

The rejection of moral taint: An examination of magical contagion responses

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Abstract

The aim of the present thesis is to examine the relationship between moral contagion and disgust, as well as whether moral contagion concerns are expressed as avoidance behaviour. Chapter 1 contains a review of existing findings in the areas of moral contagion, disgust, and the evidence for a relationship between disgust and morality. Three key gaps in the literature were identified. First, it remains unclear whether different types of moral transgressions result in differing levels of avoidance. Second, there is currently limited empirical evidence for a relationship between disgust and moral contagion. Third, although the existing literature has found that people express the desire to avoid objects tainted by a moral transgressor there is currently no behavioural evidence of this effect.

Chapter 2 is a systematic review of the moral contagion literature which has been written up for submission to a journal. The results of the reviewed studies provide support for the existence of a moral contagion effect. People show a desire to avoid physical contact with an object contaminated by a moral transgressor. The systematic review highlights two key limitations of the moral contagion literature. First, the literature has thus far failed to isolate a mechanism by which moral contagion operates. Second, none of the studies included a behavioural avoidance outcome.

Study 1, reported in Chapter 3, investigated the desire to avoid a contaminated object across a range of transgressions which differed in moral severity. Results show that the severity of the moral transgression was found to have an effect whereby the more morally severe the transgression committed by the previous owner the greater the desire to avoid the tainted object.

The effect of different types of moral transgressions on moral contagion responses was further investigated in Chapter 4 which presents a submitted manuscript consisting of four studies. Manuscript Study 1 established that the contamination effect

is unique to transgressions that fall within the moral domain. Manuscript Study 2 replicated this effect and further showed that the underlying mechanism is intimately related to disgust, as disgust was found to uniquely mediate the relationship between moral transgressions and contamination responses. In Manuscript Study 3, disgust was again found to mediate this relationship. In addition, the results of Manuscript Study 3 show that the moral contagion effect was not dependent upon the presence of a core disgust cue within the transgression. Manuscript Study 4 investigated whether or not moral contagion leads to behavioural avoidance. Results show that behavioural avoidance only occurred when the moral transgression contained a core disgust cue. The difference in findings between the thought experiments (Manuscript Studies 1-3) and the behavioural experiment (Manuscript Study 4) identifies a need for further research to examine the conditions under which moral contagion leads to behavioural avoidance.

Study 6, reported in Chapter 5, was a thought experiment which compared responses across a range of moral transgressions that differed in moral severity and either did or did not contain a core disgust cue. Results show that the moral severity of the transgression committed was a key factor which resulted in the desire to avoid a contaminated object.

Chapter 6 presents a second behavioural study where participants were given the opportunity to reject a piece of artwork created by an immoral individual. No significant differences were found across the study conditions, irrespective of whether or not the creator of the object was described as having committed an immoral act and whether or not the act contained a core disgust cue. These results are interpreted in the context of previous research which suggest that magical thinking does not always influence behaviour in cultures that do not have explicit magical beliefs.

The results of the seven studies are integrated with one another in the General Discussion presented in Chapter 7. The results of the five thought experiments show

that participants wished to avoid physical contact with an otherwise harmless object that had been previously owned and used by a moral transgressor. In contrast to the robust thought experiment findings, the results of two behavioural studies indicate that the relationship between moral contagion and the avoidance of real-life objects is more complex. Considerations for future research are discussed in the context of the conditions under which moral contagion may lead to behavioural avoidance. The inconsistency in findings between the thought experiments and behavioural experiments indicate that it is vital for future research to utilise behavioural outcomes when examining moral contagion effects.

Statement of Originality

This work has not previously been submitted for a degree or diploma in any university.

To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

(Signed)

Caley Tapp

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Acknowledgement of Papers included in this Thesis

Section 9.1 of the Griffith University Code for the Responsible Conduct of Research (“Criteria for Authorship”), in accordance with Section 5 of the Australian Code for the Responsible Conduct of Research, states:

To be named as an author, a researcher must have made a substantial scholarly contribution to the creative or scholarly work that constitutes the research output, and be able to take public responsibility for at least that part of the work they contributed. Attribution of authorship depends to some extent on the discipline and publisher policies, but in all cases, authorship must be based on substantial contributions in a combination of one or more of:

- conception and design of the research project
- analysis and interpretation of research data
- drafting or making significant parts of the creative or scholarly work or critically revising it so as to contribute significantly to the final output.

Section 9.3 of the Griffith University Code (“Responsibilities of Researchers”), in accordance with Section 5 of the Australian Code, states:

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- Offer authorship to all people, including research trainees, who meet the criteria for authorship listed above, but only those people.
- accept or decline offers of authorship promptly in writing.
- Include in the list of authors only those who have accepted authorship
- Appoint one author to be the executive author to record authorship and manage correspondence about the work with the publisher and other interested parties.
- Acknowledge all those who have contributed to the research, facilities or materials but who do not qualify as authors, such as research assistants, technical staff, and advisors on cultural or community knowledge. Obtain written consent to name individuals.

Included in this thesis are papers in *Chapters 2 and 4* which are co-authored with other researchers. My contribution to each co-authored paper is outlined at the front of the relevant chapter. The status for these papers including all authors, are:

Chapter 2: Tapp, C., Occhipinti, S. & Oaten, M. (2015). Moral contagion: A systematic review. *Unpublished Manuscript*.

Chapter 4: Tapp, C. & Occhipinti, S. (2015). The essence of crime: contagious transmission from those who have committed moral transgressions. *Manuscript submitted for publication*.

Appropriate acknowledgements of those who contributed to the research but did not qualify as authors are included in each paper.

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(Date) 21/01/2016

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Chapter 1

Magical Contagion and Morality

Moral contagion is a phenomenon whereby moral transgressors, as a result of their immoral actions, are perceived to be tainted and, as a result, become contaminants with the ability to pass on their moral taint to both other people and objects. If a previously neutral object comes into physical contact with a moral transgressor, a passage of properties occurs and the object itself becomes contaminated. Consequently, the otherwise harmless object engenders an avoidance response, just as the moral transgressor does (Nemeroff & Rozin, 1994, 2000; Rozin & Nemeroff, 1990; Rozin, Nemeroff, Wane, & Sherrod, 1989). A classic example used to demonstrate the effect involves asking people how they would feel about wearing Hitler's sweater. The typical response to this question is that the person would not wish to come into physical contact with a sweater that was once owned and worn by someone as evil as Hitler. A further example of this effect is provided by a news report involving a house where eight children had been killed. The news article reports on the demolition of the house and the subsequent relief of the community now that the house had been demolished (Kim, 2015). Although the house had not been damaged in any way by the actions of the woman who had murdered the children, the community was eager to see the house physically removed. Not only did no one wish to inhabit the house any longer, but its continued existence was a cause of negative affect. The house was perceived to be tainted by the immoral act that had occurred within it. Both of these examples illustrate seemingly irrational desires to avoid or remove objects tainted by immorality. The objects themselves do not have the capability to cause harm, in that they are neither dangerous nor a potential source of disease; however, people still react to them as if they were harmful. In this connection, moral contagion theory provides an explanation

for why people behave in a seemingly irrational way towards otherwise harmless objects that have come into contact with immorality.

Empirical findings support the idea that immorality can act as a contaminant and subsequently lead to a desire for avoidance of otherwise harmless objects (e.g., Hood, Itajkura, Gjersoe, Byers, & Donnelly, 2011; Kramer & Block, 2011; Rozin et al., 1989). For example, people report feeling more negatively about wearing a sweater previously worn by a murderer compared to wearing a brand new sweater, or a sweater previously worn by a normal, healthy man (Rozin, Markwith, & McCauley, 1994). In addition, moral contagion effects are referred to as explanations for other findings, such as moral cleansing effects (e.g., Zhong & Liljenquist, 2006). However, although there is empirical evidence that suggests that a moral contagion effect exists, there remain a number of key unanswered questions about the phenomenon. First, it remains unclear whether different types of moral transgressions result in differing levels of avoidance. The existing moral contagion literature has not yet compared contamination responses as cued by different types of moral transgressions, including transgressions which differ in moral severity. Within the literature, objects contaminated by a moral transgressor are often compared to neutral objects or objects previously owned by a person of positive moral character. Although a variety of moral transgressions are used across the range of studies examining moral contagion, the type of transgression committed has yet to be manipulated within the same study. As a consequence, it remains unclear how moral contagion responses are affected by the type of transgression committed by the immoral individual. Second, the precise mechanism underlying contagion responses is yet to be examined experimentally. Although disgust is theorised as playing a role in magical contagion processes in general (Rozin, Millman, & Nemeroff, 1986), to date, only one study, conducted by Eskine, Novreske, and Richards (2013), has investigated the indirect role of disgust via the individual difference of disgust sensitivity. It is as yet

unclear whether the documented desire for avoidance of tainted objects occurs because the objects cue feelings of disgust, or whether it is the result of general feelings of negative affect. Third, although the existing literature has found that people express the desire to avoid objects tainted by a moral transgressor there is currently no behavioural evidence of this effect. If moral contagion is a true behavioural phenomenon then it should be expressed behaviourally as avoidance of physical contact with an object tainted by a moral transgressor.

Important insights into how moral contagion effects may operate are suggested by findings within the domain of interpersonal contagion, the literature which examines moral judgements, and research investigating disgust. However, despite their relevance, moral contagion theory is yet to be integrated with these different bodies of literature. As a result, it is necessary to first explore existing research within each of these areas prior to integrating them with moral contagion theory. The present chapter, Chapter 1, contains a review of research into magical thinking, morality, and disgust. Chapter 2 is a systematic review of the moral contagion literature. The primary aim of the systematic review was to determine the current level of existing empirical support for the phenomenon of moral contagion. These two chapters provide the background for the studies reported in Chapters 3 – 7. The studies reported in Chapters 3 – 7 were designed to address the limitations which currently exist within the moral contagion literature. In the present chapter, magical contagion will first be discussed, as moral contagion falls under the magical thinking law from the anthropological literature, the *law of contagion*. Second, the moral cognition literature will be discussed in terms of factors that are of relevance to moral contagion, such as transgression severity. The relationship between disgust and contagion concerns, as well as the relationship between disgust and morality, will then be explored. Finally, the overarching aims of the present thesis will be outlined.

The Magical Law of Contagion

Moral contagion is a specific case of the law of contagion, one of the laws of sympathetic magic (initially outlined in the late 19th Century by Frazer, 1980; Mauss, 1972). Magical contagion can be summed up by the phrase *once in contact, always in contact* (Mauss, 1972). Once physical contact has taken place between two people, two objects, or an object and a person, each then bears a permanent residue or memory of the other (Rozin, Markwith, & Nemeroff, 1992; Rozin et al., 1986; Rozin & Nemeroff, 1990). There are four key aspects of the law of magical contagion. First, physical contact is necessary for the passage of properties from one object to another. Second, the transfer of properties is not dependent upon a large amount of physical contact. In this respect it can be said that contagious effects are relatively dose insensitive. Third, the effects of physical contact are relatively permanent and long lasting. Fourth, transmitted essence can mediate effects either in the source (i.e., backward causation) or in the recipient (i.e., forward causation; Rozin et al., 1992; Rozin & Nemeroff, 1990). These four features of the law of contagion distinguish true magical contagion-based responses from those based solely on a perceived association between a person and an object. Dose insensitivity and the relative permanence of the effect in particular highlight the magical aspects of this type of thinking.

Although the words contagion and contamination tend to have negative connotations in everyday speech, contagious interactions can be either positive or negative. For example, contact with an individual who is considered important, such as an ancestor, results in enhancement of the value of the object whereas contact with an item belonging to a disliked person devalues an object (Rozin et al., 1992; Rozin et al., 1986). The majority of the existing empirical literature that explores interpersonal contagion focuses on negative, rather than positive, contagion. In part, this is due to the fact that people display a heightened concern surrounding negative contagion. The

consequences of negative contagion are perceived to be much greater than the consequences of positive contagion (Rozin & Royzman, 2001). As a result, it is much more important for people to be vigilant and avoid sources of negative contagion. According to Rozin and Nemeroff (1990), there are four potential consequences of negative contagious interactions; 1) the acquisition of negative physical or personality characteristics, 2) moral degradation, 3) bad luck and 4) illness or death. These negative consequences provide justification for why people are motivated to avoid negative contagion. Contaminated people and objects must be avoided in order to avoid bringing these negative consequences upon oneself as magical contagion beliefs are fundamentally related to the incorporation of foreign essences into the self (Rozin & Nemeroff, 1990). Physical contact with a negative contagious source would putatively result in the self taking on the negative attributes of the contaminant. Further, there has historically been an obligation to keep one's body, and by proxy the psychological self, pure and untainted (Rosenberg, 1997; Thomas, 1997). For example, Thomas (1997) argues that there has traditionally been an obligation to be responsible custodians of one's body and that, rather than diminishing over time, the moral obligation to look after the purity of the self, both physical and psychological, has become more important. Contact with the negative essences of others would render the self impure which would therefore violate societal expectations of maintaining a state of moral purity.

In this connection, in a comprehensive review of a broad range of psychological phenomena, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) found that people display a heightened awareness and respond more quickly in response to negative stimuli. Negative information was found to outweigh positive information across a broad range of phenomena including intimate relationships, emotion, learning, memory and stereotypes. In addition, the review failed to find studies which provided evidence

for a reverse effect where good information outweighed bad information. The general principle that bad is stronger than good is of direct relevance to moral contagion. In their own review of biases towards negative information, Rozin and Royzman (2001) suggest that negative events have higher levels of contagiousness than positive events. The consequences of a single highly negative event, such as committing murder, are unlikely to be reversed in the eyes of others by a single highly positive event, such as a heroic act. Further, Rozin and Royzman (2001) argue that a core aspect of magical contagion, dose insensitivity, is connected to negativity bias. As demonstrated across a range of studies, very small amounts of physical contact with negative entities produce a maximal effect in terms of desire for avoidance (Nemeroff & Rozin, 2000; Rozin et al., 1986; Rozin & Nemeroff, 1990). This negativity bias suggests that moral transgressions are more contaminating than highly moral acts. Although the differences in responses to negative versus positive sources of contamination have been demonstrated empirically, it is as yet unclear whether all negative events, in the form of different types of moral transgressions, engender the same avoidance response. Although they are all negative in nature, moral transgressions differ across a range of factors including the perpetrator of the act and the severity of the act. As a result, there is a need for an investigation of moral contagion responses across different types of moral transgressions. In this connection, although moral contagion can putatively be either negative or positive in nature, the focus of the present thesis is on negative moral contagion with a specific focus on moral transgressions. Studies that examine how magical thinking operates within the interpersonal domain are of particular relevance to the present thesis, as moral contagion is a type of interpersonal contagion. The findings of this research will first be discussed, followed by an analysis of the current literature which directly examines moral contagion.

Indirect Evidence for Moral Contagion

Magical contagion processes have been found to influence a range of types of cognition including food-based cognition (Rozin, Ashmore, & Markwith, 1996; Rozin et al., 1986; Stein & Nemeroff, 1995), conceptions of germs and illness (Nemeroff, 1995; Rozin et al., 1994; Rozin et al., 1992), personality judgements (Schweder, Casagrande, Fiske, D., & Heelas, 1977), and judgements within the interpersonal domain (Hejmadi, Rozin, & Siegal, 2004; Nemeroff & Rozin, 1994). In the food domain, studies show that people are reluctant to drink a glass of juice that has briefly been in contact with a sterilised dead cockroach, despite the fact that there is no danger of the juice causing illness (Rozin et al., 1986). With regards to cognition about illness, Nemeroff (1995) found that feelings about the source of germs affects judgements of the severity (i.e., the amount of discomfort or danger resulting from the illness) of the illness that would be passed on. For example, participants indicated that germs from a disliked individual would result in a more severe illness, compared to germs contracted from their lover. Magical thinking has been found to play a role in judgements within the interpersonal domain. Findings within the interpersonal domain are of particular relevance to the present thesis as moral contagion is a type of interpersonal contagion. These findings are discussed in-depth below. The wide range of domains in which magical thinking has been found to operate indicates that it is a readily available type of thinking in modern societies. Further, although it does not speak directly to moral contagion effects, the research discussed above shows that magical contagion-based processes affect beliefs about the transmission of properties between people or objects.

Preliminary evidence for the existence of a moral contagion effect is found within the interpersonal contagion literature. Many of the studies conducted by Rozin and colleagues which examine interpersonal contagion effects include a character that is in some way a cue of immorality. The characters used range from someone who has

explicitly committed an immoral deed (e.g., a murderer) to a person who is a more general cue of immorality (e.g., a person who is evil or disliked). These studies utilise a similar methodological paradigm in order to assess rejection responses or a person's feelings about contact with an object (e.g., Nemeroff & Rozin, 1994; Rozin et al., 1986). Typically people are asked to imagine a brand new everyday object, a sweater is frequently used, and are then asked to rate the pleasantness of contact with it (e.g., wearing the sweater). They are then asked about feelings towards contact with the object following it being worn by a range of other people. For example, a participant may rate the pleasantness of contact with a sweater previously worn by a normal, healthy man then rate a sweater previously worn by a man with AIDS and then rate a sweater previously worn by a murderer (Rozin et al., 1994). The drop in desirability of physical contact with the object after contact with each user can then be assessed and comparisons made. Using this method, researchers have found that people show a desire to avoid objects previously used by specific negative others, such as Hitler, as well as people who represent negativity more generally such as a disliked person, an evil person, or a murderer (Nemeroff & Rozin, 1994; Rozin et al., 1989).

Participant responses in interviews conducted by Nemeroff and Rozin (1994) show that aversion to an object that has been in contact with a negative interpersonal source had difficulty explaining their reactions. During the interviews people spoke of the transmission of creepiness from the person to the object as well as the idea that nasty or evil people ooze nastiness which infects the object. These findings support those of Rozin et al. (1986) who found that people had trouble verbalising the reasons behind their seemingly irrational feelings towards the objects. It has been suggested that magical contagion-based reactions represent a gut reaction (i.e., an affect-based reaction), as opposed to a more reasoned cognitive judgement (e.g., Rozin, Grant, Weinberg, & Parker, 2007), and as a result explanations for why these reactions occur

or what they may be based on may be difficult to verbalise after the fact. These studies raise the question of what types of affect are driving the desire for avoidance. It is as yet unclear whether one specific emotion, such as disgust, is involved, or whether it is a general feeling of negative affect that leads to a desire for avoidance of the contaminated object. The potential role of disgust will be addressed further in the sections below.

A related area of research examines the experience of feelings of impurity following exposure to immorality. This body of work examining the relationship between immorality and purification is relevant to moral contagion as it provides evidence for the idea that moral transgressions can lead to feelings of impurity. Zhong and Liljenquist (2006) found that recalling an unethical deed was linked to a range of responses that indicated a desire for physical cleansing. Compared to participants who were exposed to an ethical act (either their own or the actions of another), participants who were exposed to an unethical act displayed an increased mental accessibility of cleansing related concepts, a greater desire for cleansing products, and a greater likelihood of taking antiseptic wipes. Taken together these findings suggest that exposure to immorality leads to feelings of being physically contaminated and a subsequent desire for physical cleansing. In this connection, a set of three studies conducted by Doron, Sar-El, and Mikulincer (2012) examined whether feedback about a participant's own morality level, relative to hypothetical others, heightened contamination-based behavioural tendencies. These effects were unique to morally-relevant information as neither a neutral condition nor a threat to a morally irrelevant self domain condition (i.e., sports aptitude) were found to have an impact upon contamination-related behavioural tendencies. In further support of the role of immorality, general negative affect felt during the course of the studies and self-esteem had no impact upon the behavioural tendencies. Unlike the results obtained by Zhong

and Liljenquist (2006), Doron et al. (2012) found that mere exposure to morally-relevant information about others had no impact upon contamination-related behavioural tendencies. This finding identifies a further need for studies to examine responses to the moral transgressions of others and how physical contact may impact upon cleansing desires, given that mere exposure had no effect. Taken together, these studies provide evidence for a process whereby moral transgressions are felt as physical contamination and lead to a desire to engage in cleansing behaviours that would generally be associated with the removal of a physical contaminant. The fact that moral transgressions lead to the desire to cleanse provides evidence for a link between morality and feelings of impurity. Further, the ability for morality to taint the physical self is important for moral contagion; if immoral acts have no detrimental effect on the purity of the moral transgressor then there is no reason to expect the transgressor to be able to contaminate other people or objects.

The results of the interpersonal contagion studies outlined above suggest a psychological process whereby an object retains the essence of a person as the consequence of physical contact. As a result of this transfer of essences, physical contact with the object is symbolically the same as contact with the person themselves. Although these studies provide evidence for the existence of a general interpersonal contagion effect and for how magical contagion processes may operate they do not represent an in-depth exploration of moral contagion effects. The systematic review reported in Chapter 2 provides an in-depth review of moral contagion studies, however it is necessary to discuss the broader evidence for moral contagion below in order to outline the gaps in this literature that are addressed by findings from the disgust and moral cognition literature. These studies do show that contact with an immoral character increases negative feelings towards contact with the object, which is consistent with what moral contagion theory would predict. However, relying solely on these findings

for evidence of a moral contagion effect is problematic as they frequently include a comparison component. As a result, it is unclear whether moral transgressors are truly to be avoided or if contact with objects used by moral transgressors is less desirable compared to objects used by a normal, healthy man who would presumably be of either neutral or positive moral character. As well as findings within the interpersonal contagion literature, further evidence for moral contagion is provided by studies that aim to specifically examine moral contagion effects.

Direct Evidence for Moral Contagion

A set of studies conducted by Hood et al. (2011) set out to examine moral contagion effects in the context of receiving an organ transplant. Across their first two studies they found that people reported feeling less happy about the prospect of receiving a heart transplant from a person serving time for having murdered their spouse. In addition, people reported higher levels of happiness towards receiving a heart transplant from a volunteer worker. Their second study showed that this effect was not unique to the heart, an organ with associated beliefs about the heart as an organ, but generalised to the prospect of receiving a liver transplant. Their third study again examined the impact of the moral character of the donor on happiness levels, but this time with Japanese participants. The authors predicted that, due to the Japanese belief in *kuetsu gata* that participants would show a greater reaction, compared to the British participants from their second study. They found that Japanese participant responses were greater in magnitude and that again there was no difference across the two organ types. These results show that the moral character of the prospective donor of an organ has an impact on feelings of happiness.

Research conducted by Eskiné et al. (2013) looking at the relationship between morality and contamination provides indirect support for the perspective that immoral actions contaminate the self. The results of their first study indicate that people who sit

in a chair previously occupied by a hypothetical student known to have committed a moral transgression exhibited higher levels of state guilt than a control condition. Their second study demonstrated that people report higher feelings of state guilt having shaken hands with a moral transgressor, compared to those who shook hands with a gloved moral transgressor, where no skin-to-skin contact takes place. This effect was found to be moderated by disgust sensitivity such that participants high in disgust sensitivity reported feeling more state guilt than those low in disgust sensitivity. Together, these studies demonstrate that individuals who have committed a moral transgression act as a contaminant with regards to emotion, specifically guilt, and this is consistent with the perspective that transgressions result in negative essence. However, as Eskine et al. do not differentiate between immoral acts and harmful, but unintentional, acts it cannot be said that negative contagious essence is solely the result of an immoral deed. It may be that simply committing an act that causes harm is contaminating, irrespective of the immorality of an act. Further, these studies do not provide information about whether feelings of contagion result in either the desire for avoidance or actual behavioural avoidance of a contaminated object.

A second study that examined potential modifiers of the contagion effect was conducted by Kramer and Block (2011) who explored whether contagion-based responses were moderated by experiential processing. Their study is also one of the few that investigate whether moral contagion operates in a backward direction. Participants were asked to imagine that they were going to sell a teddy bear that they had owned for the past 15 years on an auction website. They were then informed that they had received a bid for their reserve amount from either an immoral person, a registered sex offender, or a moral exemplar, the mother of a young child. Their findings show that people high in experiential processing (i.e., those with a general tendency to engage in instantaneous, affect-driven, non-conscious methods of processing information) showed

lower willingness to accept the reserve bid amount when the buyer was a registered sex offender. In contrast, when the buyer was a mother, greater levels of experiential processing resulted in greater willingness to accept the reservation amount. Their findings show that experiential processing plays a role in moral contagion processes. However, the way in which the results are reported, due to their focus on the role of experiential processing, does not allow the reader to make comparisons across the characters of good and bad moral character. Further, the transgression committed was one symbolically related to the object under investigation. A person may wish to avoid selling an item to a registered sex offender for reasons unrelated to a desire to avoid the potential negative effects of backward contagion. One may be concerned that the teddy bear could be used by the sex offender to attempt to attract small children who may display interest in such a toy. In addition, it is unusual for a grown adult to purchase this may lead to people instinctively feeling that there is something wrong with the sex offender wishing to purchase the teddy bear for reasons completely unrelated to the transfer of negative essence.

Two studies conducted by Newman and Bloom (2014) investigated the idea that well known public figures with either positive or negative associations in the mind of the public can act as either positive or negative contaminants, respectively. In their first study they analysed the amount of money paid for a selection of objects previously owned by John F. Kennedy, Jacqueline Onassis, Marilyn Monroe (representing previous owners who were moral exemplars), Bernie Madoff (representing a previous owner of negative moral character). In addition, the objects were rated by independent coders with regards to how much physical contact the coders perceived as having occurred between the individual and the previous owner. Their results show that the greater the perceived contact, the higher the bids were for the objects previously belonging to a moral exemplar, whereas when the objects were previously owned by a moral

transgressor, higher levels of perceived contact predicted lower bids. In their second study, participants were asked to imagine a sweater previously owned by either an admired famous person or a despised famous person. Participants were also told that one of three transformations had been applied to the sweater. They were told that the sweater had either been sterilised or that they would never be able to sell the sweater or that the sweater had been moved from its original location. Again, differing results were found across positive versus negative previous owners of the object. When the previous owner of the sweater was a positive one, the effect of transformation on willingness to pay (WTP) for the object was such that sterilisation resulted in a decrease in WTP whereas limiting resale only weakly reduced willingness to pay and moving the sweater had no effect at all. In contrast, when the previous owner of the sweater was a negative one, sterilisation led to an increase in WTP whereas limiting resale and moving the location of the sweater reduced WTP. These studies provide evidence for a contagion effect whereby the previous owner of an object has an impact upon the amount of money a person is willing to pay to acquire the object. The moral character of the individual has an impact upon people's responses, however, due to the nature of the design of the study it is unclear whether it is purely the moral character of the owner that is influencing reactions to each object. As the previous owners of the objects used in both of the studies famous individuals, it is possible that responses were influenced by perceived social prestige linked to owning an object that previously belonged to a famous person.

A further study that investigated the links between moral contagion and spending behaviour was conducted by Stellar and Willer (2013) who investigated whether money earned through immoral means would be less desirable compared to money earned through neutral means. In their first study, desirability was assessed through how many raffle tickets participants chose to fill out. Participants in the neutral

money condition were informed that the money was provided by a neutral corporation, while those in the immoral money condition were informed that the money had been supplied by a corporation that had treated their workers in a way that did not meet international labour standards. Participants who were in the immoral money condition filled out fewer raffle tickets compared to those who were in the neutral money condition, indicating that participants worked less hard to obtain money tainted by immorality. In their second study they found that when participants wrote about a time when they had acted in a moral way, versus a control writing task, they completed more tasks which would earn them money that was provided by an immoral corporation. The authors posit that this finding is due to increased belief in moral identity that is caused by the moral writing task which in turn buffers against the potential moral taint of money provided by an immoral corporation (Stellar & Willer, 2013). Although the outcome measure used within their studies was a behavioural one, filling out raffle tickets is not a measure of avoidance per se. In their first study, participants in the immoral money condition may have felt guilty about benefitting from the immoral behaviour of the corporation and so did not put as much effort in to the task. In their second study, it may be that a reminder of one's past moral deeds leads to a feeling of deservingness of the money that overrode any concerns about the source of the money. Due to the design of their second study, where no neutral money condition was included, it is difficult to determine whether the source of the money is what is driving the behavioural response.

