

# The Effect of Time on Moral Judgment

Georgi Dumanov

Advised by George E. Newman, Associate Professor of Management and Marketing at Yale  
School of Management

Submitted to the faculty of Cognitive Science in partial fulfillment of the  
requirements for the degree of Bachelor of Science

Yale University  
April 22, 2019

## **1. Abstract**

A plethora of manipulations various incidental features, including subtle and incidental features like manipulations of disgust, that affect moral judgments. The present research explores the previously unexplored effect of temporal proximity whose manipulation can influence moral judgment. Across a pilot study and two main studies, this paper finds robust evidence for the existence of the novel effect of time manipulations (i.e. decay over time) on real-time moral judgment. The results show that participants are more likely to have more severe moral outrage judgments to events that are said to have occurred more recently than to the same events when they are said to have occurred further in the past. Even though the moral judgment for both is made in the present moment, changing the timeframe of a moral act changes the severity of the moral judgment. The studies, however, do not find direct support for the hypothesized mechanism of temporal contagion as a causal explanation of the effect.

## Contents

- 1. Abstract**
- 2. Introduction**
  - 2.1. Moral Judgment
  - 2.2. Disgust
  - 2.3. Contagion
  - 2.4. Time Manipulation
  - 2.5. Present Research
- 3. Pilot Study**
- 4. Study 1**
  - 4.1. Participants
  - 4.2. Design and Procedure
  - 4.3. Results
  - 4.4. Discussion
- 5. Study 2**
  - 5.1. Participants
  - 5.2. Design and Procedure
  - 5.3. Results
  - 5.4. Discussion
- 6. General Discussion**
  - 6.1. Limitation
  - 6.2. Future Directions
  - 6.3. Concluding Remarks
- 7. Acknowledgements**
- 8. References**
- 9. Appendix**

## **2. Introduction**

In recent years, there has been a movement to remove Confederate statues and statues of slave-owners, which has caused an emotional outrage from both sides of the spectrum. On one hand, people are outraged at the moral transgressions committed by the very people the statues commemorate. Others are outraged at the fact that the statues are being removed even though they represent an accurate depiction of the history of the country. No such emotional responses are observed by tourist when sightseeing the frescos depicting the mass-enslavement and slaughter of millions of Jews in ancient Rome. No one has demanded that the frescos are taken down or destroyed. What is it about these two situations that causes such a disparity in the perception and the intensity of emotional responses? It seems that there is more than simply that the location of the events or the people being morally wronged. It seems that time has this general ability to wash away emotional salience. The two target events, in this case, entail the same moral transgression but have occurred at different times in history. This paper will examine this theorized ability of time to affect moral judgment and emotional salience.

### **2.1 Moral Judgment**

Over the course of the past two decades, academic research in the field of moral judgment has seen significant growth in its employment of established principles in social psychology. It is this abundance of research that illustrates the effect of manipulating situational context on moral judgments. For the most part, it is the decision-makers' reasoning, intuitions, and motivations that are manipulated that underpin the effect on the decision-makers' moral judgments. Haidt's Social Intuitionist Model (2001), made up of the theories of motivated

reasoning, automaticity, intuitive primacy, and social influence influenced social scientist to investigate the fundamentals bearing moral judgments from the viewpoint of the morel's theoretical accounts. In a similar fashion, Greene et al's (2001) Dual Process model of moral judgment, which relates to traditional persuasion models in social psychology (Chaiken, 1987; Petty & Cacioppo, 1986; Cushman, 2013), has stimulated researchers to understand how and what features of moral judgment processing affect the judgment at which the decision maker arrives. As a response, researchers have unveiled how the intensity of moral judgments are influenced by incredibly subtle or incidental situational shifts in various emotions, the degree and ability to process, and characteristics of moral participants and activities.

