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A Constructionist Review of Morality and Emotions: No Evidence for Specific Links Between Moral Content and Discrete Emotions

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Abstract

Morality and emotions are linked, but what is the nature of their correspondence? Many "whole number" accounts posit specific correspondences between moral content and discrete emotions, such that harm is linked to anger, and purity is linked to disgust. A review of the literature provides little support for these specific morality–emotion links. Moreover, any apparent specificity may arise from global features shared between morality and emotion, such as affect and conceptual content. These findings are consistent with a constructionist perspective of the mind, which argues against a whole number of discrete and domain-specific mental mechanisms underlying morality and emotion. Instead, constructionism emphasizes the flexible combination of basic and domain-general ingredients such as core affect and conceptualization in creating the experience of moral judgments and discrete emotions. The implications of constructionism in moral psychology are discussed, and we propose an experimental framework for rigorously testing morality–emotion links.

Keywords

morality, emotion, affect, constructionism

Jack and Diane are two American teenagers. Jack is a football star and Diane is a cheerleader, and they are in love. There appears to be a special, unique connection between them—you might call them "soul mates"—but there could also be a more general explanation for their compatibility. Jack and Diane are both the same age, grew up in the American heartland, and play sports; what seems like true love may be explained by these global similarities. This example illustrates a tension in psychology between specific and general explanations of relationships between phenomena. A *specific correspondence* suggests a unique pairing between two variables: Jack and Diane are exclusively bonded because of their distinct identities, which dictate a single appropriate match—they are "made for each other." A *general correspondence* suggests that pairings are not unique: Jack and Diane might be paired based on global characteristics shared by others, and so Diane might be just as happy with John, Jake, or Jim.

In psychology, growing research examines the relationship between moral judgments concerning the content of harm (e.g., kicking a puppy) and purity (e.g., making love to your sister), and the emotions of anger and disgust. Some theories posit specific correspondences between moral content and emotions, with unique and consistent links between harm and anger, and between purity and disgust. Such specific correspondences require (a) distinct mechanisms for the different moral content of harm and purity, (b) distinct mechanisms for the different emotions of anger and disgust, and (c) unique relationships between these distinct mechanisms. Many current accounts of morality and emotion advocate for these distinct mechanisms and specific bonds, but here we present an alternative view inspired by constructionist models of emotion and the mind more broadly.

We begin by introducing a constructionist perspective on morality and emotion and then critically review the evidence for specific morality–emotion links. Our review reveals no support for these specific links, suggesting instead that morality and emotion are linked through overlapping global characteristics such as general feelings (core affect) and knowledge about specific emotion categories (conceptual content). In other words, although there is some general correspondence between moral judgment and emotion, there appear to be no *exclusive* relationships between specific kinds of moral content (harm, purity) and specific discrete emotions (anger, disgust). As we explore, this finding

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highlights the importance of domain-general processes in emotion and moral judgment. We conclude by recommending a constructionist framework for experimentally assessing specific correspondences in morality and emotion.

Morality, Affect, and Emotions

Feelings were long dismissed as unworthy of study, especially in morality and ethics (Kant, 1785/1959; Kohlberg, 1971; Turiel, 1983), but decades of research reveals that they matter for moral judgment (for reviews, see Chapman & Anderson, 2013; Damasio, 1994; Eisenberg, 2000; Greene, 2008; Haidt, 2001; Horberg, Oveis, & Keltner, 2011; Nichols, 2004; Pizarro, Inbar, & Helion, 2011; Prinz, 2007; Strohminger, 2014; Tangney, Stuewig, & Mashek, 2007). Emotional feelings can both intensify and diminish moral judgments (e.g., Horberg, Oveis, Keltner, & Cohen, 2009; Schnall, Haidt, Clore, & Jordan, 2008; Wheatley & Haidt, 2005), but the precise link between feelings and moral judgment is debated. Before turning to this debate, some clarification is needed about how "feelings" and "moral judgments" are operationalized in the psychological literature.

Emotion science often differentiates between two types of "feelings": "affect" and "emotion" (Barrett, 2006; Bradley, Codispoti, Cuthbert, & Lang, 2001; Clore & Ortony, 2013; Keltner & Ekman, 2000; Lindquist, 2013; Panksepp, 2005; J. A. Russell, 2003). Affect is often considered a biologically basic state characterized by valence (positive vs. negative feelings) and arousal (high vs. low activation feelings; Barrett, 2006; Bradley et al., 2001; Clore & Ortony, 2013; Lindquist, 2013; J. A. Russell, 2003),[1] whereas emotions are more complex and differentiated states (anger, disgust, fear, joy, pride) with both affective qualities and conceptual qualities (Barrett, 2006; Bradley et al., 2001; Clore & Ortony, 2013; Lindquist, 2013; J. A. Russell, 2003). For example, although anger and disgust both involve unpleasant, high arousal affect (cf. P. S. Russell & Giner-Sorolla, 2013), anger typically involves perceptions of offense (Lazarus, 1991), and disgust typically involves perceptions of contamination (Rozin & Haidt, 2013). Moral psychology also differentiates between two broad concepts of moral judgment and moral content. Moral judgments are evaluations about whether certain acts or persons are ethically right or wrong (Chapman & Anderson, 2013), whereas moral content concerns other descriptive characteristics of those immoral acts or persons (Graham et al., 2013). For example, individuals might judge both hitting a child and making love to an adult sibling as "wrong." However, some researchers argue that these judgments of wrongness involve different moral content, with hitting a child involving "harm" and making love to an adult sibling involving "impurity" (Graham et al., 2013).

Modern models of moral judgment acknowledge the importance of affect, but recent approaches have posited more specific correspondences between different moral content and different discrete emotions (Rozin, Lowery, Imada, & Haidt, 1999; P. S. Russell & Giner-Sorolla, 2013; for discussion of these taxonomies, see Cheng, Ottati, & Price, 2013; Horberg et al., 2011). These approaches assume relatively sharp boundaries between psychological experiences, yielding a specific number of types of moral content and discrete emotions. We refer to these as *whole number* frameworks because they posit a core number of evolved and encapsulated mental mechanisms corresponding to "foundational" moral content (Graham et al., 2013) and "basic" emotions (Ekman & Cordaro, 2011; Izard, 2011; Panskepp & Watt, 2011). Whole number accounts of morality are well-represented in moral psychology. One early whole number account split morality into three content areas of "community," "autonomy," and "divinity" (the CAD model; Rozin et al., 1999). Moral judgments about "community" are about violations of group solidarity (e.g., burning the American flag), judgments about "autonomy" are about violations of individual rights (e.g., stealing a purse), and judgments about "divinity" are about violations of bodily or spiritual integrity (e.g., having an incestuous relationship).

Building off this taxonomy, moral foundations theory divides morality into five types of moral content: "harm," "fairness," "loyalty," "authority" and "purity" (for review, see Graham et al., 2013). "Harm" is about physical or emotional suffering (e.g., intentionally hurting someone), "fairness" is about distributive and procedural justice (e.g., unfairly dividing resources), "loyalty" is about in-group cohesion and intergroup competition (e.g., betraying one's group), "authority" is about obedience to superiors (e.g., disrespecting authority figures), and "purity" is about spiritual and physical cleanliness (e.g., committing "unnatural" sexual acts). These content areas are thought to be functionally specific such that they operate as independent "mechanisms [that] provide parents and other socializing agents the moral 'foundations' to build on as they teach children their local vices, virtues, and moral practices" (Graham, Haidt, & Nosek, 2009, p. 130; Haidt & Joseph, 2007). Moral foundations theory has inspired other taxonomies of moral content (Janoff-Bulman & Carnes, 2013; Rai & Fiske, 2011) and remains influential because it catalogs cultural differences in moral judgment.

These moral taxonomies are grounded in and inspired by the theory of basic emotions (cf., Graham et al., 2013). Basic emotions theories suggest that different discrete emotions (e.g., "anger," "fear," "surprise," "sadness," "disgust," "contempt," "happiness"; Ekman & Cordaro, 2011) stem from the operation of distinct biological mechanisms that solve adaptive problems by causing specific and consistent facial expressions, peripheral physiology, behaviors, and judgments (Ekman & Cordaro, 2011; Frank, 1988; Izard, 2011; Keltner, Haidt, & Shiota, 2006; Levenson, 2011; Panksepp & Watt, 2011). In so doing, each basic emotion is thought to "prompt us in a direction that, in the course of our evolution, has done better than other solutions in recurring circumstances that are relevant to our goals" (Ekman & Cordaro, 2011, p. 364).

Whole number frameworks suggest specific pairings between moral judgments about discrete moral content and discrete emotions. For instance, the CAD model posits,

> the three other-critical moral emotions align with the three Shweder ethics such that each of these emotions is *specifically* aroused by violations of one of the ethics. In particular, we hypothesize *specific* linkages between community and contempt, autonomy and anger, and divinity and disgust. (Rozin et al., 1999, p. 576, emphasis added)

In support of this claim, Rozin and colleagues (1999) find that some participants pair emotion faces (e.g., a scowl) and words (e.g., *anger*) with the predicted moral violation types (e.g., autonomy violation: a child hits another child). Other researchers also appear to find some evidence for morality–emotion correspondences predicted by the CAD model (Horberg et al., 2009; P. S. Russell, Piazza, & Giner-Sorolla, 2013). For instance, P. S. Russell and Giner-Sorolla (2013) state that, "the preponderance of evidence suggests that disgust responds to violations of norms about the body [i.e., purity]" (p. 329). Drawing from these results, moral foundations theory also advocates for similar specific correspondences (Rozin & Haidt, 2013), such that "disgust maps to a particular subset of moral concerns that involve sanctity, divinity, and the protection of what are perceived to be sacred values and objects" (p. 367) and "people associate cheating, stealing, and most matters of harm and fairness more closely with anger" (p. 368).

Constructionism: An Alternative Framework

In contrast to whole number accounts that posit specific morality–emotion correspondences, *psychological constructionist* accounts posit general morality–emotion correspondences. Constructionism posits that moral judgments (Cheng et al., 2013; Dienstbier, Hillman, Lehnhoff, Hillman, & Valkenaar, 1975; Gray, Young, & Waytz, 2012; Janoff-Bulman & Carnes, 2013) and discrete emotions (Barrett, 2013; Cunningham, Dunfield, & Stillwell, 2013; Lindquist, 2013; J. A. Russell, 2003) emerge from the combination of more basic, domain-general psychological processes.

Constructionism suggests that many different kinds of psychological states (moral judgments, emotions, perceptions, memories) arise not from *many distinct encapsulated processes* (i.e., one for each discrete emotion, Ekman & Cordaro, 2011; one for each type of moral content, Horberg et al., 2011), but instead from *one common combinatorial process* that flexibly combines the same basic psychological elements into different mental states (Barrett, 2013; Lindquist, 2013). As analogies, these more fundamental processes are sometimes discussed as "ingredients"—the same ingredients of flour, butter, sugar, salt, and yeast can give rise to a diversity of baked goods, including dense breads, fluffy croissants, chewy bagels, and crispy cookies (Barrett, 2009; Lindquist, 2013)—or as "elements"—the same elements of hydrogen and oxygen can give rise to both water and hydrogen peroxide (cf. Lindquist, MacCormack, & Shablack, 2015; Lindquist, Satpute, & Gendron, in press).