A number of studies have also examined the effect of a person's own feelings of immorality on contagion responses. Kardos and Castano (2012) found that when people imagined secretly picking up a winning lottery ticket dropped by another person after they had realised it was a winning ticket that they reported that they would spend less of the money on a hypothetical vacation as well as reported higher feelings of guilt,

compared to participants who imagined picking up a winning ticket from the pavement. The authors argue that this finding shows that people do not want to handle tainted money. Their results do show an unwillingness to engage with the money that was acquired immorally; however, whether this is due to moral contagion effects remains unclear. An alternate explanation for their findings exist whereby people feel guilty about spending immorally acquired money on a pleasant thing such as a holiday and as a result do not spend as much money. Perhaps coming into money as a result of luck (e.g., finding the lottery ticket on the pavement) allows one to freely spend the money on a holiday. A moral contagion effect is not required in order to provide an explanation for the decisions made by participants. This issue of inability to rule out alternate explanations for the results obtained is one that occurs across the studies which aim to investigate moral contagion effects. In part, this is due to the methods chosen to represent a contagion response. Across the range of studies reviewed above, none utilised a behavioural measure of avoidance instead they rely on self-report of likely behaviour as the result of a thought experiment. While this research provides valuable evidence for how moral contagion-based cognitions operate, it remains unclear whether these cognitions translate into behaviour. A key aspect of moral contagion responses is theorised to be the avoidance of a tainted object in order to avoid contaminating the self. As a result, the absence of behavioural evidence is a large gap within the knowledge base of how the effect operates. Therefore, a key aim of the present thesis is to examine whether moral contagion responses are expressed behaviourally.

Moral Contagion Responses to Different Types of Transgressions

The existing literature which investigates moral contagion responses seldom compares contagion-based reactions across different types of moral transgressions. Across the range of studies discussed above, moral transgressors were most frequently compared to either a control character designed to be neutral in terms of moral character

or a moral exemplar. This is problematic as it is possible that the findings in this area provide support for the idea that bad is stronger than good, rather than support for a moral contagion effect. For example, if the rated desirability of wearing a sweater previously owned by a murderer is being compared to the rated desirability of a sweater previously owned by a friend, the resulting difference that is obtained may be due to the fact that the immoral character represents a very negative source. In this connection, the lack of comparison between different types of moral transgressions means that it is difficult to draw conclusions about whether different types of moral transgressions lead to the same desire for avoidance. As the moral transgression most frequently used in studies which examine moral contagion is murder, an extreme moral violation, it is unclear whether the results obtained are being driven by the extreme salient negativity of the act. It is possible that comparatively minor transgressions, such as petty theft, do not lead to an avoidance response. Given that not all transgressions are equal in terms of the severity and the consequences of the act, it is necessary to examine how different transgression-based factors impact upon moral contagion responses. Further, the existing magical contagion literature does not make comparisons between immoral acts and harmful, but unintentional, acts. This is problematic because existing findings suggests that other negative experiences outside of the domain of morality, such as bad luck, may be contaminating (Risen & Gilovich, 2008). As a result it cannot be said that negative contagious essence, and the avoidance response that occurs as a result, is solely the result of immorality. It may be that simply committing an act that leads to a negative outcome is contaminating, irrespective of the immorality of the act. In this connection, research looking at moral cognition identifies a number of factors that influence judgements of moral transgressors and whether a particular act falls within the moral domain.

An individual's intent to cause harm, the severity of the transgression committed, and the gender of the transgressor have been found to influence judgements about a potentially immoral act that has been committed (Finkel & Groscup, 1997; Killen & Smetana, 2008; Ohbuchi & Sato, 1994). This evidence has been provided by research conducted in order to examine the development of moral reasoning in children, as well as studies that examine moral cognition processes in adults. Whether or not an act falls within the moral domain is in part determined by the perceived motives underlying the act (Killen & Smetana, 2008; Ohbuchi & Sato, 1994). Ohbuchi and Sato (1994) found that older children take into account the intentionality of the act when judging whether to accept the excuses given by a person who had harmed another, whereas this effect did not exist for younger children. Further studies have found that it is at around 8 years of age children that begin to coordinate their evaluations of acts with attributions of intentions. Once they reach this age, children are able to recognise a lack of negative intentions when a transgression is accidentally committed and also rate the actions as less harmful (Killen, Mulvey, Richardson, Jampol, & Woodward, 2011). This research suggests that an important part of moral development involves judging the consequences of an act and whether the act in question was intentional.

In research conducted with adult participants, Finkel and Groscup (1997) investigated judgements of blameworthiness of an individual within the context of a fictitious legal case. In three separate studies, and across a number of scenarios which ranged from selling cigarettes to a minor to murder, they investigated judgements of the culpability of the actor. Finkel and Groscup (1997) manipulated the intentionality of the act, how harmful the outcome was, the type of mistake, the culpability of others involved and the relationship between actors. Their results show that irrespective of other aspects of the scenario, when the actor's actions were entirely intentional (i.e., the act was not an accident, or no negligence had occurred), intent was the primary

determinant of judgements of the actor's culpability (Finkel & Groscup, 1997). These findings are supported by the results of Lagnado and Channon (2008) who investigated the effect of intentionality on judgements of blame. Across two studies they manipulated the nature of the transgression that had occurred so that the event was either intentional, unintentional, or had an external physical cause. In each study, the results showed that when the act was intentional higher levels of blame were attributed to the actor, as well as the actor being perceived as more involved in as the cause of the outcome. The findings of Lagnado and Channon (2008) and Finkel and Groscup (1997) show that intentionality is an important factor when it comes to assigning blame for a transgression, and that is more important than the harm caused by the act. With regards to moral contagion, if the desire for avoidance is one that is truly based in morality, then intentionality of the act should make a difference. However, if the desire for avoidance is a more general one aimed at avoiding contact with badness in general, then an unintentional harmful act should be equally as contaminating as an intentional one.

A body of work within the criminology literature suggests that gender is a further factor that can have an impact when judging offenders (Lindholm & Christianson, 1998; Mazzella & Feingold, 1994; McKimmie, Masters, Masser, Schuller, & Terry, 2013). In a systematic review of the effect of defendant characteristics on the judgements made by mock jurors, Mazzella and Feingold (1994) found that the type of crime committed interacted with defendant gender, whereby, compared to male defendants, female defendants were treated more leniently when the crime committed was theft. In this connection, a study conducted by (Lindholm & Christianson, 1998) found that for crimes of manslaughter or those that involved stabbing, female perpetrators were assigned less culpability than those who were male (Lindholm & Christianson, 1998). Further studies have found that transgressor gender has an impact in that female defendants are incongruent with offender stereotypes held by observers,

which subsequently alters the processing of information about the crime (McKimmie et al., 2013). Across the studies discussed above results consistently suggest that female defendants are treated more leniently and perceived as less culpable for the transgressions that they have committed. These findings suggest that gender plays an important role, particularly with regards to observer judgements of the transgressor. However, no published studies within the moral contagion literature have yet examined the role of the gender of the transgressor in contamination processes. It could be argued from a biological perspective, as outlined by Rozin and colleagues, that the gender of the moral transgressor should not have an impact on contamination processes. However, as outlined above, findings from the broader morality literature show that gender does have an impact when judging offender guilt. As a result it is necessary to investigate any potential effects of the gender of the transgressor on moral contagion responses.

In its current form, moral contagion theory has not yet been reconciled with well-established findings within the morality literature. Research which examines responses to transgressions with the potential to be perceived as immoral has found that the type of transgression committed, the severity of the transgression and the gender of the transgressor all have an impact upon the amount of responsibility attributed to the individual. However, as this work is yet to be integrated with the moral contagion literature, it remains unclear how factors related to the transgressor and transgression affect the desire for avoidance of contaminated objects. In fact, as a result of the failure to compare transgressions across different types of transgressions, it remains unclear whether the avoidance effect is unique to moral transgressions, or whether there is something unique about immorality that results in avoidance. Moral contagion responses are intimately tied to the person who has committed the transgression and their actions. Together these are the source of moral taint which is putatively passed on to a previously neutral object. In this connection, factors that have been found to have

an effect on judgements of moral transgressors themselves should also have an impact on moral contagion responses. Moral contagion is inherently a social process related to beliefs about relationships between people and objects. As a result, it is important that the construct be reconciled with other social processes that are known to influence related concepts, in this case the judgement of moral transgressors. A further area of literature that has yet to be integrated with moral contagion theory is that of disgust. As initially suggested by Rozin et al. (1986), true magical moral contagion responses should be driven by feelings of disgust which result from the prospect of contact with a contaminated object or person. However, research has yet to demonstrate that feelings of disgust are the underlying mechanism of moral contagion responses.

Magical Contagion and Disgust

Disgust is related to contamination sensitivity and is triggered by concerns about what an object is, where it has been, or what it has touched (Haidt, Rozin, McCauley, & Imada, 1997; Rozin & Fallon, 1987). The consequence of feeling disgust is a desire to avoid the person or object that is the cause of the feelings of revulsion (Curtis, de Barra, & Aunger, 2011; Rozin, Haidt, & Mccauley, 2008). Disgust is the primary emotion associated with reactions to contaminants, and disgust-based reactions appear to trigger behaviour that ultimately results in the avoidance of contamination (Rozin & Fallon, 1987; Rozin et al., 2008). Of particular relevance to moral contagion is the fact that objects that have come into contact with disgust elicitors themselves can themselves become disgusting (Curtis et al., 2011; Rozin et al., 1986). If moral transgressors and their transgressions, which cue feelings of disgust, are able to pass on disgusting properties to previously neutral objects this provides a mechanism by which moral contagion operates.

The theorised link between magical contagion processes and disgust have been investigated empirically by Rozin et al. (1986). Their study found that people

experienced feelings of disgust towards previously neutral objects when physical contact had occurred between the neutral object and the disgust inducing object. These effects were found to be relatively permanent as sterilisation had a limited purification effect on the tainted objects. For example, a glass of juice was stirred with either a disgusting item (i.e., a sterilised cockroach) or a non-disgust inducing item (i.e., a birthday candle). Participants rejected the juice only when it had come into contact with the cockroach. The fact that the cockroach had been sterilised and therefore could not pass on any pathogens to the juice lends support for the participants' reactions being linked to magical contagion-based cognitions. Other studies show that, with regards to obsessive-compulsive disorders (OCD), disgust elicitors are related to OCD contamination obsessions and washing compulsions (Olatunji, Sawchuk, Lohr, & de Jong, 2004). These findings show that disgust responses are susceptible to contagion-based thought processes. Despite this promising initial evidence, little subsequent research has investigated the role of disgust in magical contagion processes, including moral contagion processes. However, more broadly, the emotion of disgust has received a large amount of research interest in the past decade, with a particular focus on the links between disgust and morality (Landy & Goodwin, 2015; Pizarro, Inbar, & Helion, 2011). It is necessary to review findings within the broader disgust literature before applying the findings to moral contagion as this body of work suggests how the two research areas may be integrated with one another in order to examine the mechanism underlying moral contagion processes.

The Structure and Function of Disgust

It is generally agreed that it is necessary to take an evolutionary perspective when attempting to understand the development and function of disgust (Tybur, Lieberman, Kurzban, & DeScioli, 2013). One of the initial, and perhaps most influential, models of disgust's structure and function was put forward by Rozin, Haidt

and McCauley (e.g., Haidt, McCauley, & Rozin, 1994; Rozin & Fallon, 1987). Their model states that disgust originally evolved from a toxin-based food rejection-system and functions to facilitate the avoidance of pathogens. They posit that this system of disgust, which they refer to as core disgust, was subsequently co-opted by other disgust domains including animal-reminder disgust which rejects any reminder of original animal origins such as death, hygiene, violations of the body envelope and sex. Rozin, Haidt and McCauley also put forward two additional domains of disgust, interpersonal disgust, cued by contact with undesirable others, and moral disgust, cued by moral offenses (Haidt et al., 1994; Haidt et al., 1997; Rozin & Fallon, 1987; Rozin et al., 2008). Under this model, the avoidance of core disgust elicitors represents the original evolved function of disgust that subsequently broadened into other domains of social life.

Building on the body of work of Rozin and colleagues, several researchers have proposed that disgust evolved as a disease avoidance mechanism in humans (e.g., Curtis, Aunger, & Rabie, 2004; Curtis et al., 2011; Oaten, Stevenson, & Case, 2009). From this perspective, the purpose of disgust is to avoid infectious diseases. Disease avoidance is achieved as feelings of disgust lead to both avoidance and hygiene-related behaviours that limit the possibility of infection and subsequent illness. The terms pathogen and core disgust are used to refer to the same group of disgust cues (e.g., food, death, body envelope violations) depending on the theoretical perspective taken about the origin of disgust. For the sake of clarity and consistency the term core disgust will be used throughout the present thesis when referring to this group of disgust elicitors. There is little disagreement within the broader literature about the existence and function of core disgust. However, moral disgust, and the idea that moral transgressions that do not contain a core disgust cue invoke feelings of disgust, has received much more criticism and has generated debate within the literature (see Russell & Giner-

Sorolla, 2013 for a review). As disgust is theorised to play a key role in moral contagion processes, the types of domains in which it operates, or the types of cues that lead to feelings of disgust, are of importance as some moral transgressions, such as murder, cue images of blood and gore and therefore have a direct cue of core disgust, whereas other transgressions, such as stealing, can cue only a moral disgust responses as there is no alternative cue of disgust bound up within the transgression or the consequences of the transgression.

Beyond a disease avoidance function, it is theorised that the range of cues that lead to disgust has broadened due to the social nature of human interaction. This extension of the role of disgust has led to disgust being recruited to facilitate the avoidance of more than just disease-causing pathogens. There is a large social component to disgust as social learning is required in order to learn what objects are disgusting (Russell & Giner-Sorolla, 2013). As outlined briefly above, it has also been suggested that disgust serves a social function (Fischer & Manstead, 2008; Haidt et al., 1994; Haidt et al., 1997; Rozin et al., 2008; Rozin, Lowery, Imada, & Haidt, 1999; Tybur et al., 2013). Fischer and Manstead (2008) suggest that emotions have evolved in a social context and should therefore have a social function and be beneficial for social survival. It is posited that disgust is recruited within social groups in order to avoid outsiders and to demarcate what is pure and what is polluted (Curtis, 2011; Fischer & Manstead, 2008). This type of disgust is referred to within the literature as either moral disgust or sociomoral disgust and is cued by immoral acts or low-status persons (Curtis & Biran, 2001; Rozin et al., 2008). Curtis and Biran (2001) utilise anthropological evidence to argue that disgust has evolved from a system designed to avoid physical parasites to include a function of avoiding social parasites. In this connection, Fischer and Manstead (2008) suggest that sociomoral disgust plays a role in social distancing. Expressing a distancing emotion has the capacity to limit the damage caused by the

antisocial or dysfunctional behaviour of others as well as enhance one's own social standing as above the individual causing the disgust response. In this way sociomoral disgust achieves social goals through distancing (as opposed to social goals being achieved through cooperation and affiliation), whether it be at the interpersonal or group level (Fischer & Manstead, 2008). Further, Curtis et al. (2011) argue that the invocation of purity in relation to lower classes or undesirable others leads to arguments of them as being infections and therefore disgusting and contagious. As a consequence, the requirement to remain physically clean is extended to a requirement to remain morally pure.

Existing theories about the broadening of the role of disgust into the social domain have been synthesised and extended by Tybur et al. (2013). Tybur and colleagues have put forward an evolutionary-based argument for moral disgust, including the selection pressures that would have led to the extension of disgust from a response to pathogens into the moral domain. They suggest that expressions of disgust are a reliable cue which can be used to oppose and moralize a given action. In these circumstances, in the absence of sexual or core disgust, disgust can be used a signal to others of either condemnation or a tool to recruit punishment through vocal and facial displays. Therefore, they suggest that moral disgust is used for the dual purposes of communication of condemnation and punishment of another's actions (Tybur et al., 2013). In addition to a function of disgust as an output of moral cognition, Tybur et al. (2013) suggest that disgust intuitions play a role in whether a particular social rule should be endorsed or resisted. The greater the feelings of disgust, the greater the probability that there is little disadvantage in avoiding the acts that cue the feelings of disgust (Tybur et al., 2013). From a contagion perspective, this evolutionary view of moral disgust provides an explanation for why people would be motivated to avoid those who have committed a moral transgression that does not contain a core disgust

cue, such as theft. There is some disagreement within the disgust literature with regards to whether moral disgust represents a true disgust response or if the term disgust is used metaphorically by laypeople when referring to moral transgressions. This debate is of relevance to moral contagion theory as it directly relates to the underlying mechanism of moral contagion responses. Disgust is theorised as being the emotion directly related to magical contagion, and, with regards to moral contagion, it is the transgression committed which putatively acts as the disgust cue and renders the transgressor contaminating.

Evidence for a Relationship Between Disgust and Morality

Studies have found that there are specific areas within the brain that are associated with core disgust (Moll et al., 2005). Proponents of the idea that moral disgust does not represent a true emotion refer to findings which indicate that cues of moral disgust are associated with areas that overlap with feelings of anger (Moll et al., 2005). This finding has been used to argue that the feeling labelled as disgust by laypeople and referred to as moral disgust within the literature as moral disgust is more closely linked to moral outrage than a true disgust response. However, with regards to moral transgressions, other emotions may also play a role in whether a particular rule is endorsed by a particular group, which may explain additional features of the contents of moral rules and why other brain areas may also be activated (Tybur et al., 2013).

In addition to the psychophysiological studies which investigate whether disgust is cued by exposure to moral transgressions, a number of studies have examined the links between disgust and moral judgement and decision making. It has been proposed that moral judgements result from automatic emotional processing, rather than as a result of rational, or cognitive, processes (Haidt, 2001). From this perspective, emotions including disgust are intimately tied to moral judgements and moral cognition. Pizarro et al. (2011) summarize the existing empirical literature on the relationship between

disgust and morality and put forward three ways that disgust is posited to be involved in moral judgement within the literature. This is summarised in Figure 1.1 which was created by Landy and Goodwin (2005) as a summary of the work of Pizarro et al. (2001). The links between disgust in moral cognition are split into three different types of relationships: a) The elicitation hypothesis, where the judgement of an act as a moral violation evokes feelings of disgust; b) The amplification hypothesis, where experiences of disgust lead to the increased condemnation of moral transgressions, compared to if no disgust reaction was present; c) The moralisation hypothesis where feelings of disgust lead to the condemnation of actions which fall outside of the moral domain (Pizarro et al., 2011).

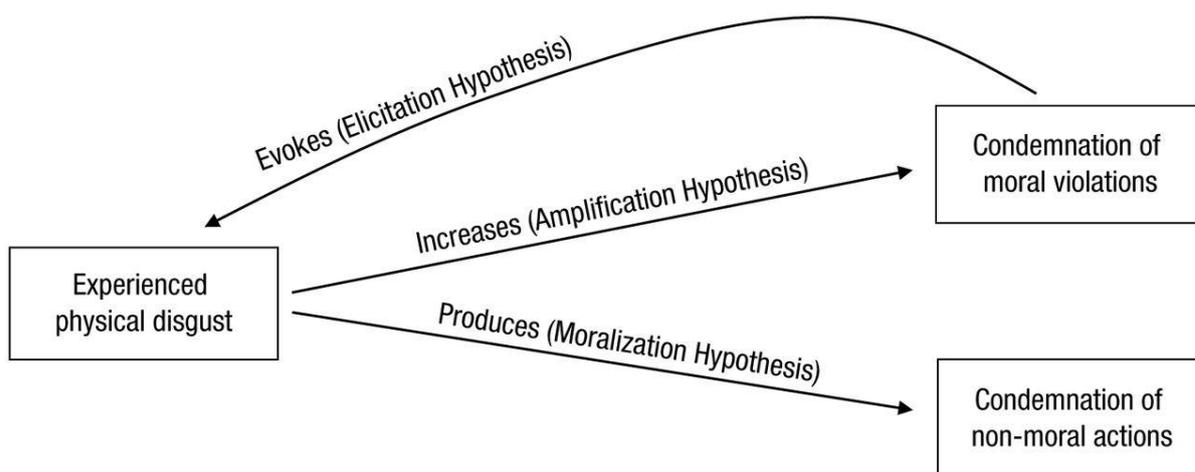


Figure 1.1. Schematic representation of three possible relationships between disgust and moral judgment. Reproduced from Landy and Goodwin (2005).

As a result of their exploration of support for each of these hypotheses, Pizarro et al. (2011) find that there is promising evidence for each, however, many questions about precisely how disgust is involved in moral processes still remain. Nevertheless, the existing studies in the area do show that disgust is involved in moral processes, even if the precise role of disgust is not yet clear. The evidence for the role of disgust in moral

judgements is discussed in more depth below. Although moralization is one of the hypothesised relationships between disgust and moral judgements, it is not directly relevant to the present thesis and so will not be discussed. Interested readers are referred to Landy and Goodwin (2015) for an in-depth discussion of the evidence for moralisation.

It has been suggested that the role of disgust in morality is limited to the moral domain of purity such that disgust is only cued when a moral transgression includes a purity violation (Gutierrez & Giner-Sorolla, 2007; Horberg, Oveis, Keltner, & Cohen, 2009; Rozin et al., 1999). For example, Horberg et al. (2009) conducted three studies, each designed to provide support for the hypothesis that disgust amplifies the moral significance of (i.e., moralises) protecting the purity of the body and soul. In their first study it was predicted that feelings of disgust, but not anger, would predict condemnation of purity violations, whereas feelings of anger, but not disgust, would predict condemnation of justice violations. Participants were presented with four vignettes describing scenarios where either purity or justice violations took place. They were subsequently required to make moral judgement ratings about the behaviours in the scenario as well as rate the extent to which the violations made them feel disgust- and anger-relevant emotions. Their findings indicate that disgust predicts harsher moral judgements of purity violations but not violations of other moral domains, and that disgust, but not another negative emotion (e.g., anger), is associated with the moralisation of purity. Their second study was designed to extend the results of their first study through the inclusion of the emotion of sadness which shares negative valence with disgust, but is not associated with appraisals of contamination or purity. The authors also aimed to examine whether disgust moralises virtuous behaviours within the purity domain. Participants were experimentally induced to feel disgust or sadness by watching brief emotionally evocative film clips prior to making moral

judgements about disgusting and non-disgusting moral violations. It was hypothesised that the disgust induction participants would make stronger moral judgments about purity behaviours than the sadness induction participants. The study findings indicate that disgust participants made significantly stronger judgements for purity violations and purity virtues compared to sadness participants. Finally, their third study investigated whether trait disgust is uniquely associated with moralisation of purity behaviours. Moral judgements were operationalised in terms of punishment and reward and individuals with high trait levels of disgust, but not trait anger or fear, were expected to punish purity violations more harshly and reward purity virtues more strongly. Participants were required to rate the extent to which they would punish each of the moral violations and the extent to which they would reward each of the moral virtues. The results show that trait disgust was significantly associated with greater punishment of purity violations and reward of purity virtues. This demonstrates that disgust does not only amplify moral judgements in the purity domain but is also related to increases in the severity of punishment of purity violations. Together, these three studies provide support for the disgust-purity association and show that disgust is uniquely associated with the moralisation of the purity domain (Horberg et al., 2009).

In contrast to the findings of the specificity of the role of disgust within the purity domain, Chapman, Kim, Susskind, and Anderson (2009) found that disgust was also cued by violations within the domain of fairness. Facial Electromyography (EMG) was utilised to monitor the reactions of participant's facial muscles when they were exposed to three different types of stimuli designed to elicit feelings of disgust. In the first condition, participants drank small samples of unpleasant-tasting bitter, sour and salty liquids. In the second condition, participants viewed photographs of uncleanness and contamination-related stimuli such as faeces and injuries. In the third condition, participants played the Ultimatum Game. Once they had played the game participants

were also asked to rate their feelings about the offer that they had received as represented by a set of photographs depicting different types of emotions, including disgust. In the first two conditions, activity in the levator labii muscle occurred as a result of exposure to disgust inducing stimuli. In the Ultimatum Game condition, their results show that as the offer became more unfair, the muscle responsible for raising the upper lip in disgust expressions (i.e., the levator labii muscle) became more active. Furthermore, this muscle activity was correlated with participant ratings of the amount of disgust they felt towards each offer. This did not occur for anger ratings. In addition, both the subjective and objective measures of disgust were found to be proportional to the perceived unfairness of the offer that the participant had received. These findings provide evidence for moral disgust responses cuing to physiological reactions which are the same as those resulting from exposure to core disgust cues. This suggests that moral disgust and core disgust can generate the same physiological responses within the body.

A number of studies demonstrate that people high in trait disgust make harsher moral judgements (Chapman & Anderson, 2014; Horberg et al., 2009; Inbar, Pizarro, Knobe, & Bloom, 2009; Olatunji, 2008). For example, Chapman and Anderson (2014) investigated whether trait disgust is related to the condemnation of moral violations. In their first study, participants read a range of scenarios designed to represent either moral transgressions or the transgression of a social convention and made judgements about their wrongness. Participants then completed the Disgust Scale (Haidt et al., 1994) in order to obtain a measure of trait disgust. Their second study utilised a similar methodology to the first but also included extra measures of anxiety, trait anger, and social conservatism, as well as an alternate measure of disgust sensitivity (the Disgust Scale – Revised; Olatunji et al., 2007). Across the two studies their results show that people with high levels of trait disgust judged moral transgressions as more wrong compared to people with low levels of trait disgust, irrespective of whether the moral

violation in question fell within the purity domain. The results of their second study also showed that the different domains of disgust had differing relationships with morality judgements, with core disgust sensitivity being the strongest predictor of wrongness judgements for both moral and conventional transgressions. Further, these results held when anxiety, trait anger and social conservatism were controlled for, indicating that the influence of disgust on judgements of moral wrongness are unique to disgust processes (Chapman & Anderson, 2014). Existing findings within the area suggest that disgust sensitivity is related to the implicit disapproval of (Inbar et al., 2009) and negative attitudes towards homosexual people (Olatunji, 2008). The findings of Chapman and Anderson (2014) broaden these findings and show that disgust sensitivity plays a role in moral judgements outside of the condemnation of homosexuality. This is an important extension of findings within the area as homosexual acts contain a core disgust cue, in anal intercourse, which could account for the increased moral condemnation expressed by people high in disgust sensitivity. As a result, it is necessary for studies to demonstrate that there is a truly moral component to the role of disgust within the moral domain, rather than responses being driven by core disgust elicitors.

Beyond the realm of trait disgust, studies have shown that incidental feelings of disgust increase the severity of moral judgements. Wheatley and Haidt (2005) hypnotised participants to feel disgust when exposed to a particular word. In the second phase of the experiment, participants read a description of a moral transgression which either did or did not contain the word used in the hypnosis. Their results show that when the word was present in description the moral transgression was judged to be much more morally wrong, compared to when the word was not present in the description (Wheatley & Haidt, 2005). These findings show that an experience of disgust amplifies wrongness judgements of moral transgressions, even when the disgust is cued implicitly. However, it should be noted that a meta-analytical review conducted

by Landy and Goodwin (2015) found that there may be publication bias within the disgust literature which examines whether disgust has an amplification effect. An in-depth discussion of these findings are beyond the scope of the present thesis, interested readers are referred to Landy and Goodwin (2015). Taken together, the studies discussed above provide evidence of a role for disgust in moral processes. Although the debate about the precise role of disgust has not yet reached its conclusion, there is evidence to suggest that people experience feelings of disgust when exposed to moral transgressions and that incidental experiences of disgust can lead to harsher judgement of those who have transgressed.

Disgust and Moral Contagion

As a consequence of the lack of research investigating the role of disgust in moral contagion processes, the nature and extent of the role of disgust in these processes is yet to be determined. Further, owing to the theorised links between disgust and contagion processes, as well as the theoretical debate currently taking place within the disgust literature, it is necessary to make comparisons across different types of moral transgressions which contain a variety of disgust cues. The differences between moral disgust and core disgust are particularly relevant as moral transgressions can cue either core or moral disgust. As a result, it is necessary to determine whether both types of transgressions are contaminating. Existing studies in the area of moral contagion frequently use moral transgressions which contain cues of core disgust, such as murder (e.g., Hood et al., 2011; Rozin et al., 1994). In addition, as discussed above, these studies do not make comparisons across different types of transgressions or measure the affective responses of participants, including disgust. As a result, it is possible that the contamination responses found within these studies are being driven by images of blood and gore, rather than the immoral nature of the act. Moral transgressions that contain cues of core disgust, such as images of blood and gore as the result of stabbing, have a

clear cause of feelings of disgust. However, in cases where the moral transgression does not contain a core disgust cue, such as theft of a valuable object, the contagion-based rejection response would putatively rely on feelings of moral disgust. As none of the existing literature makes direct comparisons between contagion-based reactions across different types of transgressions it is unclear whether contagion responses are consistent across transgressions that cue different types of disgust. Further, if disgust is the emotion uniquely related to moral contagion this strengthens the argument that a contamination based response is occurring, due to the key role disgust with regards to dirt and disease.

