, or lazy free-riding – by impeding abilities to resist impulses. They see carnal pleasures – lust, gluttony, intoxicants, gambling – as dangerously addictive behaviors, overindulgence in which would make people slave to their urges, and unable to resist uncooperative temptations. By contrast, daily self-discipline, ascetic temperance, and regular ritual observance are perceived as improving people's self-control, thus ensuring that they remain peaceful neighbors, faithful husbands and wives, industrious workers, responsible family members, or conscientious followers. Thus, although inherently harmless, hedonistic behaviors are perceived as *indirectly* socially harmful. As such, they are naturally tagged as morally wrong by cognitive systems biologically evolved to detect and condemn uncooperative behaviors or threats to cooperation (sect. 3.3). Puritanical moral judgments are thus generated by the same, cooperation-based cognitive systems producing the rest of human morality.

These intuitive psychological processes, in turn, shape the cultural evolution of puritanical norms (sect. 3.4). In environments where many people want to prevent perceived antisocial effects of hedonistic impulses, people gradually invent and refine cultural technologies they perceive as efficient for *disciplining* other individuals to ensure social order. These technologies of moral self-discipline include ascetic rituals, modest clothes, legal regulations of entertainment such as drinking and feasting, as well as mental techniques for the self-monitoring of impulses (see sect. 6.1.2). Our account, importantly, is agnostic as to whether puritanical norms are objectively effective in improving self-control and cooperation – it rather insists on people's *perceptions* that they are.

In the following, we first review and examine existing accounts of puritanical morality (sect. 2). Section 3 lays out the evolutionary and psychological foundations of the moral disciplining theory (MDT) of puritanism, and reviews evidence for its assumptions. We then derive predictions from this account, review current evidence supporting them, and outline avenues for further testing (sect. 4). We finally use this theory to explain the fall of puritanism in western, educated, industrialized, rich, and democratic (WEIRD) societies (sect. 5), and discuss extensions and outstanding questions for the study of puritanical values (sect. 6).

2. Existing accounts of puritanical morality

2.1. Moral foundations theory and disgust-based accounts

Moral foundations theory considers puritanical morality as an exception to the cooperative function of moral cognition (Graham et al., 2013; Haidt, 2012; Haidt & Joseph, 2007). According to this framework, moral cognition is composed of several domain-specific cognitive systems, most which have evolved for cooperative adaptive challenges – including harm/care, fairness/reciprocity, loyalty/betrayal, and authority/respect. The last moral system, purity/sanctity, is instead proposed to function for the nonsocial challenge of pathogen avoidance, and to emerge from disgust at the proximate level (Haidt & Joseph, 2007). People driven by carnal impulses rather than spiritual motivations would be detected by this disgust-related system as "impure" and "less than human," and thus morally condemned (Haidt & Graham, 2007, p. 9). Although this theory is consistent with the frequent cultural depiction of pleasure-seeking behaviors as "impure," it seems insufficient to explain puritanical morality, for at least two reasons.

First, it is unclear that violations of puritanical standards actually trigger disgust. Initial support for this hypothesis came from "purity violation" studies, in which participants find apparently harmless behaviors (e.g., masturbating in a chicken carcass) both disgusting and morally wrong (e.g., Haidt et al., 1993; Haidt & Hersh, 2001; Horberg et al., 2009; Rozin, Lowery, Imada, & Haidt, 1999). However, containing more pathogen cues than the typical targets of puritanical moralizations, such vignettes appear disconnected from real-world puritanical concerns. As such, they are likely to overestimate the extent to which real-world violations of puritanical standards evoke disgust. For example, in widely cited studies, sexual lust takes the form of masturbating in a *dead chicken* (Haidt et al., 1993; Horberg et al., 2009) or *corpse*-sexing (Haidt & Hersh, 2001). Gluttony becomes eating one's *dead dog* (Haidt et al., 1993), or *rotten* meat (Rozin et al., 1999). By contrast, historical and anthropological data make clear that puritanical societies are less morally obsessed by disgusting sexualities with dead animals than with the sin of lust as the *unbridled craving for sexual pleasure* (Dabhoiwala, 2012; Gaca, 2003; Le Goff, 1984; Mernissi, 2011; Seidman, 1990). For example, medieval Christian moralists (e.g., Augustine, fourth to fifth centuries, Aquinas, thirteenth century) regarded the peculiar problem of the sin of lust to be "the intensity of the pleasure it offers" (Sweeney, 2012, p. 96), and its resulting "unparalleled power to overwhelm reason and human will" (Dabhoiwala, 2012, p. 8). In the same vein, the sin of gluttony condemns the immoderate indulgence in the *pleasure* of eating

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(Adamson, 2004; Bynum, 2000; Hill, 2007, 2011), not the eating of rotten aliments or animal corpses. In fact, pleasurable aliments (affording gluttony) are almost by definition aliments that are not disgusting. In line with these ideas, when participants are asked to themselves generate sinful or lustful scenarios, they overwhelmingly mention pathogen-free behaviors (e.g., stripping) (Gray & Keeney, 2015).

Aside from lust and gluttony, moralizations of intemperance, lack of self-discipline, and impiety also seem unrelated to disgust. These behaviors do not involve pathogen cues at all. Accordingly, maintaining that disgust explains their condemnation has required to argue that this emotion is triggered not only by pathogen cues, but also by "spiritually" impure behaviors, that "degrade" the elevated nature of the human soul or remind humans of their "animal nature" (Haidt & Graham, 2007; Rozin et al., 1999, 2008; Rozin & Haidt, 2013) – an often contested theory (Bloom, 2013; Royzman & Sabini, 2001; Tybur, Lieberman, Kurzban, & DeScioli, 2013). As many researchers have noted, self-reports of being "disgusted" by "spiritual impurities" (Ritter, Preston, Salomon, & Relihan-Johnson, 2016) do not reliably demonstrate that the cognitive system of disgust is actually activated. The lay meaning of the term "disgust" is difficult to disentangle from "anger" or "contempt" (Herz & Hinds, 2013; Nabi, 2002; Piazza, Landy, Chakroff, Young, & Wasserman, 2018), and people likely use the term metaphorically to communicate their disapproval (Armstrong, Wilbanks, Leong, & Hsu, 2020; Bloom, 2004; Nabi, 2002; Royzman & Kurzban, 2011; Royzman & Sabini, 2001). In line with this idea, pathogen-free violations of "spiritual purity" are not associated with the facial expression of disgust (Franchin, Geipel, Hadjichristidis, & Surian, 2019; Ritter et al., 2016); do not elicit a disgust-related phenomenology (nausea, gagging, loss of appetite), nor action tendency (desire to move away) (Royzman, Atanasov, Landy, Parks, & Gepty, 2014); and are not or negligibly associated with reporting being "grossed-out" (Kollareth et al., 2022; Kollareth & Russell, 2019) – the lay term more aptly capturing the cognitively strict sense of disgust (Herz & Hinds, 2013; Nabi, 2002).

Second, disgust-based accounts of puritanism rely on the premise that simply perceiving an action as disgusting is sufficient to judge it immoral. As researchers have noted, however, many behaviors are disgusting without being immoral (Kayyal, Pochedly, McCarthy, & Russell, 2015; Piazza et al., 2018; Pizarro, Inbar, & Helion, 2011; Schein et al., 2016). It seems, moreover, evolutionarily unclear why disgust should have acquired such a secondary moralizing function (Fitouchi et al., in press), and the experimental evidence seems overall to cast doubt on this possibility (see Piazza et al. [2018], for an extensive review). In particular, a meta-analysis (Landy & Goodwin, 2015), highly powered replications (Ghelfi et al., 2020; Johnson et al., 2016), and recent studies (Jylkkä, Härkönen, & Hyönä, 2021) strongly suggest that feelings of disgust do not increase moral condemnation, nor cause moralization of otherwise morally neutral actions. Relatedly, correlations between disgust-sensitivity and condemnations of sex- and purity-related behaviors (Crawford, Inbar, & Maloney, 2014; Horberg et al., 2009; Inbar, Pizarro, Knobe, & Bloom, 2009) have been found to disappear when perceptions of harm are controlled for (Schein et al., 2016; see also Gray & Schein, 2016; Gray, Schein, & Ward, 2014), and to partly result from the more general effect of affective states (not only disgust) on a wide range of (not only moral) judgments (Cheng, Ottati, & Price, 2013; Landy & Piazza, 2017).

2.2. Self-serving norms and conflicts of sexual strategies

An important framework posits that moral cognition evolved not to promote cooperation, but to advance the condemner's self-interest, by recruiting allies to condemn enemies, coordinating side-taking in conflicts, and promoting moral norms advantageous to oneself (DeScioli, 2016; DeScioli & Kurzban, 2009, 2013; DeScioli, Massenkoff, Shaw, Petersen, & Kurzban, 2014; Petersen, 2018; Sznycer et al., 2017; Tooby & Cosmides, 2010). Within this framework, researchers argue that some puritanical norms emerge from self-serving attempts by some individuals to promote their reproductive interests at the expense of others' (Kurzban et al., 2010; Weeden & Kurzban, 2016; Weeden, Cohen, & Kenrick, 2008). The reproductive religiosity model argues that a high level of promiscuity in the environment threatens monogamous individuals' ability to reap the benefits of their committed, parentally investing reproductive strategy, by increasing the risk of cuckoldry or mate-poaching (Weeden & Kurzban, 2016). Monogamous individuals, thus, have an interest in normatively curbing sexual promiscuity. Researchers also argue that males' attempts to control female sexuality explain values of female chastity and modesty, and restrictions aimed at increasing paternity certainty, such as veiling, virginity tests, female claustration, and menstrual taboos (Becker, 2019; Blake, Fourati, & Brooks, 2018; Dickemann, 1981; Pazhoohi, Lang, Xygalatas, & Grammer, 2017a; Strassmann, 1992; Strassmann et al., 2012).

These accounts are not incompatible with our proposal. Mate-guarding surely underlies many sexual restrictions (Strassmann et al., 2012) and is consistent with the frequent double standard favoring men in the moralization of sexuality (Broude & Greene, 1976; Dabhoiwala, 2012). Consistent with the reproductive religiosity model, monogamous individuals more harshly oppose sexual promiscuity (Weeden & Kurzban, 2016) and its facilitators (e.g., drugs; Kurzban et al., 2010; Quintelier et al., 2013), and seem to use religion to facilitate and encourage monogamous pair-bonding (Baumard & Chevallier, 2015; Jacquet et al., 2021; Moon, 2021; Moon, Krems, Cohen, & Kenrick, 2019; Weeden et al., 2008; Weeden & Kurzban, 2013).

However, these accounts fail to sufficiently explain the more general condemnation of hedonic excesses beyond sexuality, such as gluttony (Hill, 2011; Steim & Nemeroff, 1995), drinking, harmless idleness (Tierney et al., 2021), or general lack of self-discipline (Mooijman et al., 2018) – sexual lust is only one of the many pleasure-seeking tendencies that puritanical morality condemns. They also do not account for the condemnation of bodily pleasures as intrinsically sinful, even when they are truly harmless to males or monogamous strategists, such as in frequent sexuality between *monogamous*, married partners (e.g., Dabhoiwala, 2012, pp. 7–9; Seidman, 1990; Suiming, 1998, p. 16), or in solitary masturbation (Seidman, 1990). Besides, puritanical societies moralize not only female lust but male sexual desires as well – an observation inconsistent with the mate-guarding hypothesis (Muslim Zanzibar: Beckmann, 2010; medieval and early modern Europe: Dabhoiwala, 2012, p. 8; McIntosh, 2002, pp. 73–74; Victorian England: Seidman, 1990).

Although manipulative use of moral discourse is surely used to justify oppressive norms (Strassmann et al., 2012), and advance condemners' self-interests (DeScioli et al., 2014; Sznycer et al., 2017), we propose, in the following, that people genuinely perceive puritanical norms as mutually beneficial in the social contexts in which they prevail.

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3. The moral disciplining theory of puritanism

We propose that hedonistic behaviors, although inherently victimless, are condemned because they are perceived as indirectly favoring uncooperative behaviors (e.g., aggression, infidelity, free-riding), by altering people's self-control. This hypothesis assumes that people perceive cooperation as requiring self-control (sect. 3.1); that people perceive hedonistic behaviors, such as intoxicant use, bodily pleasures, and undisciplined lifestyles, as reducing people's self-control (sect. 3.2); and that moral cognition is triggered not only by intrinsic instances of cheating, but also by behaviors perceived to indirectly and probabilistically favor socially harmful outcomes (sect. 3.3).

3.1. People perceive that cooperation requires self-control

Before reviewing evidence that people perceive self-control as necessary for cooperative behavior (sect. 3.1.3), we argue that this intuition is somewhat justified: Central forms of human cooperation – reciprocal and reputation-based cooperation – objectively require delaying gratification (sects. 3.1.1 and 3.1.2). This objective relationship between cooperation and self-control allows explaining why people perceive that cooperation requires self-control in the first place.

3.1.1. Reciprocal and reputation-based cooperation require delaying gratification

Cooperation refers to any behavior that benefits another individual (the recipient), and the evolutionary function of which is, at least in part, to benefit the recipient (West, Griffin, & Gardner, 2007, 2011). Some types of cooperation provide immediate inclusive fitness benefits to the actor. This is the case of kin altruism, whereby the actor automatically increases his indirect fitness (Hamiltron, 1964). This is also the case of by-product mutualisms (West, El Mouden, & Gardner, 2011), or cooperation for "shared interests" (West, Cooper, Ghoul, & Griffin, 2021), whereby the actor benefits the recipient as a by-product of pursing his own immediate self-interest (e.g., cooperative hunting in social carnivores; Leimar & Connor, 2003; Leimar & Hammerstein, 2010).

When the actor's and the recipient's immediate interests are not fully aligned, however, cooperation requires the actor to invest an immediate cost (to benefit the recipient), that is rewarded only in the future, by greater benefit-provision (or reduced cost-infliction) from the recipient or third parties – such as through direct reciprocity (Axelrod, 1984; Trivers, 1971), indirect reciprocity (Nowak & Sigmund, 2005; Panchanathan & Boyd, 2004), or partner choice (Barclay, 2013; Roberts, 2020). In the iterated Prisoner's Dilemma, for example, reciprocal cooperation yields higher payoff than defection only *in the long run*, by securing partners' willingness to reciprocate in subsequent rounds – in the immediate present of each round, cheating pays more than cooperating (Axelrod, 1984; Axelrod & Hamilton, 1981). Using evolutionary simulations, Roberts (2020) shows that the same holds for cooperation under reputation-based partner choice: Cooperation is adaptive when the cost of renouncing the immediate benefit of cheating is exceeded, *in the long run*, by the increased probability of being chosen as a partner in subsequent interactions. In other words, because people selectively associate with trustworthy partners, a good reputation can be understood as a capital that yields future benefits at each time step of the rest of an individual's life. Damaging this capital by exploiting others brings immediate benefits (e.g., more resources, sexual opportunities, less effort), yet deprives oneself of all the benefits that a good reputation could have brought *at each later time-point*, by attracting others' cooperative investments (Lie-Panis & André, 2022).

Accordingly, scholars have widely noted that reciprocal and reputation-based cooperation require delaying gratification: Individuals must renounce the immediate, smaller reward of cheating to secure the future, larger benefits of cooperating (Axelrod, 2006; Frank, 1988; Manrique et al., 2021; Roberts, 2020; Stevens et al., 2005). Lie-Panis and André (2022) develop a formal understanding of this idea. In their model, individuals are characterized by a discount rate, and engage in numerous trust games during their lifetime, with a certain probability of being observed by others, who transmit reputational information impacting future partner choice. At equilibrium in their model, individuals who cooperate are those who are sufficiently future-oriented, that is, who discount the future benefit of having a good reputation in the rest of their life little enough for this benefit to outweigh the immediate cost of cooperation.

3.1.2. Cooperation and self-control at the proximate level

In line with the fact that reciprocal and reputation-based cooperation ultimately require delaying gratification, psychologists have long noted that self-control – the ability to resist temptations of immediate rewards – is likely involved in cooperative decision making (Ainslie, 2013; Hofmann et al., 2018; Manrique et al., 2021; Stevens et al., 2005). For example, when faced with an attractive mating opportunity, avoiding cheating one's partner requires resisting temptations of immediate sexual pleasure (see Gailliot & Baumeister, 2007). By renouncing this immediate reward, one secures the long-term benefit of preserving one's pair-bonding relationship – a particular type of cooperative interaction (Gurven, Winking, Kaplan, von Rueden, & McAllister, 2009) – as well as one's reputation as a trustworthy partner. Meeting obligations to share resources with others, similarly, requires resisting the immediate reward of consuming these resources for oneself (Hofmann et al., 2018; Sebastián-Enesco & Warneken, 2015). By resisting this temptation, one secures the larger, future benefits of ensuring reciprocal help, as well as a good reputation. Similarly, avoiding interpersonal conflicts sometimes requires overriding aggressive impulses (see Barton-Crosby & Hirtenlehner, 2021); and doing one's part in collaborative work requires renouncing immediate leisure or procrastination. We call (1) "temptations to cheat" these impulses for immediate rewards (e.g., food, sex, rest) that conflict with prosocial obligations, and (2) "moral self-control" the resistance to these temptations to cheat (following Hofmann et al., 2018).

Converging lines of evidence demonstrate this importance of self-control for a wide range of cooperative behaviors. Performance on a delay-of-gratification task predicts children's propensity to share resources with others, after controlling for age (Sebastián-Enesco & Warneken, 2015). Focusing on the future rather than immediate consequences of their behaviors makes participants more likely to share with others (Sjåstad, 2019), and less likely to behave unethically (Hershfield, Cohen, & Thompson, 2012; van Gelder, Hershfield, & Nordgren, 2013; Vonasch & Sjåstad, 2021). Consistent with a trade-off between the immediate benefit of cheating and its future reputational cost, these associations between cooperation and future-orientation are mediated by reputational concern (Sjåstad, 2019; Vonasch & Sjåstad, 2021). Disrupting participants' right lateral prefrontal cortex – implied in the self-control of impulses for

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instant rewards (Kober et al., 2010) – makes participants more likely to cheat in cooperative interactions (Knoch & Fehr, 2007; Knoch, Schneider, Schunk, Hohmann, & Fehr, 2009; Ruff, Ugazio, & Fehr, 2013; Soutschek, Sauter, & Schubert, 2015; Strang et al., 2015). Following 1,000 children from birth to age 32, Moffitt et al. (2011) show that children with poor self-control are more likely to be convicted of a criminal offense as adults, after controlling for social class origins and IQ. Meta-analytic evidence confirms that low self-control is associated with criminal behaviors (Vazsonyi, Mikuška, & Kelley, 2017), lower propensity to forgive others and refrain from retaliation (Burnette et al., 2014; Liu & Li, 2020), and poorer interpersonal functioning (e.g., loyalty) (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). Low self-control predicts greater propensity to deceive others to obtain more benefits (Fan, Ren, Zhang, Xiao, & Zhong, 2020), lower likelihood to keep promises in relationships (Peetz & Kammrath, 2011), as well as uncooperative behaviors in the workplace (e.g., low accommodation of coworkers' needs) (Cohen, Panter, Turan, Morse, & Kim, 2014; Restubog, Garcia, Wang, & Cheng, 2010). Regarding sexual cheating, low conscientiousness – a construct related to self-control (Duckworth & Seligman, 2017) – predicts greater likelihood of infidelity in men and women across 52 countries of 10 world regions (Schmitt, 2004; see also Pronk, Karremans, & Wigboldus, 2011). And studies suggest that intensity of sexual desire, as well as tendencies to notice attractive alternative partners, predict greater infidelity among people with low, but not high dispositional self-control (Brady, Baker, & Miller, 2020; McIntyre, Barlow, & Hayward, 2015).

Despite this wealth of evidence, the self-control requirement of cooperation has been questioned by results from economic games, where meta-analytic evidence finds no association between self-control and cooperation (Thielmann, Spadaro, & Balliet, 2020). Studies also found that American participants cooperate more when forced to decide quickly than when forced to delay their decision – suggesting that cooperation in economic games, rather than requiring self-control, may be spontaneous and effortless (Rand, 2016, 2017; Rand, Greene, & Nowak, 2012). However, this "intuitive cooperation" effect failed to replicate in several, highly powered replications (Bouwmeester et al., 2017; Camerer et al., 2018; Fromell, Nosenzo, & Owens, 2020; Isler, Yilmaz, & John Maule, 2021). Recent evidence indicates that, although cooperating in economic games may be prosocial individuals' spontaneous impulse, the reverse is true for more selfish individuals, in which deliberation *increases* cooperation – consistent with a role of self-control (Alós-Ferrer & Garagnani, 2020; Andrighetto, Capraro, Guido, & Szekely, 2020; Nockur & Pfattheicher, 2021; Yamagishi et al., 2017). As Thielmann et al. (2020) note, this moderation by prosocial disposition may have obscured the relationship between self-control and cooperation in their meta-analysis of economic games (pp. 62–63). Field experiments also suggest that economic games underestimate the involvement of self-control in real-life cooperative decisions. Studying Brazilian fishermen living from their catch from a common lake, Fehr and Leibbrandt (2011) found that, while impulsivity was not associated with lower cooperation in an economic game, it did predict likelihood to free-ride on the common-pool resource in real life.

3.1.3. People perceive that cooperation requires self-control

Our account of puritanism assumes that people intuitively perceive this self-control requirement of cooperation – a premise that is well supported. Lie-Panis and André (2022) show that, because ability to delay gratification enables higher levels of cooperation, it can evolve into a credible signal of trustworthiness. Psychological evidence confirms that, in interaction with strangers as well as in established relationships, people infer others' self-control from their behavior, and expect individuals they perceive as more self-controlled to behave more cooperatively (Buyukcan-Tetik & Pronk, 2021; Buyukcan-Tetik, Finkenauer, Siersema, Vander Heyden, & Krabbendam, 2015; Gai & Bhattacharjee, 2022; Gomillion, Lamarche, Murray, & Harris, 2014; Koval, VanDellen, Fitzsimons, & Ranby, 2015; Peetz & Kammrath, 2013; Righetti & Finkenauer, 2011). People's intuitions about a good moral character include traits arguably related to self-control, such as being principled or responsible (Goodwin, 2015; Goodwin, Piazza, & Rozin, 2013). And many societies consider self-control, self-discipline, or self-restraint, as key virtues inherent to a good moral character (e.g., Lybian Bedouins: Abu-Lughod, 2016, pp. 90–93; Buddhism: Clark, 1932, pp. 86–88; Goodman, 2017; Confucianism: Csikszentmihalyi, 2020; Tiwald, 2020; Sunni Islam: el-Aswad, 2014; Wolof: Irvine, 1974, pp. 126–127; Zanzibar: Beckmann, 2010, p. 620; Christianity: Spiegel, 2020).

3.2. People perceive that some behaviors alter self-control

People, thus, intuit that cooperation requires self-control. We argue that puritanical moral judgments emerge from the interaction of this intuition with folk-psychological beliefs that some behaviors *alter* self-control. These behaviors include consuming intoxicants (e.g., alcohol, drugs), exposing oneself to tempting environments (e.g., immodest clothes, unruly music and dances), overindulging in potentially addictive pleasures (e.g., food, sex, intoxicants), or pursuing undisciplined lifestyles (e.g., intemperance, idleness, lack of ritual observance). The moral disciplining theory posits that these behaviors are moralized when perceived as undermining people's ability to control their impulses, to the point of endangering compliance with their cooperative obligations. This section characterizes the folk-psychological beliefs which, we propose, underlie puritanical moral judgments.

3.2.1. Lay theories of modifiers of state-self-control

Some behaviors of the puritanical constellation, we argue, are perceived as altering self-control as a state – that is, the ability to resist temptation in a given moment. We call them "modifiers of state-self-control."

Intoxicants. A first perceived modifier of state-self-control is intoxicant use. Psychological evidence shows that people widely believe alcohol to cause loss of self-control (Brett, Leavens, Miller, Lombardi, & Leffingwell, 2016; Critchlow, 1986; Leigh, 1987). Studies similarly suggest that people perceive drug use as enhancing short-term sexual impulses (Quintelier et al., 2013). These lay theories likely stem from observation of intoxicants' objective psychological effects. Alcohol actually impairs the inhibition of impulses (Heatherton & Wagner, 2011), narrows attention to cues of immediate rewards – an effect known as "alcohol myopia" (Giancola, Josephs, Parrott, & Duke, 2010) – , and fuels a range of impulsive behaviors (e.g., reactive aggression: Duke, Smith, Oberleitner, Westphal, & McKee, 2018; Gan, Sterzer, Marxen, Zimmermann, & Smolka, 2015; Parrott & Eckhardt, 2018; sexual impulsivity: Rehm, Shield, Joharchi, & Shuper, 2012; economic impulsivity: Schilbach, 2019). Consumption of drugs is similarly associated with impulsivity (Duke et al., 2018; Nemoto, Iwamoto, Morris, Yokota, & Wada, 2007; Weafer, Mitchell, & de Wit, 2014).

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The moral disciplining theory thus posits that intoxicants are moralized because they are perceived as favoring uncooperative behaviors, such as aggression, infidelity, and general negligence of obligations, by leading people to lose control over immediate impulses, and fueling disregard of future consequences. This hypothesis contrasts with existing accounts, which ignore cooperative concerns in the moralization of intoxicants, by arguing that their moralization stems from disgust-based concerns for the "purity of the soul" (Clifford et al., 2015; Henderson & Dressler, 2019; Horberg et al., 2009; Silver, 2020), or from exclusively selfish attempts of monogamous strategists to limit sexual promiscuity specifically (Kurzban et al., 2010).

Immodesty as cue exposure. Beside intoxicants, people perceive that self-control is also threatened by exposure to stimuli triggering short-term-oriented impulses – an effect called cue exposure (Heatherton & Wagner, 2011). Animal brains evolved reward systems tracking stimuli contributing to reproductive success (e.g., food items, sexual opportunities). Environmental cues predicting such items' availability in the immediate environment (e.g., sexual cues, appetizing smell) are thus rapidly learned and imbued with "wanting" properties (Duckworth, Gendler, & Gross, 2016a; Hyman, 2007; Kringelbach & Berridge, 2009). Exposure to these cues thus generates strong urges to consume the reward in the here and now, pushing individuals toward immediate gratification at the expense of long-term goals (Boswell & Kober, 2016; Demos, Heatherton, & Kelley, 2012; Fujita, 2011; Heatherton & Wagner, 2011).

People have a folk-understanding of cue exposure. Early in development, children understand that distracting their attention away from tempting cues (e.g., the marshmallow in front of them) allows them to delay gratification more easily (Carlson & Beck, 2001; Mischel & Mischel, 1983; Peake, Hebl, & Mischel, 2002). Also witnessing this folk-understanding, people develop "situational" strategies for self-control, rearranging their environment upstream (e.g., by not storing tempting snacks at home) to prevent short-term impulses to be triggered by cue exposure (Duckworth et al., 2016a; Duckworth, White, Matteucci, Shearer, & Gross, 2016b; Milyavskaya, Saunders, & Inzlicht, 2021). This folk-understanding, we argue, has moral consequences when cue exposure is perceived as endangering, not *personal* self-control (e.g., resisting sugar to preserve health), but *moral* self-control (resisting impulses to refrain from cheating).

This allows explaining another part of the puritanical constellation – the condemnation of immodesty. Behaviors condemned as immodest by puritanical standards typically involve emission of stimuli likely perceived as triggering impulses, thus favoring harmful self-control failures. Immodest clothing reveals cues of female fertility or sexual interest, such as body curves, skin, hair, or eyes (Pazhoohi, 2016; Pazhoohi & Hosseinchari, 2014). Exposure to these cues is known to alter males' state-self-control, by triggering their reward systems and sexual appetite (Platek & Singh, 2010; Spicer & Platek, 2010; Symons, 1995), and increasing their preference for immediate over delayed rewards (Kim & Zauberman, 2013; Wilson & Daly, 2004). Studies also suggest that exposure to sexual cues increases males' propensity to engage in manipulative and coercive behaviors to obtain sexual gratification – and thus to facilitate, not only self-control failures in general, but also *moral* self-control failures (Ariely & Loewenstein, 2006).

Prescriptions of modesty, we thus argue, are another strategy – besides prohibition of intoxicants – for preventing self-control failures with socially harmful effects. Immodest clothing and behaviors are moralized because, by increasing cue exposure, they are seen as increasing the probability that people – especially males – lose control over impulses, thereby favoring antisocial behaviors such as sexual aggression, conflicts, adultery, or premarital sex.[3] Just as people remove tempting snacks from their environment when feeling unable to resist them, societies can deem mutually beneficial, when fearing the fragility of their members' self-control (see sect. 5), to remove tempting stimuli from their environment to prevent uncooperative behaviors.

This hypothesis contrasts with existing accounts of modesty norms, which mainly regard them as selfish attempts of males to guard their mates (Dickemann, 1981; Pazhoohi et al., 2017a). Although males' mate-guarding interests likely contribute to these norms' attractiveness, we propose that moralization of modesty also emerge from more widely shared concern for the general social harm (e.g., conflicts, aggressions, infidelity) that may result from failures to control sexual impulses.

3.2.2. Lay theories of modifiers of trait-self-control

Other behaviors of the puritanical constellation, we argue, are perceived as altering self-control as a trait – that is, as the stable psychological disposition to resist temptations across situations. We term them "modifiers of trait-self-control."

Immoderate indulgence in bodily pleasures. Moralizations of victimless bodily pleasures, we argue, stem from perceptions that excessively or too frequently indulging in bodily pleasures would decrease trait-self-control. Such beliefs may be grounded in experience: The bodily pleasures typically condemned by puritanical standards generate common addictions, such as food addictions (Volkow, Wang, & Baler, 2011, 2017), sexual addictions (Farré et al., 2015; Karila et al., 2014), alcohol addictions (Vengeliene, Bilbao, Molander, & Spanagel, 2008), drug addictions (Baler & Volkow, 2007), or gambling disorders (Farré et al., 2015) – addiction being widely viewed as a disruption of self-control (Baler & Volkow, 2007; see also Vonasch, Clark, Lau, Vohs, & Baumeister, 2017). Researchers have long noted the potent reinforcement learning associated with consumption of bodily pleasures or intoxicants. Past experience with such a reward (e.g., energy-rich food) increases the motivational drive ("wanting") elicited by future exposure to it, making harder the future self-control of the associated impulse (e.g., food craving; Baler & Volkow, 2007; Story, Vlaev, Seymour, Darzi, & Dolan, 2014; Volkow, Wise, & Baler, 2017).

Accordingly, a widespread belief seems to be that the more one indulges in bodily pleasures, the more their temptations become hard to resist. A significant share of people believes that pornography (Grubbs, Grant, & Engelman, 2018a; Grubbs, Kraus, & Perry, 2019), fatty and sugary foods (Ruddock & Hardman, 2017), and intoxicants (Edelstein et al., 2020; El Khoury, Noufi, Ahmad, Akl, & El Hayek, 2019) can be addictive – and people likely associate addiction with loss of self-control (see Vonasch et al., 2017). In vignette studies, we found that participants judged individuals increasing their indulgence in bodily pleasures over several months (e.g., pornography, alcohol, fatty and sugary foods) as altering their trait-self-control as a result of this lifestyle change (Fitouchi et al., 2022). Surveying religious attitudes toward pleasure, Glucklich (2020, pp. 13–27) concludes that the addictive character of food, sex, alcohol, or gambling, is a major concern across world religions. Reviewing attitudes toward sex in European history, Dabhoiwala (2012) highlights that "It was a Christian commonplace that anyone who succumbed to this impure appetite [lust], even just once, risked developing a fatal addiction to it" (p. 33). In Hinduism, similarly, "Ancient Indian texts often call the four major addictions that kings were

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vulnerable to 'the vices of lust,' sometimes naming them after the activities themselves – gambling, drinking, fornicating, hunting" (Doniger, 2014, p. 365). Table 1 summarizes selected cases of such folk-psychological beliefs in various cultural contexts.

If people perceive that cooperation requires self-control (sect. 3.1.3), and that overindulgence in bodily pleasures reduces self-control, they may moralize bodily pleasures as indirectly facilitating uncooperative behaviors. For example, if indulgence in sexual pleasure *in victimless situations* (e.g., masturbation, frequent sex within marriage), is perceived as making people addict to sex, it becomes responsible for impeding the control of sexual urges in *cooperative situations* as well, where these impulses *are* socially harmful (e.g., when resisting them is necessary to avoid adultery). If victimless gluttony is perceived as making people addict to food, it becomes responsible for fueling uncontrollable urges which, in other situations, will prove socially harmful (e.g., when resisting food cravings is necessary to respect others' property). Repeated indulgence in bodily pleasures may be perceived, more generally, as decreasing self-control across domains, thus decreasing people's cooperativeness in general. This would be consistent with the lay theory we discuss next: That repeatedly practicing self-control would train self-control.

Self-control training, daily self-discipline, and ritual observance. Another recurrent lay theory seems to be that self-control can be trained by repeated practice – although the objective efficacy of such training is scientifically debated (Berkman, 2016; Friese, Frankenbach, Job, & Loschelder, 2017; Miles et al., 2016). Field experiments on parents suggest a widespread belief that children's self-control can be improved, associated with self-control-training practices, such as giving children unhealthy snacks less often, or bringing them less frequently to fast-food restaurants (Mukhopadhyay & Yeung, 2010). In vignette studies, participants judged that sustained self-discipline over several months (e.g., exercising regularly, reducing indulgence in bodily pleasures) would likely improve a target's trait-self-control (Fitouchi et al., 2022). This is consistent with cross-culturally recurrent beliefs that investment in ascetic practices or effortful activities allow to "build character" and improve people's self-control (see Table 1).

If people perceive both that cooperation requires self-control (Righetti & Finkenauer, 2011), and that regular self-discipline trains self-control, they may moralize effortful activities (e.g., waking up early, spiritual disciplines, needless hard work), as means to "build character" – that is, to improve the self-control required to honor prosocial obligations. This helps explaining another component of the puritanical constellation: The moralization of constant self-discipline, needless hard work, and unproductive effort, even when the latter are devoid of direct benefits to other people (Celniker et al., 2023; Tierney et al., 2021).

This also allows explaining the moralization of pious ritual observance. Indeed, psychologists have extensively argued that rituals of world religions, such as fasting, meditation, regular prayer, or effortful pilgrimages, appear specifically geared toward training self-control (Geyer & Baumeister, 2005; Koole, Meijer, & Remmers, 2017; McCullough & Carter, 2013; McCullough & Willoughby, 2009; Tian et al., 2018; Wood, 2017). These rituals require sustained restrictions of bodily desires (e.g., fasting), commitment to regular practice (e.g., praying five times a day, at fixed hours), cognitive effort (e.g., reading and memorizing the scriptures), and repeated inhibition of spontaneous tendencies (McCullough & Willoughby, 2009). We argue that these activities, as the rest of the puritanical constellation, are ascribed a moral disciplining function: Cultivating the self-control perceived necessary to honor prosocial obligations. This allows explaining why moralizations of diligent ritual observance cluster with other puritanical values (sect. 1.1) – so that "piety" is commonly listed, alongside temperance and restraint from bodily pleasures, among the core virtues of the "purity" morality (Graham et al., 2013; Haidt, 2012; Haidt & Joseph, 2007).

3.3. Puritanism and the moral mind

Our last assumptions concern the cognitive mechanisms of moral judgment. First, our account rests on a unitary theory of moral cognition, according to which moral judgments – including puritanical ones – are produced by a single, functionally unified cognitive system sensitive to cooperation (André et al., 2022). In line with other unitary theories of moral cognition (Gray et al., 2012, 2014; Schein & Gray, 2015, 2018), we insist that the plurality of moral values at the cultural level does not imply the existence of a plurality of moral systems at the cognitive level. The same moral system can produce, based on the very same computational procedures, a wide variety of outputs, and thus culturally variable values, depending on the varying inputs that it receives (Aarøe & Petersen, 2014; Nettle & Saxe, 2020, 2021). In the case of puritanical norms, a domain-general system sensitive to harm (Gray et al., 2014), or fairness (Baumard et al., 2013), can moralize victimless behaviors, as long as it is fed by causal representations depicting those behaviors as indirectly leading to socially harmful outcomes.