Although constructionism suggests that mental states emerge from combinations of basic ingredients, it does not "explain away" different moral content or emotions or deny their importance in social reality (Barrett, 2012; Lindquist, 2013). Just as croissants taste different from bagels, and water is more refreshing than hydrogen peroxide, the subjective experience of anger is truly different from that of disgust. Nevertheless, a constructionist approach focuses on the more basic mechanisms that bring these mental states forth, rather than assuming that each subjective state itself corresponds to a singular and specific psychological or biological mechanism (Lindquist & Barrett, 2012). Constructionism's emphasis on domain-general ingredients and common combinatorial processes leads to different predictions from whole number accounts about the origin of different emotions and moral content, and their relation to one another.

Constructionist Models of Emotion

Constructionism has primarily been applied in the study of emotion (Barrett, 2006; Clore & Ortony, 2013; Cunningham et al., 2013; Duffy, 1934, 1941; Hunt, 1941; James, 1890; Lindquist, 2013; Mandler, 1975; J. A. Russell, 2003; Schachter & Singer, 1962; Wundt, 1897/1998), and as Figure 1 demonstrates, it sits at one end of a theoretical continuum (adapted from Gross & Barrett, 2011). On the left are theories of basic emotion that emphasize a whole number of domain-specific, distinct mechanisms for emotions. This family of theories argues that different emotions are encapsulated psychological states, caused by dedicated mechanisms, with emotion-specific brain circuits and emotion-specific physiological and behavioral manifestations (Ekman & Cordaro, 2011; Panksepp & Watt, 2011). The pioneers of this theory argue that different emotions involve distinct mechanisms in the nervous system (i.e., "affect programs"), which demonstrate *consistent* and *specific* relationships to certain outputs that are universal across culture (Ekman, 1972, 1992; Izard, 1971, 2011; Tomkins, 1962).

Consistency is the idea that measurements thought to be the result of a specific emotion—experience, judgment, physiology, brain activation, and behavior—respond in a coherent and largely identical fashion across different instances of the same emotion. Specificity is the idea that these response channels respond differently for different emotions, such as anger versus disgust (Lindquist, Siegel, Quigley, & Barrett, 2013). Thus, basic emotion theories suggest that response channels should react similarly across instances of the same emotion (consistency) and differently across instances of different emotions (specificity). In focusing on universality of emotion, these theories hypothesize strong within-category similarities and therefore consider

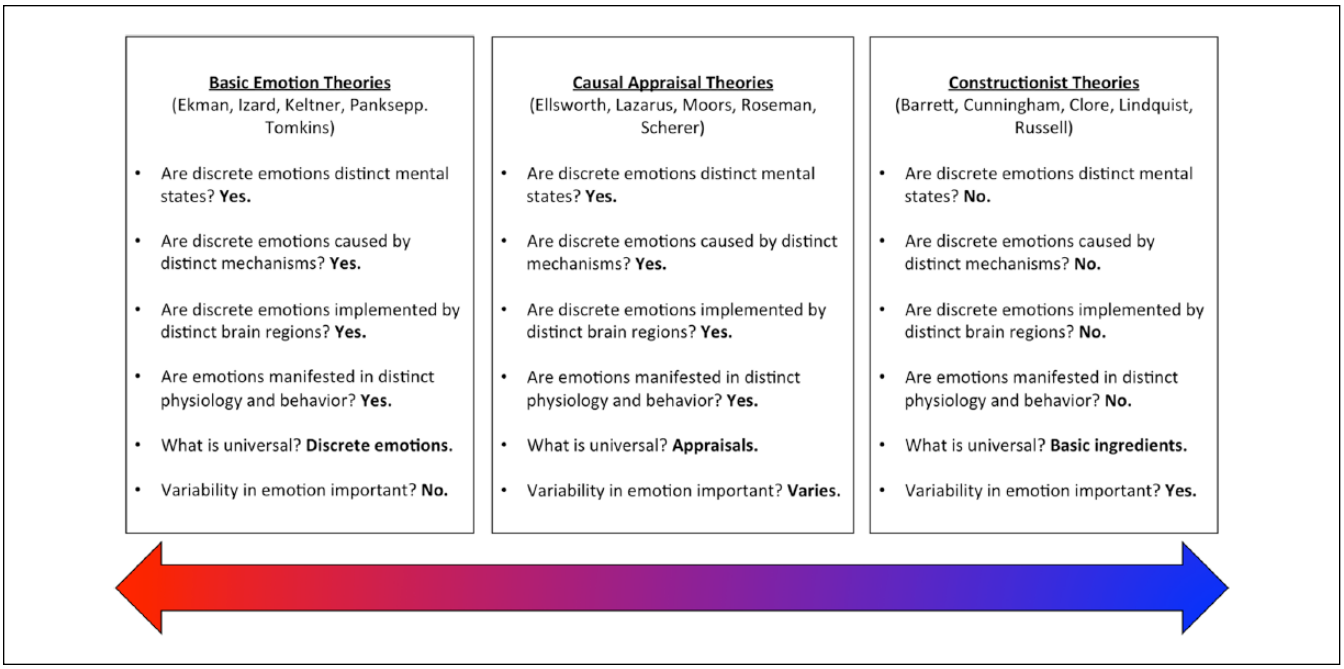

Figure 1. A continuum of emotion theories including basic emotions theories, causal appraisal theories, and constructionist theories.

within-category variability as superficial—resulting from post hoc regulation or "display rules" (Ekman & Cordaro, 2011; Matsumoto, 1990).

Basic emotions theory was the predominant framework for guiding psychological theorizing in emotion and other domains (e.g., morality, Graham et al., 2013; psychopathology, Marsh, 2013; neuroscience, Sprengelmeyer et al., 1999) for much of the last century. Despite the prevalence of basic emotions theory in the latter half of the 20th century, evidence for within-category consistency and specificity is lacking. There are low correlations between measurements of experience, physiology, facial expressions, and behavior for a given emotion (Barrett, 2006; Barrett, Mesquita, Oschner, & Gross, 2007; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005), and little evidence for specific physiological (Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Kreibig, 2010; Mauss & Robinson, 2009) or neural signatures (Kassam, Markey, Cherkassky, Loewenstein, & Just, 2013; Kober et al., 2008; Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012; Vytal & Hamann, 2010) across different emotions. Similarly, it is not clear whether different emotions have unique effects on judgment (Lindquist, Siegel, et al., 2013) or whether "prototypical" facial emotion expressions are perceived universally across contexts (Barrett, Mesquita, & Gendron, 2011; Lindquist & Gendron, 2013; Lindquist et al., in press; J. A. Russell, Bachorowski, & Fernández-Dols, 2003).

Constructionism provides a positive account of the low consistency and specificity in outputs of emotions, and sits on the right of Figure 1. In contrast to basic emotions theories, constructionism hypothesizes that different emotions emerge from common, domain-general ingredients, whose combination gives rise to substantial within-emotion variability. William James (1890), an early constructionist, suggested that there were as many kinds of emotions as there were shapes of rocks on a New England farm (cf. Lindquist, 2013). He also warned that applying emotion category labels to different states (e.g., *anger, disgust*) might lead psychologists to mistakenly search for deep physical essences of specific emotions when none may exist:

> [T]he trouble with emotions in psychology," he argued, "is that they are regarded too much as absolutely individual things. But if we regard them as products of more general causes . . . then the mere distinguishing and cataloguing becomes of subsidiary importance." (James, 1890, p. 449; cf. Lindquist, 2013)

Although different constructionist accounts debate the identity of these "general causes" or common ingredients, (Barrett, 2006; Cunningham, Zelazo, Packer, & Van Bavel, 2007; Cunningham et al., 2013; Duffy, 1941; Harlow & Stagner, 1932; J. A. Russell, 2003; Schachter & Singer, 1962; Wundt, 1897/1998), many focus on at least two: core affect and conceptual knowledge (Barrett, 2006; Clore & Ortony, 2013; Lindquist, 2013; J. A. Russell, 2003). Core affect is the general physiological state of the body (J. A. Russell, 2003), which can be experienced as independent dimensions of valence (positive vs. negative feelings) and arousal (feelings of high vs. low activation). Core affect is always present as a psychological ingredient, as "the constant stream of transient alterations in an organism's neurophysiological state that represent its immediate relation to . . . changing events"

(Barrett, 2006, p. 30). Constructionism is often mischaracterized as suggesting that emotions are nothing more than valence and arousal—this is seen in arguments that characterize constructionism as merely a "dimensional account" of emotion (cf. Lindquist, Siegel, et al., 2013). However, all constructionist theories advocate for conceptual processes that transform core affect into specific emotional experiences (Barrett, 2013; Lindquist, 2013) and thus acknowledge that emotions can be experienced as discrete and specific states. Furthermore, constructionist views acknowledge that an emotion, once formed, can shape subsequent behavior. The question that constructionism tries to address is how emotions are created in the first place, and how they have influence on subsequent behaviors.

The conceptual processes that constructionist views hypothesize transform core affect into specific experiences of emotion include knowledge about the emotion categories encoded in a specific culture's language. This conceptual knowledge includes general semantic knowledge (e.g., traffic jams make people angry), autobiographical memories (e.g., I always curse at slow drivers), and situation-specific knowledge (e.g., people never pay attention on this particular freeway). Conceptual knowledge transforms affect into discrete emotions through the process of "situated conceptualization," making sense of core affect through the lens of the conceptual knowledge activated by a specific situation (Barrett, 2013; Lindquist, 2013). Just as conceptual knowledge transforms ambiguous visual sensations into a visual perception of a gun or a hair dryer (in part based on whether visual sensations are experienced in a dark alley or a bathroom, and in part based on an individuals' prior experiences of those objects; Bar, 2009), conceptual knowledge transforms core affect into a specific experience of emotion. For instance, negative high-arousal core affect might be transformed into the experience of fear when concept knowledge about danger is activated (e.g., Lindquist & Barrett, 2008); a similar state might be experienced as anger if knowledge about offense is activated.

Constructionist models may seem similar to appraisal models of emotion—often used in moral psychology theorizing (e.g., Chapman & Anderson, 2011; Horberg et al., 2011)—because both acknowledge the importance of conceptual interpretation in emotion, but there are fundamental differences between them (Lindquist, 2013). Like basic emotions theories, appraisal theories posit a whole number of fundamental emotions, but suggest that emotions derive from cognitive evaluations (i.e., specific "appraisal mechanisms") that compute meaning along different dimensions, including but not limited to pleasantness, uncertainty, and goal-congruence (Ellsworth, 2013; Lazarus, 1991; Moors, 2009; Scherer, 2009). These appraisals are about the meaning of an external stimulus, not about a person's core affective state, and like the emotions they generate, appraisals are believed to also be encapsulated mechanisms that, in combination, are uniquely tied to different emotions (Ellsworth, 2013; Moors, 2009; Roseman, 2011). Although causal appraisal models allow that different appraisals might be used in a situation, they do not allow flexibility in appraisal–emotion relationships. A recent review concluded, "Appraisal theories assume that there is a variable relation between stimuli and emotions, but a stable relation between appraisals and emotions. In general, the same appraisals lead to the same emotions" from instance to instance (Moors, Ellsworth, Scherer, & Frijda, 2013, p. 122).