Researchers have shown that the incidental evocation of universal positivity in participants, accomplished by having participants watch Saturday Night Live episodes, modifies participants' moral judgments to Greene's famous trolley problem (Greene et al., 2004; Valdesolo & DeSteno, 2006). It turns out that incidental positivity makes participants more willing to actively harming one stranger in order to save five other strangers than otherwise. Without the manipulation, participants display an inherent repugnance to the notion of pushing over another human being. Altering the level of serotonin in one's system similarly enhances responsiveness to harm and influences moral judgment (Crockett, Clark, Hauser & Robbins, 2010). Additional research on the topic reveals further subtleties that the way manipulating mood will affect moral judgments is dependent on whether the decision is active or passive (Pastotter, Gleixner, Neuhauser & Bauml, 2013). Similarly, there are also differences between the effects on theoretical moral judgments of the specific state of mirth and that of elevation (Strohming, Lewis & Meyer, 2011).

Altering discrete emotional states antecedent to the time of decision have powerful effects on moral judgments. Emotions are defined as (1) being short-lived, (2) having a single cause, and (3) being object-oriented, while moods are defined as (1) being long-lived, (2) having multiple causes, and (3) being diffuse (Beedie, Terry, & Lane, 2005). For example, inducing a state of anger as compared to neutral emotional state or that of sadness via participants watching a video, made participants more willing to punish a hypothetical ambiguous criminal more harshly and increased their perceived sense of the criminal's intentions and guilt (Lerner, Goldberg, & Tetlock, 1998; Ask & Pina, 2011). The influence of an induced emotional state of anger on moral judgment for immoral situations also extends to real-world situations. For instance, participants in a study who were primed with incidental anger showed risen causal attribution concerning the terrorist attacks on September 11, 2001, compared to participants in the control group (Small, Lerner, & Fischhoff, 2006).

Similarly to anger, incidental manipulation of guilt has a strong effect on moral judgments about the self. That includes an exaggerated judgment of guilt and impulse to punish and purge the self (Inbar, Pizarro, Gilovich & Ariely, 2013; Lee & Schwarz, 2010; Nelissen & Zeelenberg, 2009).

Moreover, manipulating the emotional states influences the moral judgments not only of the one with the manipulated emotional state but also the moral judgment of others. Such is the case with compassion (Condon & DeSteno, 2011). Furthermore, trying to control altered compassion for others can have an effect on the confidence in the universality of moral rules (Cameron & Payne, 2012).

A different side of research that aims to demonstrate the effect of situational changes on moral judgments has to do with manipulating people's processing regarding moral dilemmas.

Much of this research that engaged techniques such as time pressure and cognitive load to illustrate how altering situational variables people's ability to deliberate when it comes to moral judgment is often considered to be sparked by the Dual Process models of moral judgment driven by the interplays between automatic and deliberate processes (Greene et al, 2004).

For example, researchers have demonstrated that introducing cognitive load in order to manipulate the ability to engage in reasoning diminishes the rates of readiness to actively harm one stranger in order to save five other strangers, among other hypothetical moral problems regarding harm (Greene, Morelli, Lowenberg & Nystrom, 2008). In addition, cognitive load also has an effect on real-life judgments. Researchers demonstrated that participants making fairness transgression judgments when under cognitive load hypocritically do not differentiate between self-judgments and judgments of others (Valdesolo & DeSteno, 2008). In a similar fashion, altering the given amount of time to respond to such dilemmas also has the above-mentioned influences on moral judgments (Suter & Hertwig 2011). In particular, reducing the time for a response (i.e. introducing time pressure) diminishes the rates of readiness to actively harm in order to save others (Paxton, Ungar & Greene, 2012). Time constraint manipulation also has an effect on the priority participants give to specific moral matters (Wright and Baril, 2011) and leads to higher sensitivity to identifying and assigning victimhood with regards to moral transgressions (Graantecedenty, Schein & Ward, 2014). Moreover, transferring cognitive resources to unrelated conspicuous stimuli such as death has also been shown to diminish the readiness to violate deontological principles (Tremoliere, De Neys & Bonnefon, 2012). Conversely, cognitive reflection triggered by taking the cognitive reflection test antecedent to the time of the decision leads to a higher readiness to violate deontological principles (Paxton et al., 2012).