Second, we assume that this moral system is triggered not only by intrinsic instances of uncooperative behaviors (e.g., violence, adultery, unfair sharing), but also by behaviors perceived as indirectly and probabilistically leading to social harm. This is consistent with experimental evidence that the triggering of moral judgment depends on the computation of a – potentially indirect – causal chain between a perpetrator's action and an undeserved cost imposed on another individual (Cushman, 2008; Guglielmo & Malle, 2017; Sloman, Fernbach, & Ewing, 2009). Victimless excesses should be preemptively moralized when perceived to causally contribute, through their deleterious effects on self-control, to an increased prevalence of uncooperative behaviors. Restrained behaviors should be praised when perceived to positively contribute, through their preserving effects on self-control, to the improvement of people's cooperativeness.

3.4. The cultural evolution of puritanism as a behavioral technology

So far, we have focused on the psychological level of moral judgment. Yet puritanism also manifests in socially transmitted traits, subject to cultural elaboration. Carnal sins are not only judged in everyday life; they have been systematized in explicit religious classifications (e.g., the seven deadly sins; Hill, 2011; Tentler, 2015). Ascetic rituals of fasting, meditation, or regular prayer have been crafted and institutionalized by doctrinal religions (Brown, 2012; Tentler, 2015). Legal regulations of alcohol have been gradually elaborated and negotiated in cultural groups (Martin, 2009; Matthee, 2014). Thus, the emergence of puritanical norms is also fruitfully conceived in cultural evolutionary terms. These puritanical cultural traits, we argue, have evolved as people, based on their folk-psychological theories of self-control, have attempted to facilitate self-control to ensure cooperative behavior.

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Table 1. Examples of folk-psychological beliefs about modifiers of trait-self-control

Folk-psychological beliefs	Selected societies and traditions (with references)
Behaviors corrupting dispositional self-control: Excessive indulgence in bodily pleasures (e.g., sex, food, drinking) reinforces short-term cravings, leading to hard-to-control habits and addictions	Amhara, Ethiopia (Levine, 1965, p. 223) Early, medieval, and early modern Christianity (Dabhoiwala, 2012, p. 33; Spiegel, 2020) Chinese Warring States period (Nylan, 2001) France, nineteenth century (Guerrand, 1984, p. 302) Greco–Roman antiquity, ascetic wisdoms (e.g., Stoicism, Platonism, Pythagoreanism) (Gaca, 2003; Irvine, 2009, pp. 114–115) Nordic and English-speaking "temperance cultures" (nineteenth century) (Levine, 1993; Yeomans, 2011) North India (Vatuk & Vatuk, 1967) Hinduism and ancient India (Doniger, 2014, pp. 363–371) Contemporary conservative Protestantism (Sherkat & Ellison, 1997) Victorian England, nineteenth century (Seidman, 1990, p. 50) Zanzibar (Beckmann, 2010, p. 622)
Behaviors improving dispositional self-control: Self-control can be trained by sustained self-discipline, ascetic practices, or disciplinary rituals (e.g., fasting, effortful or painful treatments, spiritual disciplines)	Amhara (Reminick, 1975, p. 123) Christian tradition (Spiegel, 2020) Chinese Confucian tradition (Csikszentmihalyi, 2009, 2020) Greco–Roman ascetic spiritualities (Gaca, 2003) Islamic tradition (el-Aswad, 2014; Garden, 2014; Rehman, 2019; Schielke, 2009) Japanese Buddhism (Mann, 2011) Hinduism (Doniger, 2014) Orissa, India (Menon, 2013) Ona (Gusinde, 1931, p. 1470) Tlingit (Kan, 1989, pp. 54–55, 59–60) Ojibwa (Hallowell, 1976, pp. 96, 205, 418) Tukano (Hugh-Jones, 1979, pp. 147, 271) Enga (Wiessner & Tumu, 1998, p. 218)

Prominent cultural evolutionary theories argue that normative cultural traits, such as monogamous marriage (Henrich, Boyd, & Richerson, 2012), moralizing religions (Norenzayan et al., 2016), or large-scale cooperative institutions (Richerson et al., 2016), spread in human populations because they procure *objective adaptive benefits* by increasing cooperation. Although human enforcement mechanisms (e.g., reputation, punishment) can stabilize any norm (Aumann & Shapley, 1994; Boyd & Richerson, 1992), intergroup competition would favor cooperation-facilitating norms at the expense of other evolutionarily stable equilibria (Henrich & Muthukrishna, 2021). Thus, one possibility is that puritanical norms emerge through random variation, as one of the many stable equilibria that enforcement mechanisms can maintain, and are then favored by cultural group selection. In this perspective, puritanical norms should be objectively effective in increasing cooperation by facilitating self-control (see McCullough & Carter, 2013), and would be favored by impersonal selective pressures that are independent of people's understanding of the mechanisms these norms involve or the function they serve (see Henrich, 2017, 2020).

Another possibility, however, is that the cultural evolution of norms is driven by people's *subjective perceptions* that some norms are efficient in satisfying their goals, leading them to selectively retain these norms at the expense of others (Fitouchi & Singh, 2023; Singh, 2022; Singh, Wrangham, & Glowacki, 2017). This "subjective selection" approach stresses that providing objective benefits to individuals or groups is not necessary for many cultural traits to evolve (Singh, 2022). People use their intuitions and folk-theories to craft cultural traits. Sometimes, these intuitions accurately perceive objective benefits, leading people to retain adaptive technologies, such as efficient tools or weapons (Osiurak & Reynaud, 2019). Other times, people's psychological biases and folk-theories are simply erroneous, leading them to retain ineffective practices – such as divination (Hong & Henrich, 2021), dark magic (Singh, 2021), bloodletting (Miton, Claidière, & Mercier, 2015), shamanism (Singh, 2018), or rain-making rituals (Hong, Slingerland, & Henrich, forthcoming). Such technologies recurrently evolve in human societies despite providing no adaptive benefits, simply because people wrongly perceive them as beneficial.

Normative culture, we argue, is no different. Just as people use their technical reasoning to craft technical artifacts, they use their *folk-psychology* to design *behavioral* technologies (e.g., norms, religions, institutions) aimed at influencing other individuals' behaviors. For example, Ostrom (1990) famously reviewed how people in many small-scale communities deliberately developed, often through years of trial-and-error, institutional rules they perceived as efficient in limiting free-riding. Researchers similarly argue that beliefs in punitive gods develop because people's folk-psychology perceives these beliefs – potentially wrongly – as likely to motivate others to cooperate (Fitouchi & Singh, 2022).

We argue that puritanical norms, from disciplinary rituals to Victorian anti-masturbation campaigns (Seidman, 1990), emerge from similar processes. They culturally evolve as people, based on their folk-theories of self-control, attempt to manipulate the psychological mechanics of temptation and self-control to promote prosocial behavior (Fitouchi et al., 2021). This drives the cultural evolution of norms aimed at training self-control (e.g., techniques of self-discipline, prohibitions of alcohol) or nudging resistance to temptations (e.g., modest clothing), to favor social harmony and mutually beneficial interactions. Just as for other technologies, these norms may or may not be objectively effective in promoting self-control and thus cooperation – what matters is that people *perceive* that they are. In fact, there is only mixed evidence that self-control-training (Friese et al., 2017; Miles et al., 2016) and religious observance (Marcus & McCullough, 2021) can actually

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make people more self-controlled. Of course, this doesn't imply that puritanical norms never work. Econometric analyses suggest that some moral crusades against alcohol (nineteenth and twentieth centuries) have successfully reduced drunkenness-driven violent crimes (Lowe, 2020). Field experiments in Iran suggest that conservative religious clothing actually decreases chances of male–female encounter (Pazhoohi & Burriss, 2016). In our model, however, these objective benefits will affect cultural evolutionary dynamics only if they are reflected in people's subjective perceptions of efficacy, thus impacting people's adoption and promotion strategies.

4. Explaining the core features of puritanism

This section derives predictions from the moral disciplining theory (MDT), contrasts them with those of alternative accounts, reviews current evidence supporting them, and outlines avenues for further testing. MDT generates predictions for the moralizations of each behavior of the "puritanical constellation," which can be tested independently – on bodily pleasures and lack of self-discipline (sect. 4.1), intoxicants (sect. 4.2), piety and ritual observance (sect. 4.3), and immodest clothing, music and dances (sect. 4.4).

Several predictions apply to each behavior of the constellation. For each behavior, MDT predicts that (a) its moralization should be most robustly associated with the perception that it affects cooperation (e.g., cause social harm); (b) the more people perceive the behavior as affecting self-control, the more they should moralize it; and (c) the perception that the behavior affects self-control should mediate the perception that it affects cooperation. Reliably disconfirming these predictions for a given behavior would result in falsification of MDT's hypothesis for the moralization of this behavior. Predictions that are more specific to one particular behavior (e.g., immodesty) are further specified in the dedicated subsection (e.g., sect. 4.4).

4.1. The praise of temperance and the condemnation of bodily pleasures

4.1.1. Moralizations of bodily pleasures should be most robustly associated with perceptions that they facilitate social harm

As a cooperation-based theory of puritanism, MDT predicts that moralizations of victimless bodily pleasures, and lack of self-discipline, should be most robustly associated with the perception that they facilitate uncooperative behaviors and cause social harm. In line with this idea, Schein et al. (2016) show that moralizations of sexual indulgences (e.g., oral sex) are most strongly associated with perceptions that these behaviors are "dangerous" or "harmful." Associations between disgust (or disgust-sensitivity) and moralizations of sexual indulgences disappear when perceptions of harm are controlled for (Schein et al., 2016; see also Gray et al., 2014; Gray & Schein, 2016). In the General Social Survey, support for legal restrictions of pornography is associated with the belief that "sexual material lead people to commit rape" (Sherkat & Ellison, 1997). In two vignette studies ($N > 1{,}100$), we presented participants with a target led to increase their indulgence in bodily pleasures, such as gluttony and masturbation (Fitouchi et al., 2022). Participants judged that, as a result of this lifestyle change, the target had likely become more prone to uncooperative behaviors, such as refusing to help a friend, free-riding on colleagues' work, and cheating his partner if he had the chance (Fitouchi et al., 2022). The more participants perceived that bodily pleasures would decrease the target's cooperativeness, the more they morally condemned victimless indulgence in those pleasures (Fitouchi et al., 2022).

At a more general level, MDT predicts that moralizations of victimless excesses should relate to cooperation-based moral concerns. By contrast, moral foundations theory (MFT) argues that moralizations of self-discipline are part of disgust-based concerns unrelated to cooperation. Thus, as per MFT, condemnations of victimless excesses should relate more strongly to "purity" concerns – putatively independent of cooperation – than to other moral concerns unambiguously related to cooperation (e.g., loyalty). Across four studies using the Moral Foundations Questionnaire ($N > 3{,}000$), participants' tendency to moralize victimless excesses (e.g., snacking on junk food, getting high on drugs, failing to exercise) is predicted not only by concerns for "purity" – which MFT assumes to be independent of cooperation – , but also, and to a similar extent, by moral concerns uncontroversially related to cooperation, such as loyalty/betrayal, and authority/respect (Mooijman et al., 2018). This suggests that self-discipline is moralized because it is seen as necessary to ensure within-group cooperation and social order.

These findings are consistent with historical evidence. Historians and social scientists have argued that puritanical moral campaigns of early modern Europe – variously labeled "disciplinary revolutions" (Gorski, 1993, 2003), "social disciplining" (Oestreich et al., 1982), "civilizing offensives" (Eisner, 2014; Powell, 2013), or "reform of popular culture" (Burke, 1978) – condemned undisciplined indulgence in bodily pleasures to "foster forms of socialization that would promote cooperation and harmony and result in a well-disciplined and well-ordered society" (Martin, 2009, p. 9; see also Burke, 1978; Eisner, 2014; McIntosh, 2002). Similarly, ancient ascetic spiritualities (e.g., Late Stoicism, Platonism, early Christianity, Pythagoreanism), prescribed an "overall habituation to temperance" with the explicit aim to prevent bodily appetites to fuel antisocial behaviors (Gaca, 2003). As Platonism contended, for example,

> sexual eros and the other two core appetites [eating and drinking], unless held in check by reason, are the origin of human-motivated social ills because they stimulate all vices from avarice to zealotry. If only we minded the necessary limits of sexual activity and ate and drank moderately, the society of peace and justice would be ours for the taking. (Gaca, 2003, pp. 35–36)

4.1.2. The more people perceive bodily pleasures as altering self-control, the more they should moralize bodily pleasures

MDT posits that people perceive bodily pleasures as degrading cooperativeness *because* they perceive bodily pleasures as degrading self-control, for example because of their addictive character. Thus, the more people perceive victimless bodily pleasures as addictive, or as altering self-control more generally, the more they should moralize bodily pleasures. In line with this idea, studies consistently find that the moralization of pornography is associated with the perception that it is addictive for the self (Grubbs et al., 2015, 2018a; Grubbs, Wilt, Exline, Pargament, & Kraus, 2018b). The perception that pornography is addictive is also more prevalent among religious people (Droubay & Butters, 2020), who are known to moralize pornography more strongly (Droubay, Butters, & Shafer, 2021; Grubbs et al., 2015). In vignette studies, the more participants perceive indulgence in gluttony, masturbation, and harmless laziness, as reducing an individual's self-control, the more they morally condemn victimless indulgence in those pleasures (Fitouchi et al., 2022).

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4.1.3. The perception that bodily pleasures alter self-control should mediate the perception that they affect cooperation

Experimental evidence suggests that the perceived effect of bodily pleasures on self-control mediates their perceived effect on cooperativeness. In the above-mentioned studies, the effect of indulgence (vs. restraint) on a target's perceived change in cooperativeness was 100% mediated by the perceived deleterious effect of indulgence (vs. restraint) on the target's self-control (Fitouchi et al., 2022). In other words, participants perceived indulgence in bodily pleasures, as opposed to restraint, as increasing an individual's propensity to uncooperative behaviors almost exactly to the extent that they perceived indulgence (vs. restraint) as altering this individual's self-control.

This converges with experimental evidence on the moralization of gluttony. People regularly indulging in fatty and sugary foods (e.g., hamburgers, donuts), compared to people with healthy diets, are seen not only as less moral and less trustworthy (Mankar, Joshi, Belsare, Jog, & Watve, 2008; Merritt, 2013; Oakes & Slotterback, 2004; Steim & Nemeroff, 1995), but also as less self-controlled (Gerrits, de Ridder, de Wit, & Kuijer, 2009; Merritt, 2013; Puhl & Heuer, 2010; Steim & Nemeroff, 1995). Experimental evidence indicates that these perceptions of lower self-control mediate the relationship between indulgent (vs. restrained) diet and perceived lower morality and trustworthiness (Fitouchi et al., 2022; Merritt, 2013; Steim & Nemeroff, 1995) – more so than other mediators such as a health-related concern or a general halo effect (Steim & Nemeroff, 1995).

These results converge with historical and ethnographic evidence that, in various cultural contexts, overindulgence in food or sex is condemned as causing uncooperative behaviors *through* the erosion of self-control. Scholars have argued that moral panics over masturbation in Victorian England emerged from the fear that excessive sexual activity "could, and probably would, lead to habits of indulgence in sensual pleasure and thus cause the erosion of self-control" (Hunt, 1998, p. 589; Seidman, 1990). Masturbation, or too frequent marital sexuality, were denounced as

> a vice which excites…the strongest and most uncontrollable propensities of animal nature [i.e., sexual impulses]: these are rendered more active by indulgence, while the power of restraint is lessened by it in a tenfold degree…Controlled by sensual urges *the individual loses self-control and social purpose. This inevitably leads to self-destruction and to social chaos and decline*. (Seidman, 1990, pp. 50–52, emphases added)

In Muslim Zanzibar, "once tried out, sex is said to dominate a person's thoughts with ever-increasing desire and to make it difficult to refrain from behavior that is classified as immoral, including disrespect of the elders or drug and alcohol abuse" (Beckmann, 2010, p. 622). In North India, excessive indulgence in sweets is perceived to develop an impulsive character trait, leading to commit antisocial behaviors, "like cheating, stealing and selling daughter" (Vatuk & Vatuk, 1967, p. 111). As ethnographers report:

> The problem of the chatora [the sweet addict] in Indian society seems to be perceived by our informants as a problem of loss of control over the senses by the sweet addict. … Excessive indulgence in sweets has made the chatora incapable of resisting the temptations which continually beset a man from all directions. … The weakness of the chatora is inexcusable…because it is evidence of his potential weakness against all the temptations of anti-social behavior. (Vatuk & Vatuk, 1967, pp. 111–112, emphases added)

In the Amhara peasants (Ethiopia), "there is also the fear that if one indulges in eating and drinking he may become uncontrollably hostile" (Levine, 1965, p. 223), because "eating and drinking to full satiation, and maintaining this state over time, makes one thankless, arrogant, unmindful of law and custom, and dangerously impulsive" (Reminick, 1975, p. 29). Surveys of moral attitudes toward food since European antiquity conclude that "[t]he heart of the problem it seems is that food pleasure challenges self-control" (Coveney, 2006, p. xii; Hill, 2011). In medieval Christianity, excessive food pleasure – alongside other deadly sins – "represent devilish temptations that challenge the Christian to develop and practice discretion and self-control" (Hill, 2011, p. 135). By weakening the will, gluttony "turns humans into dishonest animals, destined for hell" (Hill, 2007, p. 68). By seeking "delicious viands," a man can "do good to fewer others and cannot withhold himself so that he may help a poor man, or two, or more" (Hill, 2007, p. 68). As Doniger (2014) highlights, similar rationales for abstaining from meat recur in Hindu texts: "flesh heats the passions and is, therefore, dangerous for the ideal Hindu person, who is always in control of his emotions" (p. 415).

4.2. The praise of sobriety and the moralization of intoxicants

According to existing theories, intoxicants are moralized because they elicit disgust (Horberg et al., 2009), or because they favor sexual promiscuity, thereby infringing on the self-interest on monogamous individuals (Kurzban et al., 2010). By contrast, MDT predicts that:

(1) the moralization of intoxicants should be most robustly related to the perception that they cause uncooperative behaviors in general – including in the sexual domain (e.g., infidelity), but not exclusively;
(2) because they threaten not just monogamous individuals' self-interest, but mutually beneficial cooperation more generally (e.g., social harmony), intoxicants should be moralized not only by monogamous strategists, but also by other individuals;
(3) the moralizations of intoxicants should be associated with the perception that they decrease self-control, either as a state, because of their immediate psychoactive effects (sect. 3.2.1), or as a trait, because of their addictive nature (sect. 3.2.2);
(4) the perception that intoxicants decrease self-control should mediate the perceived relationship between intoxicant use and uncooperative behaviors.

Future studies could test these predictions. Several lines of evidence, in the meantime, suggest their plausibility.

First, survey data show that people across countries believe that intoxicants and aggression are causally linked (Critchlow, 1986; Leigh, 1987; Lindman & Lang, 1994; Paglia & Room, 1998). In the 1996 General Social Survey, 70.9% of respondents view people addicted to alcohol as likely to do something violent to others, whereas this proportion reaches 87.3% for people addicted to drugs (Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999) – a pattern found in various studies and countries (Yang, Wong, Grivel, & Hasin, 2017). In a representative sample of the United Kingdom population, "fear of violence," and perceptions that they have a "bad character" – a notion related to trustworthiness (Goodwin, 2015) – are the best predictors of stigmatizing attitudes toward heroin-addicts, explaining respectively 23.5 and

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12.4% of the variance (Mushtaq, Mendes, Nikolaou, & Luty, 2015). By contrast, perceived risk of contagion – relevant to the disgust-hypothesis – explained only 0.9% of the variance (Mushtaq et al., 2015). In a sample of 1,512 Uruguayan adults, the strongest predictor of opposition to the government's recent decision to legalize marijuana is the belief that this law will worsen public security (Cruz, Boidi, & Queirolo, 2018).

This converges with historical and ethnographic evidence that moral concerns over drinking revolve around the uncooperative behaviors it facilitates, such as adultery, conflicts, economic free-riding, or poor performance of family roles (Eisner, 2014; Martin, 2002, 2009; McIntosh, 2002; Room, 1984, 1996). In a systematic study of more than 200 English and French primary sources (e.g., sermons) from 1300 to 1700, Warner (1997) shows that drinking was condemned as causing six main types of social harm, including domestic violence, public violence, disrespect of authorities, and resources loss (placing economic burdens on the community). Legal regulations of drinking in traditional Europe (thirteenth to eighteenth centuries) are declared necessary because alcohol is "the root and foundation of many other enormous sins, such as bloodshed, stabbing, murder, swearing, fornification [*sic*], adultery, and such like" (Martin, 2009, p. 2), and results in "idleness, blasphemy, homicides and other damage and harm" (Martin, 2009, p. 30). Analyses of articles on marijuana published in American popular magazines between 1935 and 1940 – a period of moral concern over drug use – similarly find that 85% mentioned violence as one of its effects (Himmelstein, 1983).

Second, intoxicants appear perceived as causing uncooperative behaviors *because* of their effects on self-control. In survey responses, beliefs that alcohol causes "loss of self-control" and "disinhibition" is associated with the belief that alcohol favors "nasty" behaviors (e.g., fights, aggression) ($r = 0.54$) (Leigh, 1987). Presenting participants with 15 vignettes of a dating situation, Shively (2001) asked participants to rate a man's level of self-control and likelihood of sexual aggression. As the man was described as more inebriated, participants perceived him as less self-controlled and less able to stop himself from sexual aggression. In other studies, participants judged that a target led to increase his consumption of alcohol would become less self-controlled, more likely to commit uncooperative behaviors, and would worsen his moral character as a result of this lifestyle change (Fitouchi et al., 2022). Perceived change in the targets' self-control fully mediated the effect of alcohol indulgence (vs. restraint) on perceived change in cooperativeness; and mediated 71% of its effect on perceived change in moral character (Fitouchi et al., 2022).

This converges with historical and ethnographic evidence. Studies of especially acute moral crusades against drinking ("temperance movements," nineteenth century) conclude that "in any place where temperance movements developed – alcohol was defined as dangerous, as a problem, in terms of its perceived ability to destroy individual self-control" (Levine, 1993; see also Eisner, 2014; Yeomans, 2011). As Gusfield (1997) summarizes,

> Dominating the temperance ethic through much of the nineteenth and early twentieth century was a belief in the sinfulness and degradation of drinking per se. Use of spirits, beer, and wine was *inherently threatening to the self-control that marked the moral and potentially successful person.* Use endangered reputation, social standing, and income, and inevitably brought chronic inebriety *and all its attendant harms.* (Gusfield, 1997, p. 213, emphases added)

Earlier in history, medieval and early modern moralists condemned alcohol for "extinguishing reason and dulling the mind," making it "the gateway to other sins" (Martin, 2009, p. 21; see also Adamson, 2004, p. 93). Similar attributions occur in medieval Chinese Buddhism (Sterckx, 2005, pp. 224, 228). The Muslim *Hadith* similarly describes alcohol as "that which befogs the mind" (Michalak & Trocki, 2006, p. 529), making it the "source (literally 'mother') of all evils" (Powell, 2004, p. 97). Further suggesting that moralizations of drinking aim at preventing loss of self-control, they often apply with varying intensity to different groups of people, as a function of their perceived likelihood to lose self-control. For example, the Konso agriculturalists (Ethiopia), who "know only too well what disruptive effects drunkenness can have on social relations," reserved the right to consume alcohol to old men only, "supposed to be milder in their passions than the young, and more self-controlled" (Hallpike, 2008, p. 219; see also traditional Middle East: Matthee, 2014, p. 104).

4.3. The praise of piety and ritual observance

MDT maintains that pious ritual observance is morally praised because it is perceived to cultivate self-control and thus cooperativeness (sect. 3.2.2). Future research could test whether ritual observance is more strongly moralized by people perceiving regular practice of a religious discipline, such as fasting, meditation, or regular prayer, as an efficient way to increase one's ability to resist temptations – including uncooperative ones. Several lines of evidence suggest the plausibility of this idea.

First, across countries with Hindu, Buddhist, Christian, and secular majorities ($N > 3{,}200$), religious people are perceived as less likely to commit uncooperative behaviors than non-religious people (Gervais, 2013, 2014; Gervais et al., 2017), and part of this effect may stem from the perception that religious people regularly exercise self-control. Consistent with this possibility, experimental evidence indicates that religious people are perceived not only as more trustworthy, but also as more self-controlled (Moon, Krems, & Cohen, 2018), and that the perception that they are more self-controlled mediates the relationship between religiosity and greater perceived trustworthiness (Moon et al., 2018). Among religious people, those described as respecting rituals that require exercising self-control (e.g., abstaining from meat during Lent for Christians) are perceived as more trustworthy than religious people who do not, across religious affiliations (Hall, Cohen, Meyer, Varley, & Brewer, 2015; see also Singh & Henrich, 2020). Surveys of both Javanese Muslim and Christian American participants also find that a substantial share of both samples report increasing and expressing self-control as a motivation for fasting (Tamney, 1980, 1986).

These results converge with the fact that puritanical traditions explicitly ascribe self-control-training functions to ritual performance, with the specific aim of facilitating prosocial behavior. Specialists of Confucianism have long noted that "the function of rituals has been seen in China as a kind of block against or prevention of the influence of desires or selfish behavior" (Csikszentmihalyi, 2009, pp. 523–524). By cultivating self-discipline (Slingerland, 2014, pp. 70–80), and "blocking the overflow of desires" (Csikszentmihalyi, 2020, p. 7), ritual propriety was explicitly meant to facilitate prosocial behavior (Csikszentmihalyi, 2004, 2009, 2020; Graziani, 2009; Slingerland, 2014). Similarly in the Christian tradition: "as a Christian virtue, self-control is a product of spiritual discipline, a trait for which the Christian much engage in 'strict training'"

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(Spiegel, 2020, p. 1; see also Gaca, 2003; Gorski, 2003). Several ritual practices (e.g., fasting, mediation, self-denial) are "aimed at cultivating self-mastery or strength of will," allowing to "get the victory over wickedness" or "train the soul to decline genuinely appealing immoral choices" (Spiegel, 2020, pp. 1–12).

In ethnographic studies in Bhubaneswar (India), Odia Hindu report that daily performance of prayers and ablutions "teaches one to exercise self-control and enable one to cultivate self-discipline" (Menon, 2013, p. 204) – qualities they also see as required for doing one's duties toward others (Menon, 2013, pp. 201, 204). In Muslim Zanzibar, it is similarly acknowledged that the moral character trait of self-control "need[s] constant work and become[s] easier with growing age and piety" (Beckmann, 2010, p. 120; Islam more generally: Garden, 2014; Rehman, 2019). Among the Amhara (Ethiopia), "[t]he rigorous schedule of fasting is believed to help contain one's passions which could lead to an uncontrollable situation and eventual violence" (Reminick, 1975, p. 29). In Japanese Buddhist culture, practicing an "austere mental and physical discipline that one pursues for decades," such as rituals or martial arts, is seen as allowing to "become a person of great discipline, character, and compassion," who is "of far greater service to her neighbors" (Mann, 2011, pp. 74–77).

The moral disciplining theory could further be tested by quantitatively investigating the cross-cultural association between the moral praise of ritual observance and such ascriptions of moral disciplining functions to ritual performance.

4.4. The condemnation of immodest clothing, music, and dances

MDT proposes that, to prevent social harm, puritanical values do not only prescribe behaviors viewed as improving people's "inner" self-control (e.g., disciplinary rituals, restraint from bodily pleasures), but also use what psychologists call "preventive" or "situational" strategies for self-control (Duckworth et al., 2016a, 2016b; Hofmann & Kotabe, 2012). Such strategies aim at lowering the demand for self-control by preventing temptations to arise in the first place (Duckworth et al., 2016a, 2016b). This, we have argued, is what modesty norms do by limiting exposure to sexual cues (e.g., female body curves), perceived as triggering hard-to-control sex drives in impulsive males, potentially resulting in uncooperative behaviors (e.g., adultery, sexual aggression) (sect. 3.2.1). This hypothesis generates the following predictions.

4.4.1. The more people perceive male self-control as vulnerable to cue exposure, the more they should moralize immodesty

If immodesty is moralized as a risk factor for harmful self-control failures, it should be all the more condemned that people perceive surrounding males as unable to resist sexual urges in the face of cue exposure. Indeed, if males are believed able to remain peaceful and self-controlled even when exposed to tempting cues, immodesty should lose its (perceived) potential to generate social harm, and should therefore not be condemned. In line with this prediction, Moon et al. (2021) show that the more people stereotype men as unable to control their sexual urges, the more they moralize female immodest clothing and other cue-exposing behaviors (e.g., public breastfeeding). This effect does not generalize to phenomena unrelated to cue exposure, and holds after controlling for participants' reproductive strategy and other potential confounds (e.g., religiosity, conservatism, benevolent or hostile sexism). This suggests that, although inherently harmless, immodesty is moralized because of its perceived potential implications on male moral self-control (Moon et al., 2021).

4.4.2. Modesty norms should be well designed to prevent cue exposure specifically

Second, modesty norms should specifically target behaviors increasing cue exposure. This seems to be the case. Eye-tracking experiments show that Islamic clothing decreases visual access to female body curves (Pazhoohi, Macedo, & Arantes, 2017b), and accordingly decrease males' rating of female attractiveness (Mahmud & Swami, 2009; Pazhoohi & Hosseinchari, 2014; Sheen, Yekani, & Jordan, 2018). Modest clothing across puritanical traditions specifically hide such sexually arousing stimuli (e.g., Puritans' austere clothing: Bremer, 2009; Islamic veiling: Mernissi, 2011; Jewish *Tznihut* dress: Andrews, 2010; Hindu India: Stephens, 1972, p. 4; ancient Christian veiling: Tariq, 2014). Psychological evidence indicates that immodesty is more negatively viewed in public – that is, when its cue-exposing effects are amplified (Acker, 2009). The Quran also specifies that elderly women, deemed less attractive, can go unveiled (Mernissi, 2011), and studies of rural Muslim villages report that demands of modesty apply less strongly to elderly women (Antoun, 1968, p. 683; Belghiti, 1969).

Music and dance, similarly, are often condemned as exposing people to auditory and visual stimuli impeding self-control, thus making antisocial behaviors more likely. Islamic warning against the dangers of music insist on its self-control-impeding effects: "music as an activity is about exciting pleasures that make humans slaves to unruly passions" (Kiyimba, 2012, pp. 93–94); and compare music's psychological effects to those of alcohol: "avoid singing for it decreases shame, increases desire…and verily it takes the place of wine and does what drunkenness does" (Otterbeck & Ackfeldt, 2012, p. 232). Christian oppositions to dancing often specifically targeted the "mixed" dancing of men and women, exposing people to sexual cues and "lascivious" bodily movements (Wagner, 1997). In early China, Confucius condemned the "immoral, seductive popular music of Zheng," which "was sung by mixed groups of men and women, and gave rise to sexual improprieties" (Slingerland, 2014, p. 76). In early modern Europe, "plays, songs and, above all, dances were condemned for awakening dangerous emotions and as incitement to fornication" (Burke, 1978, p. 212), whereas festivals were denounced as "occasions of violence" (Burke, 1978, p. 212). Tellingly, the very same entertainment – music – can become morally *praised* when it takes the form of a disciplined, effortful, and patient activity perceived as cultivating people's self-control rather than impeding it, thus facilitating prosociality. For example, although he condemned arousing popular music, Confucius prescribed classical musical performance, precisely because the latter "place[s] limits on appetitive desires" and thus "promote[s] unselfishness…and prepare[s] people to behave morally in different domains of their life" (Csikszentmihalyi, 2020, pp. 7, 5).

5. Explaining the fall of puritanism

Although widespread, puritanical values are not ubiquitous. Their most systematically documented pattern of variation is their decline in particularly rich, WEIRD societies. In line with cultural psychological studies (Atari et al., 2022; Haidt et al., 1993; Shweder et al., 1987), the World Value Surveys demonstrate that virtually all societies, when they are made richer by modern

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economic development, progressively abandon puritanical values (Inglehart, 2018; Inglehart & Baker, 2000). The richest regions of the world (e.g., Western Europe, North America, Australia/New Zealand) show the lowest levels of puritanical values, whereas the poorest regions (e.g., Africa, Middle East, Communist Asia) exhibit the highest levels (Weeden & Kurzban, 2013). Why does puritanism decline in particularly rich, WEIRD societies?

MDT maintains that people promote puritanical norms to ensure the self-control necessary for cooperative behavior. Puritanical norms, however, have a cost: They restrict people's enjoyment of highly gratifying pleasures, and impose effortful disciplinary activities. Thus, puritanical norms should be perceived as morally warranted only when they are worth this cost. This should especially be the case in environments where people's spontaneous self-control is perceived as insufficient to ensure social order and acceptable levels of cooperation – making puritanical norms, precisely aimed at supplementing this fragile self-control, appear necessary. In fact, historians and social scientists have stressed that Puritans' zealous emphasis on maintaining constant self-control was tied to an "extraordinary fear of disorder and anarchy" (Walzer, 1963, p. 84), alimented by a pessimistic view of human nature as naturally weak-willed, driven by powerful impulses, and perpetually tempted by selfishness (Luttmer, 2000; Seidman, 1990; Sherkat & Ellison, 1997; Walzer, 1963, 1982).

This reasoning closely parallels the logic of variations in authoritarian values (Nettle & Saxe, 2021), which are associated with puritanical values (Atari et al., 2022; Harper & Rhodes, 2021). Nettle and Saxe (2021) present experimental and cross-national evidence that, in poorer environments, people are more supportive of authoritarian leaders because they expect other people to spontaneously behave less cooperatively. This lower trust in others leads people to view strong leaders, who monitor and punish cheating intransigently, as necessary to ensure acceptable levels of cooperation (Nettle & Saxe, 2021). Just as monitoring and punishment by authoritarian leaders appears less necessary in particularly rich environments, where people view others as spontaneously cooperative (Nettle & Saxe, 2021), we argue that puritanical norms, aimed at disciplining others for cooperation, become unnecessary when people see others as spontaneously self-controlled and trustworthy.

In line with this idea, the particularly rich environments in which puritanism declines lead to the development of more inherently self-controlled psychologies. People living in materially safer environments, compared to people living in poverty, are spontaneously more self-controlled (Dohmen, Enke, Falk, Huffman, & Sunde, 2018; Pepper & Nettle, 2017; Sheehy-Skeffington, 2020), invest more in extended prosociality (Holland, Silva, & Mace, 2012; Lettinga, Jacquet, André, Baumand, & Chevallier, 2020; Nettle, 2015; Silva & Mace, 2014; Zwirner & Raihani, 2020), are less susceptible to impulsive defection or retaliation (McCullough, Pedersen, Schroder, Tabak, & Carver, 2012), and have higher trust in others (Alesina & La Ferrara, 2002; Guillou, Grandin, & Chevallier, 2021; Ortiz-Ospina & Roser, 2016; Petersen & Aarøe, 2015).

Material security and higher levels of self-control are also associated with lower spontaneous engagement in the very self-control-impeding behaviors that puritanical norms preemptively restrict. Richer individuals are less susceptible to heavy drinking (Huckle, You, & Casswell, 2010; Lewer, Meier, Beard, Boniface, & Kaner, 2016), which in turn predicts less alcohol-related "undesirable" outcomes (e.g., physical fights, being away from work) (Huckle et al., 2010). Higher socioeconomic status (SES) predicts lower reward-sensitivity and greater inhibition (Yaple & Yu, 2020), which are associated with lower vulnerability to addiction problems and cue exposure (Auger, Lo, Cantinotti, & O'Loughlin, 2010; Gullo, Loxton, & Dawe, 2014; Osadchiy et al., 2019; Story et al., 2014; Thomsen et al., 2018; Volkow et al., 2017). Urges for temperance likely become useless when people are more moderate anyway, and less likely to develop hard-to-control addictions to bodily pleasures. Prohibitions of alcohol likely become superfluous when people are less susceptible to heavy drinking, and when drinking generates less social problems anyway than in poorer societies (e.g., medieval Europe: Eisner, 2001, 2003, 2014; Martin, 2009). Prescriptions of religious techniques of self-discipline likely seem unnecessary when people perceive others as disciplined enough to honor their duties.