Like basic emotions theories, appraisal theories also suggest that the same emotion (e.g., disgust), once triggered by an appraisal, involves consistent and specific changes in experience, physiology, brain activation, and behavior: "Appraisal triggers and differentiates emotional episodes through *synchronic* changes in other components" (Moors et al., 2013, p. 122, emphasis added). In other words, although appraisal theories involve meaning-making, they share key assumptions of basic emotion theories such as distinct mechanisms and whole numbers of emotions, consistency, and specificity. By contrast, constructionist models highlight variability within any discrete emotion category—conceptualization occurs not through the triggering of a distinct appraisal mechanism (or sequence of mechanisms), but through the use of a diverse set of fuzzy conceptual representations that depend sensitively on context.[2] More specifically, constructionism argues against the idea of universal appraisal mechanisms (e.g., if injustice is detected, then anger is triggered) that always cause the same emotion. Instead, it suggests that a loose set of conceptual representations transform core affect into emotion in different ways depending on the situation (Barrett, Wilson-Mendenhall, & Barsalou, 2014). For anger, these situations might involve driving a car (road rage); sitting at a desk (paper rejection), a playground (seeing a child punched), or a nightclub (bar fight); or any situation in which a person has conceptualized core affect as *anger* in the past. The sensitivity of conceptual knowledge to specific situations allows the same emotion to involve different experiences and behaviors depending on the context (Barsalou, 2009), and can account for the extreme variability inherent in any single emotion category (Barrett, 2006; Kreibig, 2010; Mauss & Robinson, 2009). In a bar fight, anger might involve clenched hands, a raised voice, and a flushed face, but in a work meeting, anger might involve eerie calm, a lowered voice, and a cold stare. For constructionist models, both of these conceptualizations are "true" instances of anger, although the quiet fury of the meeting involves different behaviors and experiences than the stereotypical case of drunken rage.

Constructionism therefore argues that there is not a single unitary concept for *anger* that is stored for later use in categorization. Although people often perceive emotions as essentialized categories, each with a unique causal mechanism and specific and consistent properties (Lindquist, Gendron, Oosterwijk, & Barrett, 2013), this intuitive perception is not reflected in studies of actual emotion experience

and perception (Barrett, 2006; Barrett et al., 2011; Cacioppo et al., 2000; Kreibig, 2010; Mauss & Robinson, 2009; Stemmler, Heldmann, Pauls, & Scherer, 2001). Most important, constructionism argues that no emotion has a true "essence" with basic, eternal, and invariant properties (on the "fuzzy" nature of concepts, see Medin, Wattenmaker, & Hampson, 1987; Mervis & Rosch, 1981). Instead, emotions are a heterogeneous population of instances that vary across situations (Barrett, 2014) and that are calibrated by recurrent situations within a given culture (Boiger & Mesquita, 2012; Mesquita, 2003). For example, disgust may involve laughing when watching a raunchy movie, retching when smelling vomit, or fleeing when seeing a sexual partner covered in open sores.

In challenging essentialist beliefs about emotions, constructionist accounts are often taken to claim that emotions are not "real." However, constructionist accounts acknowledge that discrete emotions are real to the experiencer, but are socially constructed (Searle, 1995), just like the concepts of race. Race is certainly perceived as "real" despite lacking an objective essence in genes, behaviors, or appearance (Mallon, 2004; Zack, 2002), and despite substantial within-race heterogeneity—both President Obama and rapper 50 Cent are Black, and both Pope Francis and rocker Mick Jagger are White. Moreover, constructionism also acknowledges that emotional concepts of *anger* and *fear*—like the racial terms of Black and White—are useful, and provide an easy shorthand to communicate experiences to others.

Another critique of constructionist approaches is that they are unfalsifiable because they allow too many "degrees of freedom" for empirical predictions. However, constructionist models offer clear predictions about how emotions depend on domain-general processes and vary across situations and cultures—predictions that have been supported by much recent data (Gendron, Lindquist, Barsalou, & Barrett, 2012; Gendron, Roberson, van der Vyver, & Barrett, 2014a, 2014b; Kirkland & Cunningham, 2012; Lindquist & Barrett, 2008; Lindquist et al., 2012; Oosterwijk et al., 2012; Satpute, Shu, Weber, Roy, & Ochsner, 2013; Widen & Russell, 2008; Wilson-Mendenhall, Barrett, & Barsalou, 2015; Wilson-Mendenhall, Barrett, Simmons, & Barsalou, 2011). Highlighting the combinatory process of core affect and conceptual knowledge, studies reveal that the experience of fear depends on both negative affect *and* conceptual priming of fear-related concept knowledge (Lindquist & Barrett, 2008). Highlighting the influence of context on emotional experience, studies reveal that neural correlates of the same emotion differ when experienced in different situations (e.g., fear in physical danger vs. fear social evaluation), and neural correlates of different emotions are similar when experienced in similar situations (Wilson-Mendenhall et al., 2011). Highlighting cultural variation across emotions are studies revealing that rural Africans do not use the same emotion categories (e.g., fear, anger) as Americans to categorize different expressions (Gendron et al., 2014b). These findings are not only consistent with constructionism but also the current understandings of situated cognition (Barsalou, 2009; Niedenthal, 2007; Smith & Semin, 2004), emergent mental phenomena (Lewontin, 2000), and the role of domain-general processes and neural networks in producing myriad mental states (including but not limited to emotions; Barrett & Satpute, 2013; Cushman & Young, 2011; Lindquist & Barrett, 2012; McIntosh, 2004; Shenhav & Greene, 2010; Young & Dungan, 2012).

Constructionist Models of Morality

Although early studies applied constructionist ideas to morality (Dienstbier et al., 1975; Dienstbier & Munter, 1971), constructionism has been little used in moral psychology, despite its potential utility. Domain-general processes of core affect and conceptual knowledge are ever-present ingredients for the construction of many mental states (Barrett, 2009), including moral judgments. We suggest that moral judgments involve the combination of core affect—typically unpleasantness (although pleasantness is possible, e.g., admiration of virtue; Immordino-Yang, McColl, Damasio, & Damasio, 2009)—with conceptual knowledge tailored to the current situation. In particular, the conceptual knowledge related to morality concerns who or what is being harmed, and how they are being harmed (Gray, Young, & Waytz, 2012; Janoff-Bulman & Carnes, 2013). Indeed, recent evidence shows that diversity of moral content (e.g., harm, fairness, loyalty, authority, purity) can be understood as perceptions of harm toward different victims across different contexts (Gray, Schein, & Ward, 2014; Gray, Waytz, & Young, 2012; Janoff-Bulman & Carnes, 2013).

One constructionist model—dyadic morality—suggests that all moral judgments are understood through the harm-based template of two perceived minds: an intentional moral agent causing the suffering of a moral patient (Gray & Schein, 2012; Gray, Waytz, & Young, 2012; Gray, Young, & Waytz, 2012). The terms "agent" and "patient" are rooted in moral philosophy, linguistics, and the structure of causation (Brown & Fish, 1983; Fotion, 1968), in which agents are the doers of actions, and patients are the recipients (or targets) of actions. In morality, the agent is characterized by intentional action, and the patient is characterized by harm or potential harm (i.e., vulnerability; Gray & Wegner, 2009).

Because the dyadic template of agent + patient is based on perceived (rather than "objective") harm, it can be conceptualized in myriad ways. When people perceive harm being perpetrated through inequality, fairness-related concerns could be activated (Waytz, Dungan, & Young, 2013); when people perceive harm toward the soul, purity-related concerns could be activated (Gray, 2014); and when people perceive harm toward society, loyalty-related concerns could be activated (Janoff-Bulman & Carnes, 2013). A dyadic template suggests that wrongness judgments about incest may not require a separate "purity mechanism," but could instead

arise from the perceived harm involved in such acts, whether toward potential offspring, the souls of the siblings involved, or society at large. Supporting this claim, seemingly harmless violations (e.g., necrophilia) elicit harm judgments on implicit evaluation measures that bypass post hoc reasoning (Gray et al., 2014). In other words, different moral concerns may be understood simply as different "flavors" of harm, stemming from a common cognitive template.

A dyadic template not only structures perceptions of morality (Schein & Gray, 2014) but also provides a simplified framework for understanding moral emotions. In dyadic morality, people can be perceived as one of four types in a 2 (agent/patient) × 2 (help/harm) matrix: agents of harm (e.g., villains such as Hitler), patients of harm (e.g., victims of genocide), agents of help (e.g., heroes such as Mother Teresa), and patients of help (e.g., beneficiaries of charity). Each of these quadrants appears to evoke different emotions (Gray & Wegner, 2011), with villains evoking the high arousal negative emotions of anger and disgust (Hutcherson & Gross, 2011), and victims evoking the low arousal negative emotions of sympathy and sadness (Cameron & Payne, 2011). Conversely, heroes tend to evoke the high arousal positive emotions of inspiration and elevation (Algoe & Haidt, 2009), and beneficiaries tend to evoke the low arousal positive emotions of relief and happiness (Cialdini et al., 1987). Thus, the core affective distinctions of valence and arousal can be mapped onto moral emotions, with valence reflecting perceptions of help and harm, and arousal reflecting agency or patiency.

A general cognitive moral template argues against a whole number of specialized modules for each kind of moral content, whether three (Rozin et al., 1999), four (Haidt & Joseph, 2004), five (Graham et al., 2009), or six (Graham et al., 2013). Parsimony suggests that the simplest process should be considered first, and contextualization of harm in different situations provides sufficient variability to account for moral diversity across cultures. Consistent with a common template, there is little evidence that kinds of moral content are functionally distinct.

The gold standard for measuring different moral content is the Moral Foundations Questionnaire (Graham et al., 2011), and analyses reveal that correlations *between* different "foundations" are higher than reliabilities *within* foundations. In plain terms, foundations appear to be more correlated with each other than with themselves. For example, loyalty and authority are correlated at .88 (Graham et al., 2011, Figure 3, p. 376), whereas the loyalty average inter-item correlation is .55 (Graham et al., 2011, Figure 3, p. 376) and the loyalty test–retest reliability is .71 (Graham et al., 2011, p. 371). Moreover, if one corrects for the low reliability within each foundation (i.e., attenuation; Spearman, 1904), some of these adjusted correlations reach $r = 1.0$, casting severe doubts on distinctness. Even harm and purity—often discussed as maximally distinct—appear to be highly correlated, as a recent study found a link of $r = .89$ between these content areas in ratings of moral infractions (Gray & Keeney, 2015). These high inter-content correlations suggest a lack of divergent validity for moral foundations, which is an essential component of construct validity (Campbell & Fiske, 1959; Cronbach & Meehl, 1955). More simply, distinctness is a necessary prerequisite for distinct mechanisms, and appears to be lacking.

As with emotion, the existence of underlying processes does not mean that moral diversity is unreal or unimportant. It is clear that people and cultures differ importantly regarding specific moral issues, but these differences need not reflect different moral "foundations" (Gray & Keeney, 2015). Instead, moral taxonomies may be biased by the particular sampling of issues, confusing specific operationalizations for latent constructs—conservatives may be more collectivist concerning family and patriotism, but less collectivist concerning gun control and taxation. Likewise, conservatives may be more concerned with purity regarding chastity, but liberals may be more concerned with purity regarding organic food (Janoff-Bulman & Carnes, 2013).