Moral judgments can also be influenced by the alteration of in the characteristics of a moral participant or a moral activity through their impact on the sort of processing activity that moral actors employ. Moral judgments of individuals, whose perceptions are incidentally manipulated as moral or immoral, are influenced by these manipulations (Ditto, Pizarro, & Tannenbaum, 2009). For instance, a study finds that people who are prompted to blame an individual are more inclined to assign more causal power to that individual (Alicke, 1992). Another study shows that altering the moral valence of an event has an effect on the perceived intentions of a moral actor (Leslie, Knobe, & Cohen, 2006). It turns out that unwanted consequences are associated with a higher degree of perceived intentionality as compared to favorable consequences. Other research shows one's focus can be led to the potential positive or potential negative consequences of an event depending on the moral motivation one already holds, which can be manipulated (Ditto & Liu, 2011). There is no need for harm to be caused by a moral participant in order for moral judgments regarding that moral participant to be influenced by the manipulation of the moral conviction of the judgment-maker. A study has demonstrated people are more willing to blame individuals who perform activities that turn them beneficiaries of other people's distress even if the beneficiaries had nothing to do with the cause of the distress (Inbar, Pizarro and Cushman, 2012). What is more, changing the order of presenting moral problems or wording preferences in terms of lives lost or lives saved have a direct impact on moral judgments (Rai & Holyoak, 2010; Petrinovich & O'Neill, 1996).

Framing moral preferences in terms of lives saved versus lives lost (Li, Vietri, Galvani & Chapman, 2010) also determines whether manipulating certain features such as age will have an effect on moral judgments and perception of human value (Landy, 2013). It is clear, however, that manipulating social characteristic and identities and memberships of the individual subject



to the moral judgment can strongly affect the judgment itself. For instance, participants' evaluation of unintended murder of civilians in a hypothetical situation of a terrorist attack is affected by altering the group membership of moral actors (the terrorists) (Uhlmann, Pizarro, Tannenbaum & Ditto, 2009). The same study also finds that manipulating for patriotism moderates the above-described effect. Even extremely minimal changes to even random group membership will affect moral judgments (Valdesolo & DeSteno, 2007). Researchers also find that the degree of blame assigned to a victim for moral violations such as sexual assault will depend on whether the focus is on the victim or the criminal (Niemi & Young, 2014).

Whether an individual is perceived as deserving of moral attention (Gray, Knickman, & Wegner, 2011) or is judged as able to do morally positive or negative actions (Gray & Wegner, 2009) is shown to be dependent on the mental states of the moral participant. Researchers have found that viewing someone as a body enhances sensitivity to harm but reduces sensitivity to moral responsibility (Gray, Knobe, Sheskin, Bloom & Barrett, 2011). While it may be different in the presence of brain damage (Young, Bechara, Tranel, Damasio, Hauser, & Damasio, 2010) or brief alterations of neural activity (Young, Camprodon, Hauser, Pascual-Leone, & Saxe, 2010), in general, acts that result from an accident are deemed better than those caused with intention (Cushman, 2008). Furthermore, the effect of intention on a moral judgment is increased for moral transgressions that involve harm and decreased for moral transgression involving purity violations compared to solely harm-based moral violations (Young & Saxe, 2011; Chakroff, Dungan, Koster-Hale, Brown, Saxe, & Young, 2015). Assigning blame to others decreases in the case of negative moral acts if they are manipulated to be more impulsive (Pizarro, Uhlmann, & Salovey, 2003).

The reported meaning of a moral violation is affected by subtle changes in the context encompassing a moral action. For instance, the perceived legitimacy of a policy position on how to operate in hostage situations changes depending on whether the relational context is framed as military or diplomatic (Ginges & Atran, 2011). The way an action affects the feelings of self-threat (Jordan & Monin, 2008) or the beliefs about the moral principles used in the formation of moral judgments (Carnes, Lickel & Janoff-Bulman, 2015) are affected by changes in the social context of that action. Whether an action transpires in a context associated with market pricing, authority ranking, communal sharing or equality matching will result in alternative moral judgments of the action (Fiske, 1991; Rai & Fiske, 2011). Moral judgments are also subject to the influence of manipulations of the kinematics of moral acts (Greene et al, 2009), salience of moral laws (Broeders, van den Bos, Muller & Ham, 2011), locus of interference (Waldmann & Dieterich, 2007), social connection (Lucas & Livingston, 2014), perceptions of dominance (Lammers, Stapel, & Galinsky, 2010), and visual obstruction (Amit & Greene, 2012), among other contextual manipulations.