An alternate explanation to a moral contagion response that is closely linked to feelings of disgust is that strong feelings of negative moral emotions lead to the generalised rejection of moral transgressors and associated objects. Anger and disgust individually, and in combination (i.e., as moral outrage), have been linked to both moral judgements and the assignment of punishment (Hutcherson & Gross, 2011; Rozin et al., 1999; Salerno & Peter-Hagene, 2013). Nichols (2002) argues that affect plays a key role in the differentiation between moral violations and violations of social rules or conventions. When a transgression cues feelings of negative affect, including disgust, it is judged as more serious and less permissible. These findings are supported by a fMRI study conducted by Schaich Borg, Hynes, Van Horn, Grafton, and Sinnott-Armstrong (2006), who found that different brain methods of processing decisions occur where differentiation is required between moral factors such as intention and consequences of an act. This study also found that moral scenarios involving intentionally causing harm lead to more activity in areas associated with emotion, and less activity in areas associated with cognition, compared to moral scenarios that involved only unintentional harm (Schaich Borg et al., 2006). Therefore, it is important to show that rejection of moral transgressors and associated objects is not merely the result of feelings of

negative moral emotions. A related criticism of the literature which examines the role of disgust in moral judgements that has been put forward by Pizarro et al. (2011) and others is that, although the findings within this area demonstrate that disgust plays a role, the findings do not show that disgust exerts a specific causal influence within the moral domain. This criticism can be extended to the existing moral contagion literature in that the impact of moral emotions on contagion responses has not yet been examined. Therefore it cannot yet be said that disgust is uniquely related to moral contagion. If disgust is the emotion uniquely associated with moral contagion, then disgust alone should mediate the relationship between a moral transgression and a contagion responses.

Overarching Aims

As outlined above, there is evidence to suggest that contagion concerns do not only result from illness or bodily substances that may transmit disease. Magical contagion theory posits that negative interpersonal sources also lead to contagion-based avoidance responses. Therefore, objects that have come into contact with moral transgressors should generate an avoidance response. The present thesis has three main aims. First, little research has assessed how contagion responses differ across different types of moral transgressions. As a result, an aim of the present thesis is to demonstrate that avoidance is specific to moral transgressions and that a general badness or hopelessness does not result in a rejection response, it is the moral component of a transgression that results in avoidance. Second, if disgust and contagion are interrelated concepts linked to a social requirement of protecting the body from threats to purity, it is logical that contagion concerns, driven by disgust, have mirrored the movement of disgust from being solely related to protection from disease to a broader functions which include protecting the self from moral taint. Therefore, an aim of the present thesis is to demonstrate that disgust is the mechanism by which immoral actors

engender a contamination response. Third, as there are currently no published studies that investigate a behavioural rejection response triggered by moral contagion, a further aim of the present thesis is to investigate whether moral contagion leads to behavioural avoidance.

In order to address these aims, seven experimental studies have been conducted. Chapter 3 reports Study 1 which investigates the impact of transgression severity on moral contagion responses. Chapter 4 reports Manuscript Studies 1 to 4 which have been submitted as a journal article. Manuscript Studies 1 to 3 are thought experiments. Manuscript Study 1 aims to demonstrate that the contamination response is specific to transgressions that fall within the moral domain. Manuscript Study 2 aims to examine the unique mediating role of disgust in moral contagion processes. Manuscript Study 3 aims to distinguish the effect of transgressions which directly cue core disgust related imagery (e.g., blood and gore) versus those that cue moral disgust (i.e., transgressions that cue moral disgust). The aim of Manuscript Study 4 is to further examine the role of core versus moral disgust as well as demonstrate that the behavioural rejection of an object occurs as a consequence of moral contagion. Studies 6 and 7, reported in Chapters 5 and 6, respectively, report the remaining studies that were conducted to examine moral contagion. Study 6 investigates whether moral contagion responses differ across different types of moral transgressions, including illegal moral transgressions and social transgressions. Study 7 is a further behavioural study which aims to demonstrate the behavioural rejection of an object as a result of moral contagion. Chapter 7 contains the General Discussion of the present thesis.

Chapter 2

Moral Contagion Systematic Review

STATEMENT OF CONTRIBUTION TO CO-AUTHORED PUBLISHED PAPER

This chapter includes a co-authored paper. The status of the co-authored paper, including all authors, is:

Tapp, C., Occhipinti, S. & Oaten, M. (2015). Moral contagion: A systematic review.

Unpublished Manuscript.

My contribution to the paper involved:

Conducted the database searches using key words. Extracted the data for systematic review and created summary tables. Extracted results data for p -curve analyses, ran p -curve analyses and created all tables and figures. Drafted the manuscript. Critical revision of the manuscript.

(Signed)

(Date) 21/01/2016

Caley Tapp

(Countersigned)

(Date) 21/01/2016

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Moral contagion: A systematic review.

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Abstract

This study systematically reviewed the evidence for moral contagion (i.e. the idea that moral transgressions result in negative essences that can be passed on to neutral objects through physical contact). PsycINFO, Web of Science and Google Scholar databases were searched. Criteria for inclusion in the systematic review were as follows: utilised laws of sympathetic magic definition of contamination, manipulated the moral character of the target, directly assessed contamination responses and were published in English in a peer-reviewed journal. Ten articles describing 15 studies met the inclusion criteria. A *P*-curve was created to investigate the presence of *p*-hacking. This showed that the findings of the studies contain evidential value and there was no evidence of *p*-hacking. The results of the reviewed studies provide support for the existence of a moral contagion effect. People show a desire to avoid physical contact with an object contaminated by a moral transgressor. The systematic review highlights two key limitations of the moral contagion literature. First, participants in fourteen of the studies were from the USA, UK or Australia. As contagion beliefs are influenced by culture this is a significant gap in the current research. Second, none of the studies included a behavioural avoidance outcome. Future research should address these limitations.

Moral contagion: A systematic review.

Although there appears to be general acceptance within the psychological literature that moral contagion is an established phenomenon, to date, the existing empirical support for moral transgressions as contaminating and moral transgressors as contaminants has not been reviewed and integrated systematically. Within the broader literature, moral contagion is put forward as an explanation for behaviours such as cleansing following the recall of immoral behaviour (e.g. Golec de Zavala, Waldzus, & Cyprianska, 2014; Zhong & Liljenquist, 2006). One of the key issues within the literature is that the terms *contamination* and *contagion* are often used interchangeably and are not always intended to refer to magical contagion, one of the laws of sympathetic magic. In addition, terms such as *social contagion* (e.g. Crandall, 1988; Roediger, Meade, & Bergman, 2001), *emotional contagion* (e.g. Savani, Kumar, Naidu, & Dweck, 2011) and *mental contamination* (e.g. Coughtrey, Shafran, & Rachman, 2014) are all used within the literature, but do not always refer to magical contagion. As a result of the lack of clarity within the literature, it is not clear whether contamination is simply related to feeling dirty, which is in keeping with lay meaning of the word contamination, or whether there is support for the idea that people are engaging in magical thinking heuristics. Authors citing this research when using moral contagion as an explanation for their findings often cite research from all of these areas combined, which implies that all of these types of contamination operate in the same way. Consequently, arguments relating to moral contagion are built on the basis of a range of sources that do not all utilise the same definition. The present paper will apply a magical thinking definition of contagion so as to examine the evidence for true moral contagion effects.

The law of contagion encompasses the idea that when two objects come into contact an exchange of essences (global goodness/badness) takes place, and each object

then bears a permanent residue or memory of the other (Rozin et al., 1992; Rozin et al., 1986; Rozin & Vollmecke, 1986). As a law of sympathetic magic, contagion has two basic dimensions. First, contagious interactions can be either positive or negative; contact with an object that is considered important, such as the possession of an ancestor, results in enhancement of the value of the object (i.e. positive contamination) whereas contact with an item belonging to a disliked person would devalue an object (i.e. negative contamination; Rozin et al., 1992; Rozin et al., 1986). There are four consequences of negative contagious interactions; (a) acquisition of negative physical or personality characteristics, (b) moral degradation, (c) bad luck and (d) illness or death (Rozin & Nemeroff, 1990). Second, transmitted essence can mediate effects either in the source (backward causation) or in the recipient (forward causation; Rozin et al., 1992; Rozin et al., 1986). True moral contagion should follow the principles of magical contagion outlined above. In addition, moral contagion processes should also be affected by the same factors that influence interpersonal contagion responses. Two key factors in the area of interpersonal contagion are the emotion of disgust and a person's cultural background.

Disease-based contamination is intimately connected to disgust (Curtis et al., 2004; Curtis et al., 2011; Oaten et al., 2009). Further, disgust is hypothesised to play an important role with regards to interpersonal contagion (Haidt et al., 1997; Rozin et al., 1986; Rozin & Vollmecke, 1986). Disgust is also considered to play a role in moral judgements, particularly within the moral domain of purity (Horberg et al., 2009; Schnall, Haidt, Clore, & Jordan, 2008; Wheatley & Haidt, 2005). Given the role of disgust in both morality and interpersonal contagion, true moral contagion responses should also share a relationship with disgust. A second factor that has been found to have an impact upon interpersonal contagion responses is cultural background. Magical contagion has been demonstrated with regards to interpersonal and physical sources in

people from the United States and these responses are implicit in nature (Nemeroff & Rozin, 1994; Rozin et al., 1989). In contrast, Hindu Indian culture has been found to have a more explicit belief in contamination and purity more generally, and this has been shown to generate larger responses with regards to interpersonal contagion (e.g. Hejmadi et al., 2004; Savani et al., 2011). Therefore, it is of interest to investigate the level of empirical evidence for the role of disgust in moral contagion responses as well as any culture-based effects.

The main objective of this systematic review is to determine the level of empirical evidence for the proposition that moral transgressions are contaminating and that these negative contagious essences can be passed on to previously neutral objects through physical contact. The following questions were developed in order to focus the review and guide the examination of potential studies for inclusion:

- What types of moral transgressions generate a contagion response (negative contamination)? Is there evidence that the effect also exists for moral exemplars (positive contamination)?
- Does moral contagion work in a forward and backward direction?
- How are moral contagion responses measured?
- What evidence is there for a relationship between moral contagion and disgust?
- What cultures has moral contagion been demonstrated in?
- Are there any mediators or moderators of moral contagion effects?

A second objective of this systematic review is to examine whether studies selected using the criteria outlined above showed evidence of *p*-hacking. *P*-hacking is a term used to describe a range of behaviours involving researchers engaging in questionable research practices. These include situations where decisions about whether to collect more data or which measures to include in the analysis are made when the data is being analysed, rather than in advance (John, Loewenstein, & Prelec, 2012;

Simonsohn, Nelson, & Simmons, 2014). This behaviour leads to findings of significant effects that may be the result of selective reporting rather than findings that are reflective of effects that exist in reality (Simonsohn et al., 2014). In addition, selective reporting may not be intentional, as it can be the product of journal review decision strategies. One method of determining whether a set of reported findings is the result of selective reporting or *p*-hacking is the *p*-curve method, created by Simonsohn et al. (2014). As outlined by Simonsohn et al. (2014): “*P*-curve is the distribution of statically significant *p* values for a set of independent findings. Its shape is diagnostic of the evidential value of that set of findings.” (p. 535). Right-skewed curves are diagnostic of evidential value while left-skewed curves suggest that intense *p*-hacking has taken place (for more information see Simonsohn et al., 2014). By creating a *p*-curve of the significant *p*-values within the studies identified by the systematic review of the moral contagion literature, we will be able to determine whether the findings are of evidential value and that selective reporting can be ruled out as the sole explanation of the findings.

Method

A systematic review with no publication date restrictions was undertaken. PsycINFO, Web of Science databases were searched. Google Scholar was also searched with articles that appeared relevant being selected for in-depth assessment. The searches were conducted using a combination of the terms “moral” and “contamination”, “moral” and “contagion”, “magical thinking” and “contamination”, “magical thinking” and “contagion”, “magical” and “contamination”, “magical” and “contagion”. The last search was run on 28 June 2015. In addition, the Google Scholar database was searched for citations of a landmark paper by Nemeroff and Rozin (1994). The Google Scholar database was also searched for citations of a book chapter written by Rozin and Nemeroff (1990). Eligibility was assessed by first examining the title and abstract for

each paper. The full-text of studies that clearly met the inclusion criteria was obtained. In addition, the full-text of any studies where eligibility was not clear was retrieved for more detailed evaluation against the eligibility criteria. Studies were included if they met the pre-determined inclusion criteria:

- Utilised a laws of sympathetic magic definition of contamination/contagion, including the requirement of physical contact for the transfer of essence;
- Included a manipulation of the moral character of the target (could be either a moral exemplar or a moral transgressor, or both);
- Directly assessed contamination responses (not just contamination as an explanation for other responses);
- Were published in English;
- Were published in peer-reviewed journals.

Both quantitative and qualitative studies were included. Book chapters, reviews, dissertations, editorials and commentaries were excluded.

We developed a data extraction sheet based on the research questions outlined above which was pilot tested on five of the included studies. Refinements were made and the remainder of the data was entered. One review author extracted the data and created summary tables which were checked by a second review author.

Information was extracted from each included study on: (a) participant characteristics (including age, gender and culture); (b) study design; (c) source of contamination (including whether control group was used); (d) type of contaminated object; (e) method of measuring contamination responses; (f) study results and; (g) the direction of contamination (forward vs backward); (h) contagion valence (positive vs negative). The source of contamination variable was added once the review had started, as a closer examination of the literature revealed that some studies had included moral exemplars.

Results

Study selection

The process of study selection for the review is outlined in Figure 2.1. The search of PsycINFO and Web of Science databases identified 564 citations. A search conducted through Google Scholar identified a further 97 citations. A total of 15 studies were identified for inclusion in the review. Upon examination of titles and abstracts, 61 were considered potentially relevant. Another 9 potentially relevant citations were identified from retrieved articles. In total, 70 were considered potentially relevant. Of these, 10 articles met the inclusion criteria for the review. Of the 60 excluded articles most did not include a manipulation of the moral character of the individual (a more general investigation of interpersonal contagion) or investigated a model of contagion that does not involve physical contact. Within the included articles there were 15 eligible quantitative studies which examined moral contagion. Key information about each of the studies relevant to the selection criteria is summarised in Table 2.1.

Summary of Results

Moral contagion studies used a range of moral transgressions that were either specific in nature (for example, stealing, murder and child molestation) or more general (such as a disliked or evil person). The specific moral exemplars used were a volunteer worker and a young mother and the general positive moral characters were an admired person and a lover. Across the studies where positive and negative contagion were compared to one another a consistent pattern emerged where negative contagion effects were consistently stronger than the effects of positive contagion. Newman and Bloom (2014) found that there was a positive effect of the amount of contact with the objects for moral exemplars and a negative effect of contact for moral transgressors (pay more and pay less, respectively). Hood et al. (2011) found that negative effect was stronger than the effect of a positive previous owner. Both Nemeroff and Rozin (1994) and

Rozin et al. (1989) found that people displayed substantial responses to previous contact with a negative moral source, but contact with positive sources produced very small effects that were not always statistically significant. One issue that arises when attempting to make comparisons between contagion responses to moral transgressors and exemplars is that it is difficult to match the intensity of an act like murder with an equally positive act.

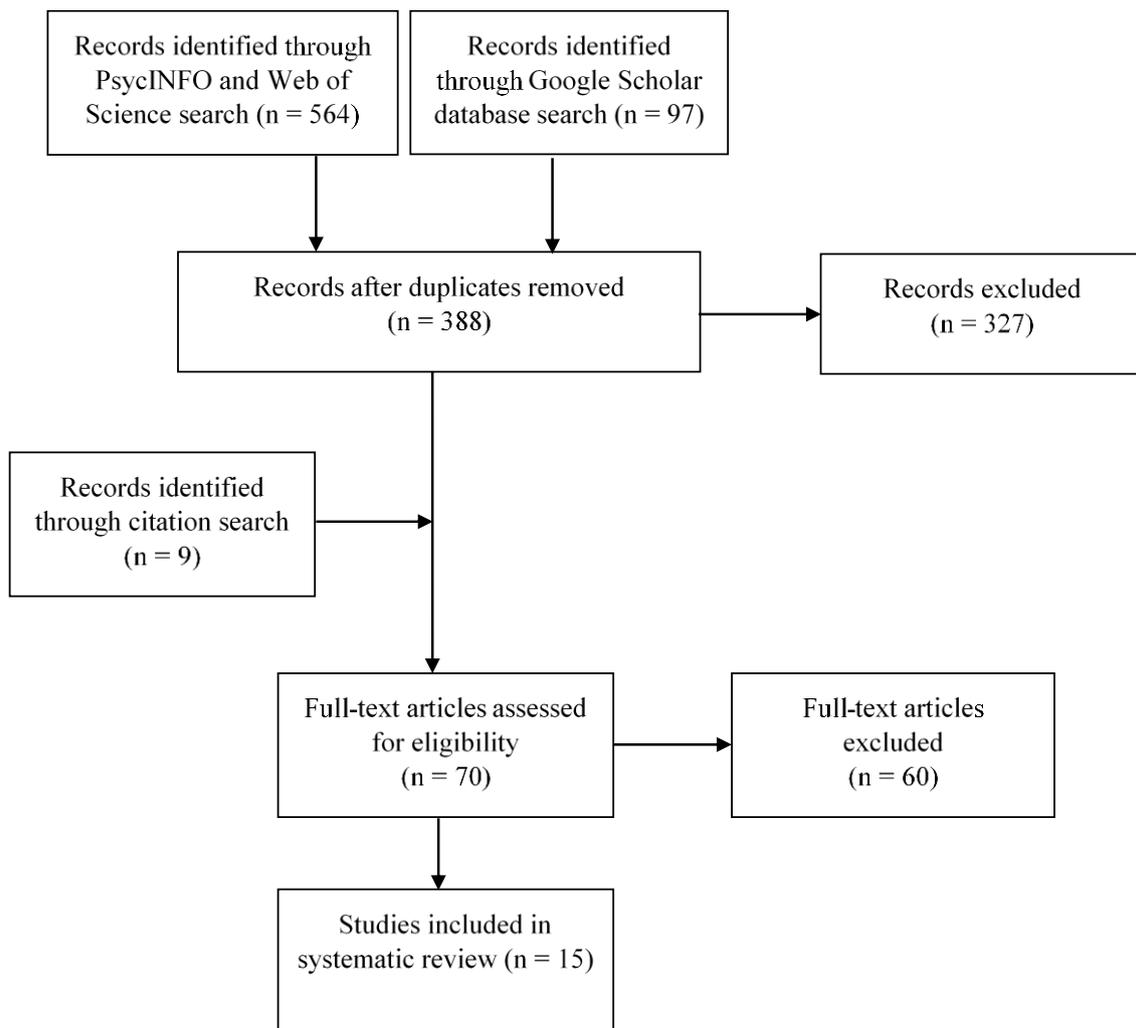


Figure 2.1. Flow diagram of study selection.

Table 2.1

Characteristics and results of studies examining moral contagion.

| Study | Contagion Direction | Contagion Type | Contaminating Character(s) | Contaminated Object(s) | Contamination-relevant Measures | Participants | Design | Results |
|-----------------------|---------------------|----------------|--|---|---|---|------------------------------------|---|
| Bastian et al. (2015) | Forward | Negative | <i>Study 4</i> Thief caught stealing object from grocery store Child molester | <i>Study 4</i> Apple Chocolate biscuit (in packaging) | <i>Study 4</i> Feelings of disgust associated with eating the object 0-4 scale | <i>Study 4</i> 114 participants (69.30% female) <i>M</i> _{age} = 19.56 years | <i>Study 4</i> Mixed design | <i>Study 4</i> Moral vitalism uniquely associated with disgust about consuming items handled by a thief. Also a unique association between moral vitalism and disgust about consuming items handled by a child molester. |
| Eskine et al. (2013) | Forward | Negative | <i>Study 1</i> Student caught stealing supplies out of the lab | <i>Study 1</i> Chair(s) | <i>Study 1</i> State guilt (15 items) 1-7 scale | <i>Study 1</i> 54 participants (70.37% female) <i>M</i> _{age} = 19.76 years | <i>Study 1</i> Between-subjects | <i>Study 1</i> Participants who were told they were sitting in the same chairs as moral transgressors reported more state guilt than participants who received no information. This effect was unique for guilt, non-significant effects for other emotions. |
| | | | <i>Study 2</i> Student who cheats on exams, plagiarises essays and lies to faculty and staff to enhance credentials | <i>Study 2</i> Direct contact (skin-to-skin handshake) | <i>Study 2</i> State guilt (15 items) 1-7 scale Disgust sensitivity measure (Haidt et al., 1994) | <i>Study 2</i> 48 participants (66.67% female) <i>M</i> _{age} = 20.15 years | <i>Study 2</i> Between-subjects | <i>Study 2</i> When participants shook hand of immoral person and there was skin to skin contact, they reported higher levels of state guilt, compared to participants who shook hands while wearing gloves. Disgust sensitivity mediated the effect with participants high in disgust sensitivity reporting higher state guilt when contact was skin-to-skin (however, participants low in disgust sensitivity still showed the effect). |

| | | | | | | | | |
|------------------------------|---------|----------|--|------------------|--|---------------------------------|------------------|--|
| Hood et al. (2011) | Forward | Both | <i>Study 1</i> | <i>Study 1</i> | <i>Study 1</i> | <i>Study 1</i> | <i>Study 1</i> | <i>Study 1</i> |
| | | | Person in prison for murdering their spouse | Heart Transplant | How happy would you be to receive a [organ] transplant? | 40 participants (50% female) | Within-subjects | People's happiness significantly decreased at the prospect of receiving a heart transplant from a murderer. |
| | | | Volunteer worker | | 0 – 10 scale | | | Prospect of receiving heart transplant from a volunteer worker significantly increased happiness. Effect stronger for murderer vs volunteer worker. |
| | | | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> |
| | | | Person in prison for murdering their spouse | Heart Transplant | How happy would you be to receive a [organ] transplant? | 39 participants (51.28% male) | Within-subjects | Replicated findings of Study 1. Negativity effect is stronger and more consistent than positivity effect. |
| | | | Volunteer worker | Liver Transplant | 0 – 10 scale | | | No difference in responses between heart and liver as object when donor was murderer. |
| | | | <i>Study 3</i> | <i>Study 3</i> | <i>Study 3</i> | <i>Study 3</i> | <i>Study 3</i> | <i>Study 3</i> |
| | | | Kyoto gang members who committed murder | Heart Transplant | How happy would you be to receive a [organ] transplant? | 40 participants | Within-subjects | Like British participants (Study 2), Japanese participants were less happy when donor was murderer. |
| | | | Kyoto volunteers who dedicated their lives to helping others | Liver Transplant | 0 – 10 scale | | | Japanese participants responded with a greater shift in ratings following learning about background of donor. No difference in responses between heart and liver. Unlike British participants, Japanese participant ratings did not extend to control questions – much purer contamination response. |
| Kardos and Castano (2012) | Forward | Negative | Own immoral behaviour (secretly picking up winning lottery ticket after another person drops it) | Money | Statements tapping into different emotions (incl. guilt and remorse) | 88 participants (54.55% female) | Between-subjects | People who imagined having acquired the money in an immoral way spent significantly less money on a holiday than those who acquired money through luck. Significantly more guilt was experienced when the money was acquired immorally. |

| | | | | | | | | |
|---------------------------|----------|------|--|---|---|----------------------------------|------------------|---|
| | | | | | Rate how much of the money they would spend on a vacation | | | In the immoral condition, guilt and spending were significantly negatively correlated. No such relationship existed in the moral condition. |
| | | | | | 1 – 7 scale from \$0-\$18 000 | | | |
| Kramer and Block (2011) | Backward | Both | Mother of young child Registered sex offender | Teddy bear (owned by family for 15 years) | Likelihood they would accept bid from the character 1 – 7 scale | 184 participants | Between-subjects | When the buyer was a moral transgressor, greater levels of experiential processing resulted in lower willingness to accept their bid and when the buyer was a moral exemplar, greater levels of experiential processing resulted in greater willingness to accept bid amount. No effects for rational processing, only a main effect of buyer type on willingness to accept bid. |
| | | | | | Experiential processing (rational-experiential inventory experiential subscale) | | | |
| Nemeroff and Rozin (1994) | Forward | Both | Enemy Evil Lover Good | Sweater | How would you feel about wearing the sweater after it had been worn by [character]? | 36 participants (52.78% female) | Within-subjects | Vast majority of participants showed substantial negative responses to contact with negative sources. Mean effects for positive sources were very small (all non-significant). |
| | | | | | -100 to +100 scale, 0 is neutral. | $M_{age} = 34.7$ years | | |
| Newman and Bloom (2014) | Forward | Both | <i>Study 1</i> John F Kennedy Jacqueline Onassis Marilyn Munroe Bernard Madoff | <i>Study 1</i> Range of objects owned by character | <i>Study 1</i> Amount of money paid for object at auction | <i>Study 1</i> No information | | <i>Study 1</i> Significant positive effect of physical contact on final bids for objects owned by John F Kennedy and Marilyn Munroe. The greater the perceived contact, the higher the bids were for positive celebrity items, but bids for negative celebrity items lower (both expensive and lower cost items). |
| | | | | | Coders rated amount of perceived contact | | | |

Also a significant effect of association whether items had monograms etc.) but this was different from the interaction above.

| | | | | | | | | |
|---------------------|---------|----------|---|---|---|--|---|---|
| | | | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> |
| | | | Admired famous person vs Despised famous person | Sweater | Amount of money participant would be willing to bid on sweater. | No information | Between-subjects 2 (famous person: admired vs despised) x 3 (transformation: sterilised vs never able to sell vs moved from original location) between-subjects | Negative celebrity - sterilisation increased willingness to pay (WTP) whereas limiting resale reduced WTP as did moving location. Difference in WTP across three transformations significant. Positive celebrity - sterilisation significant decreases WTP whereas limiting resale only weakly reduced willingness to pay and moving sweater had no effect. Significant differences across the three transformations in WTP. |
| Rozin et al. (2007) | Forward | Negative | Convicted murderer Phrase 'convicted murderer' printed on label of a sweater | Sweater Condominium | How much money would you pay not to wear the sweater for 3 hours while alone? How would you feel about wearing the sweater after it had been worn by [character]? 0 – 100 scale, 50 is neutral. | 221 participants | Mixed between (mode of response: money vs forced choice vs feeling scale) within (all character information) | Between subjects mode of response: significantly higher indifference towards magically degraded object for money. Effect higher for sweater over condo (but also more Ps). Within subjects mode of response (Ps who made ratings at one time and money judgements at another): again, lower sensitivity of money measures. That is, participants behave in more rational way when placed in monetary frame of reference. |
| Rozin et al. (1994) | Forward | Negative | <i>Study 1</i> Murderer | <i>Study 1</i> Sweater (laundered) | <i>Study 1</i> How would you feel about wearing/sleeping in/driving the [object]? | <i>Study 1</i> 960 participants (53.75% female) | <i>Study 1</i> Mixed between (character information: photo vs no photo) within | <i>Study 1</i> Drop in desirability from NEW to contact extremely consistent across objects/articles. Negative effects of contact tended to be smaller for ratings of bed and automobile. |

| | | | | | | | | |
|---------------------|------|------|---|--|--|--|-----------------------------------|--|
| | | | | Sleeping in bed (with new sheets) Driving automobile | -100 to +100 scale, 0 is neutral. | | (all other character information) | Murder results in negative drop in desirability. |
| | | | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> | <i>Study 2</i> |
| | | | Murderer | Sweater (laundered) | How would you feel about wearing the sweater after it had been worn by [character]? 0 – 100 scale, 50 is neutral. | 204 participants | Within-subjects | Confirms results above not because of comparisons between different actions. |
| Rozin et al. (1989) | Both | Both | Dislike Unsavoury Friend Lover | Sweater Hamburger Apple Hairbrush (backward and forward) Hair (backward) | How would you feel about eating/wearing/etc. the [object]? -100 to +100 scale, 0 is neutral. | 140 participants (52.86% male) $M_{age} = 22.6$ years | Within-subjects | For dislike and unsavoury, all objects drop in liking & significant at. Mixed results for friend and lover across objects, either increase or decrease and not all significant. For backward contagion, all significant except hairbrush and unsavoury, positive for friend and lover, negative for dislike and unsavoury. |

Participant Characteristics

Of the 15 studies reviewed, only six included details about the ages of participants (Bastian et al., 2015; Eskine et al., 2013; Kardos & Castano, 2012; Nemeroff & Rozin, 1994). The majority of studies included information about the gender breakdown of participants, however, some studies did not include any information about participants beyond the number and their cultural background (Kramer & Block, 2011; Newman & Bloom, 2014; Rozin et al., 2007). With regards to cultural background, almost all of the participants (73.33%) were from the USA, with the exception of the studies with the exception of the studies conducted by Hood et al. (2011) who tested participants from the UK and Japan and Bastian et al. (2015) who tested participants from Australia.