More broadly, even if theories such as moral foundations theory are useful for cataloging moral differences, we must not confuse practically useful categories with ontologically distinct cognitive processes (see Ross & Ward, 1996, "Naïve realism in everyday life"). Harm and purity are not unique moral mechanisms, but instead involve substantial internal variability and large overlap with other kinds of moral content. Perhaps even more than emotion, moral content depends on perspective, as liberal researchers may judge a specific infraction as "harmless but impure" whereas their more conservative participants view it simply as "harmful" (Gray et al., 2014; Haidt, Koller, & Dias, 1993).

In sum, for both morality and emotion, constructionism emphasizes domain-general processes, fuzzy lines between categories, and high variability within these categories. Importantly for this article, constructionism does acknowledge a morality–emotion link, but without the need to assume that either morality or emotions are divided into a whole number of distinct types. In contrast to whole number theories, constructionism suggests more global correspondences than specific correspondences, which is a prediction we test with a comprehensive review of the morality–emotion literature.

Assessing Correspondences

Are there specific correspondences between harm and anger, and between purity and disgust? To evaluate this possibility, we rely on the framework provided by Cacioppo and Tassinary (1990) that emphasizes two related criteria of specificity: exclusivity and locus. *Exclusivity* refers to whether moral content and emotions have one-to-one relationships (exclusive) or whether these relationships are more variable, contextualized, and relaxed (non-exclusive). An exclusive correspondence between purity violations and disgust would mean that disgust—and only disgust—consistently co-occurs with purity violations. A non-exclusive

correspondence would mean that purity violations co-occur with various emotions (e.g., disgust, anger, fear) across different situations.

Locus refers to whether morality–emotion links depend on specific moral content or emotions (local), or on more general characteristics that overarch these states (global). A local purity–disgust correspondence means that there is a special link between purity and disgust per se (i.e., a specific link between mechanisms for purity and disgust), whereas a general correspondence means that this link can be explained by general characteristics that purity judgments and disgust share, such as core affect and/or conceptual content. Exclusivity and locus are not independent, as a local locus can only occur if a fully or semi-exclusive relationship between two constructs has been established.

Whole number theories such as the CAD triad hypothesis (Rozin et al., 1999) and moral foundations theory (Graham et al., 2013) posit *exclusive* and *local* harm–anger and purity–disgust links. For instance, Horberg and colleagues (2011, p. 240) state that "We would expect select emotions, even compared to other emotions of the same valence, to influence judgments linked to specific socio-moral concerns. For example, anger, but not disgust or fear, should influence judgments related to matters of justice." Constructionism, on the contrary, suggests *non-exclusive* and *global* correspondences. We should note that whole number theories sometimes make softer claims of relative correspondences—harm corresponds to anger *more* than disgust, and purity corresponds to disgust *more* than anger (Rozin et al., 1999). However, this looser discrimination concedes significant overlap between different moral content and discrete emotions, contradicting the fundamental assumptions underlying whole number accounts (i.e., distinct mental mechanisms).

One could also argue that these mechanisms are fundamentally distinct, but always co-occur; however, this supposition renders claims of distinctness unfalsifiable, because something is empirically distinct only if it can be separated experimentally. If harm/purity and anger/disgust overlap occurs in studies specifically designed to isolate different moral content and emotions, it would undermine the idea of both specific correspondences and whole number theories more generally. To return to the analogy of our teenage lovers, we would be reluctant to say that Jack and Diane have a special, exclusive relationship if Diane prefers Jack most of the time, but still fools around in the back seat of John's car after football games.

In evaluating morality–emotion correspondences, we focus primarily on the purity–disgust relationship, because the literature views it as a leading example of a specific morality–emotion correspondence (e.g., "Disgust and the moralization of purity," Horberg et al., 2009; "Pollution and purity in moral and political judgment," Inbar & Pizarro, 2014; "The domains of disgust," Rozin & Haidt, 2013; "Bodily moral disgust: What it is, how it is different from anger, and why it is an unreasoned emotion," P. S. Russell & Giner-Sorolla, 2013). It might be argued that this is "the weakest link" for a specific correspondence because of lack of conceptual clarity surrounding the purity domain (P. S. Russell & Giner-Sorolla, 2013). However, if purity lacks a coherent essence, then this would already be support in favor of a constructionist emphasis on within-category variability and situated conceptualization. To show that our methodological concerns are not limited to purity, we also examine the harm–anger link hypothesized by whole number accounts. We do not extensively examine other moral content that has been linked to specific discrete emotions (e.g., community violations and contempt; Rozin et al., 1999) because these links have been relatively less examined in the literature.

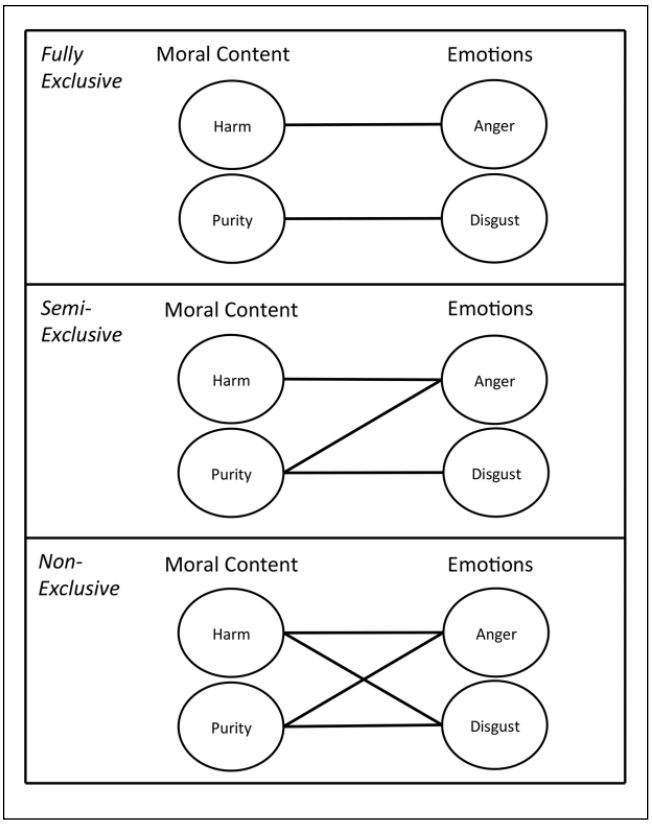

Figure 2. Exclusivity of morality–emotion correspondence: fully, semi-, or non-exclusive.
Note. In the top panel, lack of lines between constructs indicates non-significant relationships.

Evaluating Exclusivity in Morality–Emotion Links

A correspondence means simply that X is linked to Y, but there are three potential levels of exclusivity, as displayed in Figure 2 (Cacioppo & Tassinary, 1990). Full exclusivity suggests an invariant (one-to-one) relationship between X and Y. For instance, Down Syndrome symptoms and trisomy of chromosome 21 always occur together; one never appears

without the other. In mathematical terms, exclusivity means X = Y, Not X ≠ Y, Not Y ≠ X, and Not X = Not Y. In the case of morality and emotions, this would mean that disgust—and no other emotions—co-occurs with judgments of purity violations, but not judgments of other moral violations (and likewise for anger and harm). No other kinds of moral violations should elicit disgust, and no other kinds of emotions should correspond to purity judgments. In the top panel of Figure 2, these pathways are not displayed because they are not expected to differ from zero.

One step down is semi-exclusive correspondences, in which there is an exclusive relation in one direction only (many-to-one or one-to-many; see the middle panel of Figure 2). For instance, the only way to get malaria is from mosquitoes, but mosquitoes can cause other diseases. For morality and emotions, this might mean that only purity violations elicit disgust, but they also elicit other emotions. Finally, a non-exclusive correspondence (many-to-many) does not have exclusive relations in either direction (bottom panel of Figure 2). For example, smoking and lung cancer are reliably linked, but lung cancer can result from many causes, and smoking can cause other diseases. For morality and emotions, non-exclusivity means that harm and purity would both be linked with disgust and anger (and potentially other emotions as well), with each of these relationships being greater than zero. There may be relative differences in their effect sizes, but this is far from the exclusivity posited by whole number accounts.

To date, 25 articles have been published claiming a link between specific moral content and specific emotions (see Table 1). Of these studies, only a handful suggest exclusivity between judgments concerning different moral content and different emotions. For instance, research on the CAD triad (community violations-contempt, autonomy violations-anger, and divinity violations-disgust) finds that—with forced choice methodology—people often pair theoretically predicted moral content with theoretically predicted emotion faces and words (Rozin et al., 1999). Some studies with continuous emotion reports show similar CAD-predicted correspondences (Horberg et al., 2009, Studies 1 and 3; P. S. Russell et al., 2013; Young & Saxe, 2011), and specific purity–disgust correspondences (Helzer & Pizarro, 2011; Horberg et al., 2009, Study 2; Seidel & Prinz, 2013). However, as we later discuss, these studies often do not address causal locus and the more parsimonious explanation that purity and disgust are linked because of global factors such as core affect or conceptual content.

Some neuroimaging studies also appear to show purity–disgust correspondences because the insula—thought to be specific to disgust (Calder, 2003)—increased in activity during purity judgments (Moll et al., 2005; Parkinson et al., 2011; Schaich Borg, Lieberman, & Kiehl, 2008). However, meta-analytic evidence shows that the insula is not specific to disgust, occurs during many emotions (Lindquist et al., 2012), and represents the body during myriad mental states that are not limited to emotion (Craig, 2009; Lindquist & Barrett, 2012; Menon & Uddin, 2010).

In contrast to the few studies that suggest exclusivity, the majority of studies on morality and emotions fail to find an exclusive relationship. Disgust is typically linked to both non-purity moral judgments (e.g., harm and fairness; Cameron, Payne, & Doris, 2013; Chan, Van Boven, Andrade, & Ariely, 2014; Chapman & Anderson, 2009, 2014; Cheng et al., 2013; Eskine, Kacinik, & Prinz, 2011; Eskine, Kacinik, & Webster, 2012; Hutcherson & Gross, 2011; Jones & Fitness, 2008; Olatunji, Abramowitz, Williams, Connolly, & Lohr, 2007; Olatunji, Tolin, Huppert, & Lohr, 2005; Ong, O'Dhaniel, Kwok, & Lim, 2014; Schnall et al., 2008; Schnall, Benton, & Harvey, 2008; Skarlicki, Hoegg, Aquino, & Nadisic, 2013; Tybur, Lieberman, & Griskevicius, 2009; van Dillen, van der Waal, & van den Bos, 2012; Wheatley & Haidt, 2005; Whitton, Henry, Rendell, & Grisham, 2014; Zhong, Strejcek, & Sivanathan, 2010) and to non-moral judgments such as politics (Feinberg, Antonenko, Willer, Horberg, & John, 2014; Helzer & Pizarro, 2011; Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Knobe, & Bloom, 2009; Inbar, Pizarro, Iyer, & Haidt, 2012). A classic study by Wheatley and Haidt (2005) finds that hypnotically induced disgust increases the severity of all moral judgments, whether they concern purity (incest and dead-dog-eating) or not (shoplifting, theft, and bribery). Eskine and colleagues (2011) find that disgusting beverages have similar effects across these same moral violations, without any specific effect on purity. The well-known work by Schnall and colleagues (2008) finds that fart spray and dirty desks harshen moral judgments about purity and non-purity violations, and Cheng and colleagues (2013, Study 2) find that recalling disgust experiences increases condemnation of purity, harm, and fairness violations.