## **2.2 Disgust**

Disgust is the emotion that has received by far the most significant attention from researchers exploring the situational effects of emotions on moral judgment and has a special place in the research literature on this topic. Previous research has defined disgust as “revulsion at the prospect of (oral) incorporation of an offensive substance” (Rozin & Fallon, 1987; Angyal, 1941). Most of the literature focuses on the interaction between disgust and moral judgment as it relates to violations of purity (Horberg, Oveis, Keltner, & Cohen, 2009; Haidt & Graham, 2007). Fairness is a different moral realm to which the influence of disgust spreads (Hutcherson &

Gross, 2011; Chapman, Kim, Susskind, & Anderson, 2009). A study demonstrates that participants perceive moral violations described by vignettes as harsher when in an incidentally manipulated state of disgust as compared to the control group (Wheatley & Haidt, 2005). Another study found that individuals were more likely make a moral judgment with a higher severity if they are in the presence of a disgusting smell (i.e. fart spray) than those in the control group (Schnall, Haidt, Clore, & Jordan, 2008).

Even though most of the research focusing on the intersection between disgust and moral judgments has shown that magnifying disgust results in more severe moral judgments (Eskine, Kacinik, & Prinz, 2011; Cheng, Ottati, & Price, 2013), some studies have demonstrated ways in which reducing the state of disgust leads to less severe moral judgments. For instance, individuals make the severity of moral judgments is attenuated if after amplifying disgust participants washing their hands (Schnall, Benton, & Harvey, 2008). Yet other studies have shown that more severe moral judgments are made if the decision-maker is reminded of purity (Zhong, Strejcek & Sivanathan, 2010; Helzer & Pizarro, 2011; Schnall, Haidt, Clore, & Jordan, 2015; Landy & Goodwin, 2015).

## **2.3 Contagion**

Disgust and contagion are inevitably interconnected and this discussion would be incomplete without a discussion and overview of the latter both because it related to disgust and by extension to moral judgments but also because it is an essential element to my material that this thesis explores. Disgusting items are considered to possess contaminating qualities that reduce the value of other items via contact (Rozin & Fallon, 1987). Researchers investigating the impact of emotions on material transactions find that individuals think that everything nearby them is contaminated, resulting in lower buying and selling prices, reflecting the perception of

the value of an object, if these individuals are manipulated to feel disgusted (Lerner, Small, & Loewenstein, 2004). Contagion theories are based on the sympathetic magical law of contagion: “once in contact, always in contact” (Tylor, 1974/1871; Frazer, 1922/1890; Mauss, 1972/1902). When two people or objects come into even minimal physical contact with one another, they pass “essences” between each other that results in the fundamental characteristics of one are installed in the other permanently. Further research demonstrated that these contagion beliefs are not limited to primitive cultures but are rather acknowledged as a universal element of adult human cognition (Rozin, Millman & Nemeroff, 1986; Rozin & Nemeroff, 1990; Nemeroff & Rozin, 2000). For example, researchers show that food touched by a sterilized cockroach or an item that belonged to a poorly-regarded or disliked person (e.g. Adolph Hitler) will decrease the perceived value and desirability of the object (Rozin et al., 1989; Rozin & Royzman, 2001).