This hypothesis generates testable predictions: Puritanical values should decline when surrounding individuals are perceived as particularly self-controlled and trustworthy. In line with this prediction, recent analyses of the World Value Survey ($N > 200{,}000$) show that, across more than 100 countries, individuals with puritanical values have lower trust in others – that is, more belief that surrounding individuals are not spontaneously cooperative. As mentioned above, the more people perceive males as spontaneously sexually self-controlled, the less they support puritanical restrictions of immodesty (Moon et al., 2021). In the United States, van Leeuwen, Koenig, Graham, and Park (2014) find that living in a state where many people have short-term-oriented "life-history strategies" (which relate to lower self-control: Pepper & Nettle, 2017) predicts individual endorsement of purity values more strongly and robustly than any other predictor – including pathogen prevalence, relevant to disgust-based accounts of purity, but also urbanization, education, social class, and cognitive ability. Similarly, more religious and conservative American states, which are more puritanical, have been found to exhibit the greatest levels of pornography use (Edelman, 2009; MacInnis & Hodson, 2015; Whitehead & Perry, 2018), and prevalence of pornography use in 20 Arab-Muslim countries ($N > 15{,}000$) has been found to be higher than in some less puritanical countries (e.g., Australia, Italy) (Eljawad et al., 2021). Recent studies find that people holding "binding moral foundations," which include purity values, tend to be *less* self-controlled than people holding liberal, less puritanical values (Silver & Silver, 2019). The moral disciplining model allows making sense of these apparently paradoxical findings, previously seen as left unexplained (see Silver & Silver, 2019; van Leeuwen et al., 2014): The need to moralize bodily pleasures and self-discipline is felt more strongly when people perceive, by observing others' behaviors or extrapolating from their own psychology, that surrounding individuals' ability to resist temptations is not guaranteed, and thus needs to be compensated by puritanical restrictions.

6. Extending and discussing the disciplining account

6.1. Self-control and other moralizations

In this section, we further illustrate the fecundity of the moral disciplining approach, by showing how it can explain other purity-related moral judgments beyond those considered so far in this article.

6.1.1. Hygiene norms

Moral psychologists often define purity as condemning not only bodily pleasures and undisciplined lifestyles, but also dirty and

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unclean behaviors (Graham et al., 2013; Gray et al., 2022; Kollareth et al., 2022). Moral prescriptions of hygiene may seem, in line with moral foundations theory (Graham et al., 2013), straightforwardly related to disgust and pathogen-avoidance. Yet recent evidence suggests the fecundity of the moral disciplining framework to explain even this part of purity concerns. In almost 20,000 participants across 56 countries, the restrictiveness of hygiene norms (e.g., against spitting, for hand-washing) is more strongly and robustly predicted by the valorization of self-control than by perceived pathogen threat and historical pathogen prevalence – whose effect on the main factor of hygiene norms disappears when self-control values are controlled for (Eriksson, Dickins, & Strimling, 2021). This suggests that not only ascetic restraint, but also the conscientious observance of hygienic practices, may be moralized as an exercise of self-discipline.

6.1.2. "Impure thoughts" and the moralization of mental intimacy

Puritanical traditions can go as far as moralizing, not only victimless behaviors and private lifestyles, but also the very *mental states* individuals experience, such as the "impure" thoughts and desires they may entertain. In psychological experiments, Christians and Protestant participants judge some mental states (e.g., adulterous desire) to be as immoral as the behaviors that could follow them (Cohen, 2003; Cohen & Rozin, 2001; Siev & Cohen, 2007). Early Church fathers (e.g., Paul, Matthew) insisted that a man looking with desire at a woman *already* commits adultery "in his heart" (Gaca, 2003, pp. 152–153). From the thirteenth century onward, Christians were obligated to confess not only their immoral actions but also their sinful thoughts (Tentler, 2015). In the Muslim tradition, the condemnation of *zina* (unlawful, non-marital sex) also extends to mental states such as looking at the body curves of a woman ("*zina* of the eye") or hearing an unrelated woman's voice ("*zina* of the ear") (Bouhdiba, 2012, pp. 38–39; see also Rabbinic Judaism: Hezser, 2018, pp. 15–16).

The moral disciplining account helps explain this phenomenon as a special case of prevention of harmful self-control failures. Picturing oneself enjoying a reward, for example in adulterous or violent thoughts, may be perceived as triggering urges to consume this reward (e.g., sexual pleasure), making people more likely to succumb harmful temptations (e.g., adultery, assault). As written in the most popular Christian devotional book (*The Imitation of Christ*, fifteenth century), "first there comes into the mind an evil thought: next, a [vivid] picture: then delight, and urge to evil" (Tentler, 2015, p. 156). According to our account, although inherently harmless, mental states and desires are moralized when perceived as critically increasing the probability of harmful self-control failures.

In line with this idea, the puritanical moralization of mental states is often associated with prescriptions of "intra-psychic" self-control techniques (see Duckworth et al., 2016a, 2016b), aimed at detecting the birth of impulses in one's consciousness to facilitate their self-control. For example, historians have noted that "[i]t was characteristic of puritans to subject themselves to intense self-examination" (Bremer, 2009, p. 38). By meditating frequently, and recording his impulses in moral diaries (Bremer, 2009; Gorski, 1993, 2003), the individual "was to reflect on the sins he was especially prone to commit so that he might guard against those urges" (Bremer, 2009, p. 55). In the Christian tradition more generally, meditation has been construed as a self-control technique that "kills temptation at the root, by producing a mental 'soil' that will not sustain the development of illicit desires that lead to vice" (Spiegel, 2020, p. 12). Neo-Confucian traditions under China's Song, Yuan, and Ming dynasties (tenth to seventeenth centuries) similarly adopted and adapted techniques of meditation used to "detect and undercut selfish inclinations and desires" (Tiwald, 2020). In line with these cases, psychological evidence suggests that the tendency to attribute to others the ability to internally control their mental states and impulses predicts the propensity to moralize mental states (Weiss, Forstmann, & Burgmer, 2021).

6.2. Outstanding questions

Purity was originally introduced to moral psychology to raise awareness on the cross-cultural variation of morality: Beyond the harm- and fairness-centered values of WEIRD societies, morality involves, in more traditional societies, temperance, chastity, and piety (Haidt, 2012; Haidt et al., 1993; Henrich, Heine, & Norenzayan, 2010; Shweder et al., 1987). This cross-cultural revolution in moral psychology was essential, and led to systematic documentation of the fall of puritanical values in modern societies (see sect. 5; Atari et al., 2022; Haidt et al., 1993). This movement, we suggest, should go one step further.

Indeed, not all traditional societies are puritanical. Available cross-cultural codes suggest that small-scale societies, somewhat similarly to WEIRD societies, exhibit less moral emphasis on sexual restraint and modesty than larger-scale, traditional societies with world religions (Jackson, Gelfand, & Ember, 2020; Murdock, 1949; Stephens, 1972). Ethnographers have reported lax attitudes toward bodily pleasure in various small-scale societies (e.g., !Kung: Lee, 2013; Azande, Central Africa: Evans-Pritchard, 1973; Nivkh: Shternberg, 1933; Chuckchee, northeast Asia: Broude, 1996; Trobriander, Papua New Guinea: Malinowski, 1929; Weiner, 1988; Intuit: Hoebel, 2009). Even in larger-scale traditional societies, puritanical values seem not to always have been so prevalent than in the societies mentioned by initial emphases on purity (e.g., contemporary India, rural Brazil; Haidt, 2012; Haidt et al., 1993; Shweder et al., 1987). Puritanical values appear to have increased in ancient Rome between the late Republic and the early Empire (Duby, Pantel, Thébaud, & Perrot, 1994; Norena, 2007; Rousselle, 2013; Veyne, 1978; see also Gaca, 2003). In China, although bodily pleasures appear less restricted in antiquity (Goldin, 2017; Hinsch, 1994; Wells & Yao, 2018), starting with the Tang and continuing through the Song, the Yuan, the Ming, and the Qing, self-discipline, bodily pleasures, and asceticism are increasingly moralized (Benn, 2005; Sommer, 2000; Suiming, 1998; Wells & Yao, 2018; Yü, 2021). In medieval Europe, historical work similarly documents an increasingly strict policing of lack of self-control, sexual misconducts, alcohol consumption, and lax religious observance, culminating in the moralistic religious movements of the early modern period (Burke, 1978; Ingram, 1990, 1996; Martin, 2009; McIntosh, 2002).

In other words, the focus on the WEIRD/non-WEIRD dichotomy (Henrich et al., 2010) may have obscured substantial variation in puritanical values among non-WEIRD societies themselves, potentially limiting our understanding of the cross-cultural variation that psychological theories must account for. Furthering our understanding of the psychological origins of puritanical values, and testing predictions of various theories, requires the field to move forward a systematic, quantitative documentation of the full spectrum of puritanical values' variations across human societies.

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7. Conclusion

Many societies develop apparently unnecessarily austere norms, depriving people from the harmless pleasures of life. In face of the apparent disconnect of puritanical values from cooperation, the latter have either been ignored by cooperation-centered theories of morality, or been explained by mechanisms orthogonal to cooperative challenges, such as concerns for the purity of the soul, rooted in disgust intuitions. We have argued for a theoretical reintegration of puritanical morality in the otherwise theoretically grounded and empirically supported perspective of morality as cooperation. For deep evolutionary reasons, cooperation as a long-term strategy requires resisting impulses for immediate pleasures. To protect cooperative interactions from the threat of temptation, many societies develop preemptive moralizations aimed at facilitating moral self-control. This may explain why, aside from values of fairness, reciprocity, solidarity, or loyalty, many societies develop hedonically restrictive standards of sobriety, asceticism, temperance, modesty, piety, and self-discipline.

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Notes

1. Adultery is an instance of cheating in the context of pair-bonding and marriage – a cooperative interaction on reproduction, resource production, and parental investment (Gurven et al., 2009). Committed pair-bonds enjoy mutual benefits of parental certainty and greater efficiency in child care (Chapais, 2009; Gurven et al., 2009). Yet, just as in other cooperation dilemmas (Rand & Nowak, 2013), they also face short-term incentives to cheat by taking advantage of their partner's exclusive provision of benefits (fidelity), while not reciprocating it to reap the benefits of extra-pair mating (see Buss & Schmitt, 1993; Gangestad & Simpson, 2000). Adultery, thus, amounts to take the benefits of one's partner cooperation (fidelity) while not oneself paying the costs of cooperation (by oneself remaining faithful) – and is accordingly nearly universally condemned (Broude & Greene, 1976; Murdock, 1949; Poushter, 2014). This is not to deny the often-patriarchal nature of adultery proscriptions, which often sanction female's infidelity more strongly than male adultery (Broude & Greene, 1976), and often take the form of prohibitions for men to steal each other's wife, treating women as the property of their husband, father, or brothers (Dabhoiwala, 2012, p. 5). Such patriarchal norms are likely grounded in males' interests to police female sexuality (see sect. 2.2).

2. Not all cooperation-based theories of morality are unitary, and not all unitary theories are cooperation-based. Some theories, such as the morality-as-cooperation framework (Curry, 2016), view morality as functioning entirely for cooperation, yet slice morality into multiple domains corresponding to distinct domains of cooperation (see also Cosmides, Guzmán, & Tooby, 2018). Conversely, some theories maintain that morality did not evolve for cooperation, but rather to advance condemners' self-interest, yet regard morality as a functionally unitary cognitive mechanism (DeScioli & Kurzban, 2009, 2013).

3. Premarital sex also amounts to cheating other people in some social contexts. In many societies, marriage is not only a cooperative interaction between spouses, but also a way to forge social exchange relationships between families (Coontz, 2006; Schlegel, 1991). In this context, young people's premarital sex inflicts important costs to families, for example, by decreasing daughters' "value" on the matrimonial market (Beckmann, 2010, p. 623; Dickemann, 1981; LeVine, 1959, pp. 978–979), or leading to costly pregnancies out of wedlock or to unwanted marriages (Broude, 1996; Dabhoiwala, 2012, pp. 29–30; Goody, 1976, p. 17). As a result, everyone may benefit if everyone limits premarital promiscuity, which, as a threat to the public good, is collectively condemned and brings a bad moral reputation to "fornicators" and their relatives (Beckmann, 2010, pp. 622–623; Dabhoiwala, 2012, p. 618).

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Open Peer Commentary

Puritanical morality: Cooperation or coercion?

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Abstract

The suggestion that there is a need to moralize bodily pleasures for uncooperative self-control failures doesn't fit with the historical record. I counter that the development of puritanical values was an instrument of coercion and control, rather than an adaptation for cooperation. Confusing cooperation with coercion and moral principles with conventional norms leads to misconceptions about societal arrangements.

The authors of the target paper provide an interesting answer to the important question of why so many societies develop puritanical values. They suggest the answer lies in resolving two puzzles. I'm particularly interested in the second puzzle of puritanical

morality as it relates to cooperation. The authors correctly point out that most evolutionary theories of morality suggest that "moral cognition is an adaptation to the challenges of cooperation recurrent in human social life" (target article, sect. 1.2, para. 1). This, they say, explains the cross-cultural condemnations of murder, violence, and theft but leaves unexplained why humans moralize victimless lifestyle choices that pertain to food prohibitions, alcohol consumption, clothing attire, and sexual relations. They go on to argue that puritanical morality develops from "folk-psychological beliefs that restraining indulgence in victimless pleasures would improve people's self-control, thus facilitating cooperative behaviors" (target article, sect. 1.3, para. 1). Although their argument for this is weak, what I find particularly problematic is their explanation as to why some societies no longer enforce "puritanical norms."

To account for why puritanism declined in so-called western, educated, industrialized, rich, and democratic (WEIRD) societies, the authors maintain that puritanical norms are endorsed by the people to ensure the self-control necessary for cooperative behaviour. They reason that these norms have the cost of stifling people's enjoyment of highly gratifying pleasures. Therefore, "puritanical norms are only necessary when they are worth the cost" (target article, sect. 5, para. 2). Moreover, the authors argue that these norms are *especially important* when people's spontaneous self-control is seen as so inadequate to ensure a stable cooperative social order (my italics). They conclude that the collective demand for "temperance likely become useless when people are more moderate anyway, and less likely to develop hard-to-control addictions to bodily pleasures" (target article, sect. 5, para. 5). A consideration of events unfolding in the world today questions the narrative offered by the authors.

On September 16, 2022, Mahsa Amini died in custody after being arrested by the "morality" police for violating Iran's strict purity laws. Media reports suggest that many Iranians are willingly putting their lives in danger to challenge the "purity laws" of the ruling elite. According to Human Rights activists in Iran, over 300 people have been killed and thousands have been arrested. What is the explanation for this situation?

Is this an illustration of thousands of Iranians observing the behaviour of others and "extrapolating from their own psychology," that surrounding individuals' are now capable of resisting temptations so puritanical restrictions are no longer worth the cost, as the moral disciplining theory (MDT) would suggest (target article, sect. 5, para 6)? Or, are we witnessing the actions of brave women and men challenging the "puritanical values" of a corrupt, coercive elite intent on controlling how women dress, think, or what they may do with their bodies?

The problem with the MDT is that there is no differentiation between morality and social conventions or between cooperation and coercion. Although space limits me to focus on the latter, I will make a brief comment about the former. The legal philosopher Ronald Dworkin defines morality as the study of how to treat others (Dworkin, 2011) and researchers have demonstrated a clear distinction between violations of conventional norms and violations of moral principles (Turiel, 1983). Prohibitions against "inappropriate attire" are an example of a conventional norm, while concerns about how to treat others such as rights, justice, and autonomy involve morality. Failing to differentiate conventional norms with morality leads to confusion about coercion and cooperation. I will offer an analogy to emphasize the coercion/cooperation distinction.

In many democratic countries, criminal law includes several defences, including the defence of duress. Duress can be raised where an accused person has committed a criminal offence under threat of death or serious bodily harm by another individual or group of individuals. The accused person is excused from criminal responsibility because the person had no choice but to break the law.

Similarly, when we speak about cooperation, we must consider the choice or lack of choice of the individuals involved. MDT takes a "subjective selection" approach that claims, "people use their intuitions and folk-theories to craft cultural traits" (target article, sect. 3.4, para. 3). When making claims about what is considered a value in a particular culture, we must ensure that we identify what group of people are crafting the value. Certainly, cultures have assumptions about how people ought to behave, and purity language is often used to reference behaviours; however, one must be cognizant of what group of people are controlling the assumptions. We must not confuse cooperation with cooperation under duress.

In present-day Iran, are the puritanical "values" subjectively viewed as, "improving people's inner self-control" that is aimed at "lowering the demand for self-control by preventing temptations to arise in the first place" (target article, sect. 4.4, para. 1)? I doubt it. I argue that the current situation in Iran is the result of an increasing number of people, from diverse segments of society, challenging a theocratic regime who use "puritanical values" to impose a warped ideology.

Failing to consider how people live their lives in both WEIRD and non-WEIRD societies and ignoring how puritanical values have been challenged and eventually changed, leads to misconceptions about "cooperative" cultural practices. Not very long ago, a man kissing a man or a Black man holding the hand of a white woman offended the puritanical values of all WEIRD societies. Historically, "puritanical values" change, not because they are no longer needed, but because brave people have challenged discriminatory conventional norms. Often "puritanical values" have nothing to do with morality.

Although the MDT is unconvincing, encouragingly the authors conclude on a positive note. They say that perhaps the focus on the WEIRD/non-WEIRD dichotomy has limited our understanding of cross-cultural variation that psychological theories must account for. I agree. I suspect that a lack of respect for human autonomy by those enforcing "puritanical values" plays a significant role in both WEIRD and non-WEIRD societies, and a subjective uneasiness about the inadequate self-control of others has little to do with the "puritanical values" of any culture.

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Don't throw the baby out with the bathwater: Indulging in harmless pleasures can support self-regulation and foster cooperation

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Abstract

In this commentary we challenge Fitouchi et al.'s puritanical morality account by presenting evidence showing (1) that pursuing harmless pleasures can actually support self-regulation, and (2) that sharing pleasurable experiences can foster cooperation. We conclude that puritanical morality is not as adaptive as presented, and may even suppress the potential benefits pleasure can have for the individual and society.

In their target article, Fitouchi et al. summarize an impressive amount of experimental and theoretical work to build their theory that human societies moralize apparently harmless pleasures (e.g., eating, drinking, music, dance), because people perceive that these behaviors undermine self-control and thereby indirectly harm cooperation. We generally agree with Fitouchi et al. that the moralization of harmless pleasures (*puritanical morality*) is a global phenomenon worth explaining. However, we disagree with the one-sided depiction of pleasure and research in support for people's lay beliefs in their article. Even though they acknowledge that their "account is agnostic as to whether puritanical norms are objectively effective in improving self-control […]." (target article, sect. 1.3, para. 3), they do very little to disclose the errors in "people's perceptions that they are" (target article, sect. 1.3, para. 3). What is missing is a critical examination of the lay belief that "if self-control supports cooperation, then pursuing harmless pleasures must undermine it." Even though this belief sounds logical, it is not. It must be an oversimplification because, as we will argue in this commentary, the celebration of self-control does not necessarily imply the demonization of pleasure. It is important to address this logical fallacy, which forms the cornerstone of puritanical morality, because it suppresses the potential benefits experiencing pleasure can have for the individual (e.g., well-being) and society (e.g., social cohesion).

We will present two concrete challenges to puritanical morality. First, we will review empirical evidence suggesting that pursuing pleasure does not necessarily reflect a lack of self-control or does the experience of pleasure undermine it. Second, we argue based on empirical research and theorizing that socially shared pleasurable experiences foster rather than threaten social cohesion and cooperation across cultures.

Pursuing harmless pleasures does not necessarily reflect a lack of self-control, nor does it undermine it

One of the key observations of the target article is that "human societies morally condemn" (target article, short abstract) harmless pleasures, because they potentially undermine self-control, if they become habitual or excessive. Here, it is important to emphasize that not all pursuits of pleasure are signs of low self-control. Some are (failing to restrain an impulse) some are not (intentionally pursuing a hedonic goal). Brushing over this distinction conceals important differences that matter with regard to the claims of the target article. For instance, personality research shows that on the trait level self-control is not negatively but *un*related to people's hedonic capacity (i.e., capacity to experience pleasure; Bernecker & Becker, 2021). This suggests that people who are good at self-control are not necessarily purists, but are just as likely to also enjoy harmless pleasures. Importantly, people who succeed in experiencing pleasure during hedonic activities (high hedonic capacity) report higher well-being, life satisfaction, and fewer symptoms of depression and anxiety (Bernecker & Becker, 2021). People who find it difficult to experience pleasure (low hedonic capacity, anhedonia), on the contrary, have a higher risk of substance abuse (Becker & Bernecker, 2020; Destoop, Morrens, Coppens, & Dom, 2019). That implies that regularly experiencing pleasure is an adaptive part of self-regulation and can even protect people from excessive overindulgence.

Further, there is an emerging literature suggesting that the experience of pleasure can support self-regulation and positive outcomes that Fitouchi et al., like many others, unrightfully attribute to the process of self-control (Bernecker, Job, & Hofmann, 2018; Gieseler, Loschelder, & Friese, 2019). For example, research suggests that the experience of pleasure motivates people to persist in long-term goals, such as keeping a healthy diet or exercising regularly (Woolley & Fishbach, 2016, 2017). Further, work in the eating domain shows that increased food enjoyment (e.g., through mindfulness) is related to lower not higher calorie intake (Arch et al., 2016; Cornil & Chandon, 2016). Moreover, research shows that work performance and study success are not only dependent on work or study-related activities, but also on the extent to which individuals make room for and enjoy their leisure activities (Binnewies, Sonnentag, & Mojza, 2010; Jia, Hirt, & Nowak, 2019).

To summarize, engaging in harmless pleasures does not necessarily signal low self-control, especially if done intentionally. Self-control and hedonic capacity rather reflect two independent and important parts of self-regulation. Further, the experience of pleasure is an important motivator that can promote long-term outcomes and even prevent overindulgence, both of which are oftentimes but unrightfully attributed to the use of self-control.

Sharing pleasurable experiences is a way of fostering cooperation in many cultures

The social effects of (individual or shared) pleasure are relatively less studied in psychology. Several lines of research or theorizing, however, suggest that engaging in victimless pleasures with others (e.g., eating, drinking, music, dance) is not only common across cultures, but also strongly linked to social cohesion. For example, engaging in socially shared rituals involving food and drink (including what we may consider excessive indulgence during holidays, e.g., Thanksgiving) increases social cohesion and

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strengthens social identity (Ratcliffe, Baxter, & Martin, 2019). A similar point has been made for music and dance, which when shared with others engender social cohesion through creating a "group body" and "group voice" (Brown, 2021). It is, therefore, not surprising that the very measurement of cooperation includes the aspect of shared engagement in pleasurable behaviors (Lu & Argyle, 1991). This aligns with theorizing on popular culture which emphasizes the importance of collectively shared pleasure (e.g., pop music, football) for creating "a fundamental commitment to membership of a human collectivity" (Richards, 2018, p. 7). To summarize, engaging in victimless pleasures together has a clear cooperative function.

Taken together, people's beliefs about the negative effects of engaging in harmless pleasures for self-control and cooperation (if they exist) are one-sided and incomplete. There is plenty of evidence calling these beliefs, and their allegedly evolutionary foundation, into question by suggesting that the (shared) experience of pleasure is adaptive for the individual (e.g., well-being, health) and society (e.g., social cohesion). It is important that researchers become aware and communicate these adaptive effects, because otherwise the unjustified moralization of harmless pleasures will persist. As a result, individuals and societies around the globe may miss out on the potential benefits of harmless pleasures.

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Puritanism as moral advertisement helps solve the puzzle of ineffective moralization

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Abstract

The moral disciplining theory proposes that people moralize excessive innocent behavior to discipline others to behave in ways that facilitate cooperation. However, such disciplining might not always be effective. To solve this puzzle of ineffective moralization we should think of puritanism in terms of moral advertisement aimed at reputation management rather than the manipulation of others.

The moral disciplining theory provides an excitingly novel and interesting solution to the puzzle of puritanical morality. Fitouchi et al. argue that people intuitively interpret pleasurable and innocent behavior such as dancing and drinking as suggestive of a lack of self-control. Such control is needed to give up one's short-term strategies in favor of the long-term strategy of cooperation. By moralizing innocent pleasurable behavior, people thus aim to discipline others to behave in ways that facilitate cooperation.

The idea that puritanism builds on an association between pleasurable and innocent behavior and lack of self-control is quite convincing. The authors, however, argue that puritanical moralization does not have to be effective in disciplining people's behavior; it only must be perceived as such. But if such moralization is not effective, then this raises the puzzle of why people do it in the first place. How could this facilitate cooperation? The key to solving this puzzle of ineffective moralization lies in reputation-based cooperation and partner choice which also lies at the heart of the moral disciplining theory. In a biological market it is important to build a reputation as a trustworthy individual because this raises the odds to be chosen as a cooperative partner (Barclay, 2013; Noë & Hammerstein, 1995). One can build such a reputation, for instance, by acting in cooperative ways. Good and bad deeds, however, are often obvious but abstaining from doing bad things is less so. It is easy to tell that a person steals by catching them in the act, but how do we establish that a person never steals?

When information about our cooperative intentions is ambiguous or unavailable to others, it pays off to advertise them by condemning behavior that indicates uncooperativeness. You condemn stealing so others can infer that you will never steal

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yourself. The strategy appears to be quite effective. People tend to treat moral condemnation as a reliable signal of the condemner's trustworthiness or "moral goodness," even more than when a person simply states that they behave morally (Jordan, Sommers, Bloom, & Rand, 2017). We do so from a young age as 7- to 9-year-old children believe that a person who condemns stealing is less likely to steal (Hok, Martin, Trail, & Shaw, 2020).

Under this view, the primary function of puritanical moralization then might not be to manipulate other people's behavior but to manage one's reputation. By condemning behavior that is suggestive of lack of self-control you communicate to others that you are a person who decries such behavior and hence are a self-controlled and reliable cooperator. This significantly raises your odds of being chosen as a partner in the biological market. Puritanical moralization can thus be effective as a self-advertising strategy even if it fails as a disciplining one.

We can expect such a reputational strategy to be especially effective and appealing in times of social disarray (which is the case as the authors show). Under such conditions it might be less clear who is reliable partner and the odds of being victimized raise significantly. Condemning behavior that indicates uncooperativeness then might function as a lighthouse guiding cooperative partners toward you. Conversely, you can rely on others' condemnations as a guide to finding trustworthy people yourself.

Condemnation, however, only works as a reliable signal if condemners live up to their own condemnations. Otherwise, one is a hypocrite who deceives others into collaborating with an unreliable partner, reaping the benefits of the reputation boost without paying the costs. Therefore, hypocrites are looked upon more harshly than perpetrators who did not condemn the act they committed (Hok et al., 2020; Jordan et al., 2017). To avoid deception, people will check for cues of commitment. A good start for condemners to deliver such cues is to never behave in ways that they condemn. However, again, such information is ambiguous. A more straightforward sign of commitment, then, might be to discipline others for their excessive behavior. This clearly shows that you are so deeply concerned about the behavior that you are willing to pay a cost. Moral disciplining thus results from the reputational concerns that come with the commitment made by moral condemnation, which is itself a tool for reputation management. However, we can expect people to adjust their behavior in response to disciplining only if they intuit that doing so is their best option available, for example, if not doing so is more costly or if conforming brings reputational benefits in the biological market. Thinking of puritanical morality in terms of moral advertisement thus solves the puzzle of ineffective moralization.

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Moral artificial intelligence and machine puritanism

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Abstract

Puritanism may evolve into a technological variant based on norms of delegation of actions and perceptions to artificial intelligence. Instead of training self-control, people may be expected to cede their agency to self-controlled machines. The cost–benefit balance of this machine puritanism may be less aversive to wealthy individualistic democracies than the old puritanism they have abandoned.

The authors make a compelling case that puritan morality is a cognitive technology aimed at facilitating cooperative behavior, based on folk beliefs about the importance and trainability of self-control for overcoming temptations. The puritan technology is crude and costly, though. Crude, because puritan morality can be too optimistic in its belief that self-control can be trained, or too confident in the efficacy of its training regimen. Costly, because puritan morality asks a lot from people. It requires them to voluntary renounce many of the pleasures that the world can offer; and it restricts freedom, particularly that of women, in the name of not creating temptations for others. Given the fragility of this cost–benefit balance, it is perhaps no surprise that puritan morality has fallen out of fashion in wealthy, individualistic democracies which offer abundant access to all sorts of pleasures, and put a high value on individual freedom.

Here I suggest that a different form of puritanism may emerge in these wealthy individualistic societies, under a technological version which changes its cost–benefit balance. The key idea is that progress in artificial intelligence has created a new class of agents for our moral psychology to contend with: Autonomous, intelligent machines whose decisions can fall in the moral domain. For example, autonomous cars take on the duty of protecting the lives of road users; and recommendation algorithms take on the duty to steer children away from inappropriate content. These machines have a moral duty, and are given a considerable degree of autonomy to perform it. Although they do not always guarantee ethical outcomes (Köbis, Bonnefon, & Rahwan, 2021), machines are paragons of puritan morality, because they do not indulge in anything. Gluttony and lust are unknown to them. They do not dress immodestly, or engage in unruly dance. They do not drink alcohol or consume any other drug. They do not yield to temptation, because they do not experience it, just as the perfect puritan would.

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This is indeed one of the first things that people say when arguing about the benefits of autonomous cars (Shariff, Bonnefon, & Rahwan, 2017): Autonomous cars are never drunk or under the influence of any substance, they do not look at their phone when driving, and they do not fall asleep at the wheel after a night of partying. In other words, they achieve the cooperative behavior that puritan morality seeks, through the perfect display of self-control that puritan morality values. What is more, they may do so with greater efficacy, and for lower costs. Greater efficacy, because it may at some point be easier to program a car to drive safely, than to train a human to do the same (Shariff, Bonnefon, & Rahwan, 2021). Lower costs, because they remove the need to abstain from alcohol or partying: People no longer need to renounce bodily pleasures, as long as they cede their agency to their car.

This is an example of what I will tentatively call "machine puritanism." Machine puritanism is a moral system in which people are not expected to build or exercise self-control, but are expected instead to cede their agency to self-controlled machines, either through the delegation of their actions, or through the delegation of their perceptions. Machine puritanism replaces the puritan norms with a novel set of norms, which may be less aversive to members of wealthy individualistic democracies, because they promise better outcomes for lower personal effort.

We have already considered one such example of norm substitution: instead of requiring that people abstain from drinking and partying before driving, machine puritanism requires that they always cede their driving decisions to autonomous cars. Other forms of action delegations may imply that we let machines speak for us, in order to maintain decency of speech (Hancock, Naaman, & Levy, 2020). Puritan norms would require people to discipline themselves into suppressing emotions like anger or infatuation, so that their speech be free of hostility or innuendo; machine puritanism would give people leave to feel whatever they feel, in exchange for letting machines rewrite their emails, text messages, and social media posts to eliminate every trace of inappropriate speech (Gonçalves et al., 2021). In a more extreme form of this norm, people may be expected to let a machine block their communications if the machine detects that they are in too emotionally aroused a state.

Machine puritanism may include norms of delegated perception, in addition to the norms of delegated actions. Puritanism requires people to avoid situations in which they could be exposed to arousing stimuli, as well as to not expose others to such stimuli. Machine puritanism would let people do as they please, but give them the option of erasing stimuli from their perception. Instead of refusing to go to a restaurant where alcohol is served, out of fear that they would be tempted to drink, machine puritans could instruct their phone to eliminate the alcohol offerings from the restaurant menu they access through a QR code. Instead of refusing to go to the beach, out of fear of seeing nude bodies, machine puritans could instruct their smart glasses or contacts to blur the bodies of other beachgoers. At some point, the use of such a filter would become more of a norm, because why would you elect to see the bodies of others, if your smart contacts can give them privacy?

The wealthy and individualistic democracies of the West, in which puritan norms have been largely abandoned, are also among the first societies in which intelligent machines will be made massively available. With this massive availability will come the possibility of new puritan norms, which will no longer emphasize the training of self-control, but require instead that we cede control of our perceptions and decisions to these new technological paragons of puritan morality.

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Moral disciplining provides a satisfying explanation for Chinese lay concepts of immorality

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Abstract

In our research on lay prototypes of immorality, we found that Chinese consider *immoral* behaviors to be more about showing coarse character, rather than being violent and harmful (called *criminal* behaviors). The target article provides a satisfying rationale for why this Chinese immorality concept, which has many similarities to the puritanical morality described here, is connected to the morality of cooperation.

I was delighted to read this article, which provides a satisfying theoretical explanation of the lay prototype of "immorality" in Chinese. In our research on lay prototypes of "immoral behavior," we find that puritanical factors are a feature of lay concepts of immoral behavior in both Chinese and English, though much more saliently in Chinese (Buchtel, 2022; Buchtel et al., 2015). Most important, Fitouchi et al.'s argument provides a theoretical basis for explaining why the Chinese word for immorality, despite excluding extremely violent behavior and emphasizing civilized moral character, can still be considered a typical example of how humans develop moral concepts to regulate social cooperation. Although I appreciate the general argument that

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self-discipline is relevant to improving social cooperation, I am still curious about how thinking in terms of moral character influences our "cognitive mechanisms" around morality.

Theoretical approaches to defining concepts such as moral norms may not agree with lay concepts. In our research on lay concepts of morality in Chinese and English (described in Buchtel et al., 2015 and Buchtel, 2022), we chose to simply use the word "immoral" itself, asking participants to give examples of immoral behaviors. This lay prototype approach offers a way of discovering aspects of concepts that academics might have missed. But although this seemed like a straightforward exercise, the results were so different in English and Chinese that the first question that came to mind was whether we had somehow chosen the wrong translation.

We found that although *budaode* (the official Chinese translation for "immoral") has many content and cognitive similarities to what Western psychologists would expect if it meant "immoral," it also seems to describe a rather different way of thinking about immorality. *Budaode* is more connected to whether behavior reflects a cultured character rather than whether the behavior is criminally antisocial.

For example, when asked to give examples of being immoral, "killing" was among the top 10 most frequently mentioned behaviors by both Vancouver and Melbourne respondents, but mentioned only once among the 600+ behaviors given by Shanghai and Beijing respondents (Buchtel et al., 2015). Although English speakers termed the most harmful behaviors as "immoral," *budaode* behaviors were more typified by the perceived incivility of the behavior, with most criminal behaviors deemed too extreme to be called *budaode*. In a lay prototype and factor analysis of immoral behavior examples from Hong Kong, Mainland China, and the United States (Buchtel, 2022), what Fitouchi et al. term "puritanical" norms were highly apparent; but they were much more strongly emphasized in the Chinese data. All three cultures had at least one factor about sexual infidelity and promiscuity; notably, in the Hong Kong data an additional "public indecency" factor included behaviors such as swearing in public and wearing revealing clothing. In the Chinese data (but not the United States), additional prudish factors related to lacking civic virtues included unhygienic behavior (spitting on the streets, not washing hands), or rude, disruptive public behavior (e.g., talking loudly, cutting in line). Finally, although the United States prototype had two "criminal" factors including extremely violent behavior, violence was notably missing from the Chinese lay prototypes. It is also notable that all three cultures had a "bad character" factor (e.g., being selfish, uncaring, arrogant, or irresponsible).