Direction of Moral Contagion

The majority of the studies reviewed (86.66%) examined forward moral contagion (Bastian et al., 2015; Eskine et al., 2013; Hood et al., 2011; Kardos & Castano, 2012; Nemeroff & Rozin, 1994; Newman & Bloom, 2014; Rozin et al., 2007; Rozin et al., 1994). These studies found that people responded in a way consistent with a belief that the object was contaminated through physical contact with a moral transgressor. Kramer and Block (2011) examined backward contagion effects and found that contagion responses were moderated by experiential processing where greater levels of experiential processing lead to greater willingness to accept a bid for the object when potential buyer was a moral exemplar and resulted in a lower willingness to accept a bid when the potential buyer was an immoral character. The remaining study examined both forward and backward contamination (Rozin et al., 1989) which allowed comparisons between responses to forward and backward contamination. As discussed below, when examining forward contagion, contact with moral transgressors was more negative than contact with moral exemplars was positive. In contrast, when examining

backward contagion, the positive effect of their essences falling into the hands of moral exemplars was greater than the negative effect of their essences transferring to a moral transgressor.

Positive vs Negative Moral Contagion

Just over half of the studies investigated both positive and negative contagion (i.e. they included both moral exemplars and moral transgressors; Hood et al., 2011; Kramer & Block, 2011; Nemeroff & Rozin, 1994; Newman & Bloom, 2014; Rozin et al., 1989). None of the reviewed studies examined positive moral contagion alone. The remaining studies all focused exclusively on negative contagion caused by moral transgressors. As a result, negative contamination was examined more frequently than positive contamination. The majority of the contaminating actions were specific immoral or moral acts, with a few studies asking participants to imagine general characters such as a disliked person or an evil person. With regards to specific immoral deeds, the most frequent immoral act was murder (six studies; Hood et al., 2011; Rozin et al., 2007; Rozin et al., 1994), followed by theft (three studies; Bastian et al., 2015; Eskine et al., 2013; Kardos & Castano, 2012). The most frequently used positive contagion act was volunteer work (three studies, all conducted by Hood et al., 2011).

Measurement of Moral Contagion Responses

Moral contagion responses were measured in a variety of ways. One study, conducted by Rozin et al. (2007), compared three different types of object assessment, that is, payment to avoid contact with the object, forced choice of preferred object contact and feeling towards contact with the object. The majority of the remaining studies utilised a measure of feeling toward contact with the object (Hood et al., 2011; Nemeroff & Rozin, 1994; Rozin et al., 1994; Rozin et al., 1989). The next most frequently used measure of contamination was an assessment of the amount of money that people would be willing to pay for the object (Kardos & Castano, 2012; Kramer &

Block, 2011; Newman & Bloom, 2014). Two of the studies (conducted by Eskine et al., 2013) employed a measure of state guilt as evidence for contamination through contact with a tainted object. The study conducted by Bastian et al. (2015) asked participants to rate their feelings of disgust associated with eating the contaminated object. None of the studies used a behavioural measure of moral contagion.

Modifiers of Moral Contagion Effects

Of the studies included in the systematic review, only a small number examined external factors that could potentially have an impact upon moral contagion responses. The study conducted by Kardos and Castano (2012) found that feelings of guilt were significantly negatively correlated with the amount of money spent on a holiday. This suggests that when the immoral deed is committed by the person themselves the experience of moral emotions is related to subsequent contamination responses. Kramer and Block (2011) found that experiential processing moderated contamination responses. The effect of high levels of experiential processing on contagion responses on whether or not the participant chose to sell the object depended upon whether the previous owner was a moral transgressor or a moral exemplar. When the previous owner was a moral exemplar, greater experiential processing lead to an increased willingness to sell the object. Conversely, when the previous owner was a moral transgressor, greater experiential processing lead to a decreased willingness to sell the object. Although they did not test for moderation, Bastian et al. (2015) found that a person's level of moral vitalism (i.e. tendency to view good and evil as agentic forces) was a predictor of their contamination response where higher levels of moral vitalism were associated with more disgust about consuming items previously handled by a moral transgressor. These findings suggest that guilt, experiential processing and moral vitalism can all have an impact upon moral contagion responses.

Disgust.

Evidence for the relationship between disgust and moral contagion responses was of particular interest, due to the large amount of literature which theorises that disgust plays a key role in contagion processes (Curtis et al., 2011; Oaten et al., 2009; Rozin & Fallon, 1987). Only one study, conducted by Eskine et al. (2013), examined the impact of disgust on moral contagion responses. Their findings suggest that people's contamination responses are moderated by disgust sensitivity, with people being higher in disgust sensitivity exhibiting the strongest moral contagion response. Feelings of disgust towards contact with a tainted object was used as an outcome measure by Bastian et al. (2015).

***P*-curve Analysis**

In order to investigate whether the findings of the studies selected for inclusion in the systematic review showed evidence of *p*-hacking we used the methods outlined by Simonsohn et al. (2014) to select the appropriate *p* values from the studies selected for inclusion in the systematic review. Table 2.2 outlines the process of selecting the appropriate *p* value for each included study. Using the online app from Simonsohn et al. (2014) we generated a *p*-curve (see Figure 2.2). The observed distribution of the *p*-curve was right skewed, $Z = -8.43, p < .0001$, which shows that the studies contain evidential value. This finding suggests that the results obtained by studies in the area of moral contagion are not the product of *p*-hacking.

The process of examining the studies for extraction of *p*-values in order to create the *p*-curve meant that the authors engaged with the results of the studies in-depth and a number of observations were made as a result. A key aspect of the technique for creating the *p*-curve is identifying the statistical result that matches up with the stated hypothesis. This proved to be a difficult task as authors did not always explicitly state the predictions that they were making or the statistics reported in the Results section

were not reported in sufficient depth (with information about degrees of freedom, t statistics etc.). Although this level of detail for statistical reporting is now a requirement in most psychological journals, some of the articles included were published more than a decade ago and standards have shifted over time. For the majority of the studies we were able to calculate the required missing information from the information that was available, however, the study conducted by Nemeroff and Rozin (1994) was unable to be included in the p -curve as there was insufficient statistical information available. In addition, across the range of studies included in the review, we found evidence of corrections having been applied without this fact being clearly stated in the Results section. The type of analysis that was conducted was not always evident, which was especially problematic when the paper also failed to provide a directional hypothesis. Effect sizes were also seldom reported.

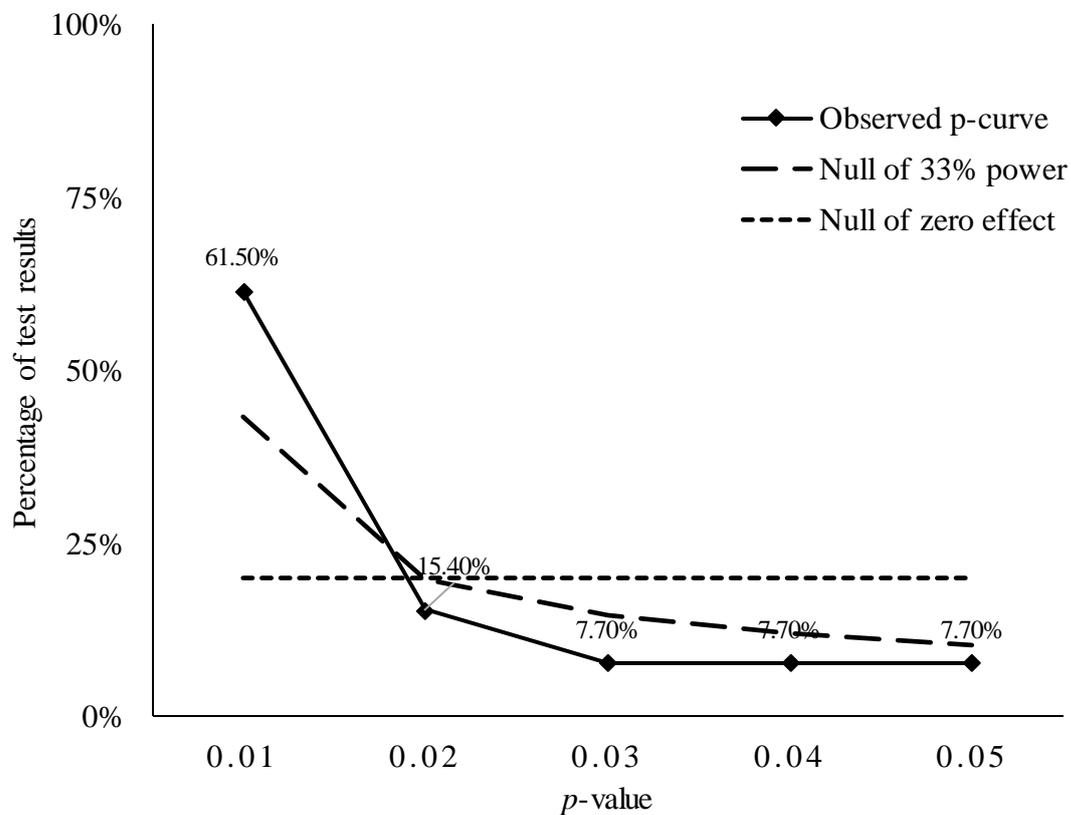


Figure 2.2. P -curve of moral contagion studies included in the systematic review.

Discussion

Summary of Evidence

The results of the reviewed studies provide support for the existence of moral contagion. Taken together, the results show that people feel that contact with an object is less desirable when it has been previously touched by a moral transgressor. Moral contagion responses were found to be moderated by disgust sensitivity (Eskine et al., 2013), experiential processing (Kramer & Block, 2011) and moral vitalism (Bastian et al., 2015). This effect was present across a range of objects including a sweater, food, and household items (such as a fork). Further, people displayed a reduced desire to receive an organ transplant from an immoral donor, an effect which held for both a heart and liver donation, indicating that the effect was not driven by symbolic beliefs about the relationship between the heart and morality within western culture (Hood et al., 2011). Other outcomes that indicated support for moral contagion included higher levels of state guilt following both direct physical contact with a moral transgressor and contact with an object touched by a moral transgressor (Eskine et al., 2013). Results also showed that objects previously owned by an immoral person resulted in lower bids at auction, compared to objects previously owned by a moral exemplar (Newman & Bloom, 2014). This effect was also found with regards to backwards moral contagion, where participants were less likely to accept a bid from a moral transgressor for a valued object, compared to a bid from a moral exemplar (Kramer & Block, 2011). In another study that utilised a monetary outcome, people spent less money on a holiday when the money was acquired through their own immoral behaviour (Kardos & Castano, 2012). In contrast to the findings of Kardos and Castano, 2012, Rozin et al. (2007) found that asking people to respond using a monetary frame resulted in reduced contagion responses, compared to when people were asked to provide feelings-based responses.

Overall, there was a focus on negative forward contagion across the studies. Some studies did examine backward contagion and, although no studies examined positive contagion on its own, a number of studies did include both positive and negative contagious sources. Compared to positive contagion effects, which were small in size or non-significant, negative contagion effects were strongest, in line with the theory that people display a negativity bias (Rozin & Royzman, 2001). The majority of studies utilised a within-subjects design where participants were presented with characters one-by-one and rated their feelings towards contact with an object (most frequently a sweater) touched or worn by each character. The majority of participants across the studies were from the United States of America; only one study included participants from a non-western culture.

Limitations

The key limitation of the moral contagion literature is that, to date, there is a lack of behavioural evidence for the effect. None of the studies included in the review had a behavioural outcome. It is possible that people may feel less favourably towards a contaminated object but when it comes to actual behavioural rejection, other factors (e.g. social norms) are more influential and behavioural rejection of the object does not actually happen. It is not yet clear from the existing empirical evidence whether moral contagion responses are potent enough to be expressed through behaviour. Interpersonal contagion responses are known to be more implicit in people from western cultures (Hejmadi et al., 2004; Rozin et al., 1989) and it is possible that this has an impact upon the behavioural expression of contagion responses. In this connection, the moral contagion literature would benefit from a broadening of research participants to include those from other cultures. Given the important role that culture plays in responses to interpersonal contagion (Hejmadi et al., 2004) it is important to also examine the role of culture within moral contagion responses. The behavioural rejection of a previously

neutral object following contact with an immoral individual is what differentiates a moral contagion response from a pure disgust-based rejection response. Feelings of disgust would explain the rejection of the individual themselves, but not the transfer of properties to a previously neutral object. Moral transgressors are stigmatised and invoke feelings of disgust (Yang et al., 2007) and invoke rejection responses as a result. A demonstration of the behavioural rejection of associated artefacts would be a valuable contribution to the literature in this area.

A further limitation of the current evidence for moral contagion is that, with the exception of the study conducted by Rozin et al. (1994) who utilised photographs of a sweater being worn by a man, participants were asked to imagine the contaminated object. An imagined object is more easily manipulated than the properties of physical, tangible objects. It may be that it is easier to devalue or reject an object that is imagined, versus a physical object whose physical properties are unaffected by learning about the background of the past owner. It is not yet clear whether moral contagion responses continue to operate when the object is an appealing and tangible rather than merely an imagined one. In addition, in the case of organ donation, the absence of other contextual factors (such as the level of need of the organ, the reality of the consequences of not receiving a donation) makes it unclear whether the moral contagion responses would be overridden or influenced by such factors. When in a situation of great need, people may not be as concerned about the moral character of the organ donor.

The type of control groups used within the body of literature examining moral contagion, particularly studies utilising a between-subjects design, limits the ability to draw conclusions about whether it is purely immoral deeds that result in contagion or whether there is a more general contaminating effect of badness. In general, the studies compared a moral transgressor to a no information condition or a person who would be regarded as high in moral character (e.g. volunteer or mother). As a consequence, it is

difficult to draw conclusions regarding whether the associated contagion response is specifically due to the immoral nature of the character's actions or whether people are less willing to come into contact with badness in general. Although a range of moral transgressions and, to a lesser extent, moral exemplars were used across the studies an issue arises with regards to the object with which the contaminated object was compared. All but four of the studies utilised a within-subjects design which meant that participants were always making contamination-based judgements with other characters (either more or less moral) in mind. This may serve to inflate contagion effects as the reaction being obtained is not based solely upon the immoral acts of the character, but rather are a product of a comparison to a character that they had read about previously. This study design may also introduce demand characteristics where participants feel they should reduce their ratings as the character becomes more negative, due to a general halo of negativity.

The studies included in the present review employed a wide range of moral transgressions; however, the type of transgression committed was not manipulated within individual studies. As a result, comparisons between the different types of moral transgressions were not made and we are unable to draw conclusions about how transgression severity may impact upon contagion responses. It remains unclear whether all moral transgressions are contaminating or whether there is a threshold of severity above which a transgression must fall in order to generate a contagion response. Interpersonal contagion research has shown that people display dose insensitivity, whereby objects or people that are perceived to be contaminating are a danger even if contact is short lived (Rozin & Royzman, 2001). In this connection, it is important to establish the boundaries of moral contagion effects—are all moral transgressions equally contaminating or is it only the most severe that justify rejection? Moral contagion responses include not only the exclusion of moral transgressor themselves but

also objects with which they have come into contact. This rejection of both person and associated artefacts objects is a costly course of action and it would disadvantage a group to exclude a large number of its members, therefore it is important to determine where the boundaries are that determine rejection.

The role of disgust within moral contagion processes also requires further investigation. Only one of the studies included in this review indirectly investigated the role of disgust in the form of disgust sensitivity (Eskine et al., 2013). In this study, a contamination response was found to be present at both high and low levels of disgust sensitivity (although the effect was more pronounced for those high in disgust sensitivity), suggesting that disgust plays a role in contamination processes across people. Given the significance of the role of disgust in relation to moral judgements (Horberg et al., 2009; Schnall et al., 2008; Wheatley & Haidt, 2005) and contamination processes (Curtis et al., 2011; Haidt et al., 1997; Oaten et al., 2009) it is necessary to determine the exact role played by disgust with regards to moral contagion. Due to the lack of research investigating the role of disgust it remains unclear whether disgust is evoked in response to the proposed contact with the moral transgressor or with a contaminated object. For this reason it is important to directly measure disgust responses, rather than use a measure of disgust sensitivity as a proxy. In addition, there is evidence that disgust and anger interact when making judgements about immoral acts (Salerno & Peter-Hagene, 2013). Russell and Giner-Sorolla (2011) argue that a disgust response to a moral situation only occurs when a norm violation regarding the use of the body has occurred and that it is the coactivation of anger that drives responses to violations involving harm or intentionality. Given that disgust is hypothesised to play a role in moral contagion processes future is needed to determine what role is played by disgust (and whether this is unique to disgust, rather than the result of moral outrage)

and whether it applies to all types of moral transgressions or is restricted to those that contain a core disgust cue.

Our systematic review of the moral contagion literature shows that the research into this area has not yet been integrated with the wider literature examining moral judgements and morality in general. There are a number of factors that have been found to influence judgements within the moral domain which would feasibly affect moral contagion responses. For example, when judging the morality of an act and a person's deservingness of punishment the severity and intentionality of the act is taken into account (e.g. Carlsmith, 2008; Darley & Pittman, 2003; Lagnado & Channon, 2008; Petersen, Sell, Tooby, & Cosmides, 2012; Rucker, Polifroni, Tetlock, & Scott, 2004). Research within the area of moral contagion has not yet explored how the severity or intentionality of a moral transgression is related to contagion responses. It is important to get a broader picture of whether moral contagion is affected by these factors, or if it operates independently from other aspects of moral cognition in order to integrate these related areas of research.

Conclusions

The literature currently provides support for moral contagion theory. An object that had come into contact with a moral transgressor results in a reduced desire for contact with the object – an effect that has been found across a wide range of objects. These effects are also relatively unaltered by physical cleansing. Results were found to be of evidential value, with no evidence of *p*-hacking found. More research is needed in the area, as there is currently no behavioural evidence in the area. This evidence is particularly important as the behavioural rejection response is a key consequence of contagion. Further, moral contagion theory is yet to be integrated with other areas of the morality literature and it is not yet clear how factors affecting moral cognition also impact upon moral contagion responses. Given the central role of moral cognition in

interpersonal and intergroup interaction, moral contagion would theoretically have a significant impact on behavioural responses towards moral transgressors and objects with which they come into contact.

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Manuscript Appendix A

Table 2.2

Disclosure table for P-curve analysis.

| Original Paper | Quoted text from original paper indicating prediction of interest to researchers | Study Design | Key statistical result | Quoted text from original paper with statistical results | Results | Robustness results |
|-----------------------|--|--|--|---|--|--|
| Bastian et al. (2015) | <i>Study 4</i> Specifically, we ask whether moral vitalists will display an aversion to having indirect or secondary contact (i.e., touching something that has been in contact with another person) with those who may be possessed by evil. | <i>Study 4</i> Two cell (thief vs child molester) | <i>Study 4</i> Association between moral vitalism and disgust towards consuming items | <i>Study 4</i> The analysis revealed that moral vitalism was uniquely associated with disgust about consuming items handled by a thief ($\beta = .25, p = .004, 95\% \text{ CI} = [0.08, 0.41]$). This same model revealed a unique association between moral vitalism and disgust about consuming items handled by a child molester ($\beta = .29, p = .001, 95\% \text{ CI} = [0.12, 0.46]$). | <i>Study 4</i> $t(104) = 2.989, p = .00349$ | <i>Study 4</i> $t(104) = 3.402, p = .00095$ |
| Eskine et al. (2013) | <i>Study 1</i> It was hypothesized that indirect and direct physical contact with a moral transgressor would increase participants' state guilt. | <i>Study 1</i> Two-cell (previous chair occupant: transgressor vs control) | <i>Study 1</i> Difference of means | <i>Study 1</i> Results showed that those who sat in the same chairs as the previous transgressors experienced significantly more guilt ($M = 2.82, SD = .66, n = 27$) than those in the control condition ($M = 2.28, SD = .77, n = 27$), $t(52) = -2.77, p = .008, d = .75$. | <i>Study 1</i> $t(52) = -2.77, p = .00775$ | |
| | <i>Study 2</i> ...hence we predicted that high disgust-sensitive participants would be more likely to experience psychological contagion effects than low disgust-sensitive participants. | <i>Study 2</i> Two-cell (contact: skin vs glove) x Disgust sensitivity <i>(attenuated interaction)</i> | <i>Study 2</i> Interaction | <i>Study 2</i> Using a two-step model that first tests the two main effects and then adds the interaction term in the second step, results revealed a main effect of the glove/hand condition ($b = 1.078, SE = .172, p < .001$) and, more critically, an interaction ($b = .582, SE = .240, p = .02$, see Fig. 1), indicating that the relationship between the glove/hand condition and state guilt depended on one's disgust sensitivity. | <i>Study 2</i> $t(41) = 2.425, p = .01980$ | |

**Authors were emailed for further detail so that results could be entered into P-curve*

| | | | | | |
|---------------------------|---|---|--|--|--|
| Hood et al. (2011) | <p><i>Study 1</i></p> <p>Predict a tendency to rate attributes lower following negative information but would show no symmetrical bias to rate attributes higher following positive information.</p> | <p><i>Study 1</i></p> <p>Six-cell (information: pre, bad, good x question: attractiveness, heart transplant, X-Factor)</p> <p><i>(attenuated interaction)</i></p> | <p><i>Study 1</i></p> <p>Interaction</p> | <p><i>Study 1</i></p> <p>The ANOVA revealed that there was a significant main effect of question ($F(2,38)=26.4, p<0.001$), indicating that the three questions elicited significantly different responses. There was also a significant main effect of information ($F(2,38)=77.2, p<0.001$), indicating that there was a significant difference between the mean scores for the pre-information, bad information and good information conditions. There was also a significant interaction between the questions and the conditions ($F(2,78)=4.49, p<0.01$), indicating a significant difference between two conditions in at least one question.</p> | <p><i>Study 1</i></p> <p>$F(2,78) = 4.49, p = .01427$</p> |
| | <p><i>Study 2</i></p> <p>Same as Study 1</p> | <p><i>Study 2</i></p> <p>(information: pre, bad, good x question: heart transplant, liver transplant, memory)</p> <p><i>(attenuated interaction)</i></p> | <p><i>Study 2</i></p> <p>Interaction</p> | <p><i>Study 2</i></p> <p>Experiment 1, there was no main effect of sex but there was a significant interaction with background information ($F(2,36)=3.64, p<0.05$). There were also significant main effects of question ($F(2,36)=4.37, p<0.05$) and background information ($F(2,36)=46.22, p<0.001$). There was also a significant interaction between the questions and the background conditions ($F(4,72)=5.4, p<0.01$).</p> | <p><i>Study 2</i></p> <p>$F(4,72) = 5.4, p = .00074$</p> |
| | <p><i>Study 3</i></p> <p>...it was predicted that Japanese students, like British students, would show a negativity bias to rate attributes lower following negative information but would show no symmetrical bias to rate attributes higher following positive information.</p> | <p><i>Study 3</i></p> <p>(information: pre, bad, good x question: heart transplant, liver transplant, memory)</p> <p><i>(attenuated interaction)</i></p> | <p><i>Study 3</i></p> <p>Interaction</p> | <p><i>Study 3</i></p> <p>There was no significant effect of sex or group. There were, however, significant main effects of background ($F(2,37.2)=24.38, p<0.001$ and question ($F(2,51.9)=4.33, p<0.05$) and a significant interaction between background and question ($F(2,81.9)=11.12, p<0.001$), indicating a significant difference between two conditions on at least one of the questions.</p> | <p><i>Study 3</i></p> <p>$F(4, 116)=11.12, p < .00001$</p> <p><i>*Df were recalculated as df with decimal places cannot be included in p-curve analysis.</i></p> |
| Kardos and Castano (2012) | <p>Specifically, we argue that people might be reticent in spending immorally acquired money because that entails engaging with it.</p> | <p>Two-cell (ticket acquisition: control vs immoral)</p> | <p>Difference of means</p> | <p>t-test revealed that less money was spent in the immoral ($M=\\$2.454$) compared to the control condition ($M=\\$4.023$), $t(86)=-2.34, p<.05$. Also, significantly more guilt was experienced when people acquired the money immorally ($M=5.56$) compared to the control condition ($M=2.82$), $t(86)=9.9, p<.0001$ (see Fig. 1).</p> | <p>$t(86) = -2.34, p = .02160$</p> |

| | | | | | |
|-------------------------|--|---|--|---|---|
| Kramer and Block (2011) | <p>We predicted an interaction between level of experiential processing and buyer.</p> <p>In this study, we tested our theorizing that greater experiential processing would be associated with a seller's lower (higher) willingness to accept an auction reservation price for a personal item when the bidder was a sex offender (mother of a young child).</p> | <p>Buyer of item (mother vs sex offender) x experiential processing style</p> <p>(<i>reversing interaction</i>)</p> | Two simple effects | <p>Analysis showed a significant effect of level of experiential processing ($\beta = -.792$, $t = -2.24$, $p < .05$) and of buyer ($\beta = 3.117$, $t = 13.01$, $p < .001$) on respondents' willingness to accept the reservation bid. Importantly, the level of experiential processing x buyer interaction was significant ($\beta = 1.355$, $t = 2.94$, $p < .01$).</p> <p>As expected, when the buyer was a sex offender, greater levels of experiential processing resulted in a lower willingness to accept the reservation bid amount ($\beta = -.792$, $t = -2.05$, $p < .05$). However, when the buyer was a mother, greater levels of experiential processing resulted in a greater willingness to accept the reservation bid amount ($\beta = .563$, $t = 2.11$, $p < .05$).</p> | <p>$t(177) = 2.05$, $p = .04184$</p> <p>$t(177) = 2.11$, $p = .03626$</p> |
| Newman and Bloom (2014) | <p><i>Study 1</i></p> <p>...perceived contact should increase the value of objects belonging to well-liked individuals (due to positive contagion) and decrease the value of objects belonging to disliked individuals (due to negative contagion)</p> <p><i>Study 2</i></p> <p>No specific predictions made</p> <p>Very difficult to tell what they would actually predict beyond a 3 way interaction (because of w/s time factor), State that location</p> | <p><i>Study 1</i></p> <p>Interaction between degree of perceived contact and valence of celebrity (liked vs disliked)</p> <p>(<i>reversing interaction</i>)</p> <p><i>Study 2</i></p> <p>2 (valence: positive vs negative) x 3 (transformation: sterilisation, can't resell, move location)</p> | <p><i>Study 1</i></p> <p>Simple effects</p> <p><i>Study 2</i></p> <p>Three-way interaction</p> | <p><i>Study 1</i></p> <p>In a final analysis, we constructed pairs of items that had the same estimated value, but differed in their ratings of physical contact (high vs. low). A mixed-model ANOVA indicated a significant interaction between contact and celebrity valence [$F(1, 114) = 15.33$, $P < 0.001$]. Consistent with the other analyses, we found that for positive celebrities (JFK, JO, and MM), high contact items sold for more than low-contact items [median (MD)high = \$14,764 vs. MDlow = \$8,604; $t(64) = 5.85$, $P < 0.001$]. However, for the negative celebrity (BM) there was a slight trend for low-contact items to sell for more than high-contact items, although this difference did not approach significance [MDhigh = \$678 vs. MDlow = \$1,096; $t(50) = -0.68$, $P = 0.49$].</p> <p><i>Study 2</i></p> <p>A repeated-measures ANOVA indicated a significant threeway interaction between willingness to pay (before vs. after the transformation) valence of the celebrity (positive vs. negative) and the type of transformation ("sterilization," "can't resell," and "move location") [$F(2, 429) = 6.22$, $P = 0.002$] (Fig. 2).</p> | <p><i>Study 1</i></p> <p>$t(64) = 5.85$, $p < .00001$</p> <p>$t(50) = -0.68$, $p > .05$</p> <p><i>Study 2</i></p> <p>$F(2, 429) = 6.22$, $p = .00217$</p> |

| | | | | | | |
|---------------------|---|--|--|--|---|---|
| | moving is a control, but not clear what other effects are expected. Results show reversal of effect for sterilisation condition but nothing in intro/previous text to suggest that this was an expected result. | (attenuated interaction) | | | | |
| Rozin et al. (2007) | We suspect that this willingness to show a rather silly, if genuine response, would be curbed if the stakes were higher, that is, for example, if money were at stake. One might be willing to acknowledge a silly magical feeling, but not to put money behind it. | Three-cell (outcome measure: monetary vs. rating vs. preference probe) | Difference in counts across cells | Statistics recalculated using information presented in Table 1, page 221 | $\chi^2(1) = 21.232$ | $\chi^2(1) = 5.0551$ |
| | | | | | <i>*first p value from first set chosen</i> | <i>*last p value from last set chosen</i> |
| Rozin et al. (1994) | If AIDS has misfortune, infection, and moral transgression components, then individual differences in sensitivity to contacts with AIDS should be well predicted by sensitivity to ACCIDENT, TB, and MURDER. | Two-cell (sweater photo vs. no sweater photo, bed, automobile) | Prediction of negativity towards article used by character | Statistics recalculated using information presented in Table 4, page 500 | $t(447) = 13.38, p < .00001$ | $t(448) = 13.72$ |
| | | | | | <i>*first p value from first set chosen</i> | <i>*first p value from first set chosen</i> |
| Rozin et al. (1989) | Thus, in contagion, contact of an object with a loved, respected, or revered person can enhance the value of the object or render it beneficial (positive contagion), whereas contact with a disliked, despised, or feared person can devalue the object or render it dangerous (negative contagion). | Twenty four-cell (4 character types across 6 object types) | Difference of means | The main effect of contact with sources was highly significant (well below .001) for all objects [minimum $F(3,88) = 43.92$]. | $F(3,88) = 43.92, p < .00001$ | |

Chapter 3

Study 1: Transgression Severity and Moral Contagion

The purpose of Study 1 was to investigate the contaminating effect of moral transgressions, with a particular focus on the relationship between transgression severity and the desire for avoidance. An aim of the present study was to compare contagion-based reactions to a range of moral transgressions. Although different types of moral transgressions have been included in studies within the published literature, as yet, no studies have manipulated the severity of the transgressions in order to directly compare rejection responses. Further, the majority of the studies within the existing literature utilise a within-subjects design. As a result, it is possible that a contrast effect is occurring whereby each moral transgression is judged not only on its own merits but rather in comparison to the transgression presented immediately prior. As the transgressions tend to become more severe as the participants make each judgement, rejection responses may be amplified. For this reason, a between-subjects design was utilised in order to investigate the impact of transgression severity on desire for avoidance. Findings within the broader moral cognition literature suggests that the gender of the transgressor can have an impact on moral judgements (e.g., Lindholm & Christianson, 1998; Mazzella & Feingold, 1994; McKimmie et al., 2013). As very few studies have examined the relationship between the gender of the transgressor and contamination effects, the present study incorporated actor gender into the design. This study and all studies reported in the present thesis were run under ethical clearance from the Griffith University Human Research Ethics Committee (GU Ref No: PSY/77/12/HREC).