There is significant evidence for contagion influencing the perception of value and by extension influencing judgments in general (Smith, Newman & Dhar, 2015). A wealth of recent research has shown that physical contact with a specific object, place, event, or person can increase the value of a mundane item (Belk 1988; Newman & Bloom 2014; Newman et al. 2011; Beverland 2005; Newman & Dhar 2014; Grayson & Martinec 2004; Nemeroff & Rozin 1994; O’Guinn 1991). While a lot of the focus, as outlined above, is on the negative contagion, there are many instances of positive contagion that involve the transfer of “essence” in a way that makes the recipient perceived as more valuable (Newman & Dhar, 2014). For instance, individuals are more inclined to buy a shirt that an attractive person of the opposite gender has worn before (Argo, Dahl, & Morales, 2008). In addition, ordinary items that were touched by liked celebrities are perceived to significantly rise in value (Newman et al., 2011; Newman & Bloom, 2014). If the inception of a piece of art included immediate physical contact with the

artist, the artwork's value increases (Newman & Bloom, 2012). What is more, people may perceive themselves as having improved skills (i.e. accuracy and creativity) if they work with objects that came into physical contact with people who are considered high on the respective dimensions (Lee et al., 2011; Kramer & Block, 2014). Furthermore, the more physical contact there is between an item and an admired source, the higher the perceived value of the object is. For instance, individuals are more likely to gamble on items that are closer to "lucky objects" (Mishra, 2009). Analogously, objects will have a higher selling price at auction ions as a function of the amount of physical contact the object has had with a celebrity (Newman & Bloom, 2014). To date and to my knowledge, prior research on contagion has focused solely on altering physical contact (i.e. Nemeroff & Rozin, 1994; Mishra, 2009; Newman et al., 2011; Argo et al., 2008).

Paul Rozin and Sharon Wolf find that people form an attachment to national and sacred land based on positive contagion (Rozin & Wolf, 2008). The researchers create a measure of attachment and administer it to Jewish college students in Israel and the United States who show that land becomes more important by being occupied by a group over long periods of time. The paper demonstrates a very strong correlation between positive contagion and levels of attachment to the land. It essentially that people believe that a place can become imbued with the "essence" of moral transgression. This is the first paper that hints at contagion in a temporal context.

Surprisingly, there is only one study that explore in the first place and finds evidence for temporal contagion, the notion that items perceived as temporally closer to the source, a prized object, place, event, or person, is judged as absorbing an increased amount of the "essence" of source, resulting in the item being deemed to have a higher value (Smith, Newman & Dhar, 2015). In this study, which keeps the degree of physical contact fixed, individuals judge an

objects' value as higher, the higher the observed order in which the items were produced. In particular, consumers exhibit a strong liking for objects with earlier serial numbers which arises from the perception that objects with earlier serial numbers are temporally closer to the source, such as the artist who created it. Furthermore, beliefs in contagion influence individuals to perceive these objects as owning more of a prized "essence".

## **2.4 Time Manipulations**

It is surprising to find out that no research has been conducted on the effect of time on the moral judgment domain because there is a vast body of research that explores various and widespread effects of time manipulations on many a plethora of domains. Studies on the estimation of elapsed time are categorized either by characteristics of the event itself or those of the time interval following the event. For example, prior research on time perception shows that more emotional events (Bratfisch, Ekman, Lundberg, & Kruger, 1971) or events that are more accessible in memory (Brown, Rips, & Shevell, 1985) leave stronger impressions in the memory of people in comparison to less accessible and less emotional ones. In addition, the perceived duration of events is influenced by the metacognitive beliefs concerning the causal connection between the events (Faro, Leclerc, & Hastie, 2005). Moreover, participants recall the duration of specific events, such as epidemics or military disputes among others, by applying their metacognitive beliefs and accessing their general knowledge of the expected duration such events typically take (Burt & Kemp, 1991). Less routine (Avni-Babad & Ritov, 2003) and more complicated (Block & Zakay, 1997) events, as well as events that associated with higher contextual variation (Zakay & Block, 2004), are perceived as longer in recollection. Similarly, brief events associated with a larger number of elements are recalled as taking longer (Ornstein, 1969) so an episode is perceived to have a longer duration if 60 words are said during that

episode as compared to 30 words (Block, 1974). Strong memory cues lead to the inclination to judge dates as more recent (Friedman, 1993; Morwitz, 1997) while participants use contextual signals of an event in order to locate it on the time continuum (Friedman, 1996). A more recent study has found that the greater the number of the accessible events, related to the target event, that occupy a time interval is, the more distant the event is perceived to be (Zauberman et al., 2010). Unrelated events, however, do not have such an effect.