Relatively little work has examined the exclusive relationship between distinct moral content and anger, possibly because the harm–anger link is more intuitive (Kahneman, Schkade, & Sunstein, 1998) and is taken as fact rather than as a testable hypothesis. The few studies that examine links between harm and anger find non-exclusive correspondences. For example, Cheng and colleagues (2013) find that anger increases condemnation of purity and justice violations, and Ugazio, Lamm, and Singer (2012) find that both anger and disgust influence judgments about harm. People feel anger in response to violations of sacred values, many of which count as purity violations (e.g., buying and selling human organs; considering whether Jesus Christ could have had different life circumstances; Tetlock, Kristel, Elson, Green, & Lerner, 2000). Recent evidence finds that prototypically angry—and not prototypically disgusted—behaviors are chosen as the most appropriate response to spiritual divinity violations (e.g., disrespecting the bible; Royzman, Atanasov, Landy, Parks, & Gepty, 2014).

Examining the causal link from morality to emotions, studies find that harm and purity violations cause both anger

Table 1. Summary of Morality–Emotion Studies Classified by IV and DV Controls.

Citation	Controlled for core affect?	Controlled for conceptual content?	Assessed multiple moral content?	Used appropriate comparison method?	Study type (Exp./ Corr.)
Cameron, Payne, and Doris (2013), Study 1*	Yes	No	No	Yes	Exp.
Cameron et al. (2013), Study 2*	No	No	No	Yes	Exp.
Cannon, Schnall, and White (2011)	No	Yes	Yes	No	Corr.
Chan, Van Boven, Andrade, and Ariely (2014), Study 1*	No	Yes	No	Yes	Exp.
Chan et al. (2014), Study 2*	No	Yes	No	Yes	Exp.
Chan et al. (2014), Study 3*	No	Yes	No	Yes	Exp.
Chapman and Anderson (2014), Study 1	Yes	Yes	No	No	Corr.
Chapman and Anderson (2014), Study 2	Yes	Yes	No	No	Corr.
Chapman, Kim, Susskind, and Anderson (2009)	Yes	Yes	No	Yes	Corr.
Cheng, Ottati, and Price (2013), Study 1*	Yes	Yes	Yes	Yes	Exp.
Cheng et al. (2013), Study 2*	Yes	Yes	Yes	Yes	Exp.
Cheng et al. (2013), Study 3*	Yes	Yes	Yes	Yes	Exp.
David and Olatunji (2011)*	No	No	Yes	Yes	Exp., Corr.
Eskine, Kacinik, and Prinz (2011)*	No	No	No	Yes	Exp.
Eskine, Kacinik, and Webster (2012)*	No	Yes	No	Yes	Exp.
Feinberg, Willer, Antonenko, and John (2012), Study 3	No	Yes	No	Yes	Corr.
Feinberg, Antonenko, Willer, Horberg, and John (2014), Study 2	No	Yes	No	Yes	Corr.
Feinberg et al. (2014), Study 3*	No	Yes	No	Yes	Exp.
Giner-Sorolla, Bosson, Caswell, and Hettinger (2012), Study 1	Yes	Yes	Yes	No	Corr.
Giner-Sorolla et al. (2012), Study 2	Yes	Yes	Yes	No	Exp.
Giner-Sorolla and Maitner (2013), Study 1	Yes	Yes	No	No	Exp.
Giner-Sorolla and Maitner (2013), Study 2	Yes	Yes	No	No	Exp.
Gutierrez and Giner-Sorolla (2007), Study 1	Yes	Yes	Yes	Yes	Exp.
Gutierrez and Giner-Sorolla (2007), Study 2	Yes	Yes	Yes	No	Exp.
Gutierrez and Giner-Sorolla (2007), Study 3	Yes	Yes	Yes	No	Exp.
Gutierrez, Giner-Sorolla, and Vasiljevic (2012)	Yes	Yes	Yes	No	Exp.
Helzer and Pizarro (2011), Study 1*	No	No	No	Yes	Exp.
Helzer and Pizarro (2011), Study 2*	No	No	Yes	Yes	Exp.
Horberg, Oveis, Keltner, and Cohen (2009), Study 1	Yes	No	Yes	No	Corr.
Horberg et al. (2009), Study 2*	No	No	Yes	Yes	Exp.
Horberg et al. (2009), Study 3	Yes	No	Yes	No	Corr.
Hutcherson and Gross (2011), Study 1	Yes	Yes	Yes	Yes	Corr.
Hutcherson and Gross (2011), Study 2	Yes	Yes	Yes	Yes	Corr.
Hutcherson and Gross (2011), Study 3	Yes	Yes	Yes	Yes	Corr.
Inbar, Pizarro, Knobe, and Bloom (2009), Study 1	No	No	No	Yes	Corr.
Jones and Fitness (2008), Study 1 for peer review	No	No	No	Yes	Corr.
Jones and Fitness (2008), Study 2	Yes	Yes	No	No	Corr.
Jones and Fitness (2008), Study 3	Yes	Yes	No	No	Corr.
Koleva, Selterman, Iyer, Ditto, and Graham (2014), Study 2	No	No	Yes	Yes	Corr.
Lerner, Goldberg, and Tetlock (1998)*	No	No	No	Yes	Exp.
Moll et al. (2005)	No	No	Yes	Yes	Corr.
Ong, O'Dhaniel, Kwok, and Lim (2014), Study 1*	No	Yes	No	Yes	Exp.
Ong et al. (2014), Study 2*	No	Yes	No	Yes	Exp.
Parkinson et al. (2011)	No	No	Yes	Yes	Corr.
Ritter and Preston (2011), Study 1*	Yes	Yes	No	No	Exp.
Ritter and Preston (2011), Study 2*	Yes	Yes	No	No	Exp.
Rottman, Kelemen, and Young (2014), Study 1	Yes	Yes	Yes	No	Corr.
Rottman et al. (2014), Study 2	Yes	Yes	Yes	No	Corr.
Royzman, Atanasov, Landy, Parks, and Gepty (2014), Study 2	Yes	Yes	Yes	No	Corr.
Royzman et al. (2014), Study 3	Yes	Yes	Yes	No	Corr.

(continued)

Table 1. (continued)

Citation	Controlled for core affect?	Controlled for conceptual content?	Assessed multiple moral content?	Used appropriate comparison method?	Study type (Exp./ Corr.)
Royzman et al. (2014), Study 5	Yes	Yes	Yes	Yes	Corr.
Rozin, Lowery, Imada, and Haidt (1999), Study 1	Yes	Yes	Yes	No	Corr.
P. S. Russell and Giner-Sorolla (2011a)	Yes	Yes	Yes	No	Exp.
P. S. Russell and Giner-Sorolla (2011b)	Yes	Yes	Yes	No	Exp.
P. S. Russell and Giner-Sorolla (2011c), Study 1	Yes	Yes	No	No	Corr.
P. S. Russell and Giner-Sorolla (2011c), Study 2	No	Yes	Yes	No	Exp.
P. S. Russell and Giner-Sorolla (2011c), Study 3	Yes	Yes	Yes	No	Exp.
P. S. Russell, Piazza, and Giner-Sorolla (2013)	Yes	Yes	Yes	No	Corr.
Salerno and Peter-Hagene (2013), Study 1	Yes	Yes	No	No	Corr.
Salerno and Peter-Hagene (2013), Study 2	Yes	Yes	No	No	Corr.
Schaich Borg, Lieberman, and Kiehl (2008)	No	Yes	Yes	Yes	Corr.
Schnall, Benton, and Harvey (2008), Study 1*	No	No	Yes	Yes	Exp.
Schnall, Benton, and Harvey (2008), Study 2*	No	No	Yes	Yes	Exp.
Schnall, Haidt, Clore, and Jordan (2008), Study 1*	No	Yes	Yes	Yes	Exp.
Schnall et al. (2008), Study 2*	No	Yes	Yes	Yes	Exp.
Schnall et al. (2008), Study 3*	No	No	Yes	Yes	Exp.
Schnall et al. (2008), Study 4*	No	Yes	Yes	Yes	Exp.
Seidel and Prinz (2013)*	Yes	No	Yes	Yes	Exp.
Skarlicki, Hoegg, Aquino, and Nadisic (2013), Study 1*	Yes	Yes	No	No	Exp.
Skarlicki et al. (2013), Study 2*	Yes	Yes	No	No	Exp.
Skarlicki et al. (2013), Study 3*	Yes	Yes	No	No	Exp.
Tybur, Lieberman, and Griskevicius (2009), Study 1	No	No	Yes	Yes	Corr.
Tybur et al. (2009), Study 2	No	No	Yes	Yes	Corr.
Tybur et al. (2009), Study 3	No	No	Yes	Yes	Corr.
Tybur et al. (2009), Study 4	No	No	Yes	Yes	Corr.
Ugazio, Lamm, and Singer (2012)*	Yes	No	No	Yes	Exp.
Van Dillen et al. (2012), Study 1*	No	Yes	No	Yes	Exp.
Van Dillen et al. (2012), Study 2*	No	Yes	No	Yes	Corr.
Wheatley and Haidt (2005), Study 1*	No	Yes	No	Yes	Exp.
Wheatley and Haidt (2005), Study 2*	No	Yes	No	Yes	Exp.
Whitton, Henry, Rendell, and Grisham (2014)*	Yes	No	No	Yes	Exp.,Corr.
Young and Saxe (2011), Study 3	No	Yes	Yes	Yes	Exp.
Zhong, Strejcek, and Sivanathan (2010), Study 1*	No	No	Yes	Yes	Exp.
Zhong et al. (2010), Study 2*	No	No	Yes	Yes	Exp.
Zhong et al. (2010), Study 3*	No	No	Yes	Yes	Exp.

Note. To find studies, we examined the references sections of theoretical reviews on morality and emotion (e.g., Chapman & Anderson, 2013; P. S. Russell & Giner-Sorolla, 2013), and also searched via PsycINFO and Google Scholar for studies involving "emotion" and "morality" as keywords.
1. Core Affect: Does the study feature multiple emotion manipulations/measurements that are matched on affect (e.g., disgust, anger, fear)?
2. Conceptual Content: Does the study avoid confounding conceptual content of the emotion induction with that of the moral scenario (e.g., relevant to body)?
3. Moral Content: Does the study measure multiple types of moral content (e.g., harm and purity)?
4. Comparison Methods: Does the study allow non-exclusivity to appear by avoiding the use of forced-choice paradigms or ANCOVA?
Studies fulfilled the affect control if they measured or manipulated emotions matched on valence and arousal (e.g., disgust, anger). Studies fulfilled the conceptual control if emotion inductions were matched on content relative to the dependent variable; studies that manipulated moral concerns (e.g., harm vs. purity) and assessed self-reported emotion all fulfilled this criterion. Studies fulfilled the multiple violation control if they measured or manipulated different types of moral concern (e.g., harm, purity). Studies fulfilled the appropriate comparison method control if they did not use forced choice method or ANCOVA to analyze emotion specificity effects. The final column lists whether the study was experimental or correlational. Studies are asterisked if they examined the causal influence of emotion on moral judgment, which is the primary focus of this review. Non-asterisked studies are either correlational or manipulated moral concerns and measured downstream emotional responses.

and disgust. Cannon, Schnall, and White (2011) find corrugator supercilii muscle activation—the eyebrow furrowing that occurs across experiences of multiple negative emotions (Cacioppo et al., 2000)—in response to both purity and harm violations. Rottman, Kelemen, and Young (2014) find that homicide (an ostensible harm violation) and suicide (an ostensible purity violation; but see Gray, 2014, for a critique) each elicited disgust and anger to similar amounts. Hutcherson and Gross (2011, Study 1) find that although disgust is the most strongly experienced emotion in response to harm and purity violations, anger co-occurs with both (but see P. S. Russell et al., 2013, for a critique of emotion measurement in Hutcherson & Gross, 2011). Studies that manipulate moral content (e.g., harm vs. purity) find that experiences of disgust and anger are highly correlated, often past points at which psychometricians would consider them statistically distinguishable. Gutierrez and Giner-Sorolla (2007) find that anger and disgust co-occur during moral judgments, and are typically very highly correlated (*r*s of .33, .64, .78, .82, .77). Similar studies find high anger–disgust correlations (.62 in P. S. Russell & Giner-Sorolla, 2011a; .64 and .79 in Giner-Sorolla, Bosson, Caswell, & Hettinger, 2012). Correcting for attenuation (Spearman, 1904), the true correlations would be higher—more than half the variance would be shared by anger and disgust.