We also went on to ask other American and Chinese participants about *why* different behaviors were wrong – how would they explain it to a child? In one version of these studies, we asked them to explain why it was wrong to carry out behaviors representing violations of the five moral foundations (MFT, Graham et al., 2013): behaviors that were harmful, unfair, disloyal, disrespectful, or disgusting. Curiously, Americans kept on returning to the theme of harmfulness when trying to explain why these were wrong; even for disgusting behaviors, they said it was wrong because it constituted self-harm. But our Chinese participants instead emphasized character traits – for example, that the behavior was disrespectful, impolite, or lacked sympathy. Even for the prototypical harmful behaviors, Hong Kong participants' most common reason given for its wrongness was that the behavior was disrespectful.

We concluded that modern Chinese lay concepts of morality focus on behavior that reflects the degree to which one has a civilized and cultivated character – a Confucianism-infused form of the puritanical morals described by Fitouchi et al. In China, violent and criminal behaviors are also extremely wrong behaviors, but they are deemed *too* extremely bad to be called *budaode* – they have been historically regulated by law, not virtue (Head, 2022). Despite *budaode's* accompanying de-emphasis on violent and criminal behavior, Fitouchi et al.'s argument helps us to explain why *budaode* (in Chinese) and immorality (in English) are connected psychological concepts.

A next step for moral psychologists may be to consider how morality that focuses on moral character, instead of directly on the amount of harm caused by certain behaviors, changes moral cognition. I would argue caution against taking it too literally when one says that all moral norms can be reduced to harm and fairness; in terms of lay cognition, our Chinese laypersons might conversely argue that all moral norms are reducible to lack of respect and moral character. I appreciate the argument that cooperation-focused biological systems could give rise to puritanical norms, and that in this way such "moral" norms are cognitively or biologically connected. However, what psychologists commonly call "moral cognition" – how we judge people and their behaviors, whether we consider them to be universally wrong, how we punish violators, how we educate children – could take different forms, and have different societal effects, when there is a focus on character cultivation. For example, perhaps a focus on virtue, which may set a higher standard for harmonious, cultivated, appropriate behavior, may conversely de-emphasize universal right-and-wrong judgments that require us only to consider the amount of harm to others that we cause. I look forward to seeing more research on how puritanical morality influences the moral mind.

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Signals of discipline and puritanical challenges to liberty

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Abstract

We extend the target authors' moral disciplining theory (MDT) by discussing signaling, proscriptive and prescriptive morality, and the dynamics by which signaling may operate in tandem with proscriptive and prescriptive forms of moral disciplining. We also suggest that MDT can help explain challenges to economic and social progress by revealing fundamental tensions between puritanical intuitions and liberal ideals.

In their moral disciplining theory (MDT), Fitouchi et al. argue that people moralize victimless transgressions because such activities are perceived to diminish self-control – a necessary skill for building and maintaining long-term cooperative relationships. We agree with the authors' argument and commend them for their comprehensive, interdisciplinary review and innovative theorizing. In this commentary, we offer three considerations for extending MDT and suggest how MDT may help us understand fundamental tensions between core moral intuitions and liberal democracy.

First, we submit that the perceived causal arrow between puritanical violations and self-control is likely bidirectional. The authors convincingly argue that people perceive puritanical violations (like gluttony) as causing people to have lower self-control. However, people likely also perceive low self-control as causing self-indulgent behaviors. Puritanical violations may thus be perceived as either diminishing future self-control or simply *signaling* already low self-control. Puritanical norms put individuals' self-control to the test; the more stringent the puritanical requirements, the more stringent the test of one's self-control. Imposing puritanical norms can help reveal who within a partner market possesses suitable discipline. Consequently, puritanical norms may enable the most self-disciplined individuals in a market to be "choosier" and select more comparably cooperative partners (by avoiding transgressors), a form of assortative matching that can optimize cooperative dynamics (Geoffroy, Baumard, & André, 2019). Even if puritanical norms do not alter people's capacities for self-control, they may nonetheless alter the dynamics of cooperation by changing who pairs with whom. We would like to see future work on MDT further consider how signaling contributes to the evolution of puritanism.

Second, although the authors describe instances of both *proscriptive* puritanism (behaviors that should be inhibited) and *prescriptive* puritanism (behaviors that should be encouraged; Janoff-Bulman, Sheikh, & Hepp, 2009), their theorizing focuses on the former. It is important to recognize that self-control can be caused or signaled not just by the inhibition of apparently "victimless" pleasures, like masturbating and overeating, but also through the expression of apparently "beneficiary-less" virtues. We have theorized that the expenditure of needless or redundant effort is one such perceived virtue (Celniker et al., 2023). Specifically, we have found that people who exert more effort are seen as more moral and are more often chosen as cooperation partners, even when those efforts produce nothing of material value. As with restraint from bodily pleasures, voluntary exertion of effort is perceived as evidence of self-control and discipline. Investigating the distinction between proscriptive and prescriptive moral intuitions, and integrating such findings into MDT, may foster a more precise understanding of puritanism and its social functions.

As an example, there are reasons to suspect that the dynamics of signaling work differently with proscriptive and prescriptive forms of moral disciplining. In a partner choice market, it is often not enough for people to show an absolute level of morality; they must compete to demonstrate their superior moral standing relative to others (Barclay, 2013). As a result, both proscriptive and prescriptive norms can lead to spirals of one-upmanship as people outdo each other to demonstrate their prosocial superiority. Yet one key difference is that, with proscriptive puritanical norms, the downward pressure on victimless self-indulgences is limited by a floor: total abstinence. In contrast, for prescriptive puritanical norms, the upward pressure on virtue signaling has no obvious ceiling. Prescriptive puritanism may thus contribute to destructive "arms races" of discipline signaling, such as exerting more and more effort, or working longer and longer hours, even when these efforts do not clearly provide greater value (Celniker et al., 2023; Markovits, 2019). These arms races may be limited only by reaching the point at which the costs of self-discipline outweigh the cooperative benefits reaped on the partner choice market – or by exhaustion. An admitted limitation of some prior work on runaway cooperation was the omission of signaling and reputation management variables (Geoffroy et al., 2019). Incorporating signaling into such models, and MDT generally, may be made more tractable by exploring the differences engendered by proscriptive and prescriptive self-discipline.

Finally, the authors showed admirable restraint in detailing the wider implications of their theory. Lacking this restraint, we will briefly speculate about how MDT may help explain and address challenges to economic and social progress. We have argued that our work on effort moralization (Celniker et al., 2023) reveals fundamental tensions between folk-economic intuitions (e.g., unproductive effort is morally commendable) and basic economic principles (e.g., unproductive effort is inefficient and should be minimized) that may lead to moralistic resistance to certain public policies (e.g., universal basic income). The research reviewed by the authors revealed similar tensions, this time between puritanical intuitions (e.g., austere demands on speech, dress, and conduct) and the ideals of classical liberalism (e.g., freedom of expression, the right to privacy, and other guarantees on civil liberties). The inherent conflict between puritanical morals and norms of liberal democracy may help explain why the "end of history" (Fukuyama, 1989) is so elusive: Authoritarian appeals are often fueled by puritanical morals that are deeply intuitive and easily evoked. This perspective may help shed light on the current

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era of democratic backsliding and authoritarian resurgence (Inglehart & Norris, 2017). Recognizing conflicts between our moral intuitions and liberal ideals, and refining our understanding of the situational and ecological contexts in which puritanical intuitions are more readily indulged, may improve our grasp of the conditions that enable our authoritarian impulses and those that reign them in.

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A broader theory of cooperation can better explain "purity"

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Abstract

Self-control provides one cooperative explanation for "purity." Other types of cooperation provide additional explanations. For example, individuals compete for status by displaying high-value social and sexual traits, which are moralised because they reduce the mutual costs of conflict. As this theory predicts, sexually unattractive traits are perceived as morally bad, aside from self-control. Moral psychology will advance more quickly by drawing on all theories of cooperation.

"Purity" – a heterogeneous set of phenomena encompassing health, sexuality, and self-control – has been an anomaly for cooperative theories of morality (Gray, DiMaggio, Schein, & Kachanoff, 2022). Hence, Fitouchi et al. have done a great service in providing a cooperative explanation.

According to their account, many aspects of "purity" can be understood as cues of self-control, and self-control is moralised because it predicts a person's likelihood of reciprocating in a social dilemma (whereas *im*purity can be understood as a cue of *a lack of* self-control, which predicts a person's likelihood of *cheating* in a social dilemma). We agree.

However, social dilemmas are not the only type of cooperative problem, and reciprocity is not the only solution. There are other types of cooperation (kin altruism, mutualism, conflict resolution), that explain other types of morality (family values, solidarity, heroism, deference, fairness, and property rights) (Curry, 2016; Curry, Mullins, & Whitehouse, 2019). These other types of cooperation may explain other aspects of "purity" that are not explained by Fitouchi et al.'s self-control theory.

Take conflict resolution. Organisms often come into conflict over food, territory, mates, and other resources (Huntingford & Turner, 1987). Contestants have a common interest in minimising the mutual costs of conflict – time, energy, injury – hence these interactions are modelled as non-zero-sum hawk–dove games (Maynard Smith & Price, 1973). One strategy for minimising costs is to engage in "ritual contests": contestants display conflict-winning traits (that indicate their probability of winning the conflict were it to escalate); contestants with inferior traits defer to those with superior traits, and withdraw from the contest (Maynard Smith, & Parker, 1976). In stable social groups, these contests lead to the formation of dominance hierarchies (Preuschoft & van Schaik, 2000).

Many organisms, including humans, engage in such contests and form hierarchies (Mazur, 2005). The traits humans display in contests include: strength, health, beauty, bravery, generosity, intelligence, skill, industriousness, and coalition size (Buss et al., 2020; Gintis, Smith, & Bowles, 2001; Riechert, 1998). Emotions are important regulatory mechanisms in these contests. For example, people are *proud* of, and motivated to display, superior traits; and they are *ashamed* of, and motivated to conceal, inferior traits (Sznycer et al., 2016, 2017). (One function of shame, then, is to motivate people to withdraw from contests they have little chance of winning.)

This conflict-resolution theory predicts that these superior and inferior traits will be moralised because they help to solve a cooperative problem – they help to minimise or forestall conflict – quite apart from any other function they might perform (Curry, 2007). This theory predicts that superior traits will be considered morally good – honourable virtues, worthy of respect. And inferior traits will be considered morally bad – dishonourable vices that *degrade* those who possess them by lowering their social value in the eyes of others.

This theory can explain why, for example, cues of high and low mate-value have been considered morally good and bad, "pure" and "impure." People compete for mates by signalling cues of high mate-value that are attractive to the opposite sex (such as fertility, fidelity, chastity, beauty, industry), and concealing cues of low mate-value that are unattractive (such as infertility, infidelity, promiscuity, poor health, a history of failed relationships). Sexually attractive traits will be considered morally good, sexually unattractive traits will be considered morally bad.

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As an initial test of this hypothesis, we asked an online sample in the United States (MTurk; $n = 98$; 66% male; mean age = 33 years) to rate the degree to which 20 "impure" traits (including promiscuity, masturbation, laziness, and drinking alcohol): (1) indicate a lack of self-control; (2) are sexually unattractive; and (3) are morally bad (1–100). We regressed "moral badness" onto "lack of self-control" and "sexual unattractiveness" using a mixed model, with traits nested within participants. (All materials, data and analysis are available on OSF: https://osf.io/g52w6/.)

Both "lack of self-control" ($\beta = 0.26$) and "sexual unattractiveness" ($\beta = 0.25$) predicted the "moral badness" of the traits (marginal $R^2 = 0.24$). The two predictors together explained more variance in moral badness than either do alone.

These results support the *self-control* theory; and they also support the *conflict-resolution* theory. They show that a *broader* cooperative theory of morality can better explain why traits are moralised. Future research should develop and test predictions from all available theories of cooperation when attempting to explain moral psychology. Advancing in this way, cooperation may provide a comprehensive explanation of moral phenomena, including those previously labelled "purity."

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Moralistic punishment is not for cooperation

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Abstract

The theory proposed by Fitouchi et al. misses the core of puritanical morality: Cruel punishment for harmless actions. Punishment is mutually harmful, unlike cooperation which is mutually beneficial. Theories of moral judgment should not obscure this fundamental distinction.

One pleasant Sunday, you gather firewood in the morning, discuss whether God exists over lunch, and later, under the stars, share a romantic kiss with your spouse in public. When word of these misdeeds gets out, the Puritans bind your hands and feet, walk you to the gallows, and put a noose over your head in front of a crowd. Then they whip you until your flesh is torn and bleeding. Then they bring a hot iron to bore a hole in your tongue.

Under Puritan rule in seventeenth-century Massachusetts, you committed several crimes and received an ordinary punishment (Merrill, 1945). But why do these tormentors punish harmless actions so cruelly?

According to Fitouchi et al., your tormentors want to cooperate. The authors propose that "puritanical morality is no exception to the cooperative function of moral cognition." Burning a hole in your tongue is a Puritan's way of saying they want to cooperate with you. The hot iron is meant to help you control yourself, particularly in obedience to Puritan rules.

We do not think the authors' explanation works. We accept their first point that cooperation requires self-control. So do many other social behaviors, including obedience to authority, loyalty to coalitions, stealth warfare – even skillful lying, theft, and murder. Cooperation is not special but it depends on self-control too.

We partly accept their second point that puritan offenses show impulsiveness. Some do and some do not. Drugs obviously impair self-control and cooperation. On the other hand, actions such as masturbation and oral sex could be impulsive or deliberate, and might appear impulsive only to those who moralize them. Homosexuality seems unconnected to self-control, yet it is a frequent target of puritanical wrath. Using contraception is rather controlled and yet still condemned by sexual puritans like the Catholic Church. Other offenses such as blasphemy, atheism, and gathering wood on Sunday are more remote yet from self-control.

However, the authors' theory does not explain the core of puritanical morality – punishment. Despite the reference to "disciplining" in the title, they barely discuss punishment, using the words *punish* and *punishment* only three times in the article. The authors' main points, cooperation and self-control, do not

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explain why puritans want to punish impulsive people, or why they inflict severe punishment for harmless impulsivities.

The authors' argument could explain how people choose partners for cooperation, but that is not the same as choosing people to punish. A person who chooses a cooperative partner with self-control gains a straightforward benefit – better cooperation that yields more rewards. In contrast, a person who punishes an impulsive glutton suffers a cost – the cost of inflicting the punishment, as well as the risk of retaliation from the glutton and their allies. How does a person benefit by punishing, at a cost to themselves, others with low self-control? Perhaps the punisher aims to discipline the offender for cooperation, but why not simply look for a better partner instead of risking retaliation to try to teach a glutton self-control?

As in our opening example, the historical Puritans are known not only for self-control but also for cruel punishment, which they often inflicted on political and religious rivals like the Quakers. Their moralistic destruction is epitomized by the Salem witch trials in which 19 people were hung for witchcraft. For decades before, the Puritans infamously expressed their moral values with the whip, the noose, the pillory, the branding iron, and the mutilation of tongues and ears. This brutality is an element of puritanical morality found in societies around the world. Yet the authors do not say how their theory explains sadistic punishment of harmless offenses.

Additionally, a theory of puritanical morality should explain why people judge certain behaviors but not others as morally wrong (DeScioli & Kurzban, 2009). The authors claim that "people intuitively perceive this self-control-requirement of cooperation" (p. 17). If moral taboos come from innate intuitions about self-control, then people should agree on what is immoral across individuals and societies. However, moral rules vary tremendously across societies, and people also bitterly disagree within each society (Haidt, 2012; Haidt, Koller, & Dias, 1993; Pew Research Center, 2013; Weeden & Kurzban, 2014). For example, if humans intuit that an unveiled woman threatens cooperation, why do many societies think it is acceptable to be unveiled? And what explains disagreements such as recent protests against mandatory veils in Iran? Despite being instructed – brutally – on the virtues of veils, immense crowds of Iranians fight for the freedom to be unveiled.

Another theory better explains puritanical rules: Moral judgment is designed for choosing sides in conflicts, while coordinating with other bystanders who choose sides by the same moral rules (DeScioli & Kurzban, 2013). To coordinate side-taking, humans can moralize essentially any category of behavior, nearly any verb can be moralized. People moralize actions that frequently occur in conflicts, providing a set of rules for choosing sides when conflicts arise.

Because moral judgment is not designed for cooperation, moral rules can inhibit cooperation and cause harm and destruction. Puritanical rules do not require a special explanation, therefore. Humans fight over the puritan issues of sex, food, drugs, and work, so they moralize actions that occur in these fights. Moral rules differ across societies for the same reason that traffic rules differ: Many codes can serve the purpose of coordination.

Still, moral rules have consistent patterns. Prohibitions against murder and theft benefit most people in most societies, so they are consistently favored in debates over the rules. Prohibitions against sexual promiscuity and disobedience to authority benefit some people while harming others, causing recurrent disagreements and a patchwork of moral variation depending on which faction wins control of the rules governing each issue – sex outside of marriage, abortion, homosexuality, veils, drugs, free speech, blasphemy, and so on (Kurzban, Dukes, & Weeden, 2010; Weeden & Kurzban, 2014).

In short, although people might benefit from avoiding impulsive partners, this benefit does not constitute a foundation of moral judgment, which is designed for coordination in conflicts rather than cooperation.

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Purity is still a problem

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Abstract

Our recent review demonstrates that "purity" is a messy construct with at least nine popular scientific understandings. Cultural beliefs about self-control help unify some of these understandings, but much messiness remains. The harm-centric theory of dyadic morality suggests that purity violations can be comprehensively understood as *abstract harms*, acts perceived by some people (and not others) to indirectly cause suffering.

Purity is a popular topic in moral psychology. One popular theory argues that purity represents a unique moral "foundation" – a distinct domain of moral judgment – that explains why liberals and conservatives disagree about politics (Graham, Haidt, & Nosek, 2009; Haidt, 2007). This theory suggests conservatives but not liberals care about violations of purity, clarifying why conservatives

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are more likely to condemn gay marriage and burning Bibles. The problem with this argument is that purity is not a distinct domain (Schein & Gray, 2015) or unique to conservatives (Frimer, Tell, & Haidt, 2015), and – most challenging – nobody even knows what exactly purity is (Gray, DiMaggio, Schein, & Kachanoff, 2022a).

In our recent review, we discovered that there are at least nine popular understandings of purity violations, ranging from disrespecting God to touching feces (Gray et al., 2022a). Purity is not defined as a single thing, but a grab-bag of norm-violating acts. We empirically demonstrated that purity is an especially messy concept that is more poorly defined and operationalized than other concepts in morality like harm or loyalty (DiMaggio, Kachanoff, & Gray, 2022), and without a clear definition of purity, it is incomprehensible as a distinct moral domain.

Fitouchi et al. tackle the messiness of purity, moving away from the unsupported ideas of distinct moral foundations. They identify a "constellation of moral norms" in puritanical cultures that emphasize self-control and temperance. Rather than arguing purity concerns are some cognitive fault-line separating modern American republicans and democrats, the authors explain that many purity norms emerge from the application of puritanical religious beliefs about intuitions around cooperation. Fitouchi et al. identify that people have the intuition that engaging in impure acts (e.g., bodily pleasures) hampers self-control capacities, and self-control is essential to being a cooperative member of society. Therefore, if someone revels in bizarre sexual fetishes, they won't work well in teams, pay back favors, or respect property rights.

This self-control account helps unify some of the acts labeled as "impure" but not all of them. Other purity concerns, like norms around not engaging in disgusting acts (Haidt, 2007) and the culturally situated prohibitions of eating meat following the death of a loved one in Hindu religious communities (Shweder, Much, Mahapatra, & Park, 1997), are still moralized, but this isn't because rolling in urine or eating chicken makes you less likely to pay back loans. A full account of purity must also be able to explain moral judgments like these – we need a meta-theory of purity.

We argue instead that the moralization of all the different purity concerns can be better explained by understanding their relationship to perceptions of harm. The theory of dyadic morality (TDM) argues that we all share a harm-based moral mind and that we condemn moral acts based on how harmful they seem (Schein & Gray, 2018). Further research supports the central role of harm in predicting moral condemnation across various "moral domains" (Ochoa, 2022) (Fig. 1).

However, harm is a matter of perception and can vary based on assumptions of the perceiver. The wrongness of purity violations are debated between people, not because they appeal to any distinct moral mechanisms, but because their harmfulness is very ambiguous. We might all agree that child abuse causes harm to a vulnerable person, but the acts used to operationalize purity are generally seen to lack obvious interpersonal harm (Gray et al., 2022a). Rolling around in sterile urine is weird but doesn't cause immediate injury. Where's the harm there? Research suggests that people do perceive some harm – and concrete victims – in these disgusting acts (Gray, Schein, & Ward, 2014; Gray et al., 2022b), and we build off these findings to suggest an overarching and culturally situated view of purity (Gray et al., 2022a). Real-world purity judgments revolve around *abstract harms*, moral norms perceived by some people (and not others) to indirectly cause suffering. These abstract harms often do not have an objective direct victim but instead have a perceived indirect victim.

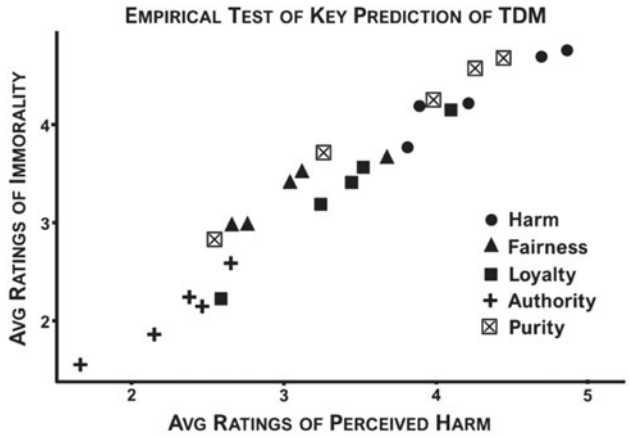


Figure 1 (DiMaggio et al.). Perceptions of harm predict moral judgment across diverse acts. Data from Ochoa (2022).

The abstract harms account of purity was clearly supported when purity was first introduced to psychology by Richard Shweder as a form of moral rhetoric. Shweder and colleagues (1997) studied how the Oriya Hindu Brahmin community discussed purity concerns around "death pollution." These Brahmins believe that one must eat a special diet to process the death pollution of a dead person. However, they also believe that failure to do so harms the soul of the deceased by delaying their reincarnation (Shweder, 2012). Although American researchers may not directly see suffering caused by some actions, those who follow these purity norms believe it causes harm downstream.

Other abstract harms rely on more metaethical beliefs, like "what if everyone did it?!" Levine, Kleiman-Weiner, Schulz, Tenenbaum, and Cushman (2020) clarify how this logic of universalization influences harm perceptions through the case of overfishing. Although it isn't necessarily harmful for a single person to fish as much as humanly possible, if everyone acted this way, ocean ecosystems would collapse, so the best moral norm is to exercise moderation. Fitouchi et al.'s description of puritanical morals implies this logic in puritan prohibitions against drugs and weird sex acts based on the belief that this leads you to be a less cooperative individual. Although one onanist may not bring about civilizational collapse, puritans believe that the most vulnerable in our society would be harmed if we were all out-of-control sodomites who "did not aid the poor and needy" (Ezekiel, 16:49).

Fitouchi et al. suggest a method for how psychologists might be able to better incorporate cultural beliefs into our investigations of morality. By analyzing how particular beliefs scaffold onto harm, the authors provide a rich account of how unique moral norms emerge from specific social contexts. Rather than accepting that some moral divides represent immutable group differences in the mind, this approach suggests that we can foster moral understanding by learning about beliefs which drive others' perceptions of abstract harm, and moral psychologists can use this method to continue to unravel the problem of purity.

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Puritanical moralism may signal patience rather than cause self-control

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Abstract

We argue that people may resist temptations not only with the aim of acquiring more self-control, but also because they want to convince others that they are patient and already possess self-control.

We agree with the authors that there is a plausible link between moral impurity and breakdown of cooperation. However, such a link does not logically require that immoral behavior negatively impacts self-control. It is enough that immoral behavior signals poor self-control. In fact, it's even enough that it signals impatience. For example, gluttony could harm cooperation even if it does not undermine the glutton's future ability to resist temptations. If potential partners consider gluttony to be a symptom of impatience, they will be reluctant to attempt cooperation.

Below, we articulate our argument with the help of a game-theoretic model. The model combines the theory of discounted repeated games with signaling theory. (For a textbook treatment of these theories, see, e.g., Fudenberg & Tirole, 1991, Chs. 5 and 8, respectively.) For simplicity, we only consider the role of patience. That is, we refrain from considering lack of self-control, for example in the form of non-exponential discounting. As shown by Obara and Park (2017) and Bernergård (2019), exponential and non-exponential discounting serve essentially identical functions with respect to sustaining cooperation in infinitely repeated games.

Two agents, drawn at random from a large population of agents, are involved in the following two-stage interaction. In the first stage, henceforth called the individual stage, each agent faces a choice whether to engage in moderation or gluttony. Moderation yields a utility of 2 today and 2 tomorrow. Gluttony yields utility of 4 today and −1 tomorrow. The patience of agent i is captured by a subjective discount factor $\delta_i \in (0, 1)$. Thus, the total utility of moderation is $2 + 2\delta_i$ and the total utility of gluttony is $4 - \delta_i$. The former is larger than the latter if $\delta_i \geq 2/3$.

In the second stage, henceforth called the group stage, the two agents play an infinitely repeated Prisoners' Dilemma game. Each agent chooses whether to make a sacrifice for the other's benefit or not to do so, that is, to defect. In each round, mutual sacrifice yields a utility of 1 each, mutual defection yields a utility of 0 each, and when one agent defects and the other sacrifices the former gets 2 and the latter gets −1. Suppose for simplicity that agents restrict attention to two strategies at the group stage. One strategy is to always defect. The other strategy is conditional sacrifice, which entails sacrifice in the first round and for as long as the other has sacrificed, and a switch to defection as soon as the opponent defects (either switching forever, as in the "grim trigger strategy" or switching temporarily as in "tit-for tat"). If both play conditional sacrifice, there is cooperation forever, resulting in a utility of $1 + \delta_i + \delta_i^2 + \cdots = 1/(1 - \delta_i)$ for each of them. If both play always defect, there is mutual defection forever, yielding zero utility. If one plays always defect and the other plays conditional sacrifice, then the defecting player gets 2 and the sacrificing player gets −1, because they will both be defecting from the second round onward. Note that always defect is a best response to always defect, whereas conditional sacrifice is a best response to conditional sacrifice if and only of $\delta_i \geq 1/2$. Suppose finally that the discount factors in the agent population are uniformly distributed on the interval [1/4, 3/4].

For the solution to the entire game, it matters crucially whether agents observe their partner's choice at the individual stage. If agents do not observe each other's consumption choices, then there is no Nash equilibrium in which conditional sacrifice is played at the group stage. Intuitively, the risk of facing a defecting opponent is enough to deter everyone from attempting to establish cooperation, regardless of their patience.

By contrast, if agents can observe their partner's consumption before deciding their own group-stage strategy, cooperation might get established. Consider the following strategy for player i: (a) At stage 1, choose moderation if and only if $\delta_i \geq 1/3$; (b) at stage 2 choose conditional sacrifice if and only if both chose

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moderation at stage 1 and $\delta_i \geq 1/2$. It is straightforward to show that this strategy profile is a subgame perfect equilibrium of the entire game. In this equilibrium, moderate consumption signals high patience (high δ_i) and a willingness to cooperate. Note that an agent with δ_i between 1/3 and 2/3 would not choose moderation if the game were to end after stage 1 but do so when they can thereby reap the benefit of durable cooperation at stage 2.

Our observation that moral behavior can have signaling value neither contradicts nor detracts from the authors' theory. Presumably, both mechanisms are at play. Only empirical analysis can clarify their absolute and relative importance for explaining puritanical morality. Unobservable puritanical behavior is inconsistent with the signaling theory. On the contrary, deliberately public displays of morality are probably better explained by the signaling theory than by the authors' theory.

Let us end by noting a difference between our signaling argument and those of the prior literature on religiosity as a credible signal (e.g., Iannaccone, 1994; Irons, 2001). The prior literature typically posits that people differ in their commitment to the religious cause. Moreover, it posits that costly displays of devotion are rewarded by other congregation members. Here, we demonstrate that the same kind of prudent behavior might instead be signaling patience, and that the reward might take the form of successful cooperation – possibly also with people outside of the religious community itself.

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Evolutionary research confirms that a need for collective action increases puritanism

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Abstract

Recent findings in evolutionary psychology explain how moral disciplining is connected to the need for collective action. Morals are strict in societies affected by war or perceived collective danger, but loose where peace and security prevail. This theory supplements the moral disciplining theory by providing an evolutionary explanation for the postulated link between puritanism and the need for cooperation.

It is difficult to explain why morals are so different in different cultures. The article makes a valuable contribution to solving this riddle.

People's beliefs that indulgent behaviors are bad for self-control and cooperation form the basis for puritanical morals according to the moral disciplining theory that the article presents. The article recognizes that functional norms, that is, norms that actually improve cooperation, can spread by cultural group selection. Yet the authors emphasize that their account is agnostic as to whether puritanical norms are objectively effective in improving self-control and cooperation. It depends only on people's perceptions that they are. This begs the question as to how these folk beliefs arise in the first place and how they change. Are the folk beliefs based on experience, evolved by cultural selection, imposed by self-interested leaders, or are they rationalizations of preexisting distastes for certain behaviors? The article focuses more on cultural evolution than on biological evolution, yet evolutionary psychology may offer additional insight into people's motivations to suppress or promote certain behaviors.

Allow me to introduce a theory called regality theory. This theory explains the psychological desire for strict discipline and strict morals as an evolved mechanism to suppress free-riding in situations with a high need for collective action, such as war and other collective dangers. Moral proscriptions against both sexual and non-sexual forms of indulgence are found in societies with a high level of perceived collective danger, according to this theory (Fog, 2017).

A fundamental element in regality theory is the need for collective action during violent conflicts. Violent intergroup conflict has been a strong evolutionary force in human prehistory. Prehistoric hunter–gatherer tribes were not always as peaceful as early anthropologists believed (Allen & Jones, 2014; Hames, 2019; Kiblinger, 2020). A hierarchical social structure with strict discipline and a strong leader can be an efficient means for suppressing free-riding in case of intergroup conflict or war (Fog, 2017; Sinn & Hayes, 2017). A hierarchical social structure with strict discipline is optimal in a dangerous environment with frequent violent conflicts. The situation is very different in a safe and peaceful environment where there is less need for collective action. A powerful and despotic leader in this situation can take advantage of everybody else without providing enough collective benefit to justify his power. People will be likely to support a strong leader and to show psychological preferences for strict discipline only in case of violent conflict. In case of peace and security, people prefer an egalitarian society and a tolerant culture because this frees them from the tyranny of a powerful leader. This theory describes a psychological flexibility that allows humans and their culture to adapt to varying needs for collective action (Fog, 2017).

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Regality theory explains why puritanical morals are most common in poor societies marred by violent conflict and precarious existence, while rich welfare societies are more tolerant of indulgent behaviors. An evolved psychological response pattern makes people prefer strict morals and an authoritarian leadership when violent conflict or other collective dangers require a high level of collective action and suppression of free-riding. In light of this theory, we can regard strict morals as functional in the sense that they represent an evolved response mechanism that increases cooperation when collective action is most needed. This theory supplements moral disciplining theory by providing an evolutionary explanation for the postulated link between puritanism and the need for cooperation.

A recent large-scale study shows that perceived collective dangers such as war and terrorism foster an authoritarian culture with strict discipline and strict sexual morals, while individual dangers have no such effect (Fog, 2023). This observation supports the theory discussed here.

The explanation that people in western, educated, industrialized, rich, and democratic (WEIRD) societies do not need strict morals because they exhibit more spontaneous self-control is perhaps less convincing when we consider that such societies are characterized by more individualism (Welzel, 2013), more indulgence (Minkov, 2011), and more focus on joy than on duty (Beugelsdijk & Welzel, 2018).

Competing interest. None.

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Drinking and feasting are perceived as facilitating cooperation

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Abstract

We argue that the occurrence of puritanical norms cannot simply be explained by appealing to the need for cooperation. Anthropological and archaeological studies suggest that across history and cultures' self-indulgent behaviours, such as excessive drinking, eating, and feasting, have been used to enhance cooperation by enforcing social and group identities.

According to Fitouchi et al., moral cognition is grounded in a need for cooperation. They argue that people believe that engaging in self-indulgent behaviours, such as drinking, dancing, and feasting, amplifies the motivational force of short-term cravings, leading to a lack of self-control, which hinders cooperation. As a result, puritanical norms, which prohibit such self-indulgent, yet apparently harmless, behaviours, arise out of a need to preserve self-control which is essential for cooperation.

We argue that the relationship between puritanical norms and cooperation is more complicated than the target article claims. Archaeological and anthropological studies provide evidence that collective self-indulgent behaviours, such as drinking, dancing, and feasting, have played a role in solidifying social and group identities, which have ultimately promoted cooperation in communities across human history and culture. As a result, the existence of puritanical norms cannot be explained simply by the need for cooperation, because behaviours that violate such norms can help, rather than hinder, cooperation.

To see this, consider studies of communal drinking in ancient China. During the Neolithic and Bronze Ages (ca. 8000–1200 B.C.), China underwent rapid population growth because of the emergence of settled communities which engaged in the domestication of plants and animals. In Neolithic Northern China, unpredictable fluctuations in climate and rainfall directly affected the agricultural and economic activities that resulted from attempts to farm arid land (Zhang et al., 2018). As a result, cooperation was vital to ensuring an adequate food supply against the background of rapid population growth and environmental pressures. If Fitouchi et al. were correct, then ancient China would have been a culture in which puritanical norms would have likely emerged to preserve precious resources and facilitate cooperation. However, evidence shows that these communities spent time and effort to take part in drinking and feasting, treating such collective self-indulgent behaviours as a crucial way of building social connections to further communal goals (Feng et al., 2021; He, Liu, Sun, Shao, & Di, 2021; Liu, 2021; Liu et al., 2019; Wang, Zhao, Wang, & Liu, 2019).

Consider first the development of community infrastructure during the mid-Yangshao period (ca. 4000–3500 B.C.) (see Liu, 2021). During this period, with population growth there was a shift in the organisation of settlements. Public houses, located in village centres, increased in size and smaller family dwellings were built to surround these public centres. As part of these village centres, large communal hearths were constructed for communal cooking. Large, decorated, amphorae for the sharing of alcohol were also located in these centres. During this period, as populations grew there was a substantial investment of time and resources for creating the means for social interactions centred around drinking and feasting.

Why might these cultural practices have emerged? One explanation is that they helped to solidify relationships within the group, encourage the sharing of goods, and solidify group

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identity. Different stories can be told for how this might work, yet we can see these activities helping to establish tribal boundaries or in-group member status, thereby directly facilitating cooperation between those that indulge as part of the ritual.

These behaviours aren't unique to ancient China either. We see evidence for the role of feasting and drinking in the promotion of cooperation in a number of cultures, for example, Andean Peru (Williams & Nash, 2021), Mesopotamia (Paulette, 2021), and Egypt (Wang, Friedman, & Baba, 2021) (for a review see Dietler, 2006). Similar practices can also be found in modern day rural Southwest China, where individuals drink alcohol from a communal *zajiu* vessel as part of the *guozhuang* ritual dance (Li, 2011; Liu, 2021). This activity has the explicit goal of promoting group solidarity.

Turning to Latin America, Spier (1995) found evidence speaking directly to the folk belief that Fitouchi et al. attempt to establish. In the Peruvian parish of Zurite, Andean women opposed the conversion of their husbands to Protestantism because the resulting abstinence, because of puritanical norms, would eliminate a means of developing connections across households, and ultimately would destroy mutual aid networks. Once again, there is a belief that anti-puritan behaviours promote cooperation, rather than hinder it.

To this day, drinking is often considered an important catalyst for social bonding which promotes cooperation. In Western cultures this is often part of workplace "pub cultures" in which partaking in these activities is taken as evidence of being a "team player" and abstaining is cause for a lack of trust. Similar phenomena can be found across the world, such as in modern day Korea, the United Kingdom, Japan, China, Australia, and numerous other countries (Schweitzer & Kerr, 2000). Partaking in these collective indulgent activities is taken to be an indicator of trustworthiness, and not as an indicator of a lack of self-control.