## **2.5 Present Research**

As this detailed literature review shows, there is a vast amount of manipulations of various incidental features that affect moral judgments. Even incidental features relating to disgust can influence moral judgment. In turn, this literature review naturally begs the question about the effect of temporal proximity as one input whose manipulation can influence moral judgment. The following studies aim at exploring how time manipulations (i.e. decay over time) may in real time influence moral judgment. I test my proposal in a pilot study and two main studies and try to explore within moral vignettes (1) the severity of people's moral outrage, generalizable to moral judgment, which increases in real time as a function of time decay and (2) test whether this effect has to do with beliefs about temporal contagion as a causal source of the effect.

The pilot study pre-tests moral vignettes in order to make an adequate selection of moral vignettes for the main studies that avoid ceiling and floor effects. Study 1 explores and documents the previously unexplored effect of time decay on moral judgment. The study presents participants with widely used moral vignettes and asks them to indicate their level of moral outrage as a response holding everything else constant but varying the time at which the events described by the moral events take place. Study 2, which uses an almost identical

methodology to that of Study 1, aims at replicating the effect in support of Study 1 but, more importantly, attempts to link the newly documented effect to temporal contagion as a potential source of the effect. The temporal manipulation for these studies results in two conditions. In the present conditions, the events being described by the vignettes are said to have occurred within the past month, while in the past condition, these same events are said to have occurred a hundred years from the current time.

**H1:** The severity of people's moral outrage will change in real time as a function of time decay. The severity of moral judgment increases if the target of the judgment is temporally closer to the present.

**H2:** This effect has to do with beliefs about temporal contagion as a causal source of the effect.

### **3. Pilot Study**

It is worth briefly explaining the pilot study to the extent to which it illustrates the choices made in the selection of stimuli for the main studies. While researchers in the moral foundation theory field use various moral violations stimuli to fit their purposes, it is crucial to use a validated set of moral violations that traverse the moral domain in order to properly investigate influences on moral judgment. In the past, the majority of research in the field has relied on two primary measures which are the Sacredness Scale (MFSS) and the Moral Foundations Questionnaire (MFQ). The MFSS measures people's willingness to commit moral violations for a monetary reward, while the MFQ measures the support for self-theories and obscure moral norms and consists of 15 agree/disagree items. Both of these measures, however,



have significant limitations. The MFSS is meant to measure people's own willingness to transgress moral principles for monetary value rather than making moral judgments about other people, events, objects or places. On the other hand, the MFQ, perhaps the most widely used measure in the past, measures people evaluations of abstract principles in place of judgments of realistic and detailed situations, which many critics have reasonably pointed out is not "how people actually make moral judgments" and can often deviate from real-life concrete moral judgments (Graham et al., 2009; Haidt, 2001). Furthermore, some of the items include "ambiguous referent[s]" the perception of whom, which can vary between individuals ex-ante, as demonstrated by the literature review, can have a significant effect on the moral judgment (Frimer, Biesanz, Walker, & MacKinlay, 2013). Last but not least, the items represent a very limited part of the spectrum of moral judgments that people are exposed to in reality (Frimer et al., 2013).

Apart from the two above-discussed main measures, researchers have used various combination of moral vignettes on an impromptu basis but have neither been validated nor do they represent a complete spectrum of the moral domain (Feinberg, Willer, Antonenko, & John, 2012; Pennycook, Cheyne, Barr, Koehler, & Fugelsang, 2013; Eskine, Kacirik, & Prinz, 2011; Schnall, Haidt, Clore, & Jordan, 2008; Wheatley & Haidt, 2005; Heekeren et al., 2005; Parkinson et al., 2011; Schaich Borg et al., 2008; Schaich Borg et al., 2011; Harenski, Antonenko, Shane, & Kiehl, 2008; Harenski & Hamann, 2006; Moll, de Oliveira-Souza, Eslinger, et al., 2002).