There are several explanations for why ratings of anger and disgust share up to 67% of variance during moral judgments. One explanation assumes that participants are being imprecise with how they use language to describe their emotional state. In this view, participants' tendency to endorse disgust when they "should be" endorsing anger (and vice versa) represents response or measurement error (Gutierrez, Giner-Sorolla, & Vasiljevic, 2012). A related interpretation is that participants hold the belief that in moral contexts, *disgust* is just a synonym for *anger* (Gutierrez et al., 2012; Nabi, 2002; Royzman & Kurzban, 2011; J. A. Russell & Fehr, 1994; Simpson, Carter, Anthony, & Overton, 2006). In contrast to these "response error" or "synonym" accounts, constructionism suggests that emotion covariation is meaningful, telling us something useful about the structure of emotions. By using the words interchangeably, participants are communicating what these states share in common: a feeling of unpleasant, highly activated core affect and/or similar conceptual content. Consistent with the idea that similarities in felt core affect result in co-endorsement of multiple emotions, people routinely co-endorse emotion adjectives that are similar in valence and/or arousal (e.g., Barrett, 2004; Barrett, Gross, Christensen, & Benvenuto, 2001; Feldman, 1995; J. A. Russell, 1991). Treating this overlap as an "effect" of interest to be explained rather than "error" is unique to constructionism, which accounts for overlap with the hypothesis that emotions share domain-general ingredients.

Another possibility is that disgust and anger co-occur when a transgression violates multiple types of moral content: For instance, acting unfairly, being disloyal, and disobeying authority could all be construed as harmful (Gray, Waytz, & Young, 2012) or impure (Batson, 2011). This line of reasoning could provide exclusive correspondences between morality and emotions, but sacrifices discreteness of moral content, and is therefore more consistent with a constructionist perspective. Alternatively, one could suggest that a specific kind of moral content elicits a primary emotion (e.g., injustice results in anger), and this primary emotion causes a secondary emotion (e.g., my anger makes me feel disgust toward the violator). While retaining discreteness of moral content, this possibility sacrifices discreteness of emotions. One could argue that emotion-specificity effects on moral judgment are uncommon because emotion inductions elicit multiple emotions—for instance, fart spray might elicit disgust at the smell and anger at its rudeness—but this again sacrifices discreteness of emotions, as shared core affect between disgust and anger could account for changes in moral judgment. In general, appealing to co-activation of moral content or emotions undermines whole number theory claims for independent, domain-specific mechanisms. Rather than attributing high correlations to response or measurement error, researchers might consider alternatives to whole number accounts.

As reports of anger and disgust tend to co-occur in response to both harm and purity violations, the studies that find the strongest exclusive relationships between harm-anger and purity-disgust tend to use either forced-choice designs (e.g., Rozin et al., 1999) or ANCOVA to control for shared variance between emotion reports (e.g., Gutierrez & Giner-Sorolla, 2007). Both approaches inflate exclusivity because they eliminate shared variance either procedurally (forced-choice) or analytically (ANCOVA). Especially problematic is that both techniques assume exclusivity in morality and emotions a priori, and so cannot reliably test it. In the original CAD studies (Rozin et al., 1999), participants were given harm and purity violations and forced to choose the single emotion face or word—"anger" versus "disgust" or a scowling versus wrinkled nose caricature of a facial expression—that best corresponds to a given violation. This method prevents participants from selecting both angry and disgusted faces or words if they wished to do so.

Even in these experiments, participants did not exclusively choose the emotion word or face hypothesized to correspond to a given moral domain—the word "anger*"* or a scowling expression was selected to correspond to violations of autonomy only 58% or 57% of the time (whereas contempt was chosen 28% and 19% of the time, and disgust was chosen 10% and 15% of the time). Participants were relatively more likely to select the word disgust and wrinkled nose expressions for purity violations (79% and 71%, respectively), but these studies cannot speak of whether exclusivity would occur if participants were not forced to make exclusive answers. Other research also suggests that forced choice methods inflate estimates of exclusivity, as the ability to "accurately" identify the meaning of an emotional expression is greatly reduced when participants are not given labels in a forced-choice format (Nelson & Russell, 2013; Russell,

1994; Widen, Christy, Hewett, & Russell, 2011). To our knowledge, no existing studies allow completely free responding when testing morality–emotion links, but those that allow endorsement of multiple emotions find evidence for non-exclusivity (Hutcherson & Gross, 2011).

To deal with co-occurrence between anger and disgust, other studies analyze data using ANCOVA (Giner-Sorolla et al., 2013; Gutierrez & Giner-Sorolla, 2007; P. S. Russell & Giner-Sorolla, 2011a), an analysis technique that excludes all shared variance between these emotions. Although these studies find a relationship between residualized disgust (controlling for anger) and purity judgments, it is unclear what psychological construct remains once controlling for the majority of variance between anger and disgust. A whole number account might suggest that what is left is pure "disgustness" (minus error) but this strong covariation raises doubts about the distinctness of disgust and anger. If emotions are psychological "compounds" as constructionism suggests, then this residual variance is simply conceptual knowledge specific to disgust—ideas surrounding contamination—and not a complete emotion.

By analogy, imagine someone arguing for the claim that men like coffee, and women like tea. Despite clear biological differences between men and women, "whole number" exclusivity claims are clearly too strong in this scenario, as at least some men like tea and some women like coffee. But suppose that the claim was instead that *relatively* more men than women like coffee, and *relatively* more women than men like tea, controlling for the similarities between these beverages. This would involve controlling for a number of factors that make individuals like both coffee and tea: the fact that both coffee and tea are warm, dark, caffeinated beverages that are consumed in social settings and purchased at shops or made at home. At the end of such an ANCOVA, what is left of coffee and tea looks, smells, and tastes nothing like the original beverages: "coffee" and "tea" now have no color, no warmth, no caffeine, no method of ingestion, no liquidity, and nowhere to purchase or make them. The only unique variance remaining is the relatively more bitter taste of coffee, suggesting a global relationship between gender and bitterness rather than something special about tea and coffee. Similarly, controlling for anger in the purity–disgust relationship leaves a residual that does not look, taste, or smell like "disgust," and may instead suggest a global relationship.

Perhaps the best evidence for the co-activation of anger and disgust in response to harm and purity violations is supported by a recent study of morality in everyday life (Hofmann, Wisneski, Brandt, & Skitka, 2014a). Using ecological momentary assessment, Hofmann and colleagues (2014a) had participants report on whether they had committed, been the target of, witnessed, or learned about a morally positive or negative act within the prior hour. In data available online (Hofmann, Wisneski, Brandt, & Skitka, 2014b), participants reported disgust, anger, and other emotions toward the moral act, and coders classified the act as belonging to one of eight moral "foundations" (harm, fairness, loyalty, authority, purity, liberty, honesty, and discipline). When we conducted our own multi-level models with emotion experience and moral content nested within participants, we found a pattern of results consistent with constructionism but not whole number accounts: Anger and disgust co-activated strongly in response to immoral acts committed by others, $B = .68$, $SE = .02$, $t = 32.69$, $p < .001$. Moreover, purity violations did not elicit more disgust than harm violations, $B = -.11$, $SE = .16$, $t = -.67$, $p = .51$, and purity violations elicited only marginally less anger than harm violations, $B = -.30$, $SE = .16$, $t = -1.84$, $p = .07$. Everyday experience fails to reveal specific morality–emotion correspondences suggested by whole number accounts.

In sum, there is little evidence for exclusivity between morality and emotion (or even within morality or emotion). At best, the data suggest loose correspondences between certain moral content and certain emotions. It is always possible that measurement error has prevented studies from finding specific correspondences that exist. However, it is more parsimonious to believe that existing studies largely failed to find these specific correspondences because none exist, especially when many of them were designed to explicitly reveal specific morality–emotion correspondences. As we mentioned previously, only a handful of studies have revealed any evidence for specificity, but this specificity could arise from more general, shared characteristics between emotion and moral content such as negative core affect and conceptual content.

Evaluating Locus in Morality–Emotion Links

The evidence so far suggests that morality–emotions correspondences are typically not exclusive; we now consider the causal locus of these correspondences. The locus of a correspondence refers to whether there is a specific and unique causal relationship between two things or whether the relationship stems from global causes. For instance, a purity–disgust correspondence may reflect a special, unique relationship between mental mechanisms for purity and disgust, or instead more global common features that transcend purity and disgust per se. Returning to our opening example, imagine that both Jill and Diane like Jack. Diane generally likes football players, but Jill generally dislikes them. Jill's affinity for Jack can only be explained through a local locus involving liking Jack specifically, but Diane's affinity can be explained through a global locus of liking football players, of which Jack is only one example.