Fitouchi et al.'s account neglects a rich literature and oversimplifies the functions of puritanical norms and self-indulgent behaviours in complex social practice. Throughout human history, folk-psychological beliefs about alcohol consumption are more complex than Fitouchi et al. claim. Self-indulgent behaviours such as drinking and feasting are not always perceived as hindering cooperation. Rather, studies have shown that people treat self-indulgent behaviours as a crucial way of facilitating cooperation. From this we see how their account fails to explain why puritanical norms on prohibiting self-indulgent behaviours only exist in some societies whereas other communities promote such behaviours. It also suggests that something other than the simple need for cooperation has brought about puritanical norms in certain regions.

Competing interest. None.

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On cooperative libertines and wicked puritans

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Abstract

We agree with Fitouchi et al. that self-denial is sometimes moralized to signal capacity for cooperation, but propose that a person's cooperative character is more precisely judged by willingness to follow cultural, group, and interpersonal goals, for which many rules can serve as proxies, including rules about abstention. But asceticism is not a moral signal if its aims are destructive, while indulging impulses in a culturally approved way can also signal cooperation.

Fitouchi et al. argue that puritanical morality is concerned with signaling and diagnosing cooperation. We agree that self-denial is sometimes moralized to serve this function, but propose a more accurate scope. Specifically, puritanical adherence only signals resources for cooperation – resources that can also bend toward non-cooperative ends. A person's cooperative character is more precisely judged by willingness to follow cultural, group, and interpersonal goals, for which many arbitrary rules can serve as proxies, including rules about abstention. But asceticism is not a moral signal if its intent is destructive; and

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indulging impulses in a culturally approved way can also signal cooperation.

First, the assumption that selfishness is self-evidently automatic, and that cooperation is self-evidently controlled, does not fit the whole story of research on the topic (e.g., Buckholtz, 2015; Nitschke, Forbes, & Lamm, 2022; Speer, Smidts, & Boksem, 2022). Fitouchi et al. note failures to replicate "intuitive cooperation" effects. They recognize that intuitive selfishness may be moderated by prosocial disposition. But many findings still reveal intrinsic motives to help. Cain, Dana, and Newman (2014) call intrinsic prosociality "giving," versus "giving in" to a social norm or social pressure to be unselfish. Evidence for giving comes from the "warm glow" literature on prosocial behavior (Andreoni, 1990; Dunn, Aknin, & Norton, 2014). If some people get a "helper's high," a prosocial disposition needs no self-control. More recently, Bago, Bonnefon, and De Neys (2021) have shown that individual differences in cooperation and selfishness both result from intuitive processes, rather than greater or lower control. If self-control is secondary to intuitive cooperativeness, then when diagnosing morality, cooperativeness itself is surely a better cue.

We are not saying that puritanism plays no part in moral inference. It might work as a multiplier, given baseline assumptions of prosocial intent. But tellingly, people are not seen as more moral when they give up short-term pleasures for evil ends. For example, after the September 11th attacks, attempts to acknowledge the suicide attackers as "courageous" were strongly resisted. Their ultimate self-sacrifice could not be seen as virtue, given the evil of their aims (Kyle, 2017). A self-controlled villain is worse, not better, than a sloppy, pleasure-seeking one. Likewise, self-control contributes to judgments of good (but not bad) character as a necessary ingredient to carry out good intentions, not as a virtue on its own (Gai & Bhattacharjee, 2022). In actual behavior, too, self-control is not always beneficent. As a trait, it can facilitate less frequent but more successful antisocial acts (Mathes et al., 2017), and can work toward selfish ends when social control is low (Uziel & Hefetz, 2014).

More parsimoniously, we see puritanical morality as one of many rules that might be adopted by a society to signal willingness to abide by other rules concerning harm and help. Rules that require self-abnegation may indeed have an advantage in practice. They are costly to enact, but can be enacted consistently, because they require no food, drink, or partner to be available. Indeed, proscriptive morality (i.e., following social/moral norms about what should not be done) has been shown to carry a stronger motivational force than prescriptive morality (i.e., seeking a prosocial end for its own sake) (Janoff-Bulman & Carnes, 2013; Janoff-Bulman, Sheikh, & Hepp, 2009). However, the important ingredient of proscriptive morality is still the adherence to the norm in the first place, and indulgence is just one of many things that can be proscribed.

Purity also loses standing as a universal signal of cooperation when group norms license rowdy behavior. If the dynamics of university "Greek" organizations and drinking societies are not proof enough, Lowe and Haws (2014) showed that in a variety of self-control arenas such as spending and eating, people formed social bonds over shared indulgence as well as shared abstinence. Abstinence was preferred mainly when self-control failure was seen as more harmful than innocuous. Likewise, Rawn and Vohs' (2011) model of "self-control for personal harm" marshals evidence that many dangerous, self-harming, and impulsive-seeming acts aim to gain social acceptance. True, in such cases people may internally need self-control to propel themselves into excesses they would otherwise recoil at. But the external signal being sent, most germane to their reputation, is one of indulgence.

Conversely, derogatory terms such as "prig," "prude," and "wowser" tell us that people who shy away from fun can pay a cost, by being seen as cold, unfriendly, even uncooperative. Uziel (2018) reviews studies showing that self-control can have downsides in personal relationships and interpersonal problem solving: Lack of spontaneity engenders mistrust. More recently, Röseler, Ebert, Schütz, and Baumeister (2021) found that people with high self-control were not always liked more. Self-control was a liability in socializing (vs. duty) situations and when the perceiver themselves had low self-control. This last effect shows that individual as well as cultural norms may determine whether tight or loose people are most to be trusted.

By their admission, Fitouchi et al.'s analysis covers only puritanism, one facet of the "purity" set of moral concerns. However, a focus on general social norms might bring in more purity concerns under a common roof. Although some observances and taboos plausibly concern pathogen control, other rules antithetical or irrelevant to immune defense take on lives of their own as cultural signifiers. Why the British and not the French historically abhor horse meat; why rotten-smelling dairy and fish concoctions have adherents in certain corners of Europe; the varied toleration worldwide of two people of the same gender who fall in love or have sex – all of these purity and impurity norms seem like arbitrary, sometimes costly, rules to follow. But they point toward a person's general rule-following tendency, taken as a very rough cue to whether they will cause harm or do good in society (for experimental evidence, see Chakroff, Russell, Piazza, & Young, 2017). In conclusion, not just puritanism, but all kinds of culturally sanctioned observances are moralized to bear on judgments – justified or not – of a person's helpfulness or depravity.

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Puritanism needs purity, and moral psychology needs pluralism

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Abstract

This account of puritanical morality is useful and innovative, but makes two errors. First, it mischaracterizes the purity foundation as being unrelated to cooperation. Second, it makes the leap from cooperation (broadly construed) to a monist account of moral cognition (as harm or fairness). We show how this leap is both conceptually incoherent and inconsistent with empirical evidence about self-control moralization.

Fitouchi et al. argue that puritanical morality arises from moralization of self-control failures, which are seen to characterize undesirable future cooperation partners. We appreciate the authors' comparisons and contrasts between their moral disciplining theory (MDT) and moral foundations theory (MFT; Graham et al., 2013; Haidt & Joseph, 2004), and we grant that self-control is central to puritanical morality and does not correspond neatly to any one moral foundation. We also appreciate the authors' historical psychological approach (Atari & Henrich, 2022; Muthukrishna, Henrich, & Slingerland, 2021), which helps theorists better situate cross-temporal changes in puritanical morality, rather than examining just one era. We also agree that it is crucial to study puritanism and purity, as it is the least WEIRD (western, educated, industrialized, rich, and democratic; Henrich, Heine, & Norenzayan, 2010) aspect of moral cognition (Atari et al., 2022a) and remains understudied compared with other moral concerns that may be more salient in WEIRD contexts.

Although we find Fitouchi et al.'s theory of puritanical morality compelling (though incomplete, as we'll show), we believe their account of MFT has missed some important areas of agreement. First, MFT agrees with Fitouchi et al. that moral *systems*, as cultural products, are best understood as aiming toward cooperation. Haidt (2012, p. 66) defined "moral systems" as "interlocking sets of values, virtues, norms, practices, identities, institutions, technologies, and evolved psychological mechanisms that work together to suppress or regulate self-interest and make cooperative societies possible." But where Fitouchi et al. suppose that moral cognition is based on a single computational device that computes fairness (or is it harm?) to infer a person's cooperation potential, MFT argues that when humans developed widely shared and socially enforceable understandings of how things "ought" to be, they drew on multiple pre-existing cognitive systems, including the attachment system, reciprocal altruism, coalitional psychology, status hierarchies, and the behavioral immune system. MFT also posits that cultural learning can regulate these evolutionarily prepared psychological mechanisms (Graham et al., 2013), which can produce cross-temporal and cross-regional differences in the endorsement of moral foundations. Do Fitouchi et al. and other monists believe that these evolved psychological mechanisms did *not* get recruited into morality because the harm system (or is it the fairness system?) was sufficient for cooperation in our evolutionary history?

We do say, as Fitouchi et al. note, that the last item in that list has an evolutionary origin different from the others. The first four foundations all grew out of interpersonal dynamics in ancient primate and mammalian societies, whereas purity cognitions have their origin in a physical world full of pathogens (Atari et al., 2022b). Yet MFT distinguishes between the evolutionary origins (from which we infer the "original trigger" of an intuition) and the current function (which includes the current triggers). We say, in numerous places, that purity now functions to enhance group binding, for example, "if you think, as I do, that one of the greatest unsolved mysteries is how people ever came together to form large cooperative societies, then you might take a special interest in the psychology of sacredness…Whatever its origins, the psychology of sacredness helps bind individuals into moral communities" (Haidt, 2012, p. 149). Consistent with this idea, Dehghani et al. (2016) found, using both social network analysis and social psychological experiments, that purity concerns were the greatest predictor of moral homophily both online and offline.

Linking puritanical morality to cooperation as the one ultimate end or social function of morality does not mean there must therefore be only one proximate moral concern or moral calculator in the mind: harm (or is it fairness?). For example, the senses all evolved to bring information about the outside world into the brain and into consciousness. Therefore, by the target article's logic, there must be only one sense: sight (or is it hearing?). But both genetic and cultural evolution are utterly indifferent to parsimony, and psychologists should be wary of theories that offer extreme parsimony at the price of a worse fit with the phenomenon under study. Koleva and Haidt (2012) called this trade-off "Occam's chainsaw." Further, the claim that MDT's account supports a plurality of monisms (based on harm, or fairness, or both) seems conceptually incoherent to pluralists like us.

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Humans are an ultrasocial and uniquely cultural species, and they cooperate in various ways and for multiple purposes (e.g., reproduction, parenting, coalition building, economic prosperity, security, etc.). Morality can involve more than one cooperative strategy and employ more than one psychological building block. Fitouchi et al. seem to agree that loyalty and authority are clearly related to cooperation, so they seem to acknowledge that there are four valid moral foundations: care, fairness, loyalty, and authority. Other researchers who take a morality-as-cooperation approach also maintain a pluralistic framework, just with a slightly different list of foundations (e.g., Curry, Mullins, & Whitehouse, 2019). And cultural evolutionary models of cooperation maintain that there are multiple evolved mechanisms underlying cooperation, such as kin-based altruism, direct reciprocity, reputation, punishment, and signaling (Henrich & Muthukrishna, 2021).

We have shown throughout the development of MFT that moral pluralism is more consistent with the empirical literature than is moral monism (see Graham et al., 2018, sect. 4). Further, the target article's monist claims about harm (and/or fairness) are specifically contradicted by the empirical literature on self-control moralization. Combining historical and experimental approaches, Mooijman et al. (2018) showed that moralization of self-control failures is most strongly related to, and facilitated by, group-binding concerns of loyalty, authority, and purity, much more so than care and fairness. And a recent investigation of the moralization of sensory pleasure found the exact same pattern (Goenka & Thomas, in press). If you limit morality to harm and/or fairness, then, you fail to capture the moralization of self-control that is so central to the target article's account.

We are happy that Fitouchi et al. and other monist researchers believe that "The idea of 'purity' transformed moral psychology" (Gray, DiMaggio, Schein, & Kachanoff, 2022), and we could not agree more. In the past few years, several emerging lines of research, using predictive modeling of naturalistic data, have demonstrated the central role of moral purity in illuminating the powerful and destructive forces of morality. Here are four examples: (a) Pathogen prevalence is predictive of endorsements of moral purity, even after controlling for political ideology, and historically, when purity values become more salient, infectious diseases drop in subsequent years (Atari et al., 2022b), (b) endorsement of purity, and other binding foundations, is predictive of US county-level frequency of hate-group activity, even after controlling for political orientation and socioeconomic status (SES) (Hoover et al., 2021), (c) COVID-19 vaccination rates are negatively predicted by county-level endorsements of moral purity, even after adjusting for structural barriers to vaccination, and the demographic and religious make-up of the counties (Reimer et al., 2022), and (d) hateful rhetoric across contexts (from Nazi propaganda to hate speech on alt-right social media sites) and across 19 languages is strongly concomitant with purity language (Kennedy et al., 2022). As these examples show, removing purity from descriptive accounts of human morality would prevent us from understanding much of the "dark side" of moral convictions and concerns (Skitka & Mullen, 2002).

Although we are convinced by Fitouchi et al. that Puritans highly moralize behaviors that are thought to reduce self-control, we think that the writings of Puritans make it clear that, like all people in all societies, they have more than one moral concern. The New England Puritan Cotton Mather once observed a dog urinating at the same time he himself was urinating. He was disgusted, and drew moral inspiration from his disgust. He later wrote this resolution in his diary: "Yet I will be a more noble creature; and at the very time when my natural necessities debase me into the condition of the beast, my spirit shall (I say at that very time!) rise and soar…" (Mather, 1708). Various branches of Buddhism, such as Tantra, also use disgust (as when contemplating a corpse) as a means of making moral progress by breaking one's attachments to one's own body. It seems to us rather awkward to force these moral statements into the procrustean bed of cooperation (or harm, or fairness), rather than taking them at face value as concerns and cognitions about purity.

As with all moral phenomena, we think that moral puritanism is best understood through a pluralist lens that embraces the full range of moral concerns, including the group-binding, cooperation-enhancing concerns of loyalty, authority, and especially purity.

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Purity is not a distinct moral domain

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Abstract

Purity violations overlap with other moral domains. They are not uniquely characterized by hypothesized markers of purity – the witness's emotion of disgust, taint to perpetrator's soul, or the diminished role of intention in moral judgment. Thus, Fitouchi et al.'s proposition that puritanical morality (a subset of violations in the purity domain) is part of cooperation-based morality is an important advance.

A recent development in moral psychology with important theoretical consequences is the division of morality into distinct domains (Rozin, Lowery, Imada, & Haidt, 1999). One such hypothesized moral domain has become the focus of intense research: purity. Purity was theorized to be distinct from other moral domains, such as autonomy for example. Autonomy violations occur when a perpetrator intentionally harms another person and thereby elicits anger in a witness, whereas purity violations occur when the perpetrator, intentionally or not, defiles his or her own body or soul and thereby elicits disgust in a witness (Rozin et al., 1999). However, more recent research questions whether purity is distinct from autonomy (Gray, DiMaggio, Schein, & Kachanoff, 2022; Kollareth, Brownell, Durán, & Russell, 2023).

Consistent with the recent questioning of purity as a distinct moral domain, Fitouchi et al. raise the question whether a subset of violations in the purity domain, what can be called puritanical morality (condemnation of lust, gluttony, drinking, drugs, gambling, etc.) is an exception to the cooperative function of moral cognition. They propose moral disciplining theory (MDT) and argue that at least some acts featured in puritanical morality are cooperation-based moral concerns. If so, such acts, allegedly understood as violations in the domain of purity, lack distinct psychological foundations and evolutionary concerns said to characterize that domain.

That violations of purity are characterized by a unique emotion, disgust, is also questionable. Fitouchi et al. argue that puritanical moral acts such as lust, gluttony, intemperance, lack of self-discipline, and impiety are unrelated to disgust. Furthermore, much of the research offered in support of the claim that purity violations are disgusting confounds the violation with a pathogen. Examples include: thinking of scriptures while expelling excrement (Haidt, 2003) or cleaning a bathroom with the national flag (Haidt, 2012; Haidt, Koller, & Dias, 1993). When studies de-confound purity violations from pathogens, those alleged purity violations are not perceived as disgusting (Kollareth & Russell, 2019; Kollareth et al., 2023; Royzman, Atanasov, Landy, Parks, & Gepty, 2014).

Fitouchi et al. also note that the word *disgust* is polysemous. Thus, there is a problem using the word *disgust* to measure the emotional reaction of disgust. The word *disgust* is synonymous with "grossed-out" when the target includes a pathogen. However, in other contexts, a witness may use the word *disgust* to indicate anger or even dislike. In studies that used the word *gross* or phrase *grossed-out* in the response format, purity violations free of pathogens were more angering than gross (Kollareth & Russell, 2019; Kollareth et al., 2023; Royzman et al., 2014).

A similar confound occurs with the use of an emotional facial expression as a measure of disgust. The standard disgust face (nose-scrunch, raised upper lip) is associated with both disgust and anger (Pochedly, Widen, & Russell, 2012; Rozin, Lowery, & Ebert, 1994; Widen & Russell, 2010). However, the face of someone about to vomit (open mouth, lowered bottom lip, cheeks raised), which we call the "sick face," was more reliably associated with pathogen disgust (Widen, Pochedly, Pieloch, & Russell, 2013). Studies have shown that the standard disgust face is commonly interpreted as angry rather than disgusted (Pochedly et al., 2012; Rozin et al., 1994; Widen & Russell, 2010). Ekman (1972) found what he called a "confusion" of anger and disgust when Papua New Guineans selected faces for basic emotions. Opposing the view that purity violations (free from pathogens) elicit genuine disgust, Ritter, Preston, Salomon, and Relihan-Johnson (2016) found that religious thought violations were not associated with the standard "disgust face" that was elicited by physically disgusting stimuli.

Yet another question raised by Fitouchi et al. in relation to disgust is whether behaviors that degrade the elevated nature of the human soul or remind humans of their animal nature are disgusting. Empirical studies have examined this specific hypothesis and conclude: Animal reminders *per se* are not disgusting (Kollareth & Russell, 2017). Some disgusting things may remind us of our animal nature, but they are not disgusting because they do so (Kollareth & Russell, 2018).

Consistent with the idea of purity violations degrading one's spiritual self, Rottman, Kelemen, and Young (2014) offered "taint to soul" as a marker of a purity violation. However, studies show that purity violations are not the only type of moral violation that a witness believes taints or degrades the soul (Kollareth et al., 2023). Witnesses find that murder, a hypothesized autonomy violation, taints the soul of the perpetrator more than does suicide, a hypothesized purity violation (Allam, Kollareth, & Russell, 2022).

Yet another hypothesized marker of a purity violation is related to the role of intention. According to Young and Tsoi (2013), "mental states, in fact, matter less, specifically, in cases of 'purity' violations" (p. 586). Initial research provided some support for this hypothesis (Barrett et al., 2016; Chakroff et al., 2016). However, more recent studies emphasize the role of the perpetrator's intention in the judged morality of various violations including those of purity. Context rather than domain governs the role of the perpetrator's intention (McHugh, McGann, Igou, & Kinsella, 2022). When context is taken into account, intention plays a significant role in the judged immorality of purity violations just as it does for autonomy violations (Kupfer, Inbar, & Tybur, 2020; Parkinson & Byrne, 2018). In the purity domain, the perpetrator's intention is significant and substantial: It is used to judge whether an impure act is moral or immoral (Kollareth & Russell, 2022).

In short, although every moral violation is distinct, empirical evidence does not support the claim of a distinct moral domain of purity. Indeed, violations characterized as purity overlap in many

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ways with other hypothesized moral domains – a claim consistent with Fitouchi et al.'s interesting and important hypothesis that puritanical morality is part of cooperation-based morality.

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Puritanical moral rules as moral heuristics coping with uncertainties

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Abstract

As the cultural evolution of a puritanical moral norm in Turkey illustrates, puritanical moral norms are not developed by nonrational reasoning concerned with purity and cleanliness. People use puritanical moral rules as moral heuristics for making intendedly rational decisions about whether to cooperate or not when the commitment of the counterparty is uncertain.

A striking example from Turkey can be helpful to set the scene for my theoretical discussion of Fitouchi et al. Turkish women are traditionally expected to keep their virginity until marriage (Frank, Bauer, Arican, Korur Fincanci, & Iacopino, 1999). The female virginity norm cannot be explained by purity concerns, as Turkish men are not averted by having sex with nonvirgin women (Ozyegin, 2015). Turkish men seem to care about it only for marriage as a cue of future fidelity. As such, it exclusively functions as a moral heuristic to ensure faithfulness: If a woman can control her sexual urges before marriage, she can also faithfully control them after marriage. Besides, if a woman is brave enough to violate the virginity rule, men can think similar bravery exists for cheating after marriage. However, that can only work if it is widely adopted. That is to say, in a country where virginity is unimportant, being nonvirgin would not imply such bravery to cheat.

The salience of the virginity rule has recently decreased in Turkey, along with changes in societal conditions (Askun & Ataca, 2007; Ozyegin, 2015). Some historical trends can explain this decline. The marriage age has increased for both men and women, while many women have their first marriages in their early 30s or later (Yüksel-Kaptanoğlu & Ergöçmen, 2014). Hence, expecting virginity becomes an unreasonable demand. Moreover, it creates new cooperation problems. Although men can expect faithfulness by relying on the virginity rule, they must marry their wives without testing their sexual compatibility. Thus, although the virginity norm may decrease the uncertainty of faithfulness, the uncertainty of marital satisfaction increases. Couples were not concerned with such issues in the past as marriages were often arranged by families with limited private interaction between partners before marriage. Furthermore, as an insurance policy, men could resort to polygamy (the polygamy rate was only around 2%) (Behar, 1991), which was, however, abolished long ago and became socially unacceptable (except in

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a few rural regions) in Turkey. The adoption of the Western lifestyle, particularly in affluent circles of big cities and coastal areas, significantly changed the conditions against the relevance of the virginity norm. The virginity norm also becomes less meaningful because of medical techniques that restore virginity. The issue may have complications, but its essence is illustrative enough (for a paper that is not on sexuality in Turkey), as it serves as a meaningful example to support Fitouchi et al. and illustrate how puritanical moral rules are used under uncertainty of cooperation.

Fitouchi et al. argue that puritanical moral rules prohibiting apparently harmless hedonic actions are preemptive measures to ensure cooperation among people whose self-interests can urge for non-cooperative action. I hold the supporting view that puritanical moral rules, such as the virginity rule, are used as moral heuristics (i.e., short-cut solutions) for intendedly rational decision making under uncertainty (cf. Gigerenzer & Gaissmaier, 2011) as people need to decide whether to cooperate with their counterparties when the commitment of the counterparty is uncertain. By referring to intended rationality, I mean people make decisions in a calculative manner to achieve their desired ends despite limitations of knowledge and cognitive capacity (Simon, 1990).

As illustrated in my opening example and as compatible with Fitouchi et al.'s moral disciplining theory, people use puritanical norms in an intendedly rational way in their daily struggles for cooperation as supported by these observations:

(1) People selectively apply a puritanical norm (e.g., Turkish men are unlikely to use the virginity rule as a moral heuristic when they marry a woman from another country where virginity is not a meaningful cue of future fidelity).
(2) People are open to relaxing a puritanical norm when it creates new uncertainties or becomes irrelevant for uncertainties (e.g., the declining salience of the virginity norm in Turkey because of changing conditions).
(3) People pay attention to a puritanical norm only when cooperation is at stake (e.g., Turkish men seek virginity only for long-term partner choices but ignore the virginity norm when it comes to short-term partner choices).

However, people can use moral heuristics unwisely (Sunstein, 2005). Besides, people are not always intendedly rational in their moral reasoning. As my research (Kurdoglu, 2019, 2020; Kurdoglu & Ateş, 2022) indicates, moral issues can be resolved heuristically (by practical reasoning aiming at accuracy in problem solving) as well as eristically (by pretentious reasoning aiming at the arbitrary exercise of power, personal taste, or whim). Heuristic reasoning provides intendedly rational solutions to moral problems. In comparison, eristic reasoning is nonrational as it aims at asserting personal preferences to others with self-serving-biased inferences (Kurdoglu & Ateş, 2022). Because of its self-serving nonrational nature, eristic reasoning produces superficial and unconvincing arguments.

Hinting at eristic reasoning in moral justifications, Haidt (2012) states that when faced with hypothetical scenarios where there is no apparent harm or violation of consent, people usually fail to provide reasonable justifications for moral taboos prohibiting bizarre sexual acts (e.g., incest). Accordingly, Haidt makes a generalization that puritanical moral rules are dogmatically defended and suggests that these rules are nonrationality infiltrated into personal tastes concerned with purity and cleanliness. Yet Haidt conflates innate individual moral preferences with collectively formed moral norms. As Haidt only focuses on the nonrationality of individual preferences, his moral foundation theory misses the intended rationality of collective moral norms and their relevance for self-control, cooperation, and social harm. In this sense, moral foundation theory fails to notice that taboos like incest are established heuristically to ensure the self-control and cooperation of people with *unusual* sexual urges. Similarly, it misses that puritanical moral norms like the virginity norm concern the self-control and cooperation of people with usual sexual desires.

In sum, although moral reasoning is not devoid of nonrational (eristic) processes at the individual level (see Graham et al., 2013), Fitouchi et al. strikingly demonstrate that moral reasoning is intendedly rational at the social level of moral norm formation and the interpersonal level of moral norm utilization.

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Considering the role of self-interest in moral disciplining

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Abstract

Why do people moralize harmless behaviors? Although people rely on cooperative principles in making their moral judgments, I argue that self-interest likely plays a role even in these judgments. I suggest potential lines of research that might examine the role of self-interest in puritanical morality.

A long tradition of research has linked morality to cooperation. Cross-cultural data suggest that, wherever people make moral condemnations, they appeal to cooperative rules such as fairness, helping one's group, and reciprocating prosocial behavior (Curry, Mullins, & Whitehouse, 2019). Fitouchi et al. show that even many non-harmful behaviors are moralized because they are viewed as inconsistent with self-control, and hence are detrimental to cooperation.

They note that people sometimes use morality for self-interested purposes. Much of the research examining self-interested uses of morality has focused on how people use morality to protect one's mating interests, for example by moralizing behavior associated with sexual promiscuity (Karinen, Wesseldijk, Jern, & Tybur, 2021; Kurzban, Dukes, & Weeden, 2010; Pinsof & Haselton, 2016) or by advocating for institutional protections against promiscuity in the form of religion (Moon, 2021; Weeden, Cohen, & Kenrick, 2008). They view this approach as consistent with their own, but as limited in explaining puritanical morality.

However, other puritanical moral judgments can also serve self-interest beyond their benefits to cooperation. Because moral principles are culturally universal, placing one's appeal within a moral principle is likely to be an effective way to advocate for one's own interests. For example, vulnerable individuals – who lack the means to protect themselves or recover from harm inflicted by others – rely more heavily on the cooperation of others; given that cooperation relies on self-control, these are precisely the people who should benefit from puritanical moral norms.

Consistent with this prediction, past research has shown that people who lack material resources (Pitesa & Thau, 2014), have weak coalitions (Petersen, 2013), or are exposed to unpredictable environments (Ding & Savani, 2020) tend to favor harsher moral judgments against harmful or exploitative behavior. Similarly, physically weak individuals, who are presumably less able to gain resources by force, tend to favor more egalitarian and peaceful moral principles (Sell, Tooby, & Cosmides, 2009), in which they are less likely to find themselves at the bottom of a hierarchy.

Another way puritanical morality can serve self-interest is through signaling. As the authors note, signaling one's ability and willingness to delay gratification helps gain others' trust. This is consistent with the authors' cooperative account, but people may use puritanical morality to signal qualities for non-cooperative reasons – such as to attract romantic partners (cf. Brown, Keefer, Sacco, & Brown, 2022) or to gain status. Thus, people might endorse puritanical moral norms partly for the benefits they receive by communicating positive traits about themselves, in addition to their concerns for cooperation.

It may seem odd that any individuals would be willing to sacrifice cooperative norms, but moralization has several costs. In addition to the costs of punishing other people's behavior, moralizing limits one's own behavior (at the risk of being labeled a hypocrite). If such individuals want to engage in gluttony or sexual taboos, moral disciplining requires these opportunity costs. Further, strict moral norms have other cultural implications – they might facilitate a more orderly society, but hinder creativity (Jackson, Gelfand, De, & Fox, 2019). Within a given society, those who are less vulnerable to disorder are more likely to benefit from increased creativity and freedom, and the increased self-control and cooperation gained by moral disciplining are less likely to be worth the costs.

Future research can test whether moral disciplining reflects these types of self-interest by exploring the costs and benefits of moral disciplining for different groups. If moral disciplining serves self-interest, one might expect people in vulnerable states to endorse more puritanical morality. As noted above, vulnerable individuals are generally harsher moral judges (Ding & Savani, 2020; Petersen, 2013; Pitesa & Thau, 2014), but this research has generally looked at judgments toward general cooperative domains rather than puritanical moral judgments.

Further, if people use puritanical morality to signal qualities about themselves, one might expect endorsement of puritanical morality to track one's incentives to signal self-control to others. They might do this for cooperative benefits, but perhaps amplify these judgments when there are potential reputational gains. Irons (2001) similarly proposed that people engage in religious costly signals to signal cooperative qualities to others, as well as qualities as a prospective mate. People who encounter strangers more frequently benefit by having the means to communicate their trustworthiness quickly; these people therefore tend to be more devout in general, and may even increase their devoutness when they are likely to encounter strangers.

Another line of inquiry might explore how cultural or ecological factors influence puritanical morality. As the authors discuss, cultural evolution might lead to more puritanical morality in societies where cooperation is especially crucial. However, these pressures might also provide opportunities to examine self-interested uses of morality. For example, puritanical moral positions might be more or less useful or powerful in influencing other people's behavior in some societies (Moon, Tratner, & McDonald, 2022), or might make it more important to maintain a good reputation (Awad, Dsouza, Shariff, Rahwan, & Bonnefon, 2020). A self-interested perspective would predict that endorsement of puritanical morality will track the costs and benefits, and that this may happen in nuanced ways.

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Purity is linked to cooperation but not necessarily through self-control

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Abstract

Fitouchi et al. claim that seemingly victimless pleasures and nonproductive activities are moralized because they alter self-control. Their account predicts that: (1) victimless excesses are negatively moralized because they diminish self-control, and (2) restrained behaviors are positively moralized because they enhance self-control. Several examples run contrary to these predictions and call into question the general relationship between self-control and cooperation.

Fitouchi et al. outline two puzzles related to puritanical morality, or the "moralization of apparently victimless pleasures." The first concerns the heterogeneous set of moral concerns that purity norms encompass (the puzzle of association). The second concerns the moralization of behaviors that seem unrelated to concerns about cooperation (the puzzle of morality without cooperation).

The moral disciplining account is meant to resolve both puzzles. On this account, self-control is necessary for cooperation. Thus, behaviors that diminish the capacity for self-control are negatively moralized, whereas behaviors that enhance the capacity for self-control are positively moralized. Puritanical norms encompass behaviors that are perceived to either diminish or enhance self-control, such as substance abuse or ritual observance, respectively. These behaviors are indirectly harmful or beneficial because engaging in them makes one a better or worse cooperative partner in the long run. Thus, the moral disciplining account not only draws a link between puritanical morality and cooperation, but also explains why puritanical norms encompass the behaviors that they do: These are behaviors that are perceived to alter individual self-control.

Fitouchi et al. have made an important case for the relationship between purity and cooperation. In addition to the evidence they provide, we have also found significant, cross-culturally robust correlations between responses to the morality-as-cooperation scale (Curry, Chesters, & Van Lissa, 2019) and judgments about the moral wrongness of purity violations depicted in the moral foundations vignettes (Clifford, Iyengar, Cabeza, & Sinnott-Armstrong, 2015; Jiménez-Leal, Carmona, Murray, & Amaya, 2022). Insofar as MAC responses index attitudes about cooperation, this suggests that there is a cross-culturally stable association between attitudes about purity violations and attitudes about cooperation.

We want to raise three issues that might help refine and extend the moral disciplining account. The first concerns two specific predictions of the account stated explicitly by Fitouchi et al.:

> Victimless excesses should be preemptively moralized when perceived to causally contribute, through their deleterious effects on self-control, to an increased prevalence of uncooperative behaviors. Restrained behaviors should be praised when perceived to positively contribute, through their preserving effects on self-control, to the improvement of people's cooperativeness. (target article, sect. 3.3, para. 2)

Purity violations are negatively moralized because they diminish self-control, whereas purity compliance is positively moralized because it enhances self-control. But puritanical behaviors and self-control sometimes dissociate. Consider someone who confesses having sexual fantasies about his coworkers. Such thoughts could constitute a purity violation that might be moralized, even if the individual exhibits exemplary self-control and never acts on them.

Fitouchi et al. might argue that these cases are grist for their mill. Impure thoughts are evidence of intra-psychic self-control while also indicating low trait self-control. But this strategy cannot accommodate other examples that raise different problems for their prediction. Defecating on someone's grave out of spite may be regarded as a purity violation. But people would not make negative moral judgments about it because of diminished self-control. For that to be the case, people would have to view these acts as signs of inappropriate temporal discounting, evidence of inability to delay gratification, or anything of this sort, depending on how they conceptualize self-control (Bermúdez, Murray, Chartrand, & Barbosa, 2023). But that seems implausible. In fact, the more deliberative (and less impulsive) these behaviors appear the worse the violation seems.

Fitouchi et al. imply that people view certain behaviors as inherently addicting: "…intoxicants are moralized because they are perceived as favoring uncooperative behaviors…by leading people to lose control over immediate impulses and fueling disregard of future consequences" (target article, sect. 3.2.1, para. 3). They cite several studies that show people believe that alcohol consumption causes loss of self-control (Brett, Leavens, Miller, Lombardi, & Leffingwell, 2016; Critchlow, 1986; Leigh, 1987).

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But these studies measure attitudes about *heavy* drinking, which involve a recurrent pattern of behavior symptomatic of addiction. What about one-off purity violations? Is the family who eats the carcass of the dead pet losing control over some impulsive urge?

Fitouchi et al. are correct that we normally infer what others are like generally based on how they behave, and beliefs about self-control inform these inferences. Perceived self-control, however, is unlikely to fully mediate perceived cooperativeness, even for purity violations. We might look down on someone who defecates on a grave not because doing it makes them less self-controlled, but because it tells us something about how this person relates to things we respect. Perceptions of cooperativeness, therefore, can dissociate from perceptions of self-control when evaluating purity violations.

Suppose, for example, that someone is committed to the masculine ideal of the stiff upper lip. Upon hearing a touching story from a grieving friend, this person bursts out in tears. This is a case of *inverse akrasia*, where acting against one's better judgment ends up being morally appropriate (Arpaly, 2000). In this situation, a failure of self-control ends up leading to behaviors that enhance the perceived cooperativeness of the individual: Weeping in solidarity with a friend can be a good thing, even if in doing so one violates a deeply held commitment. This is because in breaking this commitment, the individual shows that he cares for his friend. And caring is an important aspect of being a cooperative partner. Thus, perceived cooperativeness can dissociate from our judgments about individual capacity for self-control, which violates the first prediction of the moral disciplining account. In fact, the example suggests that diminished self-control can sometimes promote cooperation.

In sum, the moral disciplining account is correct that purity behaviors are moralized because of how such behaviors anchor inferences about what a person is like deep down. These inferences then shape how we think about people as cooperative partners, but they are distinct from judgments about individual control (Irving, Murray, Krasich, & Glasser, 2023; Murray, Murray, Stewart, Sinnott-Armstrong, & De Brigard, 2023). Thus, puritanical morality is related to cooperation, although this relationship cannot be explained entirely through perceived alterations in self-control. Instead, it is explained by our perceptions of what an individual is like deep down (what she cares about, what she respects, etc.), which encompasses but also extends beyond how a person exercises self-control.