Scott Clifford, Vijeth Iyengar, Roberto Cabeza, and Walter Sinnott-Armstrong (2015) have created the Moral Foundations Vignettes (MFVs), which is a set of 90 vignettes with between 10 and 16 vignettes per moral foundation (i.e Care, Fairness, Loyalty, Authority,

Sanctity, and Liberty; Haidt & Joseph, 2004). Every vignette depicts a concrete realistic behavior violating a particular moral principle but not other moral principles. Notably, the vignettes are controlled on many dimensions including format, syntactic structure, content, comprehensibility, complexity, ease of imagination, allowing them to be a great fit the needs for sorts of moral judgment research. The vignettes exclude situations that need prior experience or understanding of a specific subject or supported explicit or strong political stances. Last but not least, the researchers have demonstrated the validity of the MFVs through empirical studies and analyses, and since their introduction, MFVs have gained popularity among researchers.

For the pilot study, I was faced with certain limitation and had to pick a subset of the 90 MFVs. Firstly, the temporal manipulation automatically made some of the vignettes unrealistic and obsolete. While all of the behaviors from the vignettes could easily apply to the present condition, many would not make sense or seem realistic in the framework of having occurred a hundred years ago. Secondly, all of the studies were run on Amazon's Mechanical Turk which limits the number of vignettes I could test for both from a monetary perspective (it would be too expensive to run 90 scenarios) and from the perspective of expecting to keep participants attention for that long given the nature of the platform. Granted these restrictions, I was left with 20 moral foundations vignettes that represented all five of the moral foundations and passed the conditions provided by the manipulation.

For the pilot study, I recruited 199 participants ( $M_{\text{age}} = 39.41$  years;  $SD_{\text{age}} = 12.17$  years; 109 male participants) from Amazon's Mechanical Turk (MTurk). All participants read the 20 moral foundation vignettes and after each, they were asked, "To what extent does this event make you feel moral outrage?" and had to respond on 7-point Likert scale. The order in which the vignettes were presented was randomized.

Since the aim of this pilot study was to dismiss the vignettes that are inappropriate measures for the manipulation and the measure of the studies, I will discuss only the choices I made regarding which stimuli to keep and test in the main studies but will not discuss the main effect or any other effect. This task is left to the result and discussion sections of the main studies.

The results showed both ceiling and floor effects. Some of the MFVs were too extreme and showed a ceiling effect since participants were consistently rating them as maximally morally outrageous. Conversely, some of the MFVs were too mild, especially in comparison with the remaining MFVs, and revealed a floor effect marked by participants consistently scoring them as minimally morally outrageous. After removing both the vignettes that demonstrated a ceiling effect and those marked by the floor effects, I was left with a selection of 8 moral foundation vignettes. I consider this to be a very sensible amount since giving many more of the same choices to MTurk participants often result in mechanical (no pun intended) responses whereas presenting too few vignettes would be unrepresentative of the full spectrum of moral judgments that people make.

## **4. Study 1: Manipulating Time**

In Study 1, participants were asked to evaluate how morally outraged a series of events described by moral foundation vignettes makes them feel while the time of events was varied between subjects (a *month ago* vs *100 years ago*). The goal of this study was to explore and document the effect of time decay on real-time moral judgment through the manipulation of time. While the time of occurrence is varied between subjects, the time at which participants learn about each event is the present for both conditions as is the time at which moral judgments

are made. As a result, the only manipulation that has any bearing the moral judgment made by the decision makes is how far from the present moment, at which the judgment is being made, the event occurred. The primary dependent measure was rating moral outrage of each moral vignette. However, I also obtained a measure for disgust as a response to the events described by each vignette.

## **4.1 Participants**

Six hundred participants were recruited from Amazon's Mechanical Turk (MTurk). The survey was designed specifically for the platform, which allows getting a large scale of participants to take it. MTurk has received a lot of criticism in recent years for having bots taking the survey giving random answers and generating useless at best and inaccurate at worst data. I took great care in order to make sure that no bots were able to finish the survey, therefore not counting towards the data. An elaborate explanation about the data exclusion principles and the choices made to ensure the high quality and trustworthiness of the data can be found in the results section. Only adults living in the United States of America were allowed to take the survey. In addition, individuals were only permitted to take the survey on a laptop or desktop but not on mobile devices. The former criterion was set (1) because the design of the study sets the events in a foreign country for the purpose of believability and realism and (2) so that participants do not have various preexisting beliefs about that foreign country, which might contaminate the data and affect the integrity of the results. The latter criterion was put in place because the Qualtrics survey looks differently on a mobile device then it does on a larger screen so any deviations that might come from that difference were not welcome. In addition, participants who take surveys on mobile devices often are more likely to rush through the survey and pay less attention as compared to those viewing it on a larger screen. This is an attempt at