In morality and emotions, whole number accounts predict a local locus, in which purity is specifically linked to disgust because of their unique identities or mechanisms. Constructionism predicts a global locus, whereby links can be described through general characteristics of core affect (i.e., valence and/or arousal) and conceptual knowledge. The

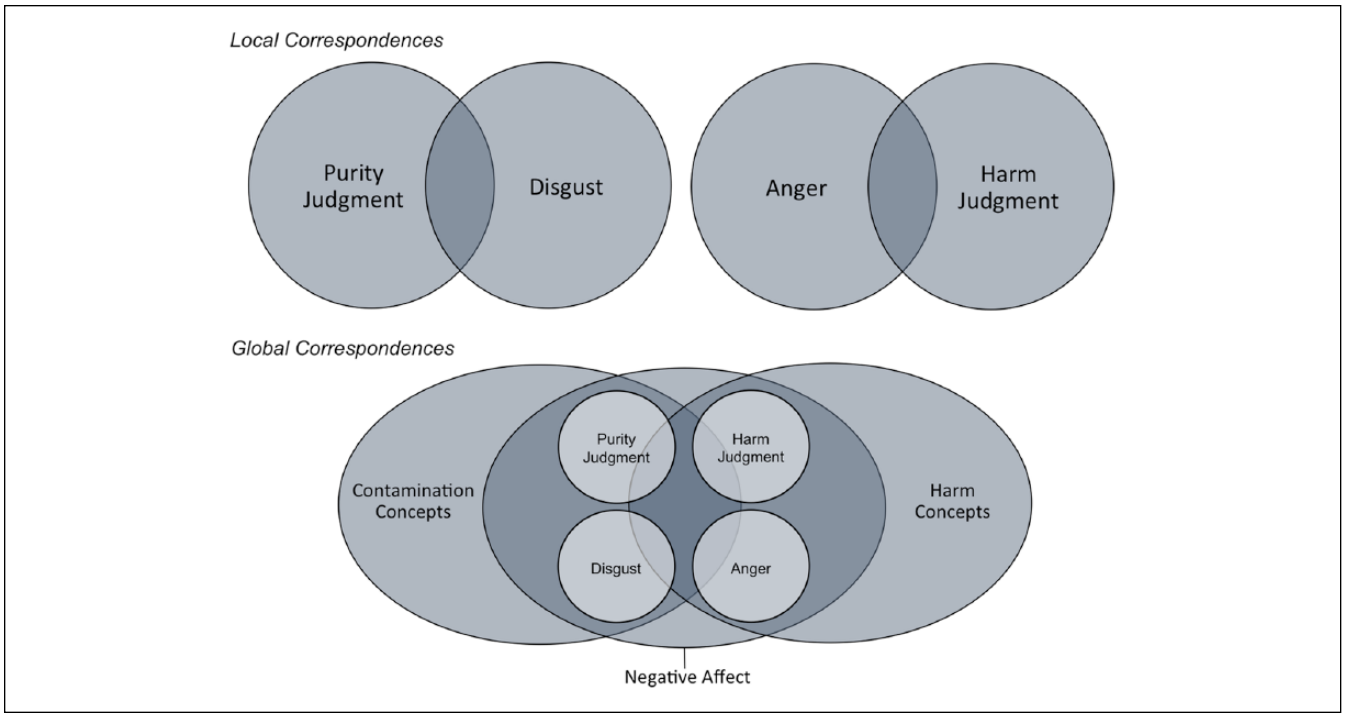

Figure 3. Locus of correspondence: Local versus global.
Note. The top panel ("local correspondence") shows that observed relationships between purity and disgust, and between harm and anger, are caused by features specific to disgust and purity in particular, and to harm and anger in particular. The bottom panel ("global correspondences") shows that observed purity-disgust and harm-anger relationships are caused by common features that transcend these discrete states, such as negative core affect and conceptual knowledge about contamination and harm.

top panel of Figure 3 shows a local correspondence. Once a semi- or fully exclusive purity–disgust relationship has been established, a local correspondence implies that it is due to specific features of purity and disgust in particular. The bottom panel of Figure 3 shows a global correspondence. The purity–disgust relationship can be accounted for by overlaps between domain-general features such as activating concepts related to disgust (e.g., contamination) and negative affect. Global correspondences are more parsimonious because they suggest fewer distinctions, and so the question is whether there is sufficient evidence to rule them out in favor of local morality–emotion correspondences.

As an illustration of causal locus, imagine that researchers find that fires spread faster in oak forests than maple forests. This could be due to something specific about oaks: As a species, perhaps oaks are more flammable. But this relationship could also be due an associated global dimension of forests that transcends tree species. Perhaps forests predominated by oaks tend to have more densely clustered trees. If so, forest fires should spread faster in oak forests with high (vs. low) tree density. Researchers could continue to say that "forest fires spread faster in oak forests than maple forests," but this would obscure the locus of the causal relationship. It would be more appropriate to say that "forest fires spread faster in forests with a higher density of trees." Understanding the relationship at this global level would lead to different predictions for theory and practice in forest fire prevention. In this section, we discuss two global dimensions of morality and emotion: core affect and conceptual content.

Ruling out the global role of core affect. Earlier, we reviewed studies suggesting that disgust and anger co-occur in moral judgments. This overlap might occur because these are both negative valence, high arousal emotions; disgust might not be the "soul mate" of purity, and any negative high-arousal emotion might do. Local correspondences require ruling out the role of shared affective characteristics, which means that studies must compare emotions with similar affective profiles, such as anger, disgust, and fear. Returning to Jack and Diane, to show that Diane likes Jack in particular, asking her about her amorous feelings toward Jack versus John (another football player) gives you more discriminatory power than asking about her amorous feelings toward Jack versus Herman (the chess team captain).

The majority of studies on morality and emotions have not controlled for core affective similarities, and have compared disgust inductions (high arousal, negative-valence) against either neutral (non-negative and even non-emotional) or sadness (negative but low arousal) inductions (e.g., Horberg et al., 2009; Schnall et al., 2008). Schnall and colleagues (2008, Study 1) compare moral judgments of groups that do or do not smell fart spray, which can only demonstrate that unpleasant affect (vs. neutral affect) influences moral judgments. This particular manipulation cannot even

claim that negative affect per se is important because it does not compare negative, positive, and neutral affect. Similarly, reminding (vs. not reminding) people of hand washing does not reveal influence of disgust (Helzer & Pizarro, 2011), but only affect—a point that applies to all studies of physical and moral cleansing (Schnall, Benton, & Harvey, 2008; Chan et al., 2014; Zhong & Liljenquist, 2006; Zhong et al., 2008).

Studies that use sadness as a comparison induction for disgust (e.g., Horberg et al., 2009, Study 3; Schnall et al., 2008, Study 4) control for negative valence, but do not account for the fact that sadness typically differs from disgust in arousal (i.e., level of activation; J. A. Russell, 2003). Watching someone put his hand in a feces-covered toilet might increase arousal more than watching a boy grieve his dying father (Horberg et al., 2009), and this arousal could harshen moral judgments. For instance, Cheng and colleagues (2013) find that disgust, anger, fear, and sadness inductions all increase condemnation about justice and purity violations to an equal extent, and these effects are mediated by changes in self-reported arousal. These findings not only contradict claims for local, exclusive morality–emotion correspondences but also show how a feature of core affect—arousal—can account for effects ascribed to discrete emotions. These findings are consistent with a constructionist account and older theories such as excitation transfer theory (Zillmann, 1971) that share similarities with constructionist models because they assume that ambiguous arousal is made meaningful in context (e.g., Schachter & Singer, 1962). Unlike excitation transfer theory and other models that assume a misattribution of arousal, constructionist approaches do not necessarily assume that the resulting emotion is "misattributed," because situational appropriateness depends on context and perception.

The findings from Cheng and colleagues (2013) suggest that researchers should include other negative valence, high arousal emotions as control conditions for emotions of interest. However, few studies have contrasted effects of disgust, anger, and fear on any moral judgments, much less judgments about different moral content (harm, purity). As predicted by global correspondences, studies that compare anger and disgust find much overlap (e.g., Gutierrez et al., 2012; Hutcherson & Gross, 2011). In some cases, researchers cannot predict moral judgments from ratings of anger and disgust because the emotion ratings are multicollinear (Rottman et al., 2014), and one study even finds that trait disgust predicts harm judgments when controlling for anger and anxiety (Chapman & Anderson, 2014), the exact oppose pattern suggested by whole number theories. Consistent with a global morality–emotion link, Gutierrez and Giner-Sorolla (2011) find that disgust and anger mediate perceived harms resulting from ostensibly harmless taboo violations.

Core affect can account for morality–emotion correspondences through main effects of valence, arousal, or an interaction between the two. Valence-focused approaches suggest that emotions that share a common valence (e.g., disgust, anger, sadness, and fear, which are all typically negative) should relate to moral judgments similarly. Arousal-focused approaches suggest that emotions that share a common arousal level (e.g., positive excitement and fear, which are both high arousal) should relate to moral judgments similarly (as seen in Cheng et al., 2013). Finally, there may be valence by arousal interactions—anger and disgust are both high-arousal negative emotions (J. A. Russell, 1980)—which is why it is important to match both dimensions in studies examining these two emotions. Depending on the context and individual differences, either main effects of valence, arousal, or an interaction between the two might occur in moral judgments. For instance, to the degree that people attend to the valence dimension of affective experience—due to situational cues or individual differences (e.g., being "valence focused," Feldman, 1995)—this dimension may exert greater influence on moral judgment. To the degree that people attend to the arousal dimension of affective experience (e.g., being "arousal focused," Barrett, Quigley, Bliss-Moreau, & Aronson, 2004), this dimension may carry more weight in moral judgments. Taking a constructionist approach, researchers could model personality and situational factors that shift attention to valence versus arousal and, for instance, explain cases in which both positive and negative high-arousal incidental emotions increase moral condemnation (Cheng et al., 2013). It is implicitly assumed that valence plays a greater driving force in moral judgments, but the work of Cheng and colleagues (2013) suggests the intriguing possibility that at least in some contexts, arousal is more important. This approach would parallel recent research in political psychology: Although some findings link conservatism to disgust sensitivity (Inbar, Pizarro, & Bloom, 2009; Inbar et al., 2012), conservatism may be underpinned by more basic dimensions of affect such as negative valence (Hibbing, Smith, & Alford, 2014) or high arousal (Tritt, Inzlicht, & Peterson, 2013).

Of course, emotions share global similarities on other affective dimensions beyond valence and arousal, such as approach versus avoidance motivation (e.g., Blascovich & Mendes, 2010; Bradley et al., 2001; Carver & Harmon-Jones, 2009; Frijda, 1988), and these dimensions could also be important global sources of influence. In one of the only other studies comparing disgust and anger inductions, Ugazio and colleagues (2012) find that disgust increases and anger decreases moral condemnation. Because disgust is prototypically avoidance-related and anger is prototypically approach-related, this apparently specific difference may reflect a general difference in approach versus avoidance motivation. Establishing a local correspondence requires another negative, arousing, avoidant emotion such as fear. Fear would be a particularly tight control as it is a negative avoidance-related emotion linked to concerns about safety and well-being. Thus, approach-avoidance is another affective dimension that must be matched across inductions when testing specific morality–emotion links.

We observed only one study in the literature that appeared to find specific, local correspondences between different moral content and emotions (Seidel & Prinz, 2013), with anger (and not disgust) tied to harsher harm judgments, and disgust (and not anger) tied to harsher purity judgments. Although their study follows our recommendation to match core affect across inductions, it confounds conceptual content with emotion, which we discuss next.

Ruling out the global role of conceptual content. A unique prediction of constructionism is that emotions are simultaneously affective and conceptual states (cf. Lindquist & Barrett, 2008). When comparing emotion inductions, studies must therefore match the affective dimensions of the emotions being induced, and any overlap between the conceptual content shared by the independent and dependent variables. Years of findings in cognitive psychology document effects of conceptual priming on behavior. For example, viewing the word "doctor" makes you quicker to respond to "nurse" as both are semantically associated with the broader constructs of "hospital," "medicine," and so on (Meyer & Schvaneveldt, 1971). Such conceptual activation with morality and emotions might be taken as evidence for local correspondences, but this domain-general process actually supports global correspondences.