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"WEIRD" societies still value (even needless) self-control and self-sacrifice

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Abstract

Some aspects of moral disciplining theory (MDT) – the association between cooperation and self-control; the notion that people and societies value sacrifice and costly prosocial behaviors – are well supported. However, other aspects of MDT – the association between religion/religiosity and cooperation; the notion that sacrifice and costly prosocial behaviors are no longer valued in "western, educated, industrialized, rich, and democratic" (WEIRD) societies – are inconsistent with existing evidence.

Fitouchi et al.'s moral disciplining theory (MDT) provides an intriguing candidate for a (nearly) unifying singular theory of moral cognition centered on a set of "puritanical" values thought to promote cooperation in the long run.

Some core features of the theory are well supported by evidence that the authors did not consider (or at least discuss). First, the notion that self-control is associated with cooperation and collective success (and vice versa) fits nicely with studies showing that prosocial behaviors and delay of gratification share common psychological underpinnings (e.g., that people treat their "future selves" much like other people; Pronin, Olivola, & Kennedy, 2008), that traits associated with self-control (e.g., conscientiousness) negatively predict anticollective behaviors (Kim & Cohen, 2015), and that wealthier countries are more future-focused and less past-focused (Noguchi, Stewart, Olivola, Moat, & Preis, 2014).

Second, the notion that people and societies moralize self-control and costly prosocial behavior is rather starkly illustrated by studies showing that people value pain (Olivola, 2011, 2018a; Olivola & Shafir, 2013, 2018), effort (Inzlicht, Shenhav, & Olivola, 2018; Olivola, 2011, 2018a; Olivola & Shafir, 2013, 2018),

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and other forms of sacrifice (e.g., investments of money and time; Olivola, 2018b) for their own sake, and consider prosocial actions and outcomes to be more meaningful when these are tied to pain and effort (Olivola, 2011; Olivola & Shafir, 2013, 2018). Clearly, sacrificing pleasure, leisure, and resources requires self-control; moreover, doing so constitutes a costly form of cooperation when the intended outcomes are prosocial.

Third, MDT correctly focuses on *subjective* perceptions regarding the effectiveness of exerting self-control, rather than (necessarily) assuming that moral norms and judgments track objective effectiveness. This distinction is critical because people engage in a wide variety of costly prosocial acts that end up being unproductive or even counterproductive to both individual and collective well-being (Olivola, 2011, 2018a). For example, some of the most popular charity fundraisers (e.g., marathons for charity, the ice-bucket challenge, etc.) involve significant pain and effort, and this leads participants to feel as though they have made more meaningful contributions, even though effortless and painless means of raising money (e.g., a simple donation online) are often more efficient (Olivola, 2011). In fact, some challenging charity fundraising events end up costing more money than they raise (Lee, Williams, & Hadden, 1999).

However, other core aspects of MDT are difficult to reconcile with the evidence – including some of the same studies and observations discussed above. First, MDT implies that (more) religious individuals and societies should be more cooperative, yet outside of self-report survey studies (which suffer from major methodological issues; Galen, 2012), the evidence linking religion and/or religiosity to cooperative behaviors is somewhere between mixed and absent (Galen, 2012; Hoffmann, 2013; Olivola et al., 2020; Sablosky, 2014). Thus, there is very little, if any, (quality) evidence that religion promotes cooperation, contrary to the predictions of MDT.

Second, Fitouchi et al. argue that the moralization of self-control – and thus the valuation of self-sacrifice – is mainly prevalent in "non-WEIRD" societies and socially conservative groups that also moralize bodily pleasure, entertainment, clothing, and piety. Yet many modern, secular, progressive societies (and subgroups) do value (even needlessly) self-sacrificing, exerting effort, incurring pain, and other forms of self-discipline, albeit in different forms. For example, the popularity of painful–effortful charity fundraising events (Olivola, 2011; Olivola & Shafir, 2013, 2018), mentioned above, is not limited to religious and conservative cultural groups. To the contrary, such events tend to be far more popular and prevalent in "WEIRD" societies, and especially among the more progressive and secular parts of those societies, where people value (more) freedoms surrounding bodily pleasures, entertainment, and clothing choices. Thus, although WEIRD societies may have witnessed a reduction in some forms of self-control and sacrifice, they have also created new – some might say "modern" – forms of moralized self-control and sacrifice that would, conversely, be seen as puzzling in many non-WEIRD societies – for example, the rapid rise of charity fundraising events involving pain (e.g., the ice-bucket challenge) and effort (e.g., marathons for charity), which are popular in WEIRD countries but rare in non-WEIRD parts of the world. This suggests that WEIRD societies are not gradually abandoning the moralization of self-control and sacrifice altogether, but rather finding other, newer ways to value self-control and the (even needless) sacrifice of pleasure and leisure.

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Disciplining the disciplined: Making sense of the gender gap that lies at the core of puritanical morals

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Abstract

Because suppression of sex has been and is at the core of puritanical morals, a proper account thereof would need to explain why suppression of sex has been largely directed towards the human female. Not only do the authors not account for this pattern, but their general model would seem to predict the reverse – that is, greater suppression/control of the male libido.

Fitouchi et al.'s target article is so capably written, so bold in ambition and scope, and so rich in ideas that seemingly only a churl would choose to dwell on its faults. Alas, churls we must be!

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For, insofar as control and strident suppression of sex (Baumeister & Twenge, 2002) has always been at the core of puritanical morals, it seems that explaining these morals requires some type of account of why the said suppression has been far more intensely concerned with one half of our species, that is, the human female.

But therein lies the rub. Not only do Fitouchi et al. not give an account of this pattern, but their model, it seems, should indicate the reverse. That is, if the principal aim of puritanical morals is to reduce the occurrence of "antisocial" acts that stem from indulging/expressing one's "hedonistic impulses" (related to sexual longings), the morals' proponents should channel the bulk of their puritan efforts toward the male libido. Not only is it rather clear that males have stronger desires (Baumeister, Catanese, & Vohs, 2001; Frankenbach, Weber, Loschelder, Kilger, & Friese, 2022), but males also appear to be more willing and able to use violent means (be it against their partners or their potential rivals) (e.g., see Buss [2012, 2021] for an overview) toward their sexual ends. Moreover, the contrasts in question are so strikingly clear that they cannot be ignored by any puritan scheme that runs on the functional logic Fitouchi et al. stipulate. Thus, given the facts as they stand, it seems that Fitouchi et al. should make a clear prediction that it is men everywhere (the less "disciplined" half) that puritanical morals would target first and foremost.

Yet the reverse is the case – Baumeister and colleagues (Baumeister, Reynolds, Winegard, & Vohs, 2017; Baumeister & Twenge, 2002) provide a broad overview of the historic suppression/control of female libido and Kreager, Staff, Gauthier, Lefkowitz, and Feinberg (2016), Marks, Young, and Zaikman (2018), and Endendijk, van Baar, and Deković (2020) report a range of results that seem to support the persistence of a gender-based double standard that leads to more disapproval of women's sexual conduct than similar conduct by men. One could also advert to the historic existence of Magdalen "homes"/asylums for so-called "fallen women" (with no counterpart in the form of "womanizer asylums") as well as the fact that the language (e.g., English, German, or Russian) includes more pejorative terms for so-called "promiscuous" women than so-called "promiscuous" men (Endendijk et al., 2020).

There have been varied attempts, some more persuasive than other, to make sense of these facts (Baumeister & Twenge, 2002; Baumeister et al., 2017; Rudman, 2017), but all of these varied attempts at least begin with the premise that there *is*, like it or not, a clear cultural pattern – the gendered suppression of sex – that must be accounted for, a premise Fitouchi et al. appear unable to grant.

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Little puritans?

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Abstract

I propose that young children may be a useful test case for Fitouchi et al.'s theory that certain seemingly harmless acts are moralized because they are seen as risk factors for future poor cooperation. The theory predicts that prior to the development of certain folk-psychological beliefs about self-control, children should be untroubled by violations of puritanical morality, and that an adult-like folk psychology of self-control should develop in tandem with disapproval of such violations.

The provocative and interesting claim by Fitouchi et al. is that we moralize certain seemingly harmless acts – laziness, overeating, unruly music and dance, and so on – because we believe that they are risk factors for future poor cooperation, because they erode self-control. This theory suggests that people who lack certain beliefs about self-control should not exhibit this kind of puritanical morality, and conversely, people who don't exhibit a puritanical morality should be less concerned about issues of self-control. The authors review one such case study in their discussion of western, educated, industrialized, rich, and democratic (WEIRD) societies, and suggest that people within these societies are less concerned with puritanical morality because they see one another as overall more self-controlled and trustworthy, and thus less susceptible to the eroding forces of gluttony and sloth.

Here, I propose that an even better test case for their theory is a diametrically opposite group, one deeply lacking in self-control, and strongly prone to hedonistic behavior – namely, young children. The cluster of folk-psychological beliefs that the authors focus on – including the notions that cooperation requires self-control, that hedonistic behavior erodes self-control, and that self-control can be trained by repeated practice – is unlikely to be innate, and instead, emerge slowly throughout childhood (Duckworth, Gendler, & Gross, 2014). Two predictions arise from this (or, equivalently, two ways to falsify their theory). First, prior to the development of these folk-psychological beliefs, children should be untroubled by what (many) adults would see

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as violations of puritanical morality. Children do possess a moral sense, and from a very young age they are bothered by acts that they see as harmful or unfair (e.g., Bloom, 2014; Woo, Tan, & Hamlin, 2022), but they should lack a puritanical morality. Second, once these folk-psychological views are in place, they should have the same puritanical morality that adults do.

Are these predictions supported? There is a rich body of research into children's beliefs about self-control, choice, and inner conflict (for a recent review, see Wente, Zhao, Gopnik, Kang, & Kushnir, 2020). Some studies find that mature folk beliefs in this domain are slow to develop. For instance, children fail to understand that one person might have conflicting or mixed desires until the age of 7 or 8 (e.g., Choe, Keil, & Bloom, 2005; Harris, 1989; Harter & Buddin, 1987; Lagatutta, 2005). But other studies with simpler tasks and more explicit forced choices find even 4-year-olds can identify mixed emotions (Kestenbaum & Gelman, 1995) and 6-year-olds affirm that people can act against their stated desires (Kushnir, Gopnik, Chernyak, Seiver, & Wellman, 2015). Finally, metacognitive knowledge about self-control strategies (such as the effectiveness of removing a tempting marshmallow from one's field of view) improves gradually between the ages of 4 and 12 (Mischel & Mischel, 1983). This is all relevant to the claims in the target article, however, there is as yet little known about whether children see self-control as a capacity that can be nurtured or eroded, and whether they see it as related to cooperation.

Similarly, although there is some research exploring the emergence of a disgust-based morality in young children (finding, for the most part, that it tends to emerge relatively late, e.g., Aznar, Tenenbaum, & Russell, 2023; Rottman & Kelemen, 2012), the developmental emergence of a puritanical morality is more of an open question. When do young children come to believe that it's wrong to overindulge in Halloween candy or sleep until noon on a weekend? (And do their moral intuitions differ when they are judging themselves, other children, or adults?)

The answers to the interesting questions raised by the target article need not be all-or-none. Perhaps children have a different conception of the relationship between self-control, hedonistic behavior, and cooperation than adults do; if Fitouchi et al. are right, this should lead to a correspondingly different conception of puritanical morality.

My own work hints at one aspect of this different conception. In Starmans and Bloom (2016), 3- to 8-year-old children, as well as a group of adults, were told two stories. Both stories described a child performing a morally good action (e.g., keeping a promise, telling the truth, helping someone). In one story, the character struggled with the decision to act morally, because she was tempted by other options, like going out to play, but also wanted to do the right thing. Ultimately, she acted morally even though it was difficult for her, thus displaying self-control. In the other story, the character was not tempted to do otherwise, and so self-control was not required. After hearing both stories, children and adults were asked which character they thought was more morally good.

The findings revealed a striking developmental difference: Not surprisingly, adults had the intuition that the individual with self-control, who overcame their struggle with temptation, was morally better. But children's judgments were strongly in the opposite direction. When the outcome is held constant, children judge someone who does the right thing without experiencing any inner struggle to be morally superior to someone who does the right thing through the use of self-control. This developmental difference remained consistent when participants were asked who should be rewarded, who is morally superior, and who will act morally in the future.

This suggests that an appreciation of the value of exercising willpower and self-control is late-emerging (see Zhao & Kushnir [2022] for replication and extension). The theory proposed by Fitouchi et al. does not necessarily entail that these children must therefore lack a puritanical morality, but the findings reviewed above suggest that this is a prediction the authors might want to make. If this prediction holds – and, more generally, if a puritanical morality emerges very late in development, alongside the emergence of adult-like beliefs about self-control – it would provide considerable support for their intriguing theory.

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Is undisciplined behavior antithetical to cooperation, or is it part and parcel of it?

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Abstract

This commentary raises three points in response to the target article. First, what appear to be victimless behaviors in highly individualistic, post-industrial societies might have a direct impact on group members in small-scale societies. Second, many societies show marked tolerance or ambivalence toward intemperate behavior. Third, undisciplined behavior is not antithetical to cooperation but can be used to cooperative ends.

Fitouchi et al. propose that puritanical moralizations, which appear apt to curtail seemingly victimless offenses, are rooted in folk-psychological beliefs that curbing impulses can foster long-term cooperation by promoting self-control. In devising their model the authors endeavor to resolve the gap between theoretical accounts of morality as cooperation, and the widespread moralization of putatively harmless behaviors including: idleness, certain drug use, ecstatic music and dance, gluttony, masturbation, and even too frequent sex within marriage, among others. This commentary raises three points in response to the target article: (1) the high degree of human fitness interdependence (Balliet, Tybur, & Van Lange, 2017; Syme & Hagen, 2023) means that much of what people do, where they direct their energies or not, and even seemingly harmless actions, have a direct impact on social partners; (2) social norms involving puritanical moralizations do not entirely extinguish human impulses, and many societies allow opportunities for indulgence to thrive alongside austerity; and (3) giving into one's impulses and displays of undisciplined behavior are not always antithetical to long-term cooperation but can be integral to it.

First, compared to many other mammals and even primates, humans have a high degree of fitness interdependence and maintain a large social network of both kin and non-kin to cooperate across multiples fitness-relevant cooperative domains including: childcare (Hrdy, 2009; Page et al., 2019; Shaver et al., 2020), subsistence and risk-pooling (Cashdan, 1985; Cronk & Aktipis, 2021), and even mate choice (Agey, Addison, Maya, & Gaulin, 2021; Walker, Hill, Flinn, & Ellsworth, 2011), among others. Humans are highly social beings and much of what humans do has social significance; westerners living in individualistic, large-scale societies, however, may not be well-attuned to the social relevance of seemingly victimless offenses across diverse societies. For instance, ethnographic reports from small-scale Pacific Islander communities indicate that even brief period of social withdrawal, a behavior that to our eyes might appear socially trivial, is used to express discontent with social partners and to motivate amends (Hollan, 1990; Macpherson & Macpherson, 1987; Syme & Hagen, 2023). In other words, our "modern eyes" (p. 8) might not be the best judge of what is and is not a victimless behavior in close-knit, intimate societies where there may be considerably less privacy. Furthermore, any amount of time spent masturbating, being intoxicated, or pursuing sexual relationships is potentially diverting time and effort away from economically productive tasks that may benefit the self or the group. This may be particularly relevant to societies in which daily economic and subsistence activity is time intensive. From these perspectives, many of the apparently victimless behaviors have the potential to directly divert time away from cooperative activities in daily life.

Second, although puritanical moralizations are found in geographically diverse cultures, they do not predominate across all societies, as the authors note. Although adultery is near universally condemned, societies display varying degrees of tolerance or even ambivalence. According to ethnographic reports from the mid-twentieth century on Chon Chuuk, a Micronesian population, adultery could be punished by the offended and was socially condemned; however, numerous ethnographies described the extramarital "sweetheart" relationship as idealized and regarded as a truer expression of passion (Fischer, 1950; Gladwin & Sarason, 1953; Swartz, 1958). Relatedly, many religious calendars alternate between periods of feasting and fasting (Clasquin-Johnson, 2022), and even "puritanical" societies can tolerate displays of markedly undisciplined behavior in specific settings. For instance, in some societies, possession cults (e.g., Zar cult) are sites where socially powerless individuals can enter altered states of consciousness and dramatize social conflicts, displaying in public view the anger and despair that they must suppress in daily life (Lewis, 2002; Somer & Saadon, 2000). Indeed, impulses reflect one's fitness interests and can never be expunged. If left unsatisfied, they can engender individual or collective frustration, agitation, or even rebellion. Thus, we might consider how and why societies vary with regard to tolerance and ambivalence of undisciplined behavior and the processes by which traditions and practices emerge to channel impulses, not just suppress them.

Finally, the authors discuss at length that intoxication and other undisciplined behaviors can lead to antisocial outcomes including the outbreak of conflict, but these outbreaks of conflict do not exist in social vacuums and are at times expressions of perceived injustice. Turning again to ethnographies on Chon Chuuk, a group with whom I have conducted research on family conflict, alcohol intoxication and spirit possession are gendered means of conflict resolution in which young men, through alcohol, and young women, through spirit possession, express indignation at perceived harms against the self or valued others (Hezel & Dobbin, 1995; Marshall, 1979), and unlike possession cults, spirit possession in Chuuk is not bound to ceremonial settings. When a young woman becomes spirit possessed, she flagrantly violates social norms, taking off her clothes, using foul language, and taking on the voice of an ancestor to call out family members for neglect or abuse of other family members. This behavior, though highly antisocial in one sense, can lead to cooperative resolution in the family (Hezel & Dobbin, 1995).

Human social life requires balancing the interests between individuals and groups. Despite humans' great capacity for cooperation and costly prosociality, humans remain stubbornly self-interested: lustful, gluttonous, pleasure-seeking, passionate, and intemperate. Hence, human social behavior is a complex interplay of the selfish and the prosocial, the disciplined and the undisciplined, the ascetic and the ecstatic, and one side cannot eclipse the other without extinguishing itself.

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The evolution of puritanical morality has not always served to strengthen cooperation, but to reinforce male dominance and exclude women

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Abstract

Puritanical morality regulates a range of seemingly insignificant behaviors, including those involving human sexuality. A sizable portion of the latter particularly burdens women, who are held responsible for the moral conduct of men. In my paper, I show that these norms have not necessarily served to evolve cooperation, but to subjugate and eliminate women from public life.

The target article by Fitouchi et al. offers an idealistic vision of the evolution of cooperation. I would like to supplement this idealistic picture with a non-idealistic feminist critique by referring to the puritanical regulation of sexual behavior and those elements that concerned women. The main assumption of my paper is that the evolution of cooperation in the model presented by the authors is the evolution of cooperation between men, not including women, treating women instrumentally, which corresponds to the patriarchal nature of the mechanisms described in this theory.

The authors cite the example of norms that mandate the covering of the body by women caused by concern for the possible loss of self-control by men, which can undermine cooperation in society. The authors propose analyzing the prohibition of premarital sex in terms of proximate behavior intended to strengthen cooperation. Even if this was the real adaptive value of the prohibition of premarital sex, the burden and consequences were on the woman who ceased to be a virgin and possibly became pregnant. Women usually did not have the right to make decisions about marital matters, a telling example of which is the practice of bride abduction or arranged marriages found in various cultures (Vandermassen, 2008). If we say that this is the nature of female biology, but no longer of male biology, then we restore the meaning of the idea that biology is the destiny of women.

The cooperative component of these and similar practices is insignificant compared to the sexist desire of men to dominate women and exclude them from public life. If the restrictions discussed by the authors that characterize puritanical morality did indeed reinforce cooperation, it was a cooperation between men and men. Women were excluded because cooperation is a feature of public space, and the place of women in sexist societies was the private sphere, where cooperation occurred spontaneously, based on kinship ties. Moreover, women were usually subordinated and dependent on men controlling resources, so they were definitively not subjects of the evolution of cooperation (Vandermassen, 2005, p. 187). According to the sexual selection model proposed by Patricia Adair Gowaty, males sought to control women, whereas females sought to repel that control (Gowaty, 1992). The model proposed by the authors to explain cooperation is a model that excludes women.

The practice of covering women, usually coupled with the prohibition of their movement without the company of a male guardian, leads to women in these cultures becoming invisible and immobile – in a sense, ceasing to exist (Rawlinson, 2016). Thus handicapped, they become easily controllable and cease to be competitors (Gowaty, 1992). Deprived of any place in public space, women are forced to take care of the home, relieving men of these responsibilities.

Also worth keeping in mind is the feminist critique of the theory of biological and cultural evolution. It is worth remembering the context of discovery, not just justification, exposed by feminist social epistemologies, as well as feminist philosophy of science. The social and cultural context of an era shapes the way scientists think and do science. This was also true of Charles Darwin and the stereotypes he reproduced about the role of gender, evident in his theory of sexual selection (Nelson, 2017). This applies not only to scientific theories, but also to religious and ethical systems, including the concept of puritanical morality. Although many of the mechanisms described by the authors can be explained in terms of the evolution of cooperation, there is a strong rationale for the hypothesis that explains the

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aforementioned mechanisms regulating women's behavior and practices in terms of their exploitation and domination by men. It is worth recalling here the interpretation of the feminist philosopher Simone de Beauvoir, who showed, that the man has always been and is the self and the woman only "the other," the man as subject and the woman as object. The practice of covering women is an objectification of the woman, who for the man was never an equal to him – such status was only held by another man. The evolution of cooperation and its effect, the social contract, is really a sexual contract between men (Pateman, 1988) (and also a racial contract, if we take into account the exclusion and colonization by white Europeans of the rest of the world; Mills, 1997).

The missing element of the target article is the omission of this component of exploitation of women and their objectification. But even if these practices were to actually enhance cooperation, the entire burden falls on women, not men, who are stigmatized for distracting men from publicly relevant issues. The evolution of cooperation that has taken place in this way requires an explanation of why evolution has discriminated against, marginalized, and placed a burden on women. Although the mechanisms in question may be adaptive in an ideal society, in a non-ideal – patriarchal – society they are a tool of oppression and control, adaptive only for a select group of men. In the abstract world of evolutionary theory, females invest more in parental care, but this biological asymmetry in a non-ideal society has become a justification for the cultural and social asymmetry between men and women (Vandermassen, 2005, pp. 78–79). Interestingly, the social naturalness of this asymmetry was assumed by religious systems, which can be interpreted as supporting the mechanisms favored by sexual selection. It is worth adding, however, that reproductive morals are a better indicator of religiosity than cooperative morals (Van Slyke & Szocik, 2020), which seems to minimize the cooperative value of religiously sanctioned restrictions, especially affecting women. It is difficult to see the gender socialization manifested in restrictions on women's freedom and choice as having any relevance to the evolution of cooperation other than sexist exploitation and subjugation by men. This is especially true of regulations, including penalties on sexual behavior and reproduction, which were almost exclusively imposed on women (Vandermassen, 2005, pp. 149–150). If these regulations were meant to promote cooperation, why has not male sexual behavior been equally regulated throughout history?

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Are we all implicit puritans? New evidence that work and sex are intuitively moralized in both traditional and non-traditional cultures

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Abstract

Contradicting our earlier claims of American moral exceptionalism, recent self-replication evidence from our laboratory indicates that implicit puritanism characterizes the judgments of people across cultures. Implicit cultural evolution may lag behind explicit change, such that differences between traditional and non-traditional cultures are greater at a deliberative than an intuitive level. Not too deep down, perhaps we are all implicit puritans.

Is puritanism steeped in the cultural and religious histories of specific groups of people, or a general characteristic of human moral cognition? Some years ago, drawing on research on automatic and unconscious mental processes (Bargh, 1997; Greenwald & Banaji, 1995), as well as cross-disciplinary scholarship on American exceptionalism (Baker, 2005; de Tocqueville, 1840/1990; Landes, 1998; Lipset, 1996), we proposed a theory of implicit puritanism in American moral cognition (Poehlman, 2007; Uhlmann, 2012; Uhlmann, Poehlman, & Bargh, 2008, 2009; Uhlmann, Poehlman, Tannenbaum, & Bargh, 2011). We posited that because of a unique history of religious migration and settlement, contemporary Americans harbor automatic and intuitive responses that reflect traditional Protestant–Puritan mores. As a result, Americans, more so than members of comparison cultures, intuitively valorize working in the absence of material need – for example, perceiving a lottery winner who continues to work in a low-paying job as having outstanding moral character. In experimental laboratory settings, Americans further exhibit responses to sexual promiscuity on implicit and indirect measures more negative than their explicit, carefully considered judgments.

The moral disciplining account proposed by Fitouchi et al. directly challenges such culture-specific accounts, arguing that puritanism stems from universal moral concerns such as identifying quality cooperation partners and avoiding defectors. As they acknowledge, western, educated, industrialized, rich, and democratic (WEIRD; Henrich, Heine, & Norenzayan, 2010) societies are often markedly less puritanical than non-WEIRD societies. However, this occurred slowly over time as cooperation concerns faded considering the increasing economic prosperity and individual-level human capital in WEIRD nations. As social cooperation became less objectively necessary for individual

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survival and goal pursuit, such cultures turned away from puritanical moral values. The moral disciplining account thus predicts that today's Americans ought to be *less* puritanical than members of less privileged societies where individuals must constantly depend on friends, neighbors, and community members for assistance.

The initial experimental investigations of implicit puritanism were conducted prior to the wave of methodological reforms in the field of psychology starting in 2011 (Nelson, Simmons, & Simonsohn, 2018; Simmons, Nelson, & Simonsohn, 2011). The studies in question relied on small samples, and the analyses were not pre-registered in advance, thus increasing statistical noise and researcher degrees of freedom to potentially dangerous levels. As a result, either the effects themselves (intuitive moralization of needless work, implicit puritanical tendencies with regard to sex) or cultural differences in such phenomena could represent false positives.

In a recent self-replication initiative, we revisited the key experimental evidence regarding implicit puritanism leveraging large-scale multi-national data collections as well as pre-registration of analyses and theoretical predictions (Tierney et al., 2020, 2021). Introducing the "creative destruction" approach to replication, we competed the original implicit puritanism account claiming American moral exceptionalism with a half dozen alternative theories of culture and morality. The winning theory was the general moralization of work, which posits that implicit puritanism characterizes the judgments of people across cultures and is not uniquely American at all. Although very surprising to us at the time, this outcome is consistent with Fitouchi et al.'s moral disciplining account, in which puritanical judgments are caused by general social concerns such as detecting reliable versus unreliable cooperation partners. Further attesting to such generalizability is a recent set of conceptual replications of the needless work effect designed by 13 independent research teams (Landy et al., 2020; see also Celniker et al., 2023).

At the same time, another outcome from the self-replication initiative suggests a major theoretical modification of the moral disciplining framework. In one of the initial demonstrations of implicit puritanism, American participants were asked for either their rational and deliberative judgment or their intuitive gut reaction to a description of a target person (a previously established mindset manipulation; Epstein, Lipson, Holstein, & Huh, 1992). In the experimental scenario, a lottery winner either retired or continued to work peeling potatoes in a restaurant kitchen despite now being a multi-millionaire. When asked for their intuitive judgment, American participants were significantly more likely to perceive needless work as reflecting good moral character than when functioning in a deliberative mindset (Poehlman, 2007; Uhlmann, Poehlman, & Bargh, 2009). Tierney et al.'s (2021) attempted replications recruited more than 50 times as many participants as the original investigation and spanned four nations and continents (India, Australia, the United States, and the United Kingdom). Disproving the notion that implicit puritanism is a uniquely American phenomenon, participants from the United States, the United Kingdom, and Australia moralized work more intuitively than deliberatively. Although the manipulation of the intuitive-deliberative response had no effect on the moral character judgments of Indian participants, an exploratory internal analysis yielded a fascinating pattern of results. Specifically, differences between the traditional (India) and non-traditional (United States, United Kingdom, Australia) cultures were greater at a deliberative than an intuitive level. In other words, Indian participants exhibited no effect of the mindset manipulation because *both* their intuitive and reasoned responses to needless work were puritanical.

This points to a potential dual-process account of cultural change and stability in puritan morality. As Fitouchi et al. highlight, WEIRD societies have become less traditional regarding work, sex, and related issues over the years, which they attribute to the steadily diminishing need for social cooperation in such nations. Our self-replication findings (Tierney et al., 2021) suggest that similar to the persistence of many social stereotypes (Charlesworth & Banaji, 2022; Charlesworth, Yang, Mann, Kurdi, & Banaji, 2021), implicit cultural evolution may lag behind explicit change. As a result, even members of non-traditional cultures who deliberatively endorse a narrow harm-based morality (Graham et al., 2013) may exhibit implicit puritanism when in an intuitive mindset, cognitively depleted, or in their responses on implicit and indirect measures. These are currently only speculations based on a comparison of just four nations, and confirmatory tests sampling more non-traditional and especially traditional cultures are needed prior to drawing strong conclusions. Although it remains to be seen if the "implicit lag" hypothesis receives broad empirical support, Fitouchi et al. may be even more right than they thought: Puritanism could be universally human, albeit implicitly for some cultures and individuals.

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There are no beautiful surfaces without a terrible depth

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Abstract

Fitouchi et al. persuasively argue against popular disgust-based accounts of puritanical morality. However, they do not consider alternative account of moral condemnation that is also based on the psychology of disgust. We argue that these other disgust-based accounts are more promising than those dismissed in the target article.

Fitouchi et al. forward an account of puritanical morality that rejects a link to disgust in favor of one focused on self-control and cooperation. Although we find their skepticism of moral foundations theory and the disgust priming literature well justified, we believe that, in line with our titular quote by Friedrich Nietzsche, they have overlooked multiple ways that disgust might still inform morality.

Consider the example that arguably sparked the decades-long interest in the concept of purity: Sibling incest. Haidt's (2001) moral intuitionist model argued that people experience a flash of affect (here, disgust) when considering incest, which in turn leads to condemnation, which is justified by "rational" arguments. A deeper adaptationist analysis inspires further questions, such as: Why are people disgusted by the thought of having sex with their close kin? Why do some people experience greater disgust toward incest than others? And why would these personal feelings of disgust influence condemnation of others who engage in (even consensual) incest?

A small literature (summarized by Lieberman & Smith, 2012) has sought to answer these types of questions by considering: (1) the ultimate function of avoiding sex with close kin, and (2) the proximate mechanisms required for recognizing close kin and experiencing such disgust. Briefly, this literature proposes that a domain-specific type of disgust, *sexual disgust* (Tybur, Lieberman, & Griskevicius, 2009), functions to reduce fitness-compromising sexual behaviors (e.g., the higher risk of combining deleterious recessive alleles inherent to incest; Bittles & Neel, 1994). Individuals who categorize each other as close genetic relatives reliably develop a mutual sexual disgust via a process that relies upon the detection of ancestrally valid kinship cues. For siblings, these cues include: (1) observations of an individual being cared for as a newborn by one's mother (e.g., nursing), and (2) observations of repeated shared parental investment over the duration of dependency (Lieberman, Tooby, & Cosmides, 2007; Westermarck, 1891). The second cue is more important when the first cue is absent, because the first cue is presumably higher validity but not available to everyone (e.g., for younger siblings in a sib-pair). In line with predictions, both cues predict the degree of personal sexual aversion to sex with a sibling (Lieberman et al., 2007).

Remarkably, the cues discussed above also predict one's condemnation of *others*' sibling incest. Earlier work argued that this phenomenon is a by-product of personally felt disgust (Fessler & Navarrete, 2004; Lieberman, Tooby, & Cosmides, 2003); later work built upon this idea by proposing that felt disgust might inform the value of strategically supporting (or, at least, not resisting) particular norms (DeScioli & Kurzban, 2013; Tybur, Lieberman, Kurzban, & DeScioli, 2013). Put simply, people have little to lose by endorsing rules against behaviors they find disgusting given that they are unlikely to engage in such behaviors and thus be targeted by resulting sanctions.

Multiple other sexual behaviors are similarly morally condemned. Consider why people stigmatize and punish (sometimes by death) not only those who have sex with a sibling, but also those who have sex with someone of the same sex. The argument forwarded in the target article suggests that such behaviors are moralized because they are diagnostic of self-control failures and, consequently, uncooperative tendencies. We are deeply skeptical of this interpretation. Individuals with same-sex sexual preferences remove themselves from the pool of intrasexual competitors in the majority mating market. What could be more cooperative in a cutthroat sexual marketplace than removing oneself from the competition?

As Lieberman and Patrick (2018) explain, adaptations that regulate *personal* decisions in the domains of food choice, physical contact, and mate choice can influence the perception of the social affordances and externalities that others hold. Broadly speaking, individuals place lower social value on those who (1) eat foods of lower consumption value, (2) regularly touch contaminated objects, or (3) select sexual partners perceived as lower reproductive value – that is, those who engage in disgust-eliciting behaviors. These considerations only relate to *personal* partner choice – they don't explain the time and energy invested in condemning third parties for engaging in the consumption, contact, and sexual behaviors often lumped under the umbrella of purity. Other systems are required to explain condemnation.

Bearing similarity to aggressive behaviors present in our chimpanzee cousins (Wrangham, 1999), humans might have coalitional adaptations that monitor for, exploit, and potentially eliminate vulnerable resource competitors (Kurzban & Leary, 2001; Tooby & Cosmides, 2010). If disgust-eliciting behaviors inform low

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social value, then individuals who engage in such behaviors might be especially prone to exploitation. The proximate, experiential aspects of such systems comprise our moral sense, which in turn shapes our perceptions of concepts such as "responsibility," "blame," "harm," and (especially pertinent to the target article) "self-control." Such concepts facilitate the mental and physical coordination of groups of people for the express purpose of targeting individuals viewed as holding low value. From this perspective, perceptions of self-control failures are often the outputs of other systems designed for moral condemnation, and feelings of disgust often serve as inputs.

The target article's dismissal of disgust is largely based on findings that (1) priming disgust (e.g., via exposure to a disgust-eliciting odor) does not lead people to generally find actions more morally wrong (Landy & Goodwin, 2015), and (2) disgust expressed toward moral violations shares features with anger expressed toward identical moral violations (e.g., Piazza, Landy, Chakroff, Young, & Wassermann, 2017; cf. Molho, Tybur, Güler, Balliet, & Hofmann, 2017). These observations do not inform the phenomena or accounts described above. They do mirror other recent accounts that, to us, have thrown the disgust baby out with the contaminated bath water in favor of an overly credulous focus on the idea that morality (perhaps exclusively) functions to promote cooperation (e.g., Curry, Mullins, & Whitehouse, 2019) or, relatedly, punish harms (Schein & Gray, 2018). Although cooperation is relevant to morality, good evidence suggests that it cannot explain everything in this area (DeScioli & Kurzban, 2009). A more complete understanding of morality might require a long look into the abyss of the darker side of human nature, with disgust being an important part of this investigation.

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Puritanical morality and the scaffolded evolution of self-control

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Abstract

There is a puzzle in reconciling the widespread presence of puritanical norms condemning harmless pleasures with the theory that morality evolved to reap the benefits of cooperation. Here, we draw on the work of several philosophers to support the argument by Fitouchi et al. that these norms evolved to facilitate and scaffold self-control for the sake of cooperation.

Fitouchi et al. have provided us with an elegant solution to the apparent paradox of puritanical morality – that is, if morality evolved to aid/ensure cooperation, why do so many societies moralize the pursuit of seemingly harmless pleasures? Although this may seem like a serious problem for evolutionary accounts of morality centered on cooperation, the authors instead argue that it can be captured perfectly well within such a framework once we move away from a focus on the short-term and consider the payoffs of long-term cooperative endeavors. Because acting on immediate impulses or desires can undermine cooperative relationships through acts such as cheating or lying, long-term utility maximizers – perhaps counterintuitively – require an investment into self-control and discipline that may undermine moment-to-moment pleasure maximization.