Method

Participants

Two hundred and forty five participants (69% male) currently residing in the United States of America were recruited via crowdsourcing website Amazon Mechanical Turk (MTurk). They were paid US \$.30 for their participation. Mean age was 28.32 years ($SD = 9.16$, range 17 – 72).

Manipulations

Moral Transgression. Participants were presented with a one sentence description of a character who had committed a moral transgression of low, medium or high severity. Severity was manipulated through the type of crime that the character was described as having committed. The immoral acts were chosen on the basis that they broadly reflect the three levels of severity of illegal behaviour in the United States of America, as outlined by Thomas (1997). The three levels of severity of immoral acts were (a) low (i.e., A man steals a bicycle chained to a fence); (b) medium (i.e., A man breaks into a home and steals jewellery and electronics); (c) high (i.e., A man drives away after seriously injuring a pedestrian).

Character Gender. Gender was manipulated by the act being described as having been committed by either a man or a woman. For example, a *woman* steals a bicycle chained to a fence.

Measures

Contamination. In order to assess the contaminating nature of immoral acts and the subsequent transmission of negative essences through physical contact, an item similar in nature to those utilised by Rozin et al. (1992). Participants were asked the following: Imagine that you have purchased a cool-looking sweater from the local thrift store. Before you get the chance to wear it for the first time you learn that its previous owner and wearer was the person described above. The impact of finding out this

information was assessed by asking participants how likely they would be to wear the sweater having found out the identity of the previous owner. This was assessed on a scale ranging from 1 (*Highly Unlikely*) to 7 (*Highly Likely*).

Morality. Participant perceptions of the moral character of the actor was measured directly i.e., participants were asked to rate how moral thought the character was (1 *Highly Immoral*; 7 *Highly Moral*). This morality measure was designed to provide confirmation of the differences in immorality of the chosen acts. Furthermore, this task also validates the previous contamination response by checking that participants believe that the acts are immoral.

Design and Procedure

Study 1 was a 3 (transgression severity: low, medium, high) x 2 (actor gender: male, female) between-subjects design. The study was conducted online. Participants were randomly assigned to one of the six between-subjects conditions. Participants were presented with a one sentence description of a character who had committed an immoral act. The characters were either male or female and were described as having committed one of three immoral acts (which varied in level of severity). Participants read the character description and then answered the contamination and morality questions that followed. Morality ratings were elicited following the contamination question to reduce demand characteristics. Participants then answered general demographic questions prior to exiting the survey.

Results

Morality

Results were analysed using a 3 x 2 (Transgression Severity [low, medium, high] x Actor Gender [male, female]) ANOVA. Table 3.1 displays the means and standard deviations for the measures across the severity levels for the male and female characters. A significant main effect of transgression severity was found, $F(2, 240) =$

7.52, $p < .001$, $\eta_p^2 = .06$. However, there was no significant main effect for actor gender nor was there an interaction between transgression severity and actor gender. Linear contrasts revealed a significant linear effect ($p < .001$) of severity level on the likelihood of wearing the sweater. As the moral transgressions became more severe in nature, participant ratings of moral character decreased. These morality ratings confirmed that the transgressions increased in severity as intended.

Table 3.1

Study 1 Means and Standard Deviations for measures of Contamination and Morality

| Transgression severity | Male Actor | | Female Actor | |
|------------------------|------------|-----------|--------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Contamination | | | | |
| Low | 5.06 | 1.71 | 5.02 | 1.99 |
| Medium | 4.49 | 2.18 | 4.33 | 2.30 |
| High | 3.88 | 2.28 | 3.93 | 2.38 |
| Morality | | | | |
| Low | 2.42 | 1.08 | 2.11 | 1.00 |
| Medium | 1.93 | 1.13 | 1.85 | 0.74 |
| High | 1.83 | 1.28 | 1.49 | 0.74 |

Contamination

Results were analysed using a 3 x 2 (Transgression Severity [low, medium, high] x Actor Gender [male, female]) ANOVA. This revealed a significant main effect of transgression severity, $F(2, 240) = 5.68$, $p = .004$, $\eta_p^2 = .05$. There was no significant main effect for actor gender nor was there an interaction between transgression severity and actor gender. Contrasts revealed a significant linear effect ($p < .001$) of severity level on the likelihood of wearing the sweater. As the severity of the moral

transgression increased participants were less likely to want to come into contact with a contaminated object. Due to the nature of the relationship between gender and moral transgressions we also investigated whether a three-way interaction was present between transgression severity, actor gender and observer gender. No three way interaction was present, $F(2, 232) = 1.37, p = .257$.

Discussion

The results of Study 1 show that the desire for avoidance of an object tainted by a moral transgressor is linear in nature and mirrors the severity of the moral transgression. The severity of the moral transgression committed by the previous owner and user of the object has a direct impact upon the desire for avoidance of the object. This finding is preliminary evidence for the idea that moral contagion responses are influenced by transgression-based factors.

The gender of the transgressor had no impact upon either moral contagion responses (i.e., the desire to avoid the sweater) or morality ratings of the transgressor. Although research shows that transgressor gender does have an impact on some types of moral cognition, we found that it did not influence contagion responses. The potential for the individual to be contaminating remains, irrespective of whether they are male or female. It is necessary to note that although we explored the effect of transgressor gender, we did not include moral transgressions where a specific gender role norm has been violated. It is possible that in such cases observers would show a stronger desire to avoid objects tainted by a woman who is guilty of killing her child compared to a man who has killed his child. Alternatively, the act of killing a child may be so contaminating and the desire for avoidance so great that there is little space for the gender of the transgressor to impact upon the effect.

The high severity moral transgression utilised in this study evidently involves a crime against person, whereas the low and medium level transgressions do not. The

majority of crimes against person fall into the most severe level of immoral deeds. In order to maintain the differences between severity levels it was necessary to restrict crime against person to only the highest level of transgression severity. The high severity moral transgression was also the only transgression of the three that included a pathogen disgust cue. The studies reported in Chapters 4, 5 and 6 include manipulations of whether or not the transgression contained a cue of pathogen disgust or moral disgust in order to investigate this further.

Chapter 4

The Essence of Crime Manuscript

STATEMENT OF CONTRIBUTION TO CO-AUTHORED PUBLISHED PAPER

This chapter includes a co-authored paper. The status of the co-authored paper, including all authors, is:

Tapp, C. & Occhipinti, S. (2015). The essence of crime: Contagious transmission from those who have committed moral transgressions. *Manuscript submitted for publication.*

[Currently under review at British Journal of Social Psychology; have submitted second revise and resubmit]

My contribution to the paper involved:

The initial conception and design of studies. Collection of all of the data for studies, with the exception of Study 4 where a Research Assistant, Ms Angela Joy, assisted with data collection from participants who were part of my extended social network. Analysed and interpreted the study data. Dr Stefano Occhipinti assisted with the mediation analysis reported in Study 2. Drafting of the manuscript text, including all tables and figures. Critical revision of the manuscript.

(Signed) (Date) 21/01/2016

Caley Tapp

(Countersigned) (Date) 21/01/2016

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Supervisor: Dr Stefano Occhipinti

The essence of crime: Contagious transmission from those who have committed moral transgressions

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Abstract

Across four studies we investigated the relationship between moral contagion and disgust. Study 1 established that the contamination effect is unique to transgressions that fall within the moral domain. Study 2 replicated this effect and further showed that the underlying mechanism is intimately related to disgust, as disgust was found to uniquely mediate the relationship between moral transgressions and contamination responses. In Study 3, disgust was again found to mediate this relationship. In addition, the results of Study 3 show that the moral contagion effect was not dependent upon the presence of a core disgust cue within the transgression. In Study 4 we investigated whether or not moral contagion leads to behavioural avoidance. Results show that behavioural avoidance only occurred when the moral transgression contained a core disgust cue. Taken together, the results of our studies show that disgust plays a key role in moral contagion processes. However, the difference in findings between the thought experiments (Studies 1-3) and the behavioural experiment (Study 4) identifies a need for further research to examine the conditions under which moral contagion leads to behavioural avoidance.

Keywords: Morality, Contamination, Contagion, Disgust, Transgressions

The essence of crime: contagious transmission from those who have committed moral transgressions

Research in the area of morality often refers to the concept of moral contagion (e.g., Jones & Fitness, 2008; Sherman & Clore, 2009; Stellar & Willer, 2013). As a form of magical thinking, contagion encompasses the idea that when two objects come into contact an exchange of essences (i.e., global goodness or badness) takes place, and each object then bears a permanent residue of the other (Rozin et al., 1992; Rozin et al., 1986; Rozin & Vollmecke, 1986). Applied to the moral domain, contagion theory suggests that moral transgressors are a source of negative essence which can be passed on to previously neutral objects through physical contact. In turn, the prospect of contact with the contaminated object results in an avoidance response. It has been suggested that this avoidance response is driven by feelings of disgust (Haidt et al., 1994; Rozin et al., 1986). The nature of disgust and its antecedents, particularly within the moral domain, is the subject of some controversy (Cameron, Lindquist, & Gray, 2015; Chapman & Anderson, 2013; Russell & Giner-Sorolla, 2013) and as a result, the evidence both for the role of disgust and its function as a mechanism of contamination is unclear.

Disgust is related to contamination sensitivity and is triggered by concerns about what an object is, where it has been, or what it has touched (Haidt et al., 1997; Rozin & Fallon, 1987). Several researchers have proposed that disgust has evolved as a disease avoidance mechanism in humans (Curtis et al., 2004; Curtis et al., 2011; Oaten et al., 2009; Rozin & Fallon, 1987). It is theorised that the role of disgust has extended to include the avoidance of sources of magical contagion (Siegal, Fadda, & Overton, 2011). Given the close relationship between disgust and physical contamination (Curtis et al., 2011; Oaten et al., 2009) and the theorised links between disgust and magical contagion, it is necessary to assess its role in moral contagion directly. If moral

transgressions are contaminating, people should experience disgust when contemplating contact with an otherwise harmless object previously owned by an immoral individual. In turn, feelings of disgust should lead to reduced likelihood of wearing or using a contaminated object.

The need to take account of feelings of disgust directly is further enhanced by the debate currently taking place about the precise role of disgust in moral processes. The type of moral transgression that is committed is of importance with some theorists arguing that the role of disgust is limited to the moral domain of purity (e.g., Horberg et al., 2009) and others that disgust is a core part of morality judgements, irrespective of the type of transgression that is committed (e.g., Chapman & Anderson, 2014). Further, of particular relevance to contamination, Oaten et al. (2009) argue that norm transgressions are only contaminating to the extent that they contain a core disgust cue (i.e., cueing images of blood and gore). From this perspective, it is not immorality itself that is disgusting, and therefore contaminating, but rather the disgust eliciting images cued by the transgression. It remains unclear whether the role of disgust is linked to the fact that some moral transgressions cue images of blood and gore or if it is the immoral act itself which cues disgust. This is problematic for explanations of moral cleansing that rely on a residue mechanism (e.g., Zhong & Liljenquist, 2006) that has not been established. As a result, our primary aim was to empirically demonstrate that disgust plays a role in moral contagion processes.

Moral contagion is often referred to as an explanation for effects found within the literature (e.g., Zhong & Liljenquist, 2006). Despite this, only a small number of studies examining moral contagion effects with a specific focus on objects have been conducted. Studies conducted by (e.g., Nemeroff & Rozin, 1994) are often cited as evidence for the existence of moral contagion. They found that wearing a sweater worn by a known enemy or evil person (e.g., a murderer) is perceived as more unpleasant

compared to a brand new sweater, even when various physical transformations are applied (e.g., laundering or unravelling and reknitting). Other studies show that people are willing to pay lower sums of money for objects previously owned by moral transgressors (Newman & Bloom, 2014) and that people feel less positively about receiving organ donations from an immoral individual (Hood et al., 2011). However, in general, these studies compare an object previously owned by a moral transgressor to one owned by a positively perceived or neutral individual. As a result, it remains unclear how contamination responses may differ across different types of moral transgressions, such as those differing in severity. Many important questions remain unanswered, such as whether all types of transgressions are equally contaminating. A further issue with the existing moral contagion literature is that, to the best of our knowledge, the existing studies in the area are all thought experiments. No research in the area has investigated behavioural rejection responses caused by moral contagion. As a result, in the set of studies reported within this paper, we aimed to compare contagion responses across different types of moral transgressions as well as to investigate whether moral contagion results in behavioural avoidance.

Although disgust is posited to be the driving emotion behind contamination processes, its role in moral contagion has not yet been thoroughly investigated. Disgust has been used as an outcome measure to indicate the presence of moral contagion (Bastian et al., 2015). In addition, a study conducted by Eskine et al. (2013) found that people reported higher levels of state guilt having shaken hands with a moral transgressor, compared to those who shook hands with a gloved moral transgressor (i.e., where no skin-to-skin contact took place). This effect was found to be moderated by disgust sensitivity such that participants high in disgust sensitivity reported feeling more state guilt than those low in disgust sensitivity. Although Eskine et al investigated the effects of disgust sensitivity, they did not specifically measure levels of disgust felt by

participants. Further, their use of state guilt as the outcome measure is not related to avoidance, and so their results do not speak directly to moral contagion. In order to address the lack of empirical evidence about the role of disgust in moral contagion processes we aimed to investigate the role of disgust in two ways. First, the role of disgust was assessed directly by assessing participant disgust towards either contact with a contaminated object or towards a moral transgressor themselves. Second, we manipulated whether the transgression contained a cue of core disgust. This was to determine whether the immoral nature of the transgression was driving avoidance responses rather than disgust caused by disgust imagery cued by the transgression. It is expected that disgust will mediate the relationship between moral transgressions and desire for contact with a contaminated object.

Studies 1 to 3 are thought experiments. Study 1 aims to demonstrate that the contamination response is specific to transgressions that fall within the moral domain, as well as investigate the impact of transgression severity. Study 2 aims to examine the unique mediating role of disgust in these processes. Study 3 aims to distinguish the effect of transgressions which directly cue core disgust related imagery (e.g., blood and gore) versus those that do not directly cue core disgust imagery as well as further explore the mediating role of disgust. Finally, Study 4 aims to further examine the role of disgust as well as to demonstrate that behavioural rejection of an object occurs as a consequence of moral contagion.

Study 1

In Study 1 we included a non-moral transgression condition in order to establish the differences between harmful acts and moral transgressions. We argue that it is not harmful behaviour more generally that leads to contamination but rather that this effect is unique to immoral acts.

Method

Participants

One hundred and fifty two participants (68% male, $M_{\text{age}} = 29.89$ years, age range: 18–63 years) currently residing in the United States of America (USA) were recruited via Amazon Mechanical Turk (MTurk) and were paid US \$.30 for their participation.

Design and Procedure

Study 1 was a between-subjects design, with three conditions of transgression type. The study was conducted online. Participants were randomly assigned to one of the three between-subjects conditions. Participants were presented with a one sentence description of a character who had committed one of three types of transgressions. The three transgression types were (a) non-moral (e.g., A woman drops an irreplaceable antique vase); (b) low-severity moral transgression (e.g., A woman steals a bicycle chained to a fence); (c) high-severity moral transgression (e.g., A woman drives away after seriously injuring a pedestrian). Participants read the character descriptions and then answered the contamination and morality questions.

In order to assess the contaminating nature of immoral acts an item similar in nature to those utilised by Rozin et al. (1992) was chosen. Participants were asked the following: Imagine that you have purchased a cool-looking set of forks from the local thrift store. Before you get the chance to use them for the first time, you learn that the previous owner and user was the person described above. Participants were then asked how likely they would be to use the forks at mealtimes. This was assessed on a scale ranging from 1 (*Highly Unlikely*) to 7 (*Highly Likely*). Participant perceptions of the moral character of the actor was measured directly i.e., please rate how moral you think the person described above is (1 *Highly Immoral*; 7 *Highly Moral*). This measure was designed to provide confirmation of the differences in immorality of the chosen acts.

Morality ratings were elicited following the contamination question to reduce demand characteristics.

Results and Discussion

The effect of transgression type on each of the outcome measures was investigated using one-way ANOVAs. All p -values for analyses reported within this paper refer to two-tailed tests.

Morality

The effect of transgression type on morality ratings was significant, $F(2, 149) = 71.32, p < .001, \eta_p^2 = .66$. Simple contrasts revealed that the low-severity moral transgression character ($M = 2.18, SD = 0.92$) was rated as significantly less moral ($p < .001$) than the non-moral transgression character ($M = 4.68, SD = 1.10$). The high-severity moral transgression character ($M = 1.58, SD = 0.78$) was rated as significantly less moral ($p < .001$) than the non-moral transgression character. The high-severity moral transgression character was rated as significantly less moral than the low-severity transgression character ($p < .001$).

Contamination

The effect of transgression type on likelihood of using the forks was significant, $F(2, 149) = 7.17, p < .001, \eta_p^2 = 0.09$. Simple contrasts were used to follow up the between groups differences. Although not statistically significant ($p = .06$), differences in ratings between the non-moral transgression and low-severity moral transgression characters were in the predicted direction as participant likelihood of using the forks previously owned by the low-severity moral transgression character ($M = 5.30, SD = 1.98$) was lower compared to the non-moral transgression character ($M = 6.04, SD = 1.58$). Participants were significantly less likely ($p < .001$) to use the forks previously owned by the high-severity moral transgression character ($M = 4.58, SD = 2.23$) compared to the non-moral transgression character. No significant differences in

likelihood of using the fork were found between the low- and high-severity moral transgression characters ($p = .06$).

Study 2

The purpose of Study 2 was to establish the mediating role of disgust in contamination processes. It was expected that disgust would uniquely mediate relationship between the type of transgression committed and contamination response.

Method

Participants

One hundred and fifty participants (76% male, $M_{age} = 27.89$ years, age range: 18 – 64 years) were recruited via Amazon MTurk. All participants were currently residing in the USA and were paid US \$.30 for their participation.

Design and Procedure

The design Study 2 was identical to Study 1, with the exception of the inclusion of questions about affect which were interposed between the manipulation and the DVs. Participants were asked to imagine that they had been using the set of forks for the past seven days before learning that the previous owner of the forks was the person they had read about. They then rated how much they would feel each of the five emotions as a result of having used the forks to eat meals on a scale of 1 (*Not at all*) to 7 (*Extremely*). The five emotions were angry, happy, sad, disgusted and surprised. The contamination item was the same as Study 1 with the exception that participants were asked how likely they would be to continue using the set of forks. The character descriptions utilised in Study 1 were again used to manipulate transgression type.

Results and Discussion

Morality

The effect of transgression type on morality was significant, $F(2, 148) = 81.67, p < .001, \eta_p^2 = .52$. Simple contrasts revealed that the low-severity moral transgression

character ($M = 2.55$, $SD = 1.09$) was rated as significantly less moral ($p < .001$) than the non-moral transgression character ($M = 4.69$, $SD = 0.98$). The high-severity moral transgression character ($M = 1.95$, $SD = 1.41$) was rated as significantly less moral ($p < .001$) than the non-moral transgression character. The high-severity moral transgression character was rated as significantly less moral than the low-severity transgression character ($p = .01$).

Affect

Ratings for each of the four types of affect were individually examined using one-way ANOVA and followed up where appropriate with simple contrasts. Significant results emerged across the transgression types for anger, $F(2, 148) = 5.61$, $p = .01$, $\eta_p^2 = .07$, disgust, $F(2, 148) = 6.97$, $p = .001$, $\eta_p^2 = .09$, and surprise, $F(2, 148) = 4.08$, $p = .02$, $\eta_p^2 = .25$, respectively. No significant differences were found between the transgression types in ratings of happiness, $F(2, 148) = 2.90$, $p = .06$, or sadness, $F(2, 148) = 1.75$, $p = .18$. Simple contrasts revealed that anger ratings were significantly higher for the low-severity moral transgression ($p = .01$) and the high-severity moral transgression ($p = .002$) compared to the non-moral transgression. Disgust ratings were significantly higher for the low-severity moral transgression ($p = .002$) and the high-severity moral transgression ($p = .002$) compared to the non-moral transgression. Surprise ratings were significantly higher for the low-severity moral transgression ($p = .02$) and the high-severity moral transgression ($p = .01$) compared to the non-moral transgression. No significant differences were found between the low- and high-severity moral transgressions on ratings of anger, ($p = .39$), disgust ($p = .72$), or surprise ($p = .66$). Table 4.1 displays the means and standard deviations for each emotion across the three transgression types. Table 4.2 displays the bivariate correlations between the emotions.

Table 4.1

Study 2 Means and Standard Deviations across the Five Emotions

| | Anger | Disgust | Sadness | Happiness | Surprise |
|---------------|---------------|---------------|---------------|---------------|---------------|
| Transgression | <i>M (SD)</i> |
| Non-moral | 1.90 (1.42) | 2.02 (1.54) | 2.29 (1.58) | 2.88 (1.97) | 2.60 (1.79) |
| Low moral | 2.71 (1.78) | 3.15 (1.96) | 2.62 (1.86) | 2.36 (1.59) | 3.47 (2.03) |
| High moral | 3.03 (2.09) | 3.29 (2.31) | 3.00 (2.08) | 2.03 (1.62) | 3.66 (2.26) |

Table 4.2

Study 2 Bivariate Correlations between the Emotion Ratings

| | 1 | 2 | 3 | 4 | 5 |
|--------------|-------|---------|---------|---------|---|
| 1. Happy | - | | | | |
| 2. Surprised | -.003 | - | | | |
| 3. Angry | -.057 | .687*** | - | | |
| 4. Disgusted | -.043 | .655*** | .865*** | - | |
| 5. Sad | -.003 | .711*** | .791*** | .786*** | - |

Note. *** $p < .001$

Contamination

The effect of transgression type on contamination was significant, $F(2, 147) = 3.46, p = .03, \eta_p^2 = .04$. Simple contrasts revealed that the difference between contamination responses in the non-moral transgression condition ($M = 5.89, SD = 1.29$) and low-severity moral transgression condition ($M = 5.31, SD = 1.84$) was in the predicted direction, however this difference failed to reach statistical significance ($p = .08$). Participants were told that they had been using the object prior to finding out the identity of the previous owner. It is possible that a low severity transgression is not of sufficient severity for the object to remain contaminated after repeated uses. Participants

were significantly less likely ($p = .01$) to continue using the forks previously owned by the high-severity moral transgression character ($M = 4.97, SD = 2.15$) compared to the low-severity moral transgression character. No significant differences were found in the desire for avoidance between the low- and high-severity moral transgression characters ($p = .36$).

Affect Mediation Analyses

Following procedures outlined by Hayes and Preacher (2014), we tested the hypothesised mediation by disgust of the relationship between transgression type and contamination. As the IV was a categorical variable, two dummy variables were created in which the respective moral transgression was coded as 1 and both other conditions as 0. This left the non-moral transgression condition as the reference category. Indirect effects were bootstrapped with 10000 replications. To establish that the mediation effect was unique to disgust the mediation analysis was conducted with ratings of all other forms of affect included as parallel mediators. As expected, the only significant indirect effects were those through disgust for the dummies representing the low-, ab path = -0.58, $p = .009$; bootstrap $SE = .22$, 95% CI [-1.10, -.22]; and high-severity, ab path = -0.65, $p = .014$; bootstrap $SE = .26$, 95% CI [-1.30, -.23], groups, respectively. This shows mediation of the effect of transgression type on contamination by disgust. By contrast, for all other forms of affect, respective ab paths range from .04 to .12 and ps range from .21 to .59. This showed that as only as reported disgust increased, it was less likely that participants would want to continue using the contaminated object. Study 2 provides strong evidence for the unique mediating effect of disgust on the relationship between type of transgression and contamination response.

Study 3

Study 3 included a high-severity moral transgression which did not contain a core disgust cue in order to assess whether the presence of a core disgust cue is

necessary for a contagion response to occur. The mediating role of disgust was again assessed; however, in contrast to Study 2, participants were asked about their feelings towards the moral transgressor themselves.

Method

Participants

One hundred and fifty four participants (71% male, $M_{age}= 32.97$ years, age range: 19 – 66 years) were recruited via Amazon MTurk. All participants were currently residing in the USA and were paid US \$.30 for their participation.