For example, both disgust (the independent variable) and purity violations (the dependent variable) involve conceptual knowledge about contamination, and this conceptual similarity may masquerade as observations of local correspondences between an emotional experience and certain moral content. The types of "incidental emotion effects" (Loewenstein & Lerner, 2002) observed in studies that manipulate emotion prior to moral judgments are in principle supposed to be unrelated to the expected emotional consequences of the judgments themselves—this is what makes them "incidental." Typically, incidental emotion studies assume that the emotion construct manipulated (e.g., fear) produces certain cognitive and/or behavioral outcomes (e.g., uncertainty) that alter the dependent variable (e.g., risk perception) in a specific way (e.g., Lerner & Keltner, 2001). However, many studies induce emotion in a way that is conceptually similar to scenarios representing different moral content. This similarity creates a tautology, merely demonstrating that activating concept *x* (e.g., dirtiness) prioritizes judgments about *x* (e.g., moral cleanliness). Without comparison conditions that control for conceptual content independent of the judgment per se, claims of morality–emotion specificity cannot be verified.

In the Seidel and Prinz (2013) study, disgust is induced by listening to someone vomit. Purity violations are then operationalized with vignettes involving oral consumption (eating a dead dog; cannibalism). The conceptual similarity between disgust and purity might explain the stronger connection that Seidel and Prinz observe between them relative to disgust and harm (e.g., lying on a resume). This conceptual confound leaves open whether purity–disgust links arise from the experience of the emotion itself, or instead the conceptual activation of "vomit" or of "the body" more broadly. Conceptual confounds are especially relevant for disgust inductions, which often have a bodily component (e.g., smelling farts; Schnall et al., 2008) that matches the content of purity violations being judged. For example, Horberg and colleagues (2009) induce disgust with a film of someone sticking his hand in a dirty toilet, and then ask about "keeping an untidy and dirty living space." To the extent that widely used purity violations involve eating or sex (e.g., eating a dead dog; pleasuring oneself with a kitten), researchers should ensure that emotion inductions do not differentially call up associations with such actions. In one study that operationalizes purity through religious sanctity violations rather than body violations, researchers find that purity is linked to anger and not disgust (Royzman et al., 2014).

In addition to purity, content about harm can be confounded in experiments. If an experiment induces anger with a film clip showing bullying (e.g., Lerner, Goldberg, & Tetlock, 1998), induces disgust through fart spray, and assesses moral judgments about kicking pets, then the anger induction will have an advantage because of its conceptual similarity to the harm violation. Some anger inductions—such as a harsh sound (Seidel & Prinz, 2013) and negative feedback (Ugazio et al., 2012)—might not confound content in this way, but researchers must nevertheless be cognizant of any similarities in core affect and conceptual content.

As Table 1 illustrates, the majority of studies examining morality–emotion links do not adequately control for domain-general overlaps of core affect and conceptual content, and those that do fail to find specific correspondences between moral content and different emotions. Our review has focused on negative emotions, but our critique also applies to positive emotions, such as amusement (Strohminger, Lewis, & Meyer, 2011; Valdesolo & DeSteno, 2006), compassion (Condon & DeSteno, 2010; Oveis, Horberg, & Keltner, 2010), elevation (Schnall, Roper, & Fessler, 2010), gratitude (DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010), and awe (Rudd, Vohs, & Aaker, 2012). Whether positive or negative, isolating effects of different emotions requires matching affect and conceptual content across inductions.

An Empirical Framework for Testing Exclusivity and Locus

Inconsistent with whole number accounts but consistent with the predictions of constructionism, our review revealed no clear evidence for specific correspondences between moral content and different emotions. Future research may yet reveal specific correspondences, but researchers must show exclusive and local correspondences between harm–anger and purity–disgust to warrant support for whole-number accounts. If such correspondences do exist, they could be

found using the following experimental framework that is inspired by constructionism: a 3 (Core affect: negative, neutral, positive) × 3 (Conceptual knowledge: anger, disgust, unrelated) × 3 (Judgment type: harm, purity, non-moral) design with core affect and conceptual knowledge manipulated between subjects and judgment type manipulated within subjects.

Specific morality–emotion correspondences would yield a three-way interaction among core affect, conceptual knowledge, and judgment type. For a specific purity–disgust relationship, moral judgments about purity (but not about harm or non-moral issues) should be uniquely severe among participants who feel negative (vs. neutral or positive) affect and are primed with disgust (vs. anger or unrelated) concepts. For a specific harm–anger relationship, moral judgments about harm (but not purity or non-moral issues) should be uniquely severe among participants who feel negative (vs. neutral or positive) affect and are primed with anger (vs. disgust or unrelated) concepts.

Conversely, general correspondences between moral content and emotions would yield no three-way interaction, but instead main effects of core affect and/or conceptual activation and would demonstrate effects on non-moral judgments. A global influence of affective valence would be indicated by increased severity of all judgments (regardless of type) after a negative (vs. neutral or positive) affect induction (regardless of conceptual priming). Had arousal been manipulated instead of valence in such a design, a global influence of the arousal dimension of core affect would be indicated by increased severity of all judgments after a high (vs. low) arousal affect induction. A global influence of conceptual knowledge would be indicated if activating anger or disgust concepts amplifies moral judgments of purity or harm, regardless of affect.

Whether such studies reveal specific or general correspondences, we suggest that constructionism has the power to explain effects in both morality and emotion. There is already ample support for the construction of emotion (reviewed in Barrett, 2013; Lindquist, 2013), and support for the construction of morality (Cheng et al., 2013; Gray et al., 2014; Gray et al., 2012) is growing. Furthermore, constructionist models of other types of mental states continue to grow in psychology and neuroscience (Bar, 2009; Barrett & Satpute, 2013; Guillory & Bujarski, 2014; Lindquist & Barrett, 2012; Xu & Kushnir, 2013). As put in a recent review of empathy and morality:

> Taken together, investigations of the evolutionary, developmental, and neural mechanisms of moral cognition yield a strong picture of a constructivist view of morality—an interaction of domain general systems, including executive control/attentional, perspective-taking, decision-making, and emotional-processing networks. (Decety & Cowell, 2014, p. 529)

Constructionism may seem less intuitive than whole number accounts because of deeply engrained essentialist views about important categories. Everything from race (Black/White) and culture (East/West), to morality (harm/purity) and emotions (disgust/anger) is often believed to have a deep and enduring core that uniquely distinguishes it and makes it what it is (Bloom, 2004; Gelman, 2009; Lindquist, Gendron, et al., 2013; Salomon & Cimpian, 2014). Of course, researchers would never endorse essentialism in its baldest form, but the claims of whole number accounts nevertheless illustrate essentialist thinking. Labels serve as "essence placeholders" (Medin & Ortony, 1989) and so naming constructs (e.g., "disgust" and "purity") can lead all of us to search for the deep metaphysical roots of those categories in our research. In contrast, constructionism suggests that specific moral content and discrete emotions are emergent phenomena that are only as real as they feel to the experiencer and the perceiver.

Perhaps the most revolutionary constructionist prediction is that morality and emotion are not even fundamentally distinct from each other. As the same domain-general processes of core affect and conceptual knowledge are used to construct moral judgments and discrete emotions, these mental state categories may not exist as separate and distinct "faculties" of the mind (cf. Lindquist & Barrett, 2012; see also Cunningham & Kirkland, 2012; Pessoa, 2008) until a specific state is experienced in a specific context. For instance, when questionnaires call for moral judgments, then researchers may observe "moral experiences," and when questionnaires call for emotion reporting, then researchers observe "emotional experiences." In daily life, these types of constructions likely happen all the time and have an impact on behavior. Seeing homosexuality as immoral likely feels like a perception of the world, whereas feeling disgust toward homosexuals feels like one's reaction to the world. This minor difference in the nature of experience could have real consequences for downstream behavior—in one case you might engage in behavior automatically, whereas in the other, you might regulate your behavior. Supporting this overlap, studies find that labeling *fear* as *moral fear* increases its relevance for moral judgments (Giner-Sorolla et al., 2013), and labeling any judgment as *moral* increases its extremity and universality (Van Bavel, Packer, Haas, & Cunningham, 2011). These results suggest that accessing the concept of "morality" during an affective experience can turn core affect and conceptual knowledge into a mental state that we might call "moral judgment." Importantly, constructionism suggests that these effects are not the result of mere "labeling" but have broader ontological implications: Mental states occur when a person makes conceptual meaning of an ambiguous affective world.

Conclusion

The tension between whole number and constructionist accounts has existed in psychology since its beginning (e.g., Darwin, 1872/2005 vs. James, 1890; see Gendron & Barrett,

2009; Lindquist, 2013). Commonsense and essentialism suggest the existence of distinct and immutable psychological constructs. The intuitiveness of whole number accounts is reinforced by the communicative usefulness of distinguishing harm from purity (Graham et al., 2009), and anger from disgust (Barrett, 2006; Lindquist, Gendron, et al., 2013), but utility does not equal ontology. As decades of psychological research have demonstrated, intuitive experiences are poor guides to the structure of the mind (Barrett, 2009; Davies, 2009; James, 1890; Nisbett & Wilson, 1977; Roser & Gazzaniga, 2004; Ross & Ward, 1996; Wegner, 2003). Although initially less intuitive, we suggest that constructionist approaches are actually better at capturing the nature of the powerful subjective phenomena long treasured by social psychologists (Gray & Wegner, 2013; Wegner & Gilbert, 2000). Whereas whole number theories impose taxonomies onto human experience and treat variability as noise or error, constructionist theories allow that experience is complex and messy. Rather than assuming that human experience is "wrong" when it fails to conform to a preferred taxonomy, constructionist theories appreciate this diversity and use domain-general mechanisms to explain it. Returning to our opening example, Jack and Diane may be soul-mates with a love that is unique, unchanging, and eternal, or they may just be two similar American kids who feel the rush of youth and the heat of a summer's day. The first may be more romantic, but the second is more likely to be true.

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Notes

1. Not all models of emotion subscribe to the idea that affect is a basic construct that underlies specific discrete emotions. For instance, according to basic emotion views, affect is a descriptive "umbrella" term that is applied to a discrete emotion after it is experienced to describe its general valence (e.g., a person must know they are feeling fear to describe their state as unpleasant; Keltner & Ekman, 2000; Panksepp, 2005). Other researchers conceive of affect as a more transient state (akin to a mood), whereas emotions are bounded and specific (see Barrett & Bliss-Moreau, 2009). Nonetheless, it is common to assume that affect is experientially more simplistic than more complex discrete emotional experiences and so we use this terminology here.
2. We note that we are referring exclusively to the class of appraisal models called "causal appraisal models" (cf. Gross & Barrett, 2011). Another kind of appraisal model—the constitutive appraisal model (e.g., Clore & Ortony, 2008)—is more similar to the constructionist account, because, in this case, appraisals are not thought to be separate causal mechanisms but instead are thought to be dimensions of meaning that constitute and describe emotion experience (i.e., uncertainty and lack of control describes what it is like to experience fear; cf. Lindquist, 2013; see also Clore & Ortony, 2008). In this vein, the "appraisals" laid out by constitutive appraisal approaches are very similar to the conceptual knowledge that is proposed in constructionist accounts. Uncertainty might be part of someone's conceptual knowledge about fear but does not correspond to a specific mechanism that detects uncertainty and then triggers fear. We suggest that domain-general conceptual knowledge is a more parsimonious mechanism than specific appraisal mechanisms, because domain-general conceptual knowledge can account for the modal information about emotion prototypes in a given culture as well as describe how emotions are constructed from domain-general ingredients of the mind (cf. Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012). Consequently, some researchers who used to refer to their models of emotion as appraisal accounts (Clore & Ortony, 2008) now refer to them as constructionist accounts (Clore & Ortony, 2013).

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