Our goal in this commentary will be to further advance their proposal by drawing on the work of philosophers who have written on the evolution of cooperation and moral norms, but that have surprisingly not been mentioned in Fitouchi et al. There is

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a long and thriving tradition of philosophers working on these issues, including Mackie (1978), Joyce (2007), and Sterelny (2012). Although it may be easy to artificially create a gap between the target article and this literature, through their being situated within different academic departments, this would be a mistake. There is no real difference in content, with much recent work in this type of philosophy of biology being imperceptibly close to the naturalistic kind of work undertaken in the target article (see also Veit, 2019). With this in mind, we believe that the proposal of Fitouchi et al. can be strengthened by drawing on Sterelny's (2012) evolved apprentice framework, which emphasizes the role of cultural feedback loops in which learning, cooperative foraging, and the scaffolding of the environment come together and mutually sustain each other.

As emphasized in Veit and Spurrett (2021), with the emergence of an economy involving sharing, trade, and cooperative foraging with division of labor, there is an immediate rationale for the investment into self-control and delayed gratification. However, these capacities have to be trained, a process that costs both time and energy with rewards being reaped only in the more distant future – a particular challenge for adolescents most in need of their development. And it is precisely here that we argue puritanical norms have played an important role in scaffolding the development of self-control capacities. Indeed, it will help us to make sense of what Fitouchi et al. describe as a "strong valorization of *temperance* and *self-discipline*" (target article, sect. 1, para. 4). Inculcation of these traits during critical developmental periods may form an important part of future cooperative success.

Moreover, the moralization of both hedonism (Saroglou & Craninx, 2021) and the lack of self-control (Mooijman et al., 2018) have what are perhaps surprising connections with arguments made by prominent utilitarian philosophers. For example, De Lazari-Radek and Singer (2010) argue that morality is at least partially a social institution and requires children to be taught within it in order for them to endorse it. Further, they argue that because children need rules that they can readily apply and understand, it may be easier to teach them simple rules that must be obeyed in a deontological fashion, even if their ultimate purpose is to ensure cooperation and enhance aggregate well-being. If these rules are not questioned in later stages – a questioning that some societies may very well also condemn – we could readily see how a society could become increasingly puritanical. Although we may conceivably tell children that it is in their own self-interest to follow moral rules, such a motivation is unlikely to conquer the pursuit of short-term interests and ensure sufficient self-discipline to reap the benefits of long-term cooperation. Evolution and moral education may then have converged alike on a seemingly paradoxical solution to ensure that hedonistic impulses can be controlled in the pursuit of greater long-term benefits.

Indeed, we suggest that there could be an evolutionary-developmental feedback loop in which improved ecological conditions for learning (i.e., the teaching of social norms) can lead to natural selection for better learning in this sphere, which in turn will lead to more effective teaching. Puritanical norms, rather than seen as a strange evolutionary latecomer in the natural history of morality, may instead have old evolutionary roots that constitute a scaffold upon which to create some of the preconditions for cooperative foraging and exchange: that is, self-control and the ability to delay gratification. Indeed, the enforcement of puritanical values during the early life-history stages of humans may have been of utmost importance as a cultural scaffold to develop the skills of self-control and resolve by leading to a feedback loop in which humans develop better self-control and in turn enforce even more austere norms.

We believe that there is great promise in the proposal made by Fitouchi et al. and that we have offered some additional reasons here for why it may be fruitful to pursue this path. To finish, we suggest some of the empirical upshots of this expanded proposal. First, developing better methods for assessing and ranking the degree of "puritanicality" of different groups or societies would then allow for testing of hypotheses regarding the circumstances associated with higher levels of puritanical moralization. In particular, we suggest that they could be used to look for relationships with results in tests for delayed gratification and stability of cooperative endeavors. Additionally, in line with the intriguing suggestion raised by the authors in the end of the paper, investigating the relationship between puritanical norms and the size and average social connectedness of members of a social group could tell us whether this type of morality arose in part to deal with the complexities arising from larger societies and the difficulties of maintaining trust without personal knowledge of individuals. If the tests we describe were to show the predicted correlations, it would further strengthen the evolutionary proposal put forth.

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The many faces of moralized self-control: Puritanical morality is not reducible to cooperation concerns

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Abstract

Fitouchi et al.'s moral disciplining approach highlights the significant role social evaluations of self-control appear to play in human moral judgment. At the same time, attributing the wide range of puritanical concerns to a singular focus on self-control seems unwarranted. A more pluralistic approach would enrich understanding of moral judgment in all its cultural and historical diversity.

Fitouchi et al. argue that moral judgments are produced by a single, functionally unified cognitive mechanism that has evolved to support cooperation. The core feature of this proposed mechanism is to moralize behaviors that are seen as causally related to socially harmful outcomes. Accordingly, humans moralize seemingly harmless hedonic behaviors because these are indicative of poor self-control and therefore serve as obstacles to social cooperation. This unifying account is interesting, and also attractive from the standpoint of parsimony. In its current incarnation, however, it is problematic in several ways.

First, the normative concerns categorized as "puritanical" in Fitouchi et al.'s account don't necessarily share unitary origins or reflect unitary concerns. Sexuality, for example, falls within the purview of puritanical moral concerns, and the target article implies that moral concerns regarding female sexuality simply reflect more general concerns about poor self-control. In contrast, Hrdy (2009) has suggested that policing of female sexuality and elaboration of female chastity values is historically (and uniquely) tied to the emergence of land ownership and patrilineal inheritance, which isn't readily explained by a self-control account.

Second, the authors contend that the propensity to monitor others' self-control stems from prosocial interest in potential cooperation. Yet other accounts are available for explaining the prevalence of self-control monitoring, and some attempt is needed to adjudicate between alternative accounts. For example, Joffe and Staerklé (2007) have identified self-control monitoring as a mechanism by which societal malfunctions are interpreted as individual failings, ultimately contributing to justification of existing injustices. On their account, then, self-control monitoring is key to antisocial psychological processes, in contrast to Fitouchi et al.'s cooperation-centered framing of self-control monitoring.

Thus, a myriad of evolutionary and psychological processes likely undergirds self-control monitoring and puritanical morality alike. In fact, significant ambiguity bedevils the very concept of morality, which poses difficulty for unitary accounts regarding its evolutionary and psychological basis. Along those lines, describing morality as an adaptation to cooperation does not distinguish between moral phenomena and other things that facilitate cooperation, such as language, social understanding, and social conventions. Consequently, the cooperative function of morality provides only limited explanatory value regarding the nature of moral cognition.

Positing that morality is reducible to concerns about harm, fairness, or cooperation implies that these are the defining features constituting the moral domain. In doing so, the moral disciplining approach commits to a "classical view" of concepts (see Rosch, 1978), which holds that all instances of a concept share common properties that are necessary and sufficient conditions for category membership (Smith & Medin, 1981). Yet, as decades of research have shown, human concepts generally cannot be characterized in terms of necessary and sufficient features (Keil, 1992; Markman, 1989). This is certainly the case for morality, as there is no consensus regarding its constitutive features, despite millennia of effort (Heath, 2017; Stich, 1993, 2018).

The notion that humans possess a special purpose, functionally unitary, moral cognition mechanism that is dedicated to detecting a set of essential features is worth questioning for other reasons, as well. This framing implies that the moral domain is organized around a moral essence that distinguishes the moral domain from other domains, complete with moral-specific psychological processes (McHugh, McGann, Igou, & Kinsella, 2022). In contrast, the multifaceted nature of the moral domain and its overlap with normative (Kelly & Setman, 2020), mentalistic (Gray, Young, & Waytz, 2012), and causal cognition (Astuti & Bloch, 2015) calls into question the plausibility that all human moral worldviews revolve around a singular core mechanism.

Finally, Fitouchi et al. suggest that the tendency to moralize bodily pleasures and self-discipline "compensates" for perceived self-control deficits. For example, they point to correlational data indicating that environments with perceived low levels of self-control tend to be associated with greater endorsement of puritanical values. Although these are interesting correlations, the source of the relationship is not clear and multiple factors may play a role in generating these patterns.

We recommend that greater emphasis be placed on diverse moral outlooks appearing in different cultural and historical contexts (Miller, 2015). This approach embeds moral reasoning within a network of psychological and sociocultural processes that collectively shape it. To illustrate, self-control may relate to a broader symbolic emphasis placed on distinguishing between humans and animals in European thought (Agamben, 2004) or to concepts of divinity believed to be shared by humans and animals alike in Hinduism (Shweder, 2003). Put another way, symbolic folk concepts reflect human systems of meaning which are constitutive of psychological phenomena (Bruner, 1990), including moral reasoning (Much & Harré, 1994).

In sum, self-control monitoring is an important aspect of moral reasoning. However, simultaneous recognition of the importance of other factors and mechanisms in shaping such reasoning is necessary. Shedding light on the variety of folk concepts that are constitutive of moral psychology marks a fruitful path forward.

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Moral emotions underlie puritanical morality

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Abstract

Fitouchi et al. illustrate the cognitive and evolutionary foundations of puritanical morality, while leave the emotional foundation unclear. We complement their theory by proposing moral emotions (e.g., guilt and shame) as characteristic emotions underlying puritanical morality. Our proposition is based on the findings that these moral emotions emerge after violations of puritanical norms and promote self-control and cooperation.

In the target article, Fitouchi et al. build a new theory that puritanical morality is developed for promoting cooperation by facilitating self-control (regardless its efficiency). Besides, they cast doubts on an influential disgust-based account of puritanical morality, which considers the function of puritanical morality as avoiding communicable diseases driven by a feeling of disgust. Although Fitouchi et al. have elucidated the cognitive and evolutionary foundations of their cooperation-based theory with sufficient evidence, they leave the emotional foundation of puritanical morality unclear after denying the role of disgust. Are there any emotions underlying puritanical morality? What are they? We would like to extend Fitouchi et al.'s theory by proposing moral emotions such as guilt and shame as characteristic emotions in puritanical morality. Our proposition is based on three reasons: (1) violations of puritanical norms induce guilt and shame; (2) guilt and shame support self-control; and (3) guilt and shame enhance cooperation.

First, it is widely reported that people feel guilty and ashamed for conducting various behaviors that condemned by puritanical morality, including binge eating, masturbation, gambling, neglecting to study, failing to excise, and so on (Baumeister, 1995; Berg et al., 2015; Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Mosher, 1979; Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004; Sharma & Sharma, 1998). Notably, behaviors manifesting lack of self-discipline (e.g., failing to excise) that are moralized by puritanical morality seem unrelated to disgust, but are related to guilt and shame (Baumeister, 1995; Harman & Burrows, 2019; Markland & Tobin, 2004). Thus, guilt and shame compared to disgust has closer associations with violations of puritanical norms.

Second, guilt and (maybe) shame are supposed to help people inhibit selfish impulses and hedonic motives (Baumeister, 1995; Baumeister & Exline, 1999). Supporting this opinion, behavioral experiments found that guilt and shame promote behaviors that need self-control, such as costly apology, help, amend, and self-punishment (de Hooge, Zeelenberg, & Breugelmans, 2007; Ohtsubo & Yagi, 2015; Yu, Hu, Hu, & Zhou, 2014; Zhu et al., 2017). Neuroimaging experiments also provided supportive evidence that guilt compared to other emotions (e.g., sadness and shame) produces stronger activation in brain regions implicated in self-control, such as orbitofrontal cortex and lateral prefrontal cortex (Wagner, N'Diaye, Ethofer, & Vuilleumier, 2011; Zhu, Feng, Zhang, Mai, & Liu, 2019) and that shame is associated with activity in the dorsolateral prefrontal cortex related to self-control (Bastin, Harrison, Davey, Moll, & Whittle, 2016). Considering Fitouchi et al. highlight that puritanical morality aims to improve self-control and prevent self-control failures, guilt and shame are conducive to achieving the aim of puritanical morality.

Third, looking at the bigger picture, the social function of guilt and shame (particularly guilt) is maintaining and repairing cooperative relationships (Chang, Smith, Dufwenberg, & Sanfey, 2011; Sznycer, 2019). As moral violations induce guilt and people are guilt averse, people usually act in a moral way that trying to minimize their anticipated guilt regarding their decisions, which promotes greater levels of cooperation (Battigalli & Dufwenberg, 2007; Bellemare, Sebald, & Suetens, 2019; Charness & Dufwenberg, 2006). Guilt avoidance is a crucial mechanism that prevents moral violations, motivates cooperative behavior, and maintains cooperative relationships (Chang et al., 2011). Guilt and (maybe) shame not only can maintain cooperative relationships, but also help to restore jeopardized relationships. After violating moral norms, people are faced with blame, punishment, and even exclusion from future cooperation (Boyd, Gintis, Bowles, & Richerson, 2003; Fehr & Gächter, 2002; Tomasello & Vaish, 2013). To cope with this problem, guilt and shame urge people to conduct behaviors (e.g., apology, compensation, and self-punishment) that require sacrificing short-term interests (e.g., body pleasure and monetary reward) and weighting long-term benefits (cooperative relationships) (Ghorbani, Liao, Çayköylü, & Chand, 2013; Nelissen, 2011; Nelissen & Zeelenberg, 2009; Watanabe & Ohtsubo, 2012; Yu et al., 2014; Zhu et al., 2017). Studies have found that guilt- and/or shame-induced behaviors (e.g., apology, compensation, and self-punishment) can facilitate forgiveness from others and restore jeopardized relationships (Hechler, Wenzel, Woodyatt, & de Vel-Palumbo, 2022; McCullough, Kurzban, & Tabak, 2013; Zhu et al., 2017). Given Fitouchi et al. advocate that the ultimate function of puritanical morality is boosting cooperation, the

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functions of guilt and shame and puritanical morality coincide well with each other.

It is difficult to judge whether guilt or shame plays a more important role in puritanical morality at the current stage. One problem is that some researchers construed "guilt" as a synonym for "shame" or vice versa. Another problem is that many studies measured only guilt or only shame. Still another problem is that guilt and shame tend to co-occur after moral violations (e.g., Nelissen & Zeelenberg, 2009). We note that guilt and shame have conceptual, theoretical, and neural differences (e.g., Bastin et al., 2016; Tangney & Dearing, 2003; Tangney, Miller, Flicker, & Barlow, 1996). To distinguish the influences of guilt and shame on puritanical morality, we encourage future studies to (1) measure both guilt and shame feelings (e.g., Ghorbani et al., 2013) and (2) create both guilt and shame conditions, in which guilt and shame are respectively the dominant emotion (e.g., Wagner et al., 2011; Xu et al., 2022).

Additionally, we keep an open mind about whether other moral emotions are involved in puritanical morality. For instance, several studies have demonstrated a link between gratitude and self-control (Desteno, Li, Dickens, & Lerner, 2014; Dickens & DeSteno, 2016). Thorough explorations on the associations between various moral emotions and puritanical morality are needed in the future.

Moral emotions are vital elements of moral apparatus linking moral norms and moral behaviors (Tangney, Stuewig, & Mashek, 2007). A moral theory without any concern about emotion is probably incomplete. We propose that moral emotions such as guilt and shame are characteristic emotions underlying puritanical morality, especially within the theoretical framework constructed by Fitouchi et al. We clarify the close associations among moral emotions, puritanical morality, self-control, and cooperation. Our extension contributes to filling in the missing part of Fitouchi et al.'s theory (i.e., the emotional foundation of puritanical morality) and setting a new direction for future research.

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Competing interest. None.

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Authors' Response

The puritanical moral contract: Purity, cooperation, and the architecture of the moral mind

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Abstract

Commentators raise fundamental questions about the notion of purity (sect. R1), the architecture of moral cognition (sect. R2), the functional relationship between morality and cooperation (sect. R3), the role of folk-theories of self-control in moral judgment (sect. R4), and the cultural variation of morality (sect. R5). In our response, we address all these issues by clarifying our theory of puritanism, responding to counter-arguments, and incorporating welcome corrections and extensions.

We are immensely grateful to all commentators for their interest, thought-provoking arguments, and the fascinating discussion they open up on the nature of morality. We are thrilled that most theories of morality are represented in the commentaries, including moral foundations theory (**Graham, Atari, Dehghani, & Haidt [Graham et al.]**), dyadic morality (**DiMaggio, Gray, & Kachanoff [DiMaggio et al.]**), morality as cooperation (**Curry & Sznycer**), as well as the side-taking hypothesis and related accounts (**DeScioli & Kurzban**; **Moon**; **Tybur & Lieberman**).

The purity controversy has structured moral psychology for decades, and for good reason (Gray, DiMaggio, Schein, & Kachanoff, 2022). Purity is at the junction of two heated debates between the aforementioned theories of morality:

(1) *The monism–pluralism debate*. Are all moral judgments, despite the diversity of their content (e.g., purity, fairness, authority), produced by a single computational device? Yes, according to monist theories – and purity is no exception (**DiMaggio et al.**; DeScioli & Kurzban, 2009; target article). Pluralists disagree: Purity, in their view, reveals the inability of monist models to explain the diversity and complexity of moral judgments (**Curry & Sznycer**; **Graham et al.**; **Weinstein & Baldwin**).

(2) *The cooperation debate*. Did moral cognition evolve exclusively for cooperation? We and others claim so (**Curry & Sznycer**; **Kurdoglu**; **Murray, Amaya, & Jiménez-Leal [Murray et al.]**). But many disagree: Purity moralizations, they argue, reveal that other adaptive challenges, such as pathogen avoidance (**Graham et al.**), coordination for side-taking in disputes (**DeScioli & Kurzban**), and self-serving use of moral principles (**Moon**; **Tybur & Lieberman**), have shaped the moral mind in our evolutionary history.

In this context, our target article aimed to show that moralizations of purity, often taken as a critical argument against both monist (Graham et al., 2013) and cooperation-based theories (Smith & Kurzban, 2019), pose a problem for neither types of theories.

Expectedly, both claims proved controversial. Pluralists think we are too reductionist. Positing more moral cognitive systems, they argue, allows better explaining morality in general and puritanism in particular. Opponents of cooperation-centric views, meanwhile, think we're too naive. Puritanism is not about cooperation, they argue, but about oppressive coercions, manipulative condemnations, and cruel punishments. As if sorting out these issues weren't difficult enough, the task is further complicated by the general confusion about what we're supposed to explain when we talk about "purity" (**DiMaggio et al.**; **Kollareth & Russell**).

We thus begin by clarifying our explanatory target – puritanical morality – by distinguishing it from other purity-related moralizations (sect. R1). This sets the stage for addressing the monism–pluralism debate (sect. R2) and the cooperation debate (sect. R3). We finally discuss the role of folk-theories of self-control in puritanical moral judgments (sect. R4), as well as cultural variations in puritanical values (sect. R5).

R1. Puritanism and purity: Clarifying explanatory targets

In evaluating our model, many commentators discussed purity violations such as incest (**Tybur & Lieberman**), atheism, blasphemy (**DeScioli & Kurzban**), food taboos (**DiMaggio et al.**; **Giner-Sorolla & Myers**), premarital sex (**Weinstein & Baldwin**), homosexuality (Giner-Sorolla & Myers; Tybur & Lieberman; **DeScioli & Kurzban**), rolling in urine (DiMaggio et al.), eating the family's dead pet dog (**Murray et al.**), or defecating on someone's grave (Murray et al.).

Most of these behaviors, however, were not clearly included in our definition of puritanical morality (target article, sect. 1). This confusion is natural given that purity is a fuzzy concept and that puritanism is a subset of purity. Before turning to more substantial debates (sects. R2 and R3), let us try to bring some order to this conceptual mess. We do so by distinguishing puritanical morality from purity (sect. R1.2), sexual morality (sect. R1.3), and the morality of the historical Puritans (sect. R1.4).

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R1.1. Can we (please) stop talking about "purity?"

As **Graham et al.** note, we think purity has brought a lot to moral psychology, by drawing attention to cultural variation and moral intuitionism. We introduced the notion of puritanical morality, however, because purity seemed too vague of a notion to provide a good explanatory target. Our target article converges with recent recommendations to abandon or at least reconceptualize the notion of purity in moral psychology (Crone, 2022; Gray et al., 2022; Kollareth, Brownell, Duran, & Russell, 2022). We and other commentators see three reasons to do so.

First, purity is poorly defined. In their recent review, **DiMaggio et al.** show that purity is understood in nine different ways (Gray et al., 2022). Rather than being given a proper analytic definition, purity functions as an intuitive label for violations that loosely relate to sex or food or religion or pathogens. As a result, "nobody even knows what exactly purity is" (DiMaggio et al., para. 1). If we don't know what we're supposed to explain, we're unlikely to advance our causal understanding and may be condemned to sterile debates.

Second, purity is not a distinct cognitive domain (**Kollareth & Russell**). Despite its fuzzy contours, one reason to keep the notion of purity may be that all purity violations trigger a common and distinctive cognitive response. Kollareth & Russell, however, review compelling evidence that three popular criteria for carving the purity domain fail to distinguish purity from other violations. Purity is (1) not tied to a specific moral emotion; (2) is not perceived as "tainting the soul" more than other violations; and (3) is not less sensitive to the actor's intentions than other moral judgments (Kollareth & Russell).

Third, many purity scenarios are so weird that they distract us from real-world moral concerns (target article, sect. 2.1). Think about eating pizza off a corpse (Clifford, Iyengar, Cabeza, & Sinnott-Armstrong, 2015) or touching poop barehanded (Dungan, Chakroff, & Young, 2017). People don't cite these behaviors as typical moral violations (Gray & Keeney, 2015). And it's not even clear whether people perceive them as really immoral (Kollareth et al., 2022).

Given these problems, it may be better to focus our explanatory efforts on (1) more restricted clusters of moral judgments, that (2) better carve moral culture at its cognitive joints, and (3) better reflect real-world moral concerns. As **DiMaggio et al.** note, our target article aimed to "tackle [this] mess of purity" by attempting to delineate one such subset of purity concerns that is (hopefully) more workable.

R1.2. Puritanical morality is not purity

By puritanism, we referred to a subset of purity that seemed to share a common feature: the moralization of asceticism. This cluster of concerns seemed to make sense in light of human psychology. Sex, food, drugs, alcohol, laziness, and ecstatic music and dances, all give us intense pleasures – the exhilarating shots of dopamine you get when you orgasm or eat sugar. Puritanism, at its very core, is a moral fear of these hedonic states. Pleasure, in puritanical eyes, is a gateway to excess, addiction, uncontrollable cravings, and irresponsible self-gratification. If you taste it, you'll seek for more, even when it means neglecting obligations – it's just too good! If you want to escape the hedonic trap and become a better person, you must learn to tame the flesh and resist worldly temptations. Hence the prescription of ascetic moderation.

Many canonical purity scenarios don't clearly instantiate these ascetic concerns. We agree with commentators that sibling incest (**Tybur & Lieberman**), eating the family's dead dog (**Murray et al.**), defecating on someone's grave (Murray et al.), disgusting behaviors such as rolling in urine (**DiMaggio et al.**), and food taboos after the death of a loved one among Hindu Brahmins (DiMaggio et al.) are most often not moralized because perceived as endangering self-control – although this may be worth actually testing.

We share **DiMaggio et al.**'s view that these judgments stem from perceptions of (unfair) harm not mediated by beliefs about self-control (Fitouchi, André, & Baumard, in press). As DiMaggio et al. note, not respecting a special diet after the death a loved one, although seemingly harmless to Western researchers, was perceived by Orissa Hindu Brahmins as harming the soul of the deceased by delaying their reincarnation (Shweder, 2012). Similarly, people likely perceive defecating on someone's grave (**Murray et al.**) as offending the deceased or their family, and probably calculate that everyone is worse off in a society where everyone shits on others' graves compared to a society where nobody does (see sect. R2.1). Julie and Mark's sibling incest (**Tybur & Lieberman**), meanwhile, fails to convince participants that the action they're judging is really harmless, and these perceptions of harm predict their condemnation of the act better than disgust (Royzman, Kim, & Leeman, 2015). We like, however, **Kurdoglu**'s suggestion that concerns for self-control might nonetheless underlie the moralization of incest, and would very much like to see this idea tested.

R1.3. Puritanical morality is not sexual morality

Many commentaries assess the explanatory power of our model by discussing sexual morality in general (**Royzman & Borislow**; **Weinstein & Baldwin**; **Szocik**). Puritanism, however, is not sexual morality (Fig. R1). Sexual puritanism captures a very specific type of sexual morality, which condemns, not particular sex acts such as adultery (**Syme**), premarital sex (Weinstein & Baldwin; **Kurdoglu**), or restrictions on female sexuality (**Barenthin**; Royzman & Borislow; Szocik), but the very fact of *taking pleasure* in sex (Dabhoiwala, 2012; Greenberg & Bystryn, 1982; Le Goff, 1984; Suiming, 1998). This is why we exemplified sexual puritanism by the moralization of masturbation and the prescription, even in marriage, that sex should always be consumed in moderation, never in a sensual way, and always for the necessity of procreation rather than to enjoy its pleasures (Dabhoiwala, 2012; Seidman, 1990; Fig. R1).

Sexual morality includes many moral judgments unrelated to this ascetic restriction of sex simply because it's pleasurable (Fig. R1). In particular, we did not argue that adultery and premarital sex are condemned because they are perceived as endangering self-control (**Weinstein & Baldwin**). Adultery imposes direct costs on the cheated partner (target article, sect. 1.2, endnote 1). Premarital sex, in many societies, imposes direct costs on families by leading to unwanted marriages, costly pregnancies out of wedlock, or decreasing a daughter's value on the matrimonial market (target article, sect. 3.2, endnote 3). As **Szocik** and **Barenthin** note, many restrictions on women's chastity and fidelity arise from men's interest to control women's sexuality (see sect. R3.1). This often leads to a moral contract between men only, in which they promise each other not to covet each other's wives (Dabhoiwala, 2012; see also Szocik).

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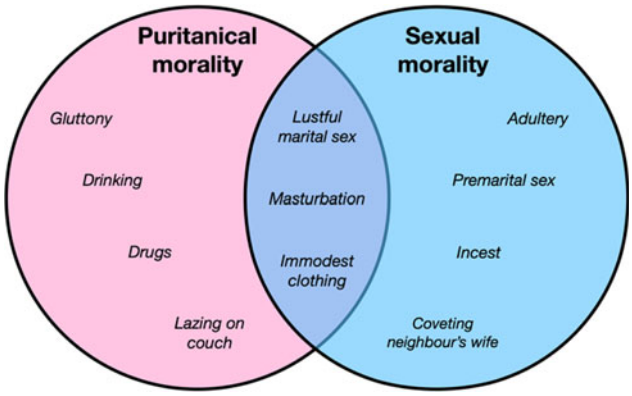


Figure R1. Clarifying the relationship between puritanical morality and sexual morality.

Our theory does not attempt to explain moralizations of these sexual behaviors that are intrinsically harmful. In our model, adultery, premarital sex, and sex with someone else's spouse are precisely among the *harmful* temptations to which puritanism seeks to improve your resistance, by training you to resist even *harmless* sexual pleasures, such as masturbation and lustful marital sexuality[1] (Fig. R2). Note that other bodily pleasures, too, can be both directly harmful and intrinsically harmless. Eating too much food *from the common pot* directly harms other people by depriving them from resources they deserve. Indulging in laziness or intoxicants *when you're supposed to do your part of collective work* amounts to directly free-ride on others' contributions – as **Syme** rightly notes. Again, these are *directly harmful* temptations to which puritanism seeks to improve your resistance, by limiting even *harmless* indulgences, such as eagerly eating *your own food*, and lazing on the couch *when you don't have to work* (Fig. R2).

R1.4. Puritanical morality is not the morality of the historical Puritans

DeScioli & Kurzban argue that our model fails to explain "puritanism" because behaviors condemned by the historical Puritans, such as atheism, blasphemy, witchcraft, or carrying wood on Sunday, seem unrelated to self-control. Again, these behaviors don't clearly instantiate the ascetic concerns at the heart of puritanical morality as we define it. We did not define puritanical morality as "the set of moral values held by the historical Puritans" (target article, sect. 1). The Puritans moralized many things: Not only bodily pleasures and ascetic restraint, but also non-puritanical concerns such as theft, treason, murder, justice, charity, humility, peacefulness, and many other values (Hall, 2012; Merrill, 1945). Conversely, puritanical concerns are found, not only among the historical Puritans, but across world religions more generally (target article, sect. 1). It doesn't seem helpful, then, to define puritanical morality as the morality of the historical Puritans.

With these clarifications in mind, we can turn to more substantial debates about the architecture of the moral mind (sect. R2), and the adaptive function of moral cognition (sect. R3).

R2. Puritanism and the moral mind: One or many moral modules?

Our target article argued that all moral judgments – including puritanical ones – are produced by a single, functionally unified cognitive system. Several commentaries call for a more pluralistic approach to moral cognition, arguing that puritanism cannot be reduced to "harm or fairness" (**Curry & Sznycer**; **Graham et al.**; **Weinstein & Bladwin**; see also **Buchtel**). In this section, we defend moral monism by clarifying our view of the computational logic of moral cognition (sect. R2.1), and by using this logic

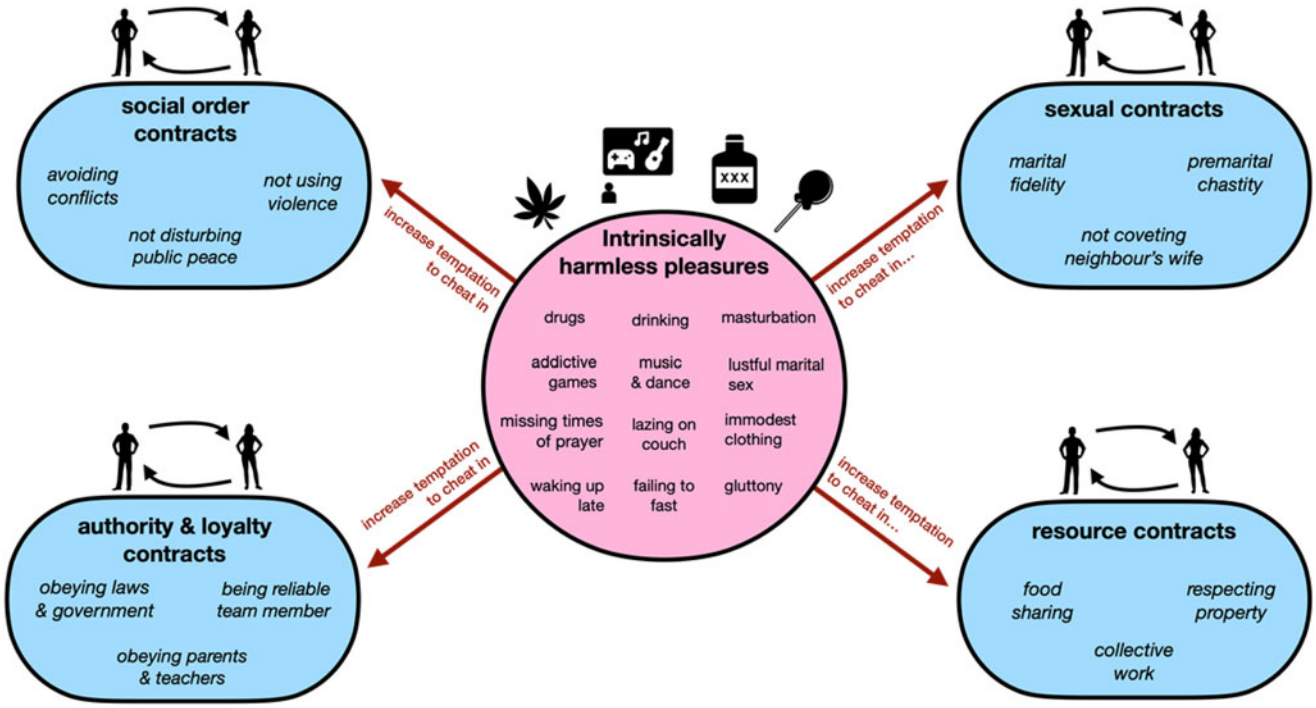


Figure R2. Perceived relationships between harmless pleasures and directly harmful behaviors in reciprocal contracts such as marital fidelity, food sharing, and social order.

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to clarify the mechanisms of puritanical moral judgment (sect. R2.2) and moral emotions (sect. R2.3).

R2.1. A single computational device – calculating reciprocal contracts – explains moral judgments across domains

Our article started from the vague idea that "moral cognition evolved for cooperation." We did so because many theories of morality agree with different variants of this claim (Boehm, 2012; Curry, 2016; Haidt, 2012; Tomasello, 2020). Yet our account of puritanism builds on one particular cooperation-based theory – the evolutionary contractualist theory of morality (André, Fitouchi, Debove, & Baumard, 2022; for earlier versions, see Baumard, André, & Sperber, 2013). According to this account, the computation moral cognition evolved to perform is strictly the same across domains of social interaction. It amounts to calculate reciprocal obligations that specify what each partner ought to do – despite having a temptation to cheat – to maximize the mutual benefits of their interaction (André et al., 2022; Fitouchi et al., in press). Before turning to the particular case of puritanism, it is necessary to clarify why we disagree with more pluralistic theories of morality.

Graham et al. make a detailed case for moral pluralism. The fact that moral cognition functions for cooperation, they argue, does not imply that the mind contains only one moral calculator to realize this function. Humans cooperate for many different purposes – from parenting to coalitions to resource production. Thus, moral cognition contains several domain-specific calculators, each tailored to one of these specific cooperation problems. These calculators include reciprocity, but also status hierarchies, coalitional psychology, and the behavioral immune system (Fig. R3). Reducing morality to harm or fairness, in their view, not only fails to explain the full breadth of morality in general (e.g., loyalty, authority), but also fails to fully explain puritanism in particular, because moralizations of bodily pleasures are associated with concerns for loyalty and authority (Goenka & Thomas, 2022; Mooijman et al., 2018).

We fully agree that puritanism aims to promote, not only fair distributions of resources, but also loyalty to coalition partners and obedience to authorities, as well as many other cooperative behaviors (target article, sect. 3). But the error of pluralistic theories is precisely to equate the plurality of moral *concerns* (e.g., fairness, loyalty, authority) with a plurality of moral *cognitive systems* (e.g., reciprocity, coalitional psychology, status hierarchies; Fig. R3). Where pluralistic models confine reciprocity to a tiny part of the moral mind, we argue that moralizations of loyalty, authority, and any other behavior, arise from the same computations of reciprocal obligations that produce fairness concerns (André et al., 2022; Fig. R3). More than that, we claim that judgments of loyalty, authority, and purity, are *poorly explained by the non-reciprocal systems* that pluralists have added into the moral mind to explain them. How can we tell? Look at the precise logic of moral intuitions in all these domains.

Take authority. Pluralists argue that moralizations of obedience to authority arise from systems evolved to navigate status hierarchies, akin to those evolved in nonhuman species, and distinct from reciprocity (**Graham et al.**; **Curry & Sznycer**). As Curry & Sznycer explicate, nonhuman hierarchies emerge from asymmetric hawk–dove interactions, where a weaker individual submits to a dominant based on cues of the dominant's likelihood to win fights over contested resources. This allows both the subordinate and the dominant to avoid the mutual costs of conflict, as the subordinate leaves the resource to the dominant.