Design and Procedure

Study 3 was a 3 Sweater Owner (brand new vs. healthy man vs. transgression man) x 3 Transgression Type (non-moral vs. core disgust cue moral vs. no core disgust cue moral) mixed design where sweater owner was a within-subjects factor and the transgression type was manipulated between-subjects. In Studies 1 and 2 the use of a 7-point scale resulted in relatively small mean differences between the conditions. To address this a new contamination measure similar to one utilised by Rozin, Markwith, & McCauley, 1994 with explicit end and midpoint anchors was used. Participants were asked the following: “Consider a scale that runs from +100 (something that you would like extremely) to 0 (something you would dislike extremely). A rating of 50 would mean that you felt neutral. Now imagine how you would feel about wearing the sweater after the sweater was worn by [character description]. The sweater was thoroughly laundered after the man had worn it.” Using this scale all participants first rated the desirability of wearing a brand new sweater, followed by a sweater worn by a normal, healthy man. Once participants had completed the contamination and morality measures for the first two characters they then completed the measures for the transgression character. Due to the between-groups manipulation participants only viewed a description of one of the transgression characters. The three transgression types were (a)

non-moral (e.g., a man who had accidentally dropped an irreplaceable vase that is a treasured family heirloom); (b) no core disgust cue moral transgression (e.g., a man who had stolen the life savings of elderly people); (c) core disgust cue moral transgression (e.g., a man who had committed murder). Participants first completed the contamination and morality measures for the character associated with the transgression condition to which they had been randomly assigned. They were then asked to rate how much of each emotion they felt towards the man above as a result of his actions on a scale of 1 (*Not at all*) to 5 (*Extremely*). The four emotions were anger, disgust, contempt and positive regard.

Results and Discussion

Morality

The effect of transgression type on morality was significant, $F(2, 151) = 72.90, p < .001, \eta_p^2 = .49$. Simple contrasts revealed that both the lifesavings thief ($M = 1.76, SD = 1.32$) and the murderer ($M = 1.51, SD = 1.21$) were rated as significantly less moral ($p < .001$) than the person who unintentionally dropped an irreplaceable vase ($M = 4.22, SD = 1.15$). There was no significant difference in morality ratings ($p = .32$) across the two moral transgression conditions, irrespective of whether or not the transgression contained a core disgust cue.

Affect

Ratings for each of the four types of affect were individually examined using one-way ANOVA and followed up where appropriate with simple contrasts. Significant differences were found across the transgression types for ratings of anger, $F(2, 151) = 25.17, p < .001, \eta_p^2 = .25$, disgust, $F(2, 151) = 50.23, p < .001, \eta_p^2 = .40$, and contempt, $F(2, 151) = 25.00, p < .001, \eta_p^2 = .25$. No significant differences between the transgression types were found for ratings of positive regard, $F(2, 151) = 1.41, p = .25$. Simple contrasts revealed that anger ratings were significantly higher for the lifesavings

thief ($p < .001$) and the murderer ($p < .001$) compared to the person who unintentionally dropped an irreplaceable vase. Disgust ratings were significantly higher for the lifesavings thief ($p < .001$) and the murderer ($p < .001$) compared to the person who unintentionally dropped an irreplaceable vase. Contempt ratings were also significantly higher for the lifesavings thief ($p < .001$) and the murderer ($p < .001$) compared to the person who unintentionally dropped an irreplaceable vase. Whether or not the moral transgression contained a core disgust cue there were no differences in ratings of disgust ($p = .94$), anger ($p = .08$), or contempt ($p = .62$). Table 4.3 displays the means and standard deviations for each emotion across the three transgression types. The bivariate correlations between each type of affect are reported in Table 4.4.

Table 4.3

Study 3 Means and Standard Deviations on Emotion Rating Scales

| | Anger | Disgust | Contempt | Positive Regard |
|------------------|---------------|---------------|---------------|-----------------|
| Transgression | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> |
| Non-Moral | 1.98 (1.22) | 1.86 (1.10) | 2.02 (1.09) | 1.37 (0.72) |
| No disgust cue | 3.60 (1.24) | 3.81 (1.13) | 3.48 (1.20) | 1.19 (0.59) |
| Core disgust cue | 3.17 (1.24) | 3.80 (1.19) | 3.37 (1.22) | 1.17 (0.67) |

Table 4.4

Study 3 Bivariate Correlations between the Four Affect Ratings

| | 1 | 2 | 3 | 4 |
|--------------------|---------|---------|-------|---|
| 1. Anger | - | | | |
| 2. Disgust | .814*** | - | | |
| 3. Contempt | .766*** | .779*** | - | |
| 4. Positive regard | -.134 | -.152 | -.101 | - |

Note. *** $p < .001$

Contamination

A 3 x 3 mixed factorial ANOVA was used to examine the effects of transgression type on contamination responses. The within-subjects main effect of the previous wearer of the sweater was significant, $F(2, 304) = 150.83, p < .001, \eta_p^2 = .50$. The between-subjects main effect of type of transgression committed was non-significant, $F(1, 152) = 2.33, p < .10, \eta_p^2 = .03$. However, as predicted, the interaction between previous wearer and transgression type was found to be significant $F(4, 304) = 13.28, p < .001, \eta_p^2 = .15$. This interaction, and the means and standard deviations on the contamination measure, are depicted in Figure 4.1. Follow up analyses show that no differences were found between the groups for ratings of the brand new sweater, $F(2, 152) = 2.97, p = .05, \eta_p^2 = .04$, or the sweater previously worn by a healthy man, $F(2, 152) = 0.38, p = .68, \eta_p^2 = .005$. However, significant differences were found across the transgression type conditions for the manipulation character, $F(2, 152) = 15.81, p < .001, \eta_p^2 = .17$. Pairwise comparisons revealed that liking ratings of the sweater previously worn by the person who unintentionally dropped an irreplaceable vase were significantly higher than those for the lifesavings thief ($p < .001$) and the murderer ($p <$

.001). Sweater ratings for the life savings thief and murderer were not significantly different ($p = .45$).

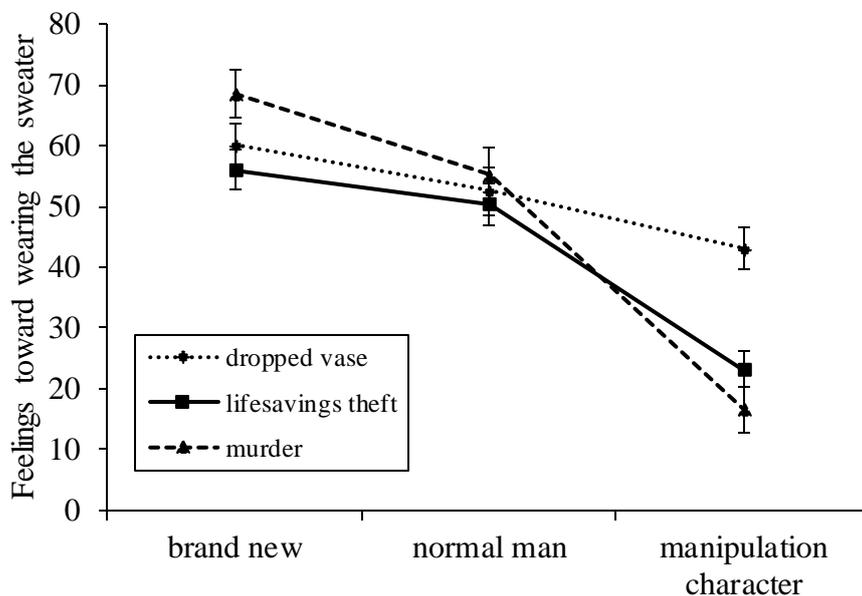


Figure 4.1. Ratings of feelings toward wearing a sweater previously worn by each of the different characters in Study 3. Higher numbers represent a more positive feeling.

Affect Mediation Analyses

Mediation analyses followed the same procedures used in Study 2. As the IV was a categorical variable, two dummy variables were created in which the respective moral transgression was coded as 1 and both other conditions as 0. This left the non-moral transgression condition as the reference category. Indirect effects were bootstrapped with 10000 replications. To establish that the mediation effect was unique to disgust the mediation analysis was conducted with ratings of all other forms of affect included as parallel mediators. As expected, the only significant indirect effects were those through disgust for the dummies representing the no core disgust cue, ab path = -13.72, $p = .030$; bootstrap $SE = 6.32$, 95% CI [-25.18, -4.30], and core disgust cue, ab path = -13.69, $p = .029$; bootstrap $SE = 6.27$, 95% CI [-24.77, -4.26], transgression

groups, respectively. This shows mediation of the effect of transgression on contamination by disgust. By contrast, for all other forms of affect, respective *ab* paths range from -3.56 to .17 and *ps* range from .28 to .84. Only as reported disgust towards the transgressor increased, it was less likely that participants would want to use the contaminated object. Study 3 provides further evidence for the unique mediating effect of disgust on the relationship between type of transgression and contamination response.

Study 4

The primary aim of Study 4 was to investigate behavioural moral contagion responses. To the best of our knowledge, no published studies have shown that moral contagion leads to behavioural rejection. The focal measure was the amount of physical contact with an object.

Method

Participants

Fifty two participants (65% female, $M_{\text{age}} = 20.74$ years, age range: 16 – 56 years) were recruited via the undergraduate subject pool at an Australian university and through the social networks of the researchers.

Design and Procedure

Study 4 was a 3 Character Type (control vs. unlucky vs. immoral) x 2 Disgust Cue (no core disgust cue vs. core disgust cue) mixed design where character type was a within-subjects factor and the type of disgust cue was manipulated between-subjects. Participants were told that they were evaluating the suitability of objects for inclusion in a collection of objects which aimed to represent everyday life in modern Australia. Participants were lead to believe that they were viewing a selection of objects from a large collection, however all participants viewed the same three objects. The three objects were (a) a metal teapot; (b) a ceramic mug; and (c) a plastic container. The type

of object and material from which the objects were constructed were varied so as to avoid rejection being explained by a particular type of object (i.e., object designed for contact with the mouth) or material (e.g., a particularly porous material). The presentation order of objects and previous owner were counterbalanced using a Latin Square design to prevent any potential order effects and so that each object was not always paired with the same character.

Information about the previous owner of the object was in the form of three newspaper clippings. The three character types were (a) a control character who was described the manager of a local logistics company; (b) an unlucky character who had a run of bad luck involving hail damage to his car; and (c) an immoral character where the presence of a core disgust cue was manipulated between groups. In the core disgust cue condition, participants read about a man who had beaten and stabbed his ex-girlfriend to death. In the no core disgust cue condition, participants read about a man who had befriended an elderly couple at their church and had stolen their life savings. For each object participants were directed to begin reading the newspaper clipping while the experimenter picked out the object. This was to ensure that the manipulation was introduced prior to the object appearing and so that participants could not touch the object before learning the identity of the previous owner. The object was placed on the table directly in front of the participant and each session was recorded using a video camera. The objects were presented one by one and participants were able to touch each object as much or as little as they wished to.

Once the object had appeared participants were able to begin completing the question booklet. For each object participants answered questions about the object and the newspaper clipping that they had read. One of the open-ended questions was relevant to contagion as it asked if the participant liked the object. A second question asked if the object should be part of a collection designed to record modern Australian

life. This was designed to assess whether participant rejection of the object was specific to contagion concerns or if they represented a more generalised rejection of immorality.

The videos of participant interactions with the objects were coded by a coder blind to the study conditions to determine the total duration of touch (in seconds) and the total number of times each object was touched. A touch was counted when the participants' hands or fingers touched the object. The two open-ended responses regarding liking of the object and whether the object should be retained in the collection were coded by a second coder who was also blind to the study conditions and hypotheses. Responses were coded on a scale of 0 to 10 (5 = *neutral*). Values above five represented a positive feeling and values below five represented a negative feeling.

Results and Discussion

A two-way mixed ANOVA was conducted for each of the study measures with disgust cue (no core disgust cue vs. core disgust cue) as a between-subjects variable and character type (control vs unlucky vs immoral) as a within-subjects variable. Means and standard deviations for the study measures are displayed in Table 4.5.

Number of times touched. With total number of times touched as the dependent variable, no significant within-subjects, $F(2, 100) = 0.13, p = .88, \eta_p^2 < .01$, or between-subject main effects were found, $F(1, 50) = .04, p = .84, \eta_p^2 < .01$, respectively. However, there was a significant interaction between character type and disgust cue, $F(2, 100) = 3.27, p = .04, \eta_p^2 = .06$. Inspection of the means revealed that, as predicted, there was less touching of the object previously owned by a murderer. This was tested by comparing the number of times each object was touched in the murderer condition with the neutral and unlucky conditions, jointly and examining this comparison within the levels of disgust. This analysis revealed that participants in the core disgust condition touched the object previously owned by the murderer fewer times compared to objects owned by the other characters, $t(100) = 2.05, p = .04$, but that no such

difference emerged for participants in the no core disgust cue condition, $t(100) = 1.47, p = .14$. As well, the neutral and unlucky conditions themselves were not significantly different for either the no core disgust cue condition, $t(100) = 0.57, p = .57$, or the core disgust cue condition, $t(100) = 0.14, p = .89$.

Duration of touch. With total duration of touch as the dependent variable, no significant between-subjects effects, $F(1, 50) = 0.02, p = .90, \eta_p^2 = .02$, or within-subject effects were found, $F(2, 100) = 0.94, p = .39, \eta_p^2 < .01$. The interaction between character type and disgust cue was also non-significant, $F(2, 100) = 1.80, p = .17, \eta_p^2 = .03$.

Liking. Coded responses were analysed using two-way mixed ANOVA. There was a significant effect of character type on liking ratings, $F(2, 104) = 3.28, p = .04, \eta_p^2 = .06$. No significant effect of type of disgust cue was found, $F(1, 52) = 0.03, p = .86, \eta_p^2 < .01$, nor was a significant interaction present, $F(2, 104) = 0.74, p = .48, \eta_p^2 = .01$. These differences were followed up using pairwise comparisons which revealed that the object previously owned by the immoral character was liked significantly less than the object previously owned by the unlucky character ($p = .04$) and the control character ($p = .02$). Ratings for objects belonging to the unlucky and control characters were not significantly different ($p = .81$).

Retain object in the collection. Coded responses were analysed using two-way mixed ANOVA. There was no significant effect of character type, $F(2, 104) = 2.13, p = .12, \eta_p^2 = .04$, or of the type of disgust cue, $F(1, 52) = 0.46, p = .50, \eta_p^2 = .01$, on whether the object should be retained. The interaction between character type and disgust cue was also non-significant, $F(2, 104) = 0.24, p = .79, \eta_p^2 = .01$.

Table 4.5

Study 4 Means and Standard Deviations on Core Study Measures

| Character | Time spent touching in seconds | Number of times touched | Liking of object | Keep object in collection |
|---------------------|-----------------------------------|----------------------------|------------------|------------------------------|
| | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> |
| No core disgust cue | | | | |
| Normal man | 17.59 (22.10) | 1.73 (1.37) | 5.64 (1.73) | 5.56 (2.96) |
| Unlucky man | 14.56 (23.21) | 1.58 (1.58) | 6.08 (2.12) | 5.44 (2.63) |
| Immoral man | 13.74 (13.08) | 2.00 (1.72) | 4.92 (2.71) | 4.52 (3.04) |
| Core disgust cue | | | | |
| Normal man | 14.05 (16.45) | 2.00 (2.17) | 6.17 (2.11) | 6.17 (2.70) |
| Unlucky man | 11.56 (12.21) | 2.04 (2.25) | 5.52 (2.50) | 5.31 (2.95) |
| Immoral man | 18.59 (25.54) | 1.54 (1.45) | 4.76 (2.56) | 4.93 (2.75) |

General Discussion

Across four studies, we found evidence for a moral contagion response whereby people show a desire to avoid an otherwise harmless object previously owned and used by a moral transgressor. Our results provide novel empirical evidence for the role of disgust in moral contagion processes. The results from Studies 1, 2 and 3 show that an act that causes harm to another person is not sufficient to produce a contagion response. Compared to a non-moral transgression, immoral acts result in a clear desire for avoidance. These findings are consistent with and extend previous findings in the area which show that people feel less positively about objects previously owned by a moral transgressor (e.g., Rozin et al., 1992). In addition, the results of the first three studies are the first to show that the moral severity of transgressions has an impact upon contamination responses. Although the act of dropping an irreplaceable vase arguably causes more harm than the act of stealing a bicycle, the former is clumsy and accidental but the latter is immoral. These results provide new insights into how moral contagion processes operate across different types of transgressions in that the severity of the moral transgression has a clear impact upon the desire for avoidance. In our studies, differences in the severity of moral transgressions were presented to participants as between-subjects manipulations. As participants had no way of knowing what was being presented in the other study conditions, the influence of transgression severity cannot be attributed to relative judgements being made between different types of transgressions.

Taken together, our studies represent an in-depth exploration of the role of disgust in moral contagion processes. We investigated the effect of disgust in two ways. First, we assessed the role of disgust directly by assessing whether it mediated the relationship between the type of transgression committed and the desire for avoidance. Second, we investigated the role of disgust indirectly by manipulating the presence of a

core disgust cue in the transgression committed. The results of Studies 2 and 3 show that disgust mediates the relationship between the type of transgression committed and desire to avoid the object. Study 2 assessed disgust related to the use of the object, whereas in Study 3 disgust was directly related to the transgressor. The finding of mediation by disgust with reference both to use of the object and to the transgressor suggests that the role of disgust is intimately linked to the immorality of the transgressor, rather than more diffuse feelings regarding the use of an object. That is, disgust responses towards the transgressor themselves and toward an object they had touched both pointed to the same rejection response and only when the transgression was an immoral one. This pattern of results is more consistent with the perspective that a negative moral taint passes from the transgressor to the object than with the mere negative connotation of an object belonging to an author of harm.

Further, our results provide empirical support for the theorised relationship between disgust and moral contagion (Rozin et al., 1986). When people contemplate contact with an object previously owned by a moral transgressor, disgust is directly linked to how much they wish to avoid the object. In both Studies 2 and 3 the mediation effect was found to be unique to disgust. Although people expressed other negative moral emotions, such as anger and contempt, and these, as expected, were correlated with disgust, no other form of affect mediated the relationship between the transgression committed and the desire for avoidance, even when all forms of affect were tested in parallel. This underlines the finding that the desire for avoidance is not driven by generalised negativity. Instead, avoidance is uniquely related to disgust, the primary emotion evoked by contamination that involves physical dirt and disease (Curtis & Biran, 2001; Oaten et al., 2009; Siegal et al., 2011). This suggests that our participants are responding to moral impurity based in magical thinking using similar response systems as those dedicated to detecting and avoiding physical dirt. In addition, our

results provide support for the notion that the function of disgust has expanded beyond protection of the body from physical impurity to a role in protecting the body from moral impurity from interpersonal sources (Curtis & Biran, 2001; Tybur et al., 2013). This is particularly important in that our transgressions did not evoke specific purity concerns as has been the case with other studies linking disgust to moral behaviour (e.g., Horberg et al., 2009).

The role of disgust in contagion processes was further investigated in Studies 3 and 4. The results of Study 3 show that participants' feelings about contact with the object were not dependent upon the moral transgression containing a core disgust cue. Participants reported being equally disgusted by the two moral transgression characters and showed an equal desire to avoid the tainted object. If contagion responses were being driven by reminders of core disgust then it would be expected that only the object previously owned by a murderer would result in a desire for avoidance. The findings of Study 3 show that not only did both murder and the theft of the lifesavings of the elderly both cue disgust, but there were no differences in the expressed desire for avoidance of the object between the two types of transgressions. These findings provide an alternate perspective to the one put forward by Oaten et al. (2009) who argue that norm violators are only contaminants to the extent that they are a reminder of core disgust cues. Our findings show that when people think about objects that have come into contact with moral transgressors they wish to avoid the object, irrespective of the type of disgust cued by the object. When considered in conjunction with the mediation findings discussed above these results suggest that the contagion responses are intimately connected to the immorality of the actions of the transgressor. Consistent with the results of Studies 1, 2 and 3, participant responses to the open-ended questions of Study 4 indicate that people liked the objects belonging to the immoral characters much less compared to the neutral and unlucky characters. When making an affect-based

evaluation of the objects, those belonging to an immoral character were viewed less favourably, irrespective of the presence of a core disgust cue. This finding suggests that the object's association with an immoral character devalued it in the mind of the participants. In addition, no differences across the characters were found on the question which asked participants whether the object should be kept in the collection or not. This shows that participant responses do not represent a generalised rejection of the objects previously belonging to immoral individuals. Instead, people are responding specifically to the type of interaction with the object that is being put forward.

In contrast to the findings of the three thought experiments and the open-ended responses to Study 4, when examining behavioural responses to contaminated objects the picture is a more complex one. Behavioural avoidance of physical contact with the object previously owned by a moral transgressor only occurred when the moral transgression committed by the previous owner contained a core disgust cue. A possible explanation for this finding is provided by Tybur et al. (2013) who have built upon the work of Rozin et al. (1986) and propose that pure moral transgressions (i.e., ones that do not contain a core disgust cue) invoke moral disgust. The authors propose that moral disgust is used for the dual purposes of communication of condemnation and punishment of another's actions (Tybur et al., 2013). From this perspective, moral disgust plays a social role; it is more important for communication of condemnation of immoral acts to others than the avoidance of dirt and disease. Tybur et al. (2013) suggest that moral disgust may not result in behavioural avoidance. The results of the behavioural measure in Study 4 provide support for the idea that moral disgust is not associated with behavioural avoidance. However, as our Study 4 is the first within the literature to investigate behavioural avoidance as a consequence of moral contagion, future research is needed to further examine this effect.

An alternative explanation for the difference in findings between the thought experiments and the behavioural responses is that when imagining the hypothetical scenario participants overestimate how negatively they would feel about contact with the object. In our first three studies, and the majority of published studies which investigate moral contagion (with the exception of one study conducted by Rozin et al., 1994), neither the actual object nor a picture of the object are viewed, the object is always imagined. When viewing a real life object that is not visibly dirty or spoiled in any way the prospect of physical contact with the object may not be as negative as when the object is imagined. In our Study 4, even when the moral transgression contained a core disgust cue, participant responses did not represent complete behavioural rejection of the object. When an object is imagined the only information that can influence a participant's responses is the object they have imagined. By contrast, when a real life object is presented there are external cues (e.g., about the state of the object) which may compete with moral contagion-based responses.

Research conducted by Morales and Fitzsimons (2007) found that people feel disgust towards some types of consumer goods (e.g., sanitary pads) and, in turn, these objects were found to contaminate other objects which resulted in increased negative feelings towards the previously neutral object. However, although people reported feelings of disgust towards the objects, and they can act as contaminants, these items are still purchased (i.e., no avoidance response takes place). In this connection, an analysis of auction results conducted by Newman and Bloom (2014) showed that objects previously owned by immoral well known individuals (e.g., Bernie Madoff) obtained significantly lower purchase prices compared to positively viewed individuals (e.g., John F. Kennedy). Objects previously owned by an immoral individual were perceived more negatively and did not attract as high a sale price at auction, but people did not avoid purchasing the objects altogether. It is possible that a similar process occurred in

our Study 4. Participants reported feeling less positively towards the objects owned by the moral transgressors, but their behaviour did not represent complete avoidance of physical contact.

The possible explanations outlined above highlight the need for future research in the area of moral contagion that examines behavioural moral contagion responses to real life objects. It may be that these effects only occur when the link between the transgressor and the object is obvious (e.g., a person watches the immoral individual interact with the object prior to using it themselves) or that people would be willing to touch the object but would be unwilling to use the object for its intended purpose (e.g., actually use the fork to eat a meal). However, the findings of the thought experiments reported in the present Studies 1 to 3, as well as the existing moral contagion literature, provide substantial evidence for a consistently reported desire to avoid physical contact with an object contaminated by a moral transgressor. In addition, Studies 2 and 3 show that this response is mediated specifically by disgust and not by other moral emotions. We do not believe that the findings of Study 4 contradict these existing findings, but rather that they raise an important question about what types of conditions lead to moral contagion being expressed as behavioural avoidance.

In conclusion, across three studies we consistently found that people show a desire to avoid contact with a harmless object previously owned by a moral transgressor and that disgust plays a key role in these processes. The difference in results between our thought experiments and behavioural experiment highlight the need for more intensive research which examines the relationship between moral contagion, disgust and behavioural avoidance.

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Chapter 5

Study 6: Interpersonal versus Illegal Transgressions

The present study aimed to further investigate the effect of different types of moral transgressions on moral contagion responses. There is some disagreement within the literature about the conditions under which norm transgressions are contaminating. It has been argued that for norm transgressions to be contaminating they must contain a core disgust cue (Oaten, Stevenson, & Case, 2011). In addition, it is as yet unclear how moral contagion-based reactions to norm transgressions will vary according to the severity of the transgressions. The findings within the literature reported in Chapters 3 and 4 of the present thesis show that contagion responses are linear in nature; as severity increases so does the desire to avoid an object contaminated by a moral transgressor. The effect of transgression severity is further investigated within the present study through the inclusion of moral transgressions that differed in terms of their illegality. That is, acts that are currently severe enough to be legislated against versus those that fall into the interpersonal domain and so are not governed by laws. As a result, participants were presented with one of four transgressions; two low-severity acts, stealing a bicycle and not returning a bicycle that was lent in good faith, and two high-severity acts, adultery and rape. The two high-severity transgressions both contained a cue of core disgust (i.e., sexual intercourse) while the two low-severity transgressions did not contain a core disgust cue. As these acts contain the same cues of core disgust, differing contagion responses are able to be attributed to differing judgements of the acts themselves, rather than affect-based disgust responses. It is predicted that people will exhibit a desire to reject objects belonging to the high-severity transgressors much more compared to objects belonging to the low-severity transgressors. In addition, it is predicted that there will be no differences in rejection between the low-severity transgression characters but that people would reject the object contaminated by the

high-severity rape character much more than the object contaminated by the high-severity adulterer.

The study was a between-groups design to avoid participant responses to the contagion measure being attributable to comparisons between the transgressions and their relative severity. An open-ended question was also included in order to provide a deeper understanding of how people respond to objects that have come into contact with a moral transgressor.

Method

Participants

Two hundred and five participants (64% male) were recruited online via crowdsourcing website Amazon Mechanical Turk (MTurk). All of the participants were currently residing in the United States of America and were paid US \$.30 for their participation. The mean age was 31.18 years ($SD = 9.51$, range 19 – 73).

Manipulations

Transgression type. Participants were presented with a one sentence description of a character who had committed a transgression of either low or high-severity and that was either against the law or an interpersonal transgression. In the high-severity, illegal transgression condition the character was a man who had previously committed rape. The high-severity, legal transgression condition character was a man who was described as having had sex with a woman who was not his wife. In order to clarify the consequences of his act, participants were also told that the man's wife had found out about what had happened. The low-severity, illegal transgression condition character was a man who had stolen a bicycle chained to a fence. The low-severity, legal transgression condition character was a man who had borrowed a friend's bicycle and failed to return it due to laziness, despite having promised to do so.

Measures

Contamination. In order to assess the contaminating nature of immoral acts and the subsequent transmission of negative essences through physical contact, an item similar in nature to those utilised by Rozin et al. (1992) was used. Participants were asked the following: “Consider a scale that runs from +100 (something that you would like extremely) to 0 (something you would dislike extremely). A rating of 50 would mean that you felt neutral. How would you feel about using a mug owned and used by [description of character here]. The mug has been washed since it was last used by the man.”

Feelings towards the character. Participant affective responses towards the character were assessed using a five point scale (e.g., 1 *Not at all Angry*; 2 *Somewhat Angry*; 3 *Angry*; 4 *Very Angry*; 5 *Extremely Angry*). The four feelings were positive regard, contempt, disgust and anger.

Morality. Participants were asked to rate how moral they think the man they have read about is on a scale of 1 (*Highly Immoral*) to 7 (*Highly Moral*) with a mid-point of 4 (*Moderately*).

Social distance. The social distance measure was designed to be a more distal task which allows for the rejection of the person, rather than associated objects. As such, it was designed to assess participant desire to reject the person as a contaminated object. An item assessing the desired degree of social distance from the target was a modified version of the items in the Bogardus scale of social distance (Bogardus, 1933). Participants were asked to choose one of the following seven types of relationship that they be comfortable having with the target: (1 *As a close relative by marriage*, 2 *As a close personal friend*, 3 *A neighbor on your street*, 4 *Co-worker in the same occupation*, 5 *Citizen in your country*, 6 *Only as a visitor to your country*, 7 *Would exclude them from your country*).

Open ended responses. Participants were asked to write about why they feel the way that they do about using the mugs.