Yet this idea makes aberrant predictions. If moral intuitions about authority were produced by a calculator dedicated to this adaptive problem, the simple fact of being more likely to win a contest – like a dominant gorilla in a primate hierarchy – should give people a *moral right* to others' obedience. Brute force, in other words, should be the only source of legitimate power. This completely contradicts people's moral intuitions about authority. The core feature of authority as a moral relationship is precisely its difference from *coercion* (Saxe, 2022; Tyler, 2006). The ability to win conflicts over contested resources does not make a chief, a boss, or a teacher *deserve* his followers'

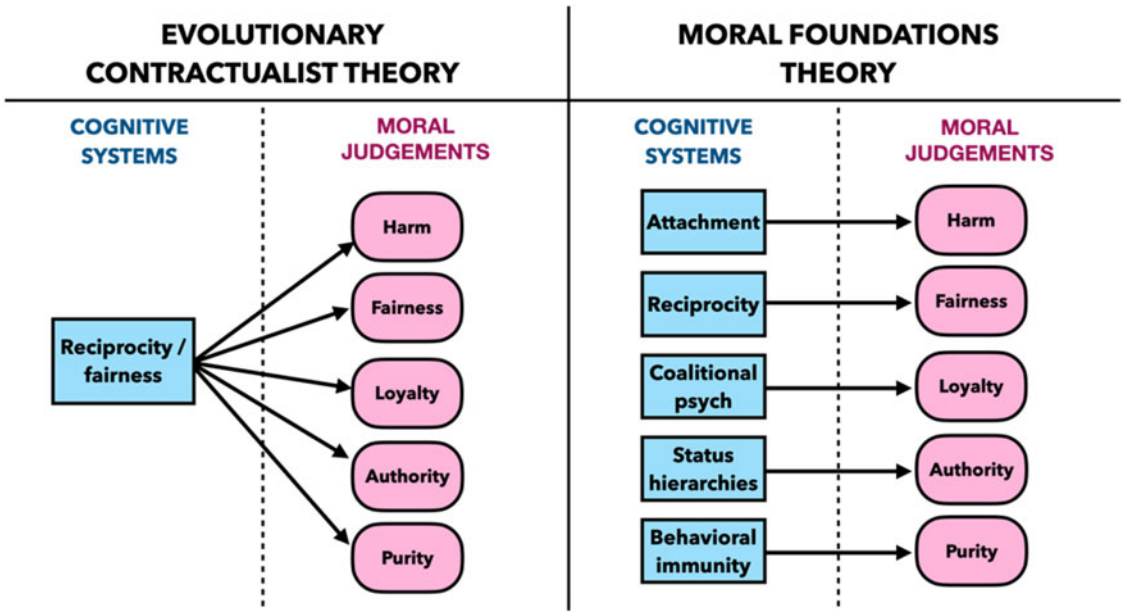


Figure R3. Distinction between the evolutionary contractualist theory of morality (André et al., 2022) and moral foundations theory (Graham et al., 2018).

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obedience. It does allow him to *force* them to fulfill his desires. But that is precisely judged as an *abuse of power*, not as a moral right. Of course, subordinates will submit, superficially appearing to "respect authority," but they will do so out of fear of the whip, not out of a moral obligation to obey.

Rather than from hawk–dove interactions, moral intuitions about authority emerge from the fact that authority is a *reciprocal contract* as any other (Price & Van Vugt, 2015). Leaders provide, at a cost to themselves, benefits to followers by working out complicated decisions, mediating disputes, or coordinating collective action (Glowacki & von Rueden, 2015; Hagen & Garfield, 2019; Price & Van Vugt, 2015). In return, followers provide leaders with status, resources, and decision-making power (Glowacki & von Rueden, 2015; Price & Van Vugt, 2015). Each follower accepts to give up some of their freedom to follow orders so that everyone can benefit from better decisions and more efficient collective action.

As in any reciprocal contract, what people consider morally wrong is to *cheat*. The leader can abuse his power to unfairly advance his interests at the expense of followers. This amounts to cheating: Taking the benefits of followers' cooperation (obedience) while failing to fulfill his own part of the contract (making decisions that benefit everyone) (Tooby, Cosmides, & Price, 2006). Another key marker of reciprocity is the *conditionality* of people's obligation to cooperate. If the leader neglects the interests of his people, people don't feel morally obliged toward him in return (Tyler, 2006). They will submit if forced to. But they'll nonetheless consider the tyrant morally corrupt. And they'll choose another leader as soon as they can (Van Vugt, Jepson, Hart, & De Cremer, 2004), just as they seek better cooperation partners when cheated in other relationships (Baumard et al., 2013). In other words, authorities must be… fair. Wait, wasn't fairness a distinct foundation?

The same holds for loyalty, which **Graham et al.** and **DeScioli & Kurzban** (para. 4) distinguish from reciprocal cooperation. Coalitions are nothing but *n*-person reciprocal exchanges (Tooby et al., 2006). In zero-sum competition between groups, helping a rival coalition means harming your partners (Boyer, Firat, & van Leeuwen, 2015). So coalition partners can maximize mutual benefit if each refrains from helping rival groups or shifting alliances. Yet each partner has a temptation to cheat. I could make money, for example, by selling strategic information to the group we're fighting. If all my partners did that, however, we would lose the war and all be worse off. Here again, the immoral behavior – betrayal – amounts to cheating in a reciprocal contract: Taking the benefits of others' refusal to trade with outgroups while not myself paying this cost. And loyalty intuitions obey the conditionality of reciprocal obligations: If all your partners shamelessly betrayed you, do you still owe them to be loyal?

To be clear, we do not deny that people have a coalitional psychology (**Graham et al.**), in the sense of domain-specific adaptations for *detecting* alliances or *recruiting* coalitional support (Pietraszewski, Curry, Petersen, Cosmides, & Tooby, 2015). But this is not the same thing as calculating "what we owe to each other" (Scanlon, 2000) within a coalition. The requirements of this properly moral computation are the same whether our collective action is about sharing food or competing with rivals or building a house together (André et al., 2022).

To morally judge a behavior, the moral calculator takes as inputs the *costs* and *benefits* that the behavior implies for each partner, and computes whether it would be mutually advantageous if all partners behaved in this way (André et al., 2022). What matters for this calculation is the amount of costs each partner pays and the benefits they receive, regardless of the specific behaviors that generate these costs and benefits. If each of us shares food when others are hungry, we each end up with more benefits than costs. That's because the cost of sharing when you have plenty is smaller than the benefit of being helped in return when you're hungry. So we *owe* to each other to share food, and stinginess is *wrong* (food-sharing contract). In other situations, if each of us obeys orders, we each end up with more benefits than costs. That's because the cost of obeying orders when we don't like them is lower than the benefit we can get, for example, from the more efficient organization allowed by everyone's obedience (obedience contract). The list of moral contracts could go on and on. If each of us refrains from using violence to his advantage, we'll all benefit from the myriad of activities enabled by peace (social order contract). There is not one, or two, or five, or six moral foundations, but as many moral concerns as there are mutually beneficial contracts, which depend on the infinite, parametrical variation of costs and benefits implied by each behavior in every situation. Morality is not a set of foundations, but one flexible and open-ended calculation based on varying inputs (André et al., 2022).

With that in mind, we can turn to the particular contract that was the focus of our target article.

R2.2. The puritanical moral contract

R2.2.1. Fairness, not harm

The same computations of mutual benefit, we argue, explain puritanical morality. In our target article, we wrote that bodily pleasures are moralized when perceived to facilitate "harm" or "antisocial behaviors." As **Graham et al.** rightly note, that was too vague: Is puritanism produced by perceptions of harm or fairness computations? The short answer is fairness.

We largely agree with **DiMaggio et al.**'s theory of dyadic morality that purity violations are condemned because they are perceived to indirectly cause harm. In our view, however, the immorality of an action does not depend on whether an agent *harms* a patient *per se*, but on whether an agent *cheats* a patient (André et al., 2022). Because cheating implies harming someone, harm and cheating often co-occur, giving the impression that morality is fundamentally about harm. But not all harm implies cheating. Sometimes, harming others is simply regrettable but not morally wrong.

Take breaking up with someone you've been dating for a few weeks and who happens to have feelings for you (Royzman & Borislow, 2022). Despite being harmful to your date – you broke their heart – people don't find your behavior immoral (Royzman & Borislow, 2022). This is because it would not be mutually beneficial to expect everyone not to break up in such situations. Each of us would have to remain stuck forever with whomever we just started dating (huge cost). Moral cognition calculates that we are all better off allowing each other to break up sometimes (huge benefit) even if it means paying the smaller cost of occasional heartbreak (when others leave us). Thus, breaking up in this context is harmful but does not amount to cheating someone in a reciprocal contract. Accordingly, moral cognition does not calculate that this behavior is immoral (Royzman & Borislow, 2022).

The same holds, we argue, for puritanical moral judgments. Bodily pleasures are perceived to facilitate harmful behaviors, but are not moralized because of this harm in itself. The relevant question is not whether costs are imposed *per se*, but whether the net effect of costs and benefits received by the perpetrator would be positive if everyone behaved like the perpetrator – consistent

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with **DiMaggio et al.**'s remarks about universalization (Levine, Kleiman-Weiner, Schulz, Tenenbaum, & Cushman, 2020). In other words, would we all be better off if we allowed each other the pleasure of drinking, but also suffered the costs of others' drinking (e.g., violence, adultery, lazy free-riding)? Or would we all be better off if we each paid the costs of abstinence yet ensured the benefits of safe streets and productive work (because others don't drink)? When people believe that unrestrained indulgence would result in huge costs, we argue, the moral computation outputs the puritanical moral contract, which goes something like this:

> **The puritanical moral contract**: We owe it to each other to bear the costs of ascetic habits and rigorous training in self-control, because if everyone makes this effort, we'll all secure the greater benefits of an orderly and peaceful society. In this contract, gluttons, drunkards, and lustful sex-addicts are *cheaters*. They unfairly take the benefits of others' restraint without paying the costs of mutually beneficial discipline.

R2.2.2. A broader theory of cooperation doesn't help explain puritanism

Puritanical morality, **Curry & Sznycer** argue, is better explained by considering more cooperative problems than reciprocal contracts. They point to resolution of conflicts by ritual contests in hawk–dove interactions. When competing over a resource, contestants display cues of their likelihood to win a fight were it to escalate. This allows them to avoid the mutual costs of conflict, as the weaker individual withdraws from the contest (Smith & Parker, 1976). Because one area of human conflict is the competition over mates, Curry & Sznycer argue that traits signaling people's mate-value will be moralized because they help resolve conflicts over mates, by signaling contestants' relative ability to win the mating competition.

From this, however, **Curry & Sznycer** jump to an apparently unwarranted prediction, namely that cues of *low* mate-value, such as infidelity and masturbation, should be considered morally *bad*. This prediction does not follow from the hawk–dove interaction they describe. In a contest over mates, displaying *low* mate-value means playing dove – that is, signaling that I'm *unlikely* to win the mating competition. Yet playing dove is precisely a cooperative behavior: It allows preventing the conflict by leaving the resource to the hawk – people more likely to win the conflict. It is precisely when nobody displays inferiority that the conflict escalates. Morality as cooperation, it seems to us, thus predicts the opposite of what Curry & Sznycer make it say. Because cues of low mate-value allow resolving the conflict, morality as cooperation predicts that they should be considered morally *good* – not morally bad.

Curry & Sznycer present data that contradict this prediction. They find that perceiving purity violations, such as masturbation, as sexually unattractive correlates with considering them morally *bad*. This association is interesting, but in our view, it contradicts Curry & Sznycer's conflict-resolution theory when its predictions are carefully derived. Consistent with moral disciplining, however, Curry & Sznycer find that perceiving purity violations as indicating lack of self-control predicts their moral condemnation.

R2.3. Puritanism and moral emotions

R2.3.1. Disgust does not generate puritanical moral judgments

Our target article reviewed evidence against a role of disgust in puritanical condemnations (sect. 2.1). **Graham et al.**, however, argue that the writings of the puritans suggest that they "use disgust (as when contemplating a corpse) as a means of making moral progress by breaking one's attachments to one's own body." We agree! But *using disgust* to make moral progress is not the same thing as *generating a moral judgment based on disgust*.

A psychological theory of morality is supposed to identify the cognitive mechanisms that *generate* moral judgments. Generating a moral judgment means taking as input a *non-moral* representation (e.g., cues of pathogens, costs imposed on other people), and producing, based on computations of this non-moral material, an output representation that does have moral content, such as "masturbation is *wrong*" (Fitouchi et al., in press). The current state of the evidence indicates that disgust is not such a mechanism: Simply perceiving a behavior as disgusting does not in itself generate the representation that it is wrong (**Kollareth & Russell**; Fitouchi et al., in press; Piazza, Landy, Chakroff, Young, & Wasserman, 2018).

Of course, once mechanisms other than disgust have produced the moral representation that masturbation is wrong, people can use disgust to nudge themselves into avoiding to behave immorally. But this does mean that it was disgust that produced their moral judgment. People can also self-inflict pain after masturbating to avoid doing it again. This does not imply that pain is a moral calculator – and the same holds for disgust.

Tybur & Lieberman argue that disgust may serve as an input to moral calculators rather than being itself a moral calculator. They argue that, because people find incest and homosexuality disgusting, they are unlikely to engage in these behaviors anyway, and thus have little to lose by supporting norms against those behaviors. Moreover, because people perceive individuals engaging in disgusting behavior as being of low social value, they would condemn these behaviors to coordinate the collective exploitation of these vulnerable individuals (sect. R3.3).

We are not sure that these accounts escape the problems of other disgust-based theories. First, many behaviors are disgusting without being immoral, such as picking your nose and eating it in private (Kayyal, Pochedly, McCarthy, & Russell, 2015; Piazza et al., 2018; Royzman, Leeman, & Baron, 2009). If people have much to gain and little to lose by supporting norms against disgusting behavior, why does finding a behavior disgusting sometimes, but not systematically, lead to moral condemnation? **Tybur & Lieberman**'s theory of incest and homosexuality, it seems to us, should specify why condemnation fixates on those disgusting behaviors and not others. Second, it predicts that disgust should robustly predict condemnations of incest and homosexuality. Yet correlations between disgust-sensitivity and condemnation of incest (Royzman et al., 2015), homosexuality (Schein, Ritter, & Gray, 2016), and other disgusting behaviors (Gray & Schein, 2016; Royzman et al., 2009; Schein et al., 2016) don't seem robust to controls nor to reflect a specific effect of disgust on moral condemnation (Landy & Piazza, 2017; Piazza et al., 2018).

R2.3.2. Guilt and shame are involved in, but not specific to puritanical morality

Zhu & Liu rightly point out that our theory was incomplete at the level of moral emotions. To fill this gap, they propose that guilt and shame characteristically underlie puritanical morality, in line with evidence that people feel guilt and shame after gambling, binge eating, masturbating, and failing to exercise. We fully agree that violations of puritanical norms can trigger guilt and shame. These emotions, however, are not *specific* to puritanical morality.

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People feel guilt not only after gluttony, but also after lying, stealing, betraying, or cheating their partner – in line with remarks by Zhu & Liu. This is because guilt functions to compensate partners after violating contracts to restore reciprocal cooperation and your moral reputation (Fitouchi et al., in press). Because this adaptive challenge prevails across domains of reciprocal interaction, guilt is triggered by moral violations across domains.

R3. Puritanism and self-interest: Cooperation or strategic moralizing?

Many commentators view our theory as "idealistic" (**Szocik**) and "overly credulous" (**Tybur & Lieberman**). By overemphasizing cooperation, they argue, our account overlooks patriarchal coercion, cynical power struggles, and cruel punishments at the center of puritanism (**Barenthin**; **DeScioli & Kurzban**; Tybur & Lieberman; Szocik; **Moon**). In this section, we clarify the interplay between the puritanical moral contract and patriarchal coercion (sect. R3.1), moralistic punishment (sect. R3.2), and the strategic promotion of self-serving norms (sect. R3.3).

R3.1. Puritanical morality is not (only) patriarchal coercion

Several commentators argue that puritanical norms do not serve cooperation but are crafted by men to exclude women from public life and control their bodies and sexuality (**Szocik**; **Barenthin**). Across cultures, they note, people restrict sexuality more tightly for females than for males (Szocik; **Royzman & Borislow**; see also Barenthin; **Weinstein & Baldwin**). If puritanism serves to promote mutually beneficial cooperation, then "why hasn't male sexual behavior been equally regulated throughout history?" (Szocik, para. 6).

Royzman & Borislow amplify the objection. Not only does our theory fail to explain this double standard, it even seems to predict the opposite. Compared to females, males have stronger sex drives and are more prone to antisocial behaviors when seeking sexual gratification (Buss, 2021). Thus, if puritanical restrictions aim to prevent antisocial effects of sexual self-control failures, they should regulate sex more strongly for males than for females, not the other way around! Let us answer these compelling arguments in several steps.

First, we fully agree that patriarchal coercion and objectification of women explain many restrictions on female sexuality. Our target article never denied this. We explicitly wrote that men's interest to police women's sexuality "surely underlies many sexual restrictions … and is consistent with the frequent double standard favoring men in the moralization of sexuality" (target article, sect. 2.2). We also highlighted the "often-patriarchal nature of adultery proscriptions, which often sanction female's infidelity more strongly than male adultery…, treating women as the property of their husband, father, or brothers" (target article, sect. 1.2, endnote 1).

However, our explanatory target – puritanical morality – differs from these patriarchal restrictions (sect. R1.3). Puritanical values refer to a specific type of sexual morality that prescribes sexual abstinence as just one facet of asceticism in general *for both men and women*. Condemnations of lustful marital sex and masturbation targeted both husbands and wives, boys and girls (Dabhoiwala, 2012; Seidman, 1990), and the historical Puritans moralized immodest clothing for both men and women (Bremer, 2009, p. 51). To convince you that puritanical asceticism is not inherently male-biased, take concrete data (Fig. R4). McIntosh (2002) examined the proceedings of public courts from 255 villages and small towns in England (1370–1600), which sought to control quarrels, sexual misdeeds, and unruly alehouses. She notes that "the terms used to characterize all these offenses suggest that they violated…both self-control over one's own behavior and the discipline that should be exercised by people in authority over their charges" (McIntosh, 2002, p. 68). Yet she finds that:

> the majority of the lesser English courts that reported sexual problems presented both men and women at the same time…It seems, therefore, that local jurors were not concerned principally with female sexuality but rather were attempting to regulate disorderly sexual behavior wherever it occurred, among both men and women. (McIntosh, 2002, pp. 73–74; Fig. R4)

We agree, however, that puritanism is male-biased in other contexts. **Szocik** and **Barenthin** rightly note that female clothing, for example, is more tightly controlled across cultures. We agree that this double standard is largely rooted in patriarchal oppression. But note that – contrary to **Royzman & Borislow**'s suggestion – the moral disciplining model also explains this double standard. As Royzman & Borislow rightly note, men have stronger sex drives (Baumeister, Catanese, & Vohs, 2001), are more aroused by visual sexual stimuli (Hamann, Herman, Nolan, & Wallen, 2004), are more likely to engage in antisocial behaviors when desiring sex (Buss, 2021), and are perceived less able to control their sexual urges (Moon, Wongsomboon, & Sevi, 2021). Thus, exposing males to female sexual cues creates greater risk of antisocial behaviors than exposing females to male sexual cues. The moral disciplining model thus expects that, to prevent harmful self-control failures, modesty norms should regulate female clothing more strongly. Consistent with this view, the more people believe that men can't control their sex drives, the more they moralize immodesty in women (Moon et al., 2021; target article, sect. 4.4).

R3.2. Moralistic punishment is for cooperation

DeScioli & Kurzban argue that, by overemphasizing cooperation, our account fails to explain another dark side of puritanism – harsh, moralistic punishments. We would explain why puritans prefer self-controlled people in partner choice, but not why they pay the costs of punishing impulsive people. Indeed, punishment is costly. As DeScioli & Kurzban note, this cost can be recouped if punishment disciplines partners for cooperation. But they ask, "why not simply look for a better partner instead of risking retaliation to try to teach a glutton self-control?"

Well, sometimes people can't switch partners (Thomson et al., 2018). So they try to discipline the partners they have, provided they have enough bargaining power (Barclay & Raihani, 2016; von Rueden, Gurven, & Guala, 2012). If drunk neighbors disturb public peace and cause disorder and violence, what is less costly? Moving your whole family to another village – where there may be drug addicts anyway – or referring to the local court, where you'll find other people keen to discipline drunkards? (see McIntosh, 2002).

The local court is key here. Contradicting **DeScioli & Kurzban**'s claim that "punishment is not for cooperation," many communities organize to control free-riding for mutual benefit by sharing the costs of punishment (Hechter, 1988; Ostrom, 1990). They appoint accountable monitors to police for the common good and reward them with reciprocal payments

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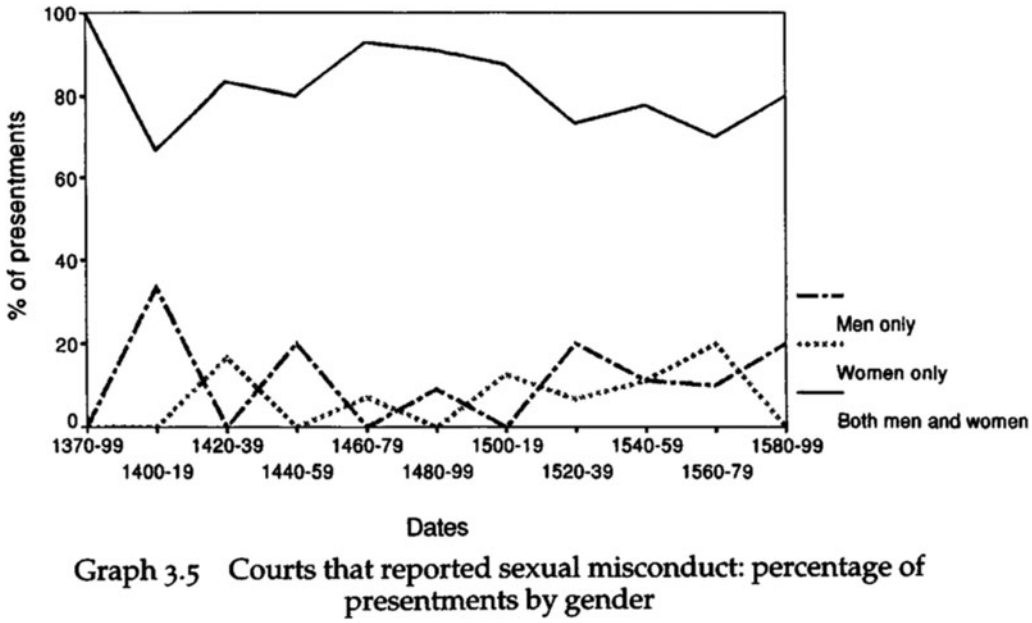


Figure R4. Percentage of presentments for sexual misconducts to lesser English courts by gender, 1370–1599. Data and figure from McIntosh (2002).

or reputational benefits (Ostrom, 1990). Or they use coordinated sanctions to dilute the cost of punishment over multiple individuals who have a common interest in curbing free-riding (Boehm, 2012; Molleman, Kölle, Starmer, & Gächter, 2019). When people perceive undisciplined behaviors as threats to the public good (sect. R2.2.1), it's no mystery why they organize to punish them, just as they do for other forms of cheating (Ostrom, 1990).

The harshness of punishment is not specific to puritanism either. When people perceive others as untrustworthy, they see harsh, public punishments as necessary to sufficiently deter free-riding (Nettle & Saxe, 2021). They publicly execute traitors and cut off the hand of thieves. Consistent with this view, **Fog** cites evidence that tight social control is preferred in environments with high need for collective action. When people fear sex-addicts, gluttons, and drunkards in the same way, they want to control them as tightly as they do for any kind of cheaters. The fact that we, living in high trust and secure societies, see harsh punishments as pointless cruelties doesn't mean that people didn't see them as necessary evils to ensure the public good in less peaceful contexts. Reciprocal cooperation does not refer to anything that vaguely seems nice, but to interaction structures where people can achieve mutual benefit *if everyone refrains from exploiting others' cooperation*. The corollary is that exploiting others' cooperation makes you deserve punishment (André et al., 2022; Fitouchi & Singh, 2023).

R3.3. Strategic moralizing only exists because moral judgments encode mutual benefit in the first place

According to several commentators, puritanical morality arises from mechanisms evolved, not for mutually beneficial cooperation, but to promote moral norms advantageous to oneself (**DeScioli & Kurzban**; **Moon**; **Tybur & Lieberman**). Moon argues that people who are weaker and more vulnerable to disorder likely benefit from moralizing undisciplined behavior at the expense of people interested in freedom and creativity. DeScioli & Kurzban argue that puritanical morality stabilizes when factions that benefit from these norms gain control over the rules (see also DeScioli, 2023). Tybur & Lieberman argue that puritanical moralizations serve to coordinate the exploitation of people of low social value (see sect. R2.3.1).

We agree that people often use moral judgments manipulatively (target article, sect. 2.2). However, we respectfully disagree with **DeScioli & Kurzban**, as well as **Tybur & Lieberman**, that moral condemnation can be reduced to a self-interested or coordination function. **Moon** notes that it's precisely because moral principles are widely about cooperation for mutual benefit that appealing to them is efficient to convince others to behave in accordance with your self-interest. In line with his remarks, we think the very reason why strategic moralizing is adaptive is that moral concepts encode information about mutual benefit in the first place. Let us explain.

Take **Tybur & Lieberman**'s argument that moral condemnation serves to coordinate coalitional attack. To coordinate the exploitation of a low-value onanist, why would it be more efficient to say "Masturbation is wrong!" than to say "Let's all attack at 1 p.m. to get lots of benefits!?" The reason why moral language is useful is that it helps you justify your attack *in terms of the public good*, by presenting the exploited individual as a cheater who deserves punishment rather than an innocent victim of your selfish motives (Singh, 2021). Similarly, if you want to get others to drink less because you're vulnerable to disorder (**Moon**) or persuade them to adopt puritanical laws because they benefit you (**DeScioli & Kurzban**), why should it be more efficient to say "Drinking violates a moral duty!" than to say "Stop drinking! It's not in my interest!?" Again, the reason is that saying "Drinking is wrong" means "We would all be better off if everyone stopped drinking, not just me!" Strategic moralizing amounts to use moral arguments deceptively to convince others that a given behavior is mutually beneficial when in fact the behavior only benefits the condemner. But for people to benefit from using these manipulative signals, moral arguments must activate the notion of mutual benefit in the minds of receivers. Otherwise, recipients would have no interest in listening to such

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arguments, and strategic moralizing would be of no use in the first place (see Dawkins & Krebs, 1978).

R4. Puritanism and folk-theories of self-control

R4.1. Puritanism depends on beliefs, not that asceticism signals self-control, but that it improves self-control

Contrary to what some commentators seem to have understood, we did not argue that bodily pleasures are moralized because they are perceived to *signal* low self-control and low cooperativeness (**Curry & Sznycer**; **Giner-Sorolla & Myers**; **Graham et al.**; **Tierney, Cyrus-Lai, & Uhlmann [Tierney et al.]**; **Tybur & Lieberman**). Without ascribing us this idea, other commentators themselves propose that purity violations are moralized because they signal impatience (**Ellingsen & Mohlin**), uncooperativeness (**Murray et al.**), or a low propensity to respect cultural norms in general (Giner-Sorolla & Myers).

These ideas based on signaling, however, are not sufficient to explain why people morally condemn bodily pleasures. Inferring that gluttons are impulsive or untrustworthy explain decisions to avoid gluttons on the cooperation market, but not the time and energy spent trying to reduce their gluttony – in line with remarks by **Tybur & Lieberman** and **DeScioli & Kurzban**. People in puritanical cultures don't just avoid impulsive individuals, they try to *stop them* from indulging by enacting legal prohibitions (Martin, 2009), reporting sinners to courts (McIntosh, 2002), and promoting techniques of self-discipline to help them curb carnal impulses (Bremer, 2009). This is why we argued that puritanical morality arises from beliefs, not that restraint *signals* self-control, but that restraint *strengthens* or *protects* self-control. This relates to **Buchtel**'s fascinating data on the centrality of a "cultivated" character in Chinese lay concepts of morality. The core of puritanical morality is that people have a moral duty to cultivate character traits that will help them behave more cooperatively in the future (Fitouchi, André, & Baumard, 2022a; Fitouchi, André, Baumard, & Nettle, 2022b).

That said, we very much like **Celniker, Ditto, Piff, & Shariff**'s (**Celniker et al.**) compelling insight that people may impose puritanical norms, not only to improve others' self-control, but also to test others' ability to control themselves in order to choose more disciplined partners. Consistent with this subtle idea, **Kurdoglu** compellingly argues that Turkish men use chastity norms in a fine-grained manner to extract information about potential partners' trustworthiness.

R4.2. When people don't believe that indulgence erodes self-control, they simply don't condemn it

Many commentators review evidence that indulgence in bodily pleasures, such as eating, drinking, and feasting is often used for social bonding, suggesting that people often perceive indulgence as facilitating cooperation rather than impeding it (**Becker & Bernecker**; **Fu & Viera**; **Giner-Sorolla & Myers**; **Syme**). Some of them see this as challenging our account, by showing that many societies have more positive views of bodily pleasure than our theory would assume (Fu & Viera; Giner-Sorolla & Myers, see also Becker & Bernecker).

We do not claim, however, that folk-theories that bodily pleasures threaten cooperation are universal. We argue that *when* people hold these folk-theories, they *morally condemn* bodily pleasures. This does not entail that humans everywhere should exhibit these folk-theories. Many people don't morally condemn bodily pleasures, and our theory *predicts* that they should not hold these folk-theories. In fact, this prediction is supported by evidence cited by **Fu & Viera**, as well as **Giner-Sorolla & Myers**, that people reject puritanical norms when they perceive indulgence to promote cooperation, and prefer abstinence only when "self-control failure [is] seen as more harmful than innocuous" (Giner-Sorolla & Myers).

Starmans offers a fascinating way to test this relationship between folk-theories and moral judgments. She notes that beliefs that self-control can be trained or eroded likely emerge late in childhood. Thus, children should morally judge bodily pleasures differently than adults, to the extent that have different folk-theories of self-control (see also Starmans & Bloom, 2016). We fully agree and would very much like to see this prediction tested. We also agree with **Syme** that even puritanical adults likely hold more subtle folk-theories than those reviewed in the target article. In particular, allowing some periods of unrestrained indulgence – as opposed to continuous abstinence – may appear useful to better channel impulses in the rest of social life (Syme).

R4.3. On the (in)accuracy of puritanical folk-theories

R4.3.1. Why discipline others when disciplining is ineffective?

Our theory is agnostic about whether puritanical norms are objectively effective in improving self-control and cooperation (target article, sect. 3.4). But if puritanical norms don't work, **Blancke** asks, why would people try to discipline others in the first place?

Blancke builds on evidence that condemning a behavior makes you appear less likely to engage in it. Thus, condemning indulgence may signal that you are highly self-controlled, helping you attract cooperation partners. For the signal to be credible, however, receivers must ensure you're not a hypocrite. Paying the cost of disciplining others, Blancke argues, allows people to demonstrate their commitment to puritanical values and thus to credibly signal their self-control. This compelling idea nicely complements **Celniker et al.**'s argument that promoting puritanical norms provides benefits in partner choice (sect. R3.1).

Blancke's mechanism, however, seem to also require that people believe puritanical norms to improve self-control in the first place. To reap reputational benefits from moral condemnation, you must condemn behaviors that others see as deserving to be condemned. Unjustly condemning others for behaviors that nobody perceives as threatening the common good seems unlikely to bring reputational benefits – although this should be empirically tested. For people to gain reputational benefits from condemning bodily pleasure, then, others must at least find it plausible that unrestrained indulgence threatens the public good in some way.

R4.3.2. Societal implications of folk-psychological beliefs

Several commentators insist on the negative social consequences of puritanical folk-theories. We agree with **Olivola** that the intrinsic valorization of effort can lead to ineffective altruism, as well as with **Becker & Bernecker** that debunking puritanical theories of self-control – when they are false – allows preventing societies from missing the benefits of harmless pleasures. We particularly share **Celniker et al.**'s concern that limiting moralistic responses to welfare policies and liberal values requires understanding why moralizations of effort are so intuitive. Beyond self-control, understanding people's folk-theories of social phenomena often

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seems crucial for policy design in many domains (Johnson & Nettle, 2020; Nettle & Saxe, 2021; Piff et al., 2020).

R5. Puritanism and moral variation

R5.1. Did puritanism fall in economically developed societies?

Many commentators note that puritanical morality is highly variable (**Barenthin**; **Bonnefon**; **DeScioli & Kurzban**; **Fog**; **Syme**). In our target article, we reviewed evidence that puritanical values have declined in western, educated, industrialized, rich, and democratic (WEIRD) societies (sect. 5). Several commentators question this idea (**Olivola**; **Tierney et al.**). In wonderful experiments, Tierney et al. found that, compared with Indian participants, Western participants judged needless work as less indicative of a good moral character in their deliberative responses, but not in their implicit responses. Tierney et al. thus suggest that WEIRD people are still puritanical on an intuitive level.

We are not sure that this is the case. Perceptions of a "good moral character," measured by **Tierney et al.**, seem to reflect perceptions of trustworthiness (Goodwin, 2015). Tierney et al.'s result, in other words, reflect that WEIRD participants still implicitly perceive people who engage in needless work as more trustworthy than people who don't. This doesn't really show, however, that WEIRD participants think that people have a *moral duty* to work even when they don't need to – which would reflect a properly puritanical judgment. One possible explanation of the discrepancy between Tierney et al.'s implicit and deliberative measures, in fact, might be that WEIRD participants might have inhibited their intuitive distrust of the idle target in their deliberative response, precisely because they don't have the moral intuition that the idle target has done anything wrong. These are of course only speculations, which we hope make some sense to Tierney et al.

This relates to **Olivola**'s suggestion that WEIRD societies would not have abandoned puritanism because they still value effort and find effortful actions more meaningful than easy ones (see Bloom, 2021; Inzlicht, Shenhav, & Olivola, 2018). Again, "valuing" effort in such general terms is not the same as viewing lack of effort as morally wrong behavior. Admiring mountaineers and feeling that effort adds meaning to one's life is not the same as thinking that people have a *moral duty* to regularly engage in effortful activities – and that they ought to be punished if they don't.

R5.2. Moral variation from universal computations

Echoing several commentaries (**DiMaggio et al.**; **Fog**; **Kurdoglu**), a key point of our theory is that the cultural variation of morality is not contradictory with moral judgments being produced by a universal computational procedure.

Moral variation, we argue, does not result from unconstrained coordination on arbitrary norms (**DeScioli & Kurzban**), nor from a plurality of moral cognitive systems (**Graham et al.**), but from flexible computations of mutual benefit based on variable inputs (sect. R2). Unlike **Veit & Browning**, we don't think that puritanical morality in itself has "deep evolutionary roots" because it would have facilitated the self-control required by cooperative foraging in human evolution. The reason is that, as **Syme** rightly highlights, puritanical norms seem weak, if not absent, in many small-scale societies (target article, sect. 6.2). We did not argue that puritanical morality emerges from "innate intuitions about self-control" (DeScioli & Kurzban), which would be "adaptive" in themselves (**Becker & Bernecker**). Rather, puritanical moral judgments arise from the regular computations of moral cognition – "What would be mutually beneficial if everyone did it?" (André et al., 2022; Levine et al., 2020) – when the latter are placed in environmental conditions where the costs of ascetic restraint appear worth the mutual benefits of social peace (sect. R2.2.1).

In line with this notion of cost–benefit balance (sect. R2), **Bonnefon** makes the provocative suggestion that, with the advent of autonomous cars and other machines, a new form of puritanical morality may replace the costly and effortful puritanism that WEIRD societies have abandoned. In order to prevent self-control failures, people will calculate that they are morally obliged, not to engage in laborious trainings of self-control, but simply to cede their agency to self-controlled machines (e.g., autonomous cars) that are never impulsive nor drunk – a much less costly way of protecting the public good from human impulses. This conjecture beautifully illustrates the point that morality is not a set of rigid rules, but the product of open-ended computations.

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Note

1. Other commentators argue that contraception (**DeScioli & Kurzban**) and homosexuality (DeScioli & Kurzban; **Giner-Sorolla & Myers**; **Tybur & Lieberman**) are moralized for reasons unrelated to self-control. We are agnostic on this question. But these behaviors are less remote from self-control than they seem. Although homosexuality was largely tolerated until late antiquity, its moralization rose as part of "a broad trend toward asceticism in the Hellenistic and late Roman empires," which was "hostile to all forms of sexual pleasure, including homosexuality" (Greenberg & Bystryn, 1982, pp. 517–520; see also Gaca, 2003). Like masturbation and unrestrained sex within marriage, homosexuality and contraception involve having sex only for *pleasure* (because they cannot lead to procreation) and thus to give free rein to hedonic consumption – the greatest fear of puritanical moralizers (Seidman, 1990).

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