Design and Procedure

This study was a 2 (severity: low, high) x 2 (legality: legal, illegal) between-subjects design. The study was conducted online. Participants were randomly assigned to one of the four between-subjects conditions. The study procedure was very similar to the thought experiments reported in Chapters 3 and 4. Participants first read the description of the character which included the transgression they had committed. They then completed the items measuring contamination, their feelings towards the character, morality, social distance and provided their open ended responses.

Results

Contamination

Due to the nature of the transgressions that were used in the high-severity conditions (i.e., adultery and rape) a 2x2x2 ANOVA was conducted in order to investigate whether a three-way interaction between gender, severity and illegality was present. No significant 3-way interaction with gender was found, $F(1, 197) = 1.84, p = .177$. As a result, participant gender was not included in the analyses reported below.

A 2x2 ANOVA revealed significant main effects of severity, $F(1, 201) = 11.67, p = .001$, and illegality, $F(1, 201) = 25.78, p < .001$. However, these effects were qualified by a significant two-way interaction between the severity and legality conditions, $F(1, 201) = 7.36, p = .007$. Post hoc analyses revealed that there was no difference in desire for avoidance between the two legal transgressions, not returning a borrowed bicycle and committing adultery, $F(1, 201) = 0.24, p = .627$. However, participants showed a greater desire to avoid using the mugs when the transgressor had committed rape compared to a transgressor who had stolen a bicycle, $F(1, 201) = 19.63, p < .001$. In addition, there were no differences in rejection responses across the low-

severity transgressions, $F(1, 201) = 2.71, p = .102$, but the mugs previously used by the rapist generated a greater desire for avoidance than the mugs previously used by the adulterer, $F(1, 201) = 31.38, p < .001$.

Morality

No significant 3-way interaction with gender was found, $F(1, 197) = 0.15, p = .697$. As a result, participant gender was not included in further analyses. A 2x2 ANOVA revealed a significant main effect of transgression severity, $F(1, 201) = 68.45, p < .001$, as well as a significant main effect of transgression illegality, $F(1, 201) = 46.34, p < .001$. No significant interaction between severity and illegality was found, $F(1, 201) = 0.59, p = .443$. Follow-up analyses show that people rated the low-severity transgression characters ($M = 2.89, SD = 1.07$) as significantly more moral than the high-severity transgression characters ($M = 1.80, SD = 0.98$), $F(1, 201) = 68.45, p < .001$. People rated the legal transgression characters ($M = 2.80, SD = 1.04$) as more moral than the illegal transgression characters ($M = 1.90, SD = 1.10$), $F(1, 201) = 46.34, p < .001$.

Table 5.1

Study 6 means and standard deviations on contamination, social distance and morality measures.

| Character | Contamination <i>M (SD)</i> | Social Distance <i>M (SD)</i> | Morality <i>M (SD)</i> |
|----------------------|--------------------------------|----------------------------------|---------------------------|
| Bicycle not returned | 45.17 (20.39) | 4.13 (1.14) | 3.29 (0.94) |
| Bicycle stolen | 38.22 (22.03) | 5.41 (1.13) | 2.51 (1.05) |
| Adultery | 43.10 (19.35) | 4.16 (1.17) | 2.32 (0.89) |
| Rape | 20.20 (22.00) | 6.25 (0.96) | 1.34 (0.82) |

Social Distance

No significant 3-way interaction with gender was found, $F(1, 197) = 0.73, p = .394$. As a result, participant gender was not included in further analyses. A 2x2 ANOVA revealed a significant main effect of transgression severity, $F(1, 201) = 8.06, p = .005$, as well as a significant main effect of transgression illegality, $F(1, 201) = 120.55, p < .001$. However, these main effects were qualified by a significant interaction between severity and illegality, $F(1, 201) = 6.82, p = .01$. The significant interaction was followed up with post hoc analyses which revealed that there was no significant difference in the desired social distance between the two legal transgressions, $F(1, 201) = 0.02, p = .875$. However, participants required a significantly greater social distance from the character who had committed rape compared to the character who had committed adultery, $F(1, 201) = 15.52, p < .001$. In addition, participants desired greater social distance between themselves and the bicycle thief character compared to the character who had forgotten to return a bicycle, $F(1, 201) = 33.89, p < .001$. When comparing the two high-severity moral transgressions it was found that participants desired greater social distance from the character who had committed rape compared to the character who had committed adultery, $F(1, 201) = 95.51, p < .001$.

Feelings towards the Character

Across the four types of affect no significant three-way interactions between severity, illegality and gender were found (ps range from .424 to .885).

Disgust. A 2x2 ANOVA revealed significant main effects of severity, $F(1, 201) = 90.05, p < .001$, and illegality, $F(1, 201) = 80.92, p < .001$. However, these effects were qualified by a significant two-way interaction between the severity and legality conditions, $F(1, 201) = 11.73, p = .001$. Post hoc analyses revealed a significant difference in feelings of disgust between the two legal transgressions, $F(1, 201) = 17.63, p < .001$, where the character who had committed adultery elicited significantly more

disgust than the character who did not return a borrowed bicycle. A significant difference was also found between the two illegal transgressions, $F(1, 201) = 87.13, p < .001$, in that participants reported a greater feelings of disgust when the transgressor had committed rape compared to a transgressor who had stolen a bicycle. In addition, there was a significant difference in disgust responses between the two low-severity transgressions, $F(1, 201) = 15.02, p < .001$, with the character who had stolen the bicycle eliciting more disgust than the character who had forgotten to return the bicycle. Of particular interest, when comparing the two high-severity transgressions, the actions of a person who had committed rape generated greater feelings of disgust than committing adultery, $F(1, 201) = 79.76, p < .001$.

Anger. A 2x2 ANOVA revealed significant main effects of severity, $F(1, 201) = 49.40, p < .001$, and illegality, $F(1, 201) = 86.05, p < .001$. However, these effects were qualified by a significant two-way interaction between the severity and legality conditions, $F(1, 201) = 9.05, p = .003$. Post hoc analyses revealed a significant difference in feelings of disgust between the two legal transgressions, $F(1, 201) = 7.75, p = .005$, where the character who committed adultery elicited significantly more disgust than the character who did not return a borrowed bicycle. Participants also reported a greater feelings of disgust when the transgressor had committed rape compared to a transgressor who had stolen a bicycle $F(1, 201) = 52.63, p < .001$. In addition, there was a significant difference in disgust responses between the two low-severity transgressions, $F(1, 201) = 19.02, p < .001$, with the character who had stolen the bicycle eliciting more disgust than the character who had forgotten to return the bicycle. The actions of a person who had committed rape generated greater feelings of disgust than the mugs previously used by the adulterer, $F(1, 201) = 78.03, p < .001$.

Contempt. A 2x2 ANOVA revealed significant main effects of severity, $F(1, 201) = 61.47, p < .001$, and illegality, $F(1, 201) = 46.82, p < .001$. However, these

effects were qualified by a significant two-way interaction between the severity and legality conditions, $F(1, 201) = 6.81, p = .01$. Post hoc analyses revealed a significant difference in feelings of disgust between the two legal transgressions, $F(1, 201) = 13.12, p < .001$, where the character who committed adultery elicited significantly more disgust than the character who did not return a borrowed bicycle. Participants also reported a greater feelings of disgust when the transgressor had committed rape compared to a transgressor who had stolen a bicycle $F(1, 201) = 57.05, p < .001$. In addition, there was a significant difference in disgust responses between the two low-severity transgressions, $F(1, 201) = 8.67, p = .003$, with the character who had stolen the bicycle eliciting more disgust than the character who had forgotten to return the bicycle. The actions of a person who had committed rape generated greater feelings of disgust than the mugs previously used by the adulterer, $F(1, 201) = 46.19, p < .001$.

Positive regard. A 2x2 ANOVA revealed no significant effect illegality, $F(1, 201) = 1.93, p = .166$, severity, $F(1, 201) = 3.14, p = .078$. The two-way interaction between the severity and legality conditions was also non-significant, $F(1, 201) = 1.76, p = .186$.

Table 5.2

Study 6 means and standard deviations of feelings towards each moral transgressor on the emotion rating scales.

| Character | Anger <i>M (SD)</i> | Disgust <i>M (SD)</i> | Contempt <i>M (SD)</i> | Positive <i>M (SD)</i> |
|----------------------|------------------------|--------------------------|---------------------------|---------------------------|
| Bicycle not returned | 1.67 (0.75) | 1.69 (0.78) | 1.73 (0.84) | 1.21 (0.68) |
| Bicycle stolen | 2.53 (0.92) | 2.47 (1.05) | 2.35 (0.96) | 1.04 (0.20) |
| Adultery | 2.22 (1.15) | 2.54 (1.25) | 2.50 (1.27) | 1.06 (0.31) |
| Rape | 3.91 (1.05) | 4.29 (0.89) | 3.90 (1.09) | 1.04 (0.19) |

Open Ended Responses

Participant responses to the open-ended question about why they thought Paul acted in the way that he did were coded for the presence of a reason that referred to magical thinking concepts. Reasons were coded as magical thinking based if they fit the criteria outlined by Rozin and Nemeroff (1990). For example, a magical contagion-based reason was coded as present if the participant made references to essence, moral taint or the mug containing the memory of the actions of the previous owner. The results of the coding are presented in Table 5.3. Differences in the reasons provided across the two types of transgression were examined using a chi-squared analysis. Results show that when the transgression is a high-severity, illegal immoral action that people use more terms related to magical thinking to describe their reaction to the mugs, $\chi^2(3, N = 205) = 41.19, p < .001$, compared to participants in the other study conditions. Examples of magical contagion-based responses and non-magical contagion responses are presented in Table 5.4.

Table 5.3

Study 6 coding results for explanations provided for why participants felt as they did towards using the mugs.

| | Bicycle not returned | Bicycle stolen | Adultery | Rape |
|------------------------------|----------------------|----------------|----------|------|
| Other explanation | 43 | 43 | 41 | 23 |
| Magical thinking explanation | 5 | 8 | 9 | 33 |

Table 5.4

Study 6 example open-ended responses provided by participants to explain why they thought they felt the way they did about using the mug.

| Magical thinking based explanation | Other explanation |
|---|---|
| <p><i>Participant 199</i></p> <p>“I feel I would be reminded of the negative incident whenever I used the mug. There would be "bad vibes" about it.”</p> | <p><i>Participant 36</i></p> <p>“I don't like to borrow and use other peoples things in the first place. I especially don't like being indebted.”</p> |
| <p><i>Participant 12</i></p> <p>“I am not 100% sure why. The thought of putting my lips on something that a rapist drank from disgusts me. I couldn't knowingly drink from a cup that a rapist drank from. It's like the cup is tainted. I would probably smash the mug.”</p> | <p><i>Participant 190</i></p> <p>“I have no problem using a thoroughly washed mug. I use silverware in restaurants used by numerous people previously.”</p> |
| <p><i>Participant 140</i></p> <p>“I feel like a piece of identity comes from each mug despite what the mug looks like.”</p> | <p><i>Participant 183</i></p> <p>“I feel neutral about the mug. It is an inanimate object and as long as it was washed I have no qualms in using it.”</p> |
| <p><i>Participant 55</i></p> <p>“Putting my mouth on the mugs that a rapist used is to intimate a relationship to the rapist even though it is an inanimate object”</p> | <p><i>Participant 208</i></p> <p>“I don't have a strong preference one way or another. As long as it was washed well I don't see the big deal.”</p> |

Discussion

Participants responses indicate that they wished to avoid physical contact with the mugs previously owned by each of the immoral characters. All of the contamination scores fell below the midpoint which was labelled as representing a neutral feeling. However, participants did not feel equally as negatively about the prospect of physical contact with the mugs across the four transgressions. The mugs described as having previously belonged to the man who had committed rape had a mean liking score eighteen points lower than the mean score of the next most negative previous owner's mugs. Participants exhibited the strongest desire to avoid the mugs previously owned and used by the man who had committed rape, compared to all of the other transgressions, irrespective of whether or not the other transgressions were also prohibited by law or high-severity in nature. The differences in moral contagion responses between the adulterer and the man who had committed rape suggest that the response is not solely driven by the presence of a core disgust cue. The object which had been in contact with a man who had committed rape showed the greatest desire for avoidance, which suggests that the desire to avoid a contaminated object is influenced by more than just the presence of a core disgust cue.

The additional measures included in the study show a similar pattern of responses as was obtained on the moral contagion measure. With regards to the affect ratings, participants showed the highest levels of disgust, anger and contempt towards the character who had committed rape. The finding of no differences between the characters in feelings of positive regard suggests that people feel an equal amount of general negativity towards the different moral transgressors, irrespective the precise nature of the transgression. This finding strengthens the ratings that were obtained for the moral emotions in that although there was a general lack of positive feeling towards each of the moral transgressors, participants responded with different levels of the moral

emotions according to the transgression that was committed. The results of the social distance measure show that, once again, people desire the most distance between themselves and the character who has committed rape. Reactions to the two legal transgression characters show that people were comfortable with having them as a co-worker. This demonstrates that although there is some desire for distance between the self and a character who has committed a legal transgression there is not the complete rejection that is shown towards a character who has committed rape.

Taken together, the findings of Study 6 provide further support for the results obtained in the studies reported in Chapters 3 and 4 of the present thesis. Once again the severity of the moral transgression committed was found to have an impact upon participant responses. The more severe the transgression, the greater the feelings of negativity towards physical contact with the object previously owned by the moral transgressor. In the present study, unlike in the previous studies, two moral transgressions which both contained a core disgust cue but differed on the dimension of legality were compared. As discussed above, the mug previously owned by the character described as having committed rape engendered the most negative response, both on the contamination measure and on the affect measures. These results, in conjunction with the results of the studies reported in Chapters 3 and 4 of the present thesis, indicate the need for future research to include comparisons across different types of moral transgressions when examining moral contagion responses. It would be of particular interest to examine whether different types of moral transgressions lead to different degrees of behavioural avoidance.

Chapter 6

Study 7: Moral Contagion-based Behavioural Avoidance

Study 7 was designed to demonstrate a behavioural moral contagion response. As discussed in the systematic review presented in Chapter 2, there are currently no published studies which have shown that moral contagion results in behavioural rejection responses. Study 7 was run prior to the behavioural study presented in Manuscript Study 4. The present study was ultimately not reported in the manuscript due to journal word length constraints.

The aim of Study 7 was to show behavioural rejection of a piece of artwork (i.e., visual art, painted by hand) created, and therefore contaminated, by an immoral individual. A piece of artwork was chosen as the contaminated object as the creation of the artwork would involve many instances of physical contact with the artist. In addition, due to the study being conducted at a market, artwork was chosen as it is not an unusual item for people to come across in that context. The severity of the moral transgression committed was manipulated once again via a short artist biography that was attached to the back of the artwork. It was expected that participants would be less likely to take home artwork that had been created by an immoral person, compared to artwork created by an artist of untainted moral character. It was also expected that the findings of the previous studies would be replicated, in that there would be no difference in rejection rates between the high-severity moral transgression containing a core disgust cue and the high-severity moral transgression without a core disgust cue.

Study 7 was conducted in two parts, reported as Study 7A and Study 7B. Study 7A and B were run concurrently, so that the study participants represented a sample from the same population. Participants participated in either Study 7A or Study 7B. Study 7A was designed merely to check that the manipulation of the moral character of the artist within the artist biographies was successful. Study 7B was the study proper in

which participants viewed the artwork and made judgements about it. The studies were designed in this way in order to, as much as possible, prevent participants from guessing the true purpose of the study. Given that the behavioural measure of the study was separated as much as possible from the pencil-and-paper responses it would have risked making the immorality of the artist's actions highly salient if participants were also asked about their feelings towards the artist and his immoral deeds within the same question booklet.

Study 7A

Participants

Participants were recruited over two occasions at a market held on Saturdays in a metropolitan city in Australia. Forty six people agreed to complete the study (48% female, $M_{age} = 33.57$ years, age range: 18 – 85 years).

Manipulations

Character type. The description of the moral transgression of the artist was incorporated into the artist biography. The four character types were (a) control (i.e., no mention of immoral past behaviour); (b) low-severity no core disgust cue moral transgression (i.e., a man who had committed petty theft); (c) high-severity no core disgust cue moral transgression (i.e., a man who had stolen the life savings of elderly people); (d) high-severity core disgust cue moral transgression (i.e., a man who had committed murder).

Measures

Morality. Participants were presented with a range of potential attributes and asked to rate how likely they feel it is that the character they read about possesses each attribute. The ratings were made on a scale of 0 to 10 (*0 Not at all likely; 5 Moderately likely; 10 Extremely likely*). The morality item was embedded within the list of potential

attributes. The potential attributes were as follows: competent, skilful, intelligent, principled, warm, moral, capable, friendly, sociable, trustworthy, playful, honest.

Affect. Participants were asked to rate how much of each emotion they felt towards the man described in the artist biography as a result of his actions on a scale of 0 (*Not at all*) to 10 (*Extremely*; 5 *Moderately*). The four emotions were anger, disgust, contempt and positive regard. This measure was included primarily to examine the differences between the core disgust cue and no core disgust cue versions of the character type manipulation.

Design and Procedure

Participants were randomly assigned to one of the four between-subjects character-type conditions. Market attendees were approached and asked if they were willing to complete a survey looking at opinions about artwork. Those who indicated willingness to participate first read the consent form before the study proper began. Participants were then presented with the question booklet and asked to complete it. The artist biography, which contained the manipulation of the artist's moral character, appeared on the first page of the booklet. The subsequent pages of the booklet contained the affect questions, questions about the attributes of the person they had read about and then the demographic questions. Participants were directed to first read the biography and then answer the questions that followed. Once the questionnaire had been completed it was collected by the experimenter and participants were thanked for their participation.

Results and Discussion

The means and standard deviations of participant responses to the affect measures and the attribute rating scales are presented in Tables 6.1 and 6.2, respectively. The results show that participants were responding to the manipulation of the moral character of the artist in a way that is consistent with the findings of the

previous studies reported within the present thesis. Due to the results obtained, and minimal sample size given that the study was a pilot, statistical analyses were not performed on the results of Study 7A.

Table 6.1

Study 7A Means and Standard Deviations on Affect Measures

| Character | Anger | Disgust | Moral Outrage | Positive Regard |
|--------------------|---------------|---------------|------------------|--------------------|
| | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> |
| Murderer | 3.67 (2.67) | 4.33 (2.71) | 5.33 (2.84) | 3.50 (1.68) |
| Life savings thief | 4.55 (2.38) | 3.73 (2.90) | 4.45 (2.30) | 3.45 (1.86) |
| Petty thief | 2.73 (2.76) | 2.36 (1.96) | 3.45 (2.73) | 5.91 (1.70) |
| Control | 0.25 (0.87) | 0.00 (0.00) | 0.00 (0.00) | 7.50 (1.51) |

Table 6.2

Study 7A Means and Standard Deviations for each Character Attribute

| | Moral | Skilful | Intelligent | Principled | Warm | Competent | Capable | Friendly | Sociable | Trustworthy | Playful | Honest |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Character | M (SD) |
| Murderer | 2.83 (2.21) | 7.58 (2.23) | 7.67 (1.07) | 4.5 (2.11) | 4.75 (2.45) | 6.33 (2.06) | 7.75 (1.36) | 5.75 (2.60) | 5.75 (2.56) | 3.25 (2.49) | 4.92 (2.94) | 4.83 (2.59) |
| Life savings thief | 2.36 (1.50) | 7.45 (1.69) | 6.00 (1.73) | 2.82 (1.47) | 3.64 (2.46) | 7.10 (1.29) | 7.09 (1.38) | 6.00 (2.12) | 5.82 (2.18) | 2.55 (1.92) | 4.50 (2.27) | 2.82 (1.78) |
| Petty thief | 5.64 (2.34) | 7.91 (1.38) | 6.64 (2.46) | 4.64 (2.20) | 5.82 (2.32) | 7.18 (2.36) | 7.18 (1.54) | 5.91 (2.55) | 5.45 (2.46) | 3.64 (2.62) | 5.91 (2.95) | 3.82 (3.09) |
| Control | 6.36 (2.11) | 7.50 (1.73) | 6.83 (1.85) | 6.36 (1.29) | 6.75 (2.30) | 7.00 (1.86) | 7.33 (1.72) | 7.08 (2.11) | 6.00 (2.30) | 6.75 (2.05) | 6.58 (1.51) | 6.67 (1.56) |

Study 7B

Method

Participants

Participants were recruited over two occasions at a market held on Saturdays in a metropolitan city in Australia. Participant characteristics were similar to Study 7A. Eighty five people agreed to complete the study (58% female, $M_{\text{age}} = 40.03$ years, age range: 18 – 74 years).

Design and Procedure

Participants were randomly assigned to one of the four between-subjects conditions. Market attendees were approached and asked if they were willing to complete a survey looking at opinions about artwork. Those who indicated willingness to participate first read the consent form before the study proper began. Participants were presented with the two pieces of artwork (secured on a piece of black A4 board) and were asked to indicate which one they liked the most. The two types of artwork were created on an A6 size piece of watercolour paper. The first design was a cityscape drawn in ink. The second design was an abstract circle created using multi-coloured watercolour paint. Multiple copies of each artwork were created, however each one was hand made by the same artist to ensure that it was obvious that they had been handmade (as opposed to a machine made copy). Once participants indicated their preference, the artwork was removed from the board and was handed to them. Participants were invited to take a closer look at the artwork as well as read the artist biography (containing the manipulation of the artist's moral character) secured to the back of the artwork. They were then handed the question booklet and answered the questions about the artwork. Once the questionnaire had been completed it was collected by the experimenter and participants were thanked for their participation. This was designed to make participants believe that the study had concluded. They were then offered the opportunity to take the

artwork home with them as a thank you for having completed the study. Their choice was surreptitiously recorded by the experimenter once the participant had moved away.

Manipulations

Character type. The description of the moral transgression of the artist was incorporated into the artist biography. The four character types were (a) control (i.e., no mention of immoral past behaviour); (b) low-severity no core disgust cue moral transgression (i.e., a man who had committed petty theft); (c) high-severity no core disgust cue moral transgression (i.e., a man who had stolen the life savings of elderly people); (d) high-severity core disgust cue moral transgression (i.e., a man who had committed murder).

Measures

Artwork judgements. Feeling towards the artwork was assessed using an 11-point scale where answers above 5 represented a positive feeling and answers below 5 represented a more negative feeling (5 = *neutral*). Participants were also asked how much they would be willing to pay for the artwork if they saw it for sale at a market stall. In addition, they were asked how likely they would be to display the artwork on an 11-point scale (0 = *not at all likely* to 10 = *extremely likely*).

Behavioural measure. At the conclusion of the study participants were offered to opportunity to take the artwork home with them. This was designed to show behavioural rejection of artwork created by an artist who had committed a moral transgression.

Results and Discussion

Artwork Judgements

No significant differences were found between the conditions on the feeling toward the artwork item, $F(3, 76) = 1.25, p = .30, \eta_p^2 = .05$, the willingness to pay item,

$F(3, 80) = 1.01, p = .39, \eta_p^2 = .04$, or the item asking if participants would display the artwork in their homes, $F(3, 81) = 1.31, p = .28, \eta_p^2 = .05$.

Behavioural Measure

No significant differences in acceptance vs. rejection of the artwork emerged between the conditions $\chi^2(3, N = 83), p = .34$. The majority of participants (81.93%) accepted the offer of taking the artwork home with them.

Table 6.3

Study 7B Means and Standard Deviations on Core Study Measures

| Character | Liking | WTP | Display |
|--------------------|---------------|---------------|---------------|
| | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> |
| Murderer | 6.81 (1.08) | 28.20 (43.90) | 5.74 (3.53) |
| Life savings thief | 7.00 (1.34) | 18.36 (26.94) | 6.23 (3.24) |
| Petty thief | 7.28 (1.49) | 16.65 (14.72) | 6.90 (3.13) |
| Control | 7.55 (1.32) | 33.45 (47.56) | 7.50 (2.31) |

The results of Study 7A indicate that the manipulation of the artist's moral character within the artist biographies was successful. In Study 7B, we found that, irrespective of the type of disgust cued by the moral transgression, people did not reject the artwork. One possible explanation for the absence of findings is the conditions under which the experiment was conducted. Due to the market setting, participant recruitment required the experimenters to build rapport with potential participants and it is possible that this positivity swamped the moral contagion effects. In an effort to reduce the likelihood of participants guessing the true purpose of the experiment the manipulation of the moral character of the artist, and therefore the cause of any moral contagion concerns, was limited to a one line description in the artist biography. However, this fact, in conjunction with the highly positive interaction with the

experimenters, may have had the effect of reducing the effect of the manipulation so that it was not strong enough to cause a moral contagion response. Further, with regards to acceptance or rejection of the offer of taking the artwork home, participants may have felt that it would be rude to refuse the opportunity to take the artwork home with them, due to the positive social interaction that had occurred with the experimenter. To refuse a friendly offer from the experimenter to take home the piece of artwork, which participants had already indicated that they liked, would be a very counter-normative course of action to take.

A further possible explanation for the findings of Study 7B relate to the culture in which the study was conducted. Although the results of the present study do not speak to culture, cultural beliefs surrounding the appropriateness of behaviour based in magical thinking provide a possible explanation for the results obtained. As outlined by Rozin et al. (1989), although magical beliefs are part of adult thinking, in modern industrial cultures adults are expected to have in favour of rational, scientific views. As a result, behaviour based on magical thinking is viewed as maladaptive or irrational. In this connection, culture has been found to have an impact upon magical thinking and subsequent behavioural responses (Hejmadi et al., 2004; Hood et al., 2011; Subbotsky & Quinteros, 2002). In a study comparing magical thinking in British and Mexican participants, Subbotsky and Quinteros (2002) found that behavioural responses were related to the demands of culture in a more complex way than cognitive judgements. Mexican participants engaged in magical thinking across the studies, however British participants only behaved in a way consistent with magical thinking beliefs when there was a perceived high cost of not behaving in such a way. In a culture that has explicit cultural beliefs surrounding contamination and purification, behavioural avoidance responses are socially acceptable and may be a requirement. In contrast, people from cultures with implicit contagion beliefs face negative social consequences for counter-

normative contagion-based behaviour. The implicit nature of moral contagion beliefs within Australian society provides a potential explanation for why participants in the present study did not reject the contaminated artwork.

The possible explanations for why no behavioural moral contagion effects were found in Study 7B discussed above remain assumptions. Future research is needed to determine whether the social context in which the experiment was conducted does overpower moral contagion effects. Given the robust and consistent moral contagion responses obtained in the thought experiments reported within the present thesis it is unlikely that moral contagion effects are never expressed as behaviour. Rather, in a culture where magical contagion beliefs and responses are implicit, and may result in negative social consequences, moral contagion effects may only be obtained under specific contexts. Future research should investigate the types of contexts that elicit behavioural moral contagion responses.

Chapter 7

General Discussion

The seven studies described in the present thesis represent a thorough exploration of moral contagion effects. In particular, the studies compared different types of moral transgression committed by the previous owner and the role of disgust in moral contagion processes. In addition, two of the studies investigated whether moral contagion leads to behavioural avoidance of physical contact with an otherwise harmless object. Across the five studies that were thought experiments, participants consistently expressed a desire to avoid contact with an object previously owned by a moral transgressor. In contrast to these findings, the two behavioural experiments did not produce consistent results. The findings of the thought experiments will first be integrated with one another prior to a discussion of the difference in results obtained between the thought experiments and the behavioural experiments.

The Desire to Avoid Contaminated Objects

The findings of the thought experiments reported in the present thesis are consistent with both moral contagion theory and previous findings in the area. In Studies 1, 7a and 7b as well as Manuscript Studies 1, 2 and 3, participant responses showed that a true magical thinking based contagion response was taking place. When asked about physical contact with an otherwise harmless object previously owned by a moral transgressor, participants consistently indicated a desire to avoid physical contact with the object. Participant rejection of the object was not based upon the material from which the object was constructed. In addition, information about the object having been thoroughly cleansed did not have an impact upon the desire for avoidance. Across the five studies, a range of different types of objects were used, including a mug, a fork and a sweater. However, irrespective of the type of object described in the studies, results consistently showed that participants wished to avoid contact with the object when it

was previously owned by a moral transgressor. This provides support for the effect being one of magical contagion as it demonstrates that it is independent of the physical properties of the object, one of the key features of magical contagion (Rozin et al., 1992). Further, in the present Manuscript Study 3 and Study 6, participants were explicitly told that the object had been thoroughly cleaned after contact with the previous owner. However, the results of these studies were consistent with the other thought experiments reported in the present thesis which suggests that information about the sterilisation of the objects. Another key feature of magical thinking is the lack of impact of transformations, such as physical cleansing (Rozin et al., 1992). As a result, the consistency in findings across the studies further strengthens the argument for the desire for rejection exhibited by participants being magical thinking-based. These findings support previous research which has shown that magical thinking is a feature of cognition within modern industrialised cultures (e.g., Bastian et al., 2015 Hood, 2011 #3; Nemeroff & Rozin, 1994).

As well as being consistent with existing moral contagion theory, the findings of the present thought experiments extend previous work in the area by examining rejection responses across a range different types of transgressions. As discussed in Chapter 1, previous research has thus far failed to make systematic comparisons across a range of different moral transgressions. As a result, it remains unclear how moral contagion responses differ across different types of moral transgressions. In the present Study 1, despite previous research having found that the gender of the transgressor had an impact on observer judgements (Lindholm & Christianson, 1998; Mazzella & Feingold, 1994; McKimmie et al., 2013), transgressor gender did not influence moral contagion responses. Irrespective of whether the moral transgressor was male or female, participants showed a desire to avoid physical contact with a contaminated object in this study. However, it should be noted that Study 1 did not examine moral transgressions

that were extreme violations of a gender role norm, such as a mother who murders her own child. There is some evidence to suggest that when assigning punishment to offenders that women are given more severe punishments when the transgression that they have committed violate female role norms (e.g., Mazzella & Feingold, 1994). Further research is needed to determine whether these extreme violations of social roles through an immoral act results in the gender of the transgressor having an impact on moral contagion responses. The findings of the present Study 1 demonstrate that across a range of different types of moral transgressions, the gender of the transgressor does not have an impact upon the desire for a avoidance of a contaminated object.

Moral contagion responses across different types of transgressions were further explored by manipulating the moral severity of the transgression committed. The effect of the moral severity of the transgression committed on the desire for avoidance was investigated in two ways. First, the severity of the transgression committed was manipulated directly with transgressions of differing levels of severity chosen to be presented to participants (i.e., bike theft, a break and enter, a hit and run). Second, transgression severity was manipulated by altering whether the transgression committed was intentional. Across the thought experiments, the severity of the moral transgression had a clear impact upon participant desire for avoidance. The more morally severe the transgression committed was, the less positively participants felt about the prospect of physical contact with an object previously owned by the moral transgressor. In addition, when the transgression was an unintentional one that fell outside of the moral domain (i.e., an irreplaceable antique vase was accidentally broken) participants displayed a significantly lower a desire to avoid the object. Although the act of dropping an irreplaceable vase arguably causes more harm than the act of stealing a bicycle, the former is clumsy and accidental but the latter is immoral. Only transgressions that fell within the moral domain resulted in a clear desire for avoidance. The results discussed

above provide new insights into how moral contagion operates across different types of transgressions. The findings show that the type of moral transgression committed has an impact upon how people feel about the prospect of contact with a potentially contaminated object. Furthermore, the differences in the moral severity of transgressions were always presented to participants as between-subjects manipulations. As participants had no way of knowing what was being presented in the other study conditions, the influence of transgression severity cannot be attributed to relative judgements being made between the different types of transgressions. Further, because a range of transgressions were investigated, the results found cannot be explained by the principle that bad is stronger than good. These results show that participant responses do not represent a generalised rejection of the objects previously belonging to immoral individuals. Instead, people were specifically responding on the basis of the actions of the previous owner of the object.

The role of disgust in moral contagion processes. The results of the thought experiments reported in the present thesis show that the driving emotion behind moral contagion responses is disgust. Disgust was found to mediate the relationship between the type of transgression committed and desire to avoid the object. Mediation by disgust was found with reference both to use of the contaminated object and to the transgressor. The more disgust a participant felt about using the object or towards the moral transgressor themselves, the greater their desire to avoid contact with the object. Not only do these results provide empirical support for the theorised relationship between disgust and moral contagion (Rozin et al., 1986), but the effect was found to be unique to disgust. As would be expected, people expressed feelings of other negative moral emotions, such as anger and contempt. However, disgust was the only emotion which mediated the relationship between the transgression type and the desire for avoidance of a contaminated object. Further, mediation by disgust was also found when the moral

transgression committed did not contain a core disgust cue. Again, even with the other negative moral emotions entered as parallel mediators, the only emotion that acted as a significant mediator was disgust. This finding shows that the desire for avoidance exhibited by participants does not represent a generalised rejection of the moral transgressor or immorality in general. Instead, disgust, the primary emotion involved in contamination related to disease and physical dirt (Curtis & Biran, 2001; Oaten et al., 2009; Siegal et al., 2011), is the only emotion which is related to participants' moral contagion responses.

As well as demonstrating the unique mediating role of disgust, the findings of the thought experiments indicated that both feelings of disgust and contagion responses were not dependent upon the moral transgression containing a core disgust cue. From a moral contagion perspective, this finding provides an alternative perspective to the one put forward by Oaten et al. (2009) who suggest that norm transgressions are only contaminating to the extent that they contain a cue of core disgust imagery. When the transgressions presented were both high-severity transgressions, such as murder and the theft of the lifesavings of the elderly, no differences emerged, irrespective of the presence of a core disgust cue. Participants reported being equally disgusted by the moral transgression characters and showed an equal desire to avoid the tainted object. If reminders of core disgust were driving the contagion response then it would be expected that only the object previously owned by a murderer would result in a desire for avoidance. In addition, when the transgressions contained a core disgust cue but were of differing levels of severity, such as adultery and rape, differences in moral contagion responses emerged. Participants showed a much larger desire to avoid the object previously owned by the high-severity moral transgressor. Although both transgressions contained a core disgust cue, the transgression that was highly immoral resulted in the greatest contamination response. The immorality of the actions of the transgressor was

the key determinant of the desire for avoidance. Taken together these findings show that disgust plays an important role in moral contagion processes and this role is not limited to whether or not the moral transgression contains a core disgust cue.

Current perspectives on moral contagion highlight the magical thinking component of these processes. However, as discussed above, the Manuscript Studies 2, 3 and 4 in the present thesis show that moral transgressors both: a) generate feelings of disgust, the key emotion cued by exposure to a potentially contaminating source; and b) a desire for avoidance similar to that which occurs as a result of exposure to physical contaminants. This finding suggests that, rather than being irrational, responses to immoral individuals follow a logical process which is sparked by the experience of disgust, an emotion relevant to contamination threat. To the extent that an individual feels disgust, either core- or moral-disgust, they wish to avoid contact with a morally tainted object. This process is very similar to the role of disgust in facilitating the avoidance of potential sources of disease. As discussed by Rozin and Nemeroff (1990), responses to potential sources of disease contamination (i.e., viruses and bacteria) have much in common with magical contagion. In both cases, the source of negativity is invisible and is able to be transferred from object to object via physical contact. In this connection, (Schaller, 2011) proposes the existence of a *behavioural immune system* which comprises psychological processes that respond to these perceptual cues of infection risk through the activation of aversive emotions, cognitions and behavioural impulses. This theory is of direct relevance to the present findings as it suggests that cues of infection risk include foreign individuals, those who appear to be physically different (e.g., an obese individual), and norm violators. As many moral transgressions represent extreme norm violations it is possible that these acts cue the same processes which evolved to avoid infection risk. This would mean that rather than a process largely driven by cognitive processes, the emotional response, in the form of disgust, to

a potential contaminant plays a key role in avoidance behaviour. Given the potential link via disgust between disease and moral contagion processes, it would be of interest to compare avoidance responses across morally tainted individuals and individuals who carry perceptual cues of infection risk. This would not only provide further information about how moral contagion operates but also further knowledge about the links between social cognition, behaviour and infection risk.

Disgust responses towards moral transgressions. The findings with regards to disgust make a contribution to the existing debate within the moral cognition literature. Across the three studies where participants were asked about their affective responses towards the different transgression characters they reported feeling disgust towards the characters. Further, the level of disgust felt by participants was proportionate to the immorality of the act. Across the studies, as would be expected, participants reported very low levels of disgust towards a character that had accidentally committed a harmful act. In contrast, participants reported significantly higher levels of disgust towards characters who had committed a moral transgression. These findings support a perspective on disgust whereby the range of disgust cues is broader than moral purity violations (Gutierrez & Giner-Sorolla, 2007; Horberg et al., 2009) or moral transgressions that contain core disgust cues (Oaten et al., 2009). It is necessary to note that these findings do rely upon participant self-report, rather than facial EMG or fMRI results. Although there is evidence to suggest that disgust cued by immorality activates the same facial muscles as those activated by core disgust cues (Chapman et al., 2009), fMRI studies suggest that feelings of disgust that arise following exposure to pure moral transgressions are associated with areas in the brain that overlap with feelings of anger (Moll et al., 2005). The findings of the studies reported in the present thesis do not speak to this precise aspect of the moral disgust debate. However, the participants in these studies chose the emotion with the label of disgust when asked about their feelings

towards a moral transgressor and, when the transgression was a high severity illegal transgression, these ratings did not differ in accordance with whether or not the transgression contained a core disgust cue. This suggests a continuity in responses that is not dependent upon the presence of a core disgust cue. Further, although participants also recorded feelings of other negative moral emotions, it was only the emotion of disgust that significantly mediated the relationship between the type of transgression committed and the desire for avoidance of a tainted object. Participants were able to select other negative moral emotions, including anger which is posited to have a close relationship with disgust, particularly with regards to moral outrage (Salerno & Peter-Hagene, 2013), however only disgust had an impact upon moral contagion responses, and only when the transgression committed was an immoral one. Future research should investigate the role of disgust further by examining physiological markers of disgust with more physiological measures of disgust.

Summary of thought experiment findings. Taken together the results of the five thought experiments show that when asked about contact with a harmless object previously owned by a moral transgressor people indicated a desire to avoid physical contact with the object. This effect was found across a range of different types of objects made from different types of materials and with a variety of uses and was unaffected by information about the cleanliness of the object. Further, the effect was influenced by the severity of the moral transgression committed in that the more morally severe the transgression was the greater the desire for avoidance of the tainted object. In addition, the relationship between transgression type and desire for avoidance was uniquely mediated by disgust. Finally, the moral contagion effect was not found to be dependent upon the presence of a core disgust cue. In contrast to these robust thought experiment findings, the results of the two behavioural studies indicate that the

relationship between moral contagion and avoidance of real-life objects is more complex than when participants merely contemplate contact with an object.

Behavioural Avoidance of Contaminated Objects

Across the two behavioural studies evidence for a behavioural avoidance of physical contact with a contaminated object was inconsistent. In the behavioural study reported as Manuscript Study 4, behavioural avoidance of physical contact with the object described as having been previously owned by a moral transgressor only occurred when the moral transgression committed by the previous owner contained a core disgust cue. In the behavioural study reported in Chapter 6 no significant effects were found across the study conditions. The majority of participants accepted the offer of taking home the piece of artwork, even when the artist responsible for its creation had committed a severe moral transgression. No significant differences were found in acceptance of the artwork between the groups where the artist was a murderer and when the artist had stolen the lifesavings of the elderly – the presence of a core disgust cue had no impact upon rejection responses in this study. As outlined in Chapter 6, there are several possible explanations for the lack of significant results found in the contaminated artwork study. Nevertheless, across the two behavioural studies evidence for a behavioural moral contagion effect was inconsistent and neither study demonstrates complete behavioural rejection of an object contaminated by a moral transgressor. A number of other studies in the published literature have also shown inconsistent results with regards to moral contagion effects and magical contagion more generally.

An analysis of auction results conducted by Newman and Bloom (2014) showed that objects previously owned by well known, immoral individuals (e.g., Bernie Madoff) obtained significantly lower purchase prices compared to positively viewed individuals (e.g., John F. Kennedy). Objects previously owned by an immoral

individual were perceived more negatively and did not attract as high a sale price at auction, but people did not avoid purchasing the objects altogether. Participants reported feeling less positively towards the objects owned by the moral transgressors, but their behaviour did not represent complete avoidance of physical contact. A further study that examined magical contagion processes was conducted by Kecinski, Keisner, Messer, and Schulze . Their study was a behavioural study which examined a classic magical contagion paradigm initially used by Rozin and colleagues whereby participants are asked if they would drink from a glass of water which had been stirred using a dead, sterilised cockroach. Instead of asking participants whether they would drink the water, Kecinski et al. utilised willingness to pay (WTP) and willingness to accept (WTA) measures. In the WTP condition, participants indicated how much they would be willing to pay to avoid having to drink water in which a dead cockroach had been placed and then removed. In the WTA condition, participants indicated how much compensation they would need to receive in order to drink the cockroach contaminated water. Their findings show that participants were willing to pay more to avoid, and expected more compensation for, drinking the cockroach contaminated water compared to spring water and cockroach contaminated water that had subsequently been filtered. However, their findings also show that a large portion of the participants recorded a value of zero on either the WTA or WTP. Further, cleansing appeared to have an effect whereby participants submitted significantly lower values on WTP and WTA when the cockroach contaminated water had been undergone a water filtration process. It is possible that, as outlined by Rozin et al. (2007), the involvement of money leads to switching of pathways so that rational processing is used instead of more automatic processes which involve magical thinking. Alternatively, it may be that when there are competing demands and not avoiding leads to favourable outcomes, such as purchasing a necessary product or accepting a visually appealing piece of artwork from a friendly

experimenter, magical contagion related concerns become less prominent. One further interpretation of the lack of findings with regards to the behavioural experiments reported in the present thesis is that moral contagion concerns are not expressed as behavioural avoidance. However, given the fact that consistent results have been obtained in both the studies reported in the present thesis, as well as within the existing moral contagion literature, it is unlikely that the explanation for the lack of behavioural findings is as simple as people not holding moral contagion concerns. This difference in findings is worthy of consideration and highlights a real need for future research in the area to focus on conducting behavioural experiments. A number of considerations for future research are outlined below.

Considerations for Future Research

In both the thought experiments reported in the present thesis and the existing literature that examines moral contagion effects (e.g., Hood et al., 2011; Newman & Bloom, 2014; Rozin et al., 1989), people consistently show a desire to avoid, or feel more negatively about, contact with an otherwise harmless object previously owned and used by a moral transgressor. As outlined in the systematic review of the literature reported in Chapter 2, no existing published findings have investigated moral contagion based avoidance behaviour. As a result, the mixed findings of the two behavioural studies reported in the present thesis highlights the need for further research to thoroughly examine the conditions under which moral contagion is expressed as behaviour. Due to the lack of evidence of behavioural avoidance it cannot yet be said with confidence that existing findings in the area can be used to explain how people would act in a given situation. It is not yet clear whether the effects found in these studies would also be found in a behavioural experiment. For example, Hejmadi et al. (2004) found that people reported feeling less happy about the prospect of receiving a heart transplant from a person serving time for having murdered their spouse. In

addition, people reported higher levels of happiness towards receiving a heart transplant from a volunteer worker. It would be of interest to see whether, in a true life or death situation, any moral contagion concerns would be overridden by the consequences of not accepting an organ donation (i.e., probable death of oneself or a loved one).

Although people indicate that they would prefer not to receive an organ transplant from an immoral individual, it is as yet unknown whether these moral contagion effects would actually result in the choice to reject the transplant. This is problematic as researchers often refer to moral contagion effects as if they apply to behaviour. It remains possible that participants may anticipate that they will feel much more negatively about an object previously belonging to a moral transgressor than they actually do when faced with a real life interaction with the object.

Forecasting of reactions to contaminated objects. There is evidence to suggest that when people consider how they will feel about an event in the future that there is a tendency to overestimate how negatively they will feel (Eastwick, Finkel, Krishnamurti, & Loewenstein, 2008; Gilbert, Morewedge, Risen, & Wilson, 2004; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). People are also typically very confident of their predictions about both their own behaviour and the behaviour of others (Dunning, Griffin, Milojkovic, & Ross, 1990; Griffin, Dunning, & Ross, 1990). It is difficult to forecast reactions to events that one has never experienced as it is difficult to know precisely what the events will entail (Gilbert et al., 1998). With regards to events that would cue feelings of negative affect, studies indicate that people make a number of forecasting errors. For example, Gilbert et al. (1998) found that people overestimate the durability of feelings of negative affect, in that they underestimated their ability to deal with cope with negative affect that arises as a result of negative events. These findings, in conjunction with those of Gilbert et al. (2004) show that people fail to take into account implicit cognitive processes which ameliorate

the effects of negative affect when a scenario takes place in real life. In this connection, in the thought experiments reported in the present thesis, participants were required to make a judgement about how they would feel if presented with an object previously owned by a moral transgressor. The findings of (Gilbert et al., 2004; Gilbert et al., 1998) suggest that participants may have overestimated how negatively they would feel about physical contact with the object.

When forecasting how one would feel the available information about the event plays a role in the accuracy of the forecast that is made (Dunning et al., 1990; Gilbert et al., 2004; Gilbert et al., 1998; Griffin et al., 1990). In both the thought experiments reported in the present thesis, and the majority of published studies which investigate moral contagion, with the exception of one study conducted by Rozin et al., 1994, neither the actual object nor a picture of the object are viewed, the object is always imagined. As a result, the primary information that is available to the participant is information regarding the moral character of the previous owner of the object. The salience of the actions of the immoral individual may make interaction with an object previously owned by them appear to be more negative than if competing information about the object itself was also available. Further, given that the object itself is being imagined, there is little control over what kind of mental image of the object is conjured up by participants. Participants may imagine a particularly ugly sweater or a fork that is disgusting in appearance as the result of physical dirt which would clearly result in physical contact with the object being perceived as less desirable. Future research should either utilise real-life or pictures of real-life objects in an attempt to hold participant perceptions of the physical properties of the object itself constant.

It should be noted that, even if it the responses obtained in moral contagion thought experiments is an affective forecasting error, that is that people overestimate how negatively they will actually feel when presented with a real life object, to dismiss

the existing findings as merely an error of judgement would in itself be an error. The findings of the thought experiments are extremely consistent across different groups of participants. If a forecasting error is occurring, it is underpinned by systematic factors such as the moral severity of the transgression. In addition, the fact that participants stated that they would feel negatively about the prospect of contact with an object previously owned by a moral transgressor is evidence for the occurrence of magical thinking. Even if this desire is not ultimately expressed as behaviour participants still state that they would feel more negatively. As such, it is of interest to examine why a mismatch occurs between participants thoughts and their behaviour as well as whether there are specific conditions under which behavioural avoidance does occur as the result of moral contagion.

The presence of disgust cues. The physical state of the imagined object is directly relevant to participant experiences of disgust when contemplating physical contact with an object. Unlike physical or disease based contagion, in the case of magical contagion there are no additional external cues of disgust which may amplify a disgust response when potential contagion concerns arise. Instead, moral contagion responses are competing with the absence of disgust cues linked to the object itself. When viewing a real life object that is not visibly dirty or spoiled in any way the prospect of physical contact with the object may not be as negative as when the object is imagined. In Manuscript Study 4, reported in Chapter 4, even when the moral transgression contained a core disgust cue, participant responses did not represent complete behavioural rejection of the object. When an object is imagined the only information that can influence a participant's responses is the object they have imagined. By contrast, when a real life object is presented there are external cues (e.g., about the state of the object) which may compete with moral contagion-based responses. A key difference between magical contagion and physical contagion

reactions is that physical contaminants (e.g., dirt) are visible and tangible. With regards to physical contamination, there are a number of cues including visual, tactile and olfactory cues which may cause feelings of disgust (Curtis et al., 2004; Oum, Lieberman, & Aylward, 2011; Rozin et al., 1986). With regards to magical contagion, and more specifically moral contagion, the contaminant, which renders the previously neutral object disgusting, is a person who has committed an immoral act. In the behavioural experiments reported in the present thesis, the objects were clean and dry; there were no tactile disgust cues.

In this connection, a study conducted by Oum et al. (2011) presented participants with a range of stimuli and asked them to touch each one. Their results showed that wet objects or those that felt like biological material (e.g., dough) were rated as more disgusting, compared to dry objects and those that felt like inanimate matter (e.g., a piece of rope). Participants also stated that they would be less likely to put the disgusting objects in their mouth. The findings of Oum et al. (2011) suggest that, although participants in the behavioural studies were exposed to a disgust cue in the actions of the moral transgressor, there were competing non-disgusting cues in that the objects themselves did not have any of the tactile qualities of disgust inducing objects. That is not to say that the objects need to be dirty in order to cue a moral contagion response; instead, it is possible that the cue of disgust (i.e., the moral transgressor) needs to be more closely linked to the object in order to generate an avoidance response. Future research should investigate if watching an immoral individual interact with the object prior to participants touching it themselves has an impact upon avoidance responses.

Type of interaction with the contaminated object. People regularly engage in behaviour that involves handling disgusting objects (e.g., changing nappies) out of necessity. People touch physically disgusting objects for particular purposes but would

not engage with the physically disgusting object in other ways. For example, a person would clean up after a puppy who has urinated inside the house, and would also rate urine as highly disgusting. However, it seems highly unlikely that they would be willing to eat a piece of food that had fallen on the floor in the same place that had just been cleaned up. There is empirical evidence which shows that people engage with disgusting objects, including those that have the capacity to contaminate other objects. Across six studies Morales and Fitzsimons (2007) found that people felt disgust towards some types of consumer goods (e.g., sanitary pads). In turn, the disgust inducing objects were found to contaminate other objects through physical contact. This contamination led to less favourable evaluations of the previously neutral products. In addition, physical contact with a disgusting product increased ratings of negative attributes that were relevant only to the disgusting product's own negative attributes, for example higher levels of fat when the previously neutral product had made contact with a high fat disgust inducing product. However, despite reported feelings of disgust towards the objects, and the ability for these objects to act as contaminants, these items are still purchased by consumers on a regular basis. These findings suggest that objects can be both disgusting and lead to contamination but this does not necessarily lead to complete behavioural avoidance, especially when the object has practical uses.

A further consideration for future research is the type of interaction that participants are required to have with a potentially contaminated object. One difference in the outcome measures utilised in the thought experiments and behavioural experiments was that in the thought experiments participants were asked about how much they would like to use the object. The use of the object always involved close physical contact with the object, either wearing the object (e.g., wearing a sweater) or using the object to ingest a substance (e.g., using a fork to eat a meal). By contrast, the outcome measures in the behavioural studies were a more general measure of physical

contact with the object. The behavioural studies were set up in this way in order to reduce the possibility that participants would guess the underlying hypotheses of the experiment and reduce the likelihood of demand characteristics influencing the results. However, the possibility remains that people would be willing to make physical contact with an object such as a fork by touching it, but would be unwilling to use the object for its intended purpose, such as use the fork to eat a meal. In particular, when the object is one for which use involves the mouth, differences in results may emerge compared to objects that only come into contact with the hand. In particular, the oral incorporation of substances has been likened to incorporating the substance into the self (Rozin & Fallon, 1987). Rozin and Fallon (1987) argue that the perceptual salience of an object being inside the mouth leads to an increase in the intensity of a disgust response. Disgust is intimately tied to the avoidance of ingestion via the mouth, and as a result it would be of interest for future research to examine the relationship between moral contagion and the mode of interaction with the tainted object.

Potential forecasting errors, the presence of disgust cues and the mode of interaction with a potentially contaminated object are all aspects of the phenomenon of moral contagion that could be taken into consideration when designing future experiments. Empirical investigation of these would enable a more thorough understanding of how moral contagion operates and under which circumstances contagion concerns are expressed behaviourally, if any. A further aspect of moral contagion that needs to be taken into account and may help to explain when behavioural avoidance does and does not occur is the cultural context in which experiments take place. Different cultures have differing degrees of acceptance of explicit expressions of magical beliefs (Hejmadi et al., 2004; Subbotsky & Quinteros, 2002) and therefore the cultural background of the participants has the potential to be extremely relevant to moral contagion concerns.

The role of culture. Culture is a factor that has been found to influence magical contagion responses more generally (Hejmadi et al., 2004; Subbotsky & Quinteros, 2002) and moral contagion specifically (Hood et al., 2011). Hindu Indian culture has been found to have a more explicit belief in contamination and purity compared to American culture, and this has been shown to generate larger responses with regards to both magical contagion more generally and interpersonal contagion specifically. In addition, Hindu Indian children were more likely than American children to perceive contamination as being impervious to purification (Hejmadi et al., 2004). The third study of Hood et al. (2011) examined the impact of the moral character of the donor on happiness levels, but this time with Japanese participants. The authors predicted that, owing to the Japanese belief in *kuetsu gata*, these participants would show a greater reaction, compared to the British participants from their second study. They found that Japanese participant responses were greater in magnitude in that, compared to the British participants, they were less happy to receive an organ donation from an immoral individual.

In a study comparing magical thinking in British and Mexican participants, Subbotsky and Quinteros (2002) found that behavioural responses were related to the demands of culture in a more complex way than cognitive judgements. Mexican participants behaved in a way that was consistent with magical thinking across the studies, however British participants only behaved in this way when there was a perceived high cost of not behaving in such a way. The Mexican participants in these studies come from a culture with more explicit beliefs about the causal role of magic in everyday life and as a result it was more acceptable for them to behave in a way that was consistent with these beliefs. By contrast, within the culture of the British participants, there is a strong emphasis placed on what is perceived as rational, scientific thinking and an expectation that behaviour itself be rational. The study conducted by

Subbotsky and Quinteros (2002) demonstrates that when the situation was a low risk one, participants behaved in a manner consistent with their explicit cultural beliefs. However, when the situation was a high risk one, even the British participants who held more implicit magical thinking beliefs behaved in a way that was consistent with magical thinking. These results show that not only does culture have an impact upon the behavioural expression of magical thinking beliefs, but also that the context in which the behaviour is taking place plays a role in behavioural outcomes. The idea that context plays a role in shaping behaviour is not a new one, however the moral contagion literature has yet to examine how context may affect moral contagion responses, particularly with regards to cultures where magical thinking beliefs operate on an implicit level. Culture is clearly an important consideration with regards to behavioural reactions based on magical thinking. In addition, culture not only plays a role in determining the appropriateness of behavioural expressions of magical thinking but it also dictates which behaviours are and are not acceptable for people to engage in, including what behaviours are considered to be moral transgressions. It would be of interest for future research to thoroughly investigate the role of culture in moral contagion processes. Not only would it be of interest to examine whether behavioural avoidance of potentially contaminated objects differs across cultures, but also whether the range of acts which can render an otherwise harmless object as contaminated is the same across different cultures.

Conclusions

In conclusion, the seven studies reported in the present thesis represent a thorough exploration of moral contagion processes with a specific focus on the role of disgust. The results of the five thought experiments show that when asked about contact with a harmless object previously owned by a moral transgressor participants indicated a desire to avoid physical contact with the object. This effect was present across a range

of different types of objects made from different types of materials and with a variety of uses and was unaffected by information about the cleanliness of the object. The moral contagion effect was not found to be dependent upon the presence of a core disgust cue. Further, the severity of the moral transgression committed was found to have an effect whereby the more morally severe the transgression was the greater the desire to avoid the tainted object. Results show that disgust was the only emotion to mediate this relationship; no mediating effect was found for other negative emotions such as anger and contempt. The more disgust participants felt, either towards the use of the object or the moral transgressor themselves, the stronger their desire to avoid the object. This mediation effect was found to be independent of whether or not the moral transgression contained a core disgust cue. In contrast to these robust thought experiment findings, the results of the two behavioural studies indicate that the relationship between moral contagion and avoidance of real-life objects is more complex. In the first behavioural study participants were found to reduce the amount of physical contact with an object contaminated by an immoral individual, but only when the moral transgression committed contained a core disgust cue. In the second behavioural study no significant differences were found across the study conditions, irrespective of whether or not the creator of the artwork was described as having committed an immoral act. The inconsistency in findings between the thought experiments and behavioural experiments indicate that it is vital for future research to utilise behavioural outcomes when examining moral contagion effects. Further research is needed to determine if magical thinking is confined to thought-based scenarios, or whether it represents a process which is intimately related to immorality and results in the behavioural avoidance of people and associated objects.

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