minimizing the likelihood of such haste and inattention, usually resulting in inaccurate data, occurring. All participants were forced to answer all questions and would neither get paid nor would their data be used unless they completed the entire survey until the very end.

In fact, nine hundred and ten participants initiated the study but many did not complete it due to a very stringent screening procedure. Participants who were not able to correctly answer all of the screening questions, which included what food is not consumed on the 4th of July or if you have ever been bitten by a great white shark among many more, that bots would not be able to answer were automatically excluded (for more details see Appendix). Participants who did not take the survey in one sitting were also excluded and so were people who did not consent to take the survey. Last, but not least, participants who were not able at the end of the survey to correctly identify the name of the country (Iceland) in which the events were said to occur, the time specified (past month or 100 years ago) when the events were said to occur, and the name of the newspaper in which the headlines were published (Morgunblaðið) were also excluded. After all of these exclusion principles were stringently applied to the data, five hundred and ninety-five participants ( $M_{\text{age}} = 39.95$  years;  $SD_{\text{age}} = 13.37$  years;  $N_{\text{male}} = 305$ ) ( $N = 595$ :  $N_{\text{past month}} = 297$ ,  $N_{100 \text{ years ago}} = 298$ ) were left.

## **4.2 Design and Procedure**

All participants were welcomed by an introductory message that walks the participants through the basics of what the format the survey will be taking (for more details see Appendix). In addition, it asks each participant to give their honest answer assuring them of their anonymity and that there is no right answer. The message also instructs them to take the survey in one sitting, in one session, without visiting other websites or opening other tabs or windows, without performing other tasks simultaneously or communicating with other people. Participants are then

asked to give their consent to take the study. Furthermore, all participants are asked to answer six screening questions that will screen through all the bots trying to take surveys online (for the exact questions see Appendix). At the end of the survey, all participants are asked to answer five demographics questions about their gender, age, state, household income, and political affiliation (for the exact questions see Appendix). On a separate page following the demographics questions, all participants have to answer three attention check-type questions regarding content from the survey, that served as another exclusion criterion (for the exact questions see Appendix). Finally, participants were allowed to leave a comment and were given a debriefing form (for more details see Appendix).

After participants pass the screening questions, each participant is randomly assigned to one of two conditions in a 1 x 2 (time: past month vs. 100 years ago) between-subject design. In both conditions, participants are presented with specific instructions explaining that they will encounter headlines from Morgunblaðið, a newspaper in Iceland, and were asked to read each headline and respond to the questions that follow each headline (for more details see Appendix). In one condition (the *past month* condition), the instructions explicitly point out that the headlines were directly taken from actual articles published by Morgunblaðið in this *past month*. Analogously, in the other condition (the *100 years ago* condition), the instructions explicitly emphasize that the headlines were directly taken from actual articles published by Morgunblaðið in this *one hundred years ago*. The instructions were followed by a picture of either modern day Reykjavik, the capital of Iceland, or what Reykjavik actually looked like 100 years ago as per the respective condition, both with a written description of what the picture represents (for the actual pictures see Appendix). Participants were not allowed to proceed to the next page without correctly answering a question about the specified time when the described events take place.

Not only does that check ensure that every participant has read the instructions, but also provides a reminder of and re-enforces the most important detail, increasing the likelihood that the participant will keep the timeframe in mind when making judgments about each headline.

Once participants respond correctly to the date-attention check, they are presented with the eight moral foundation vignettes the selection process of which was explained in detailed in the Pilot Study section. The order of the MFVs is randomized. Each vignette was displayed to the participants on a separate page and each vignette was preceded by instructions reminding of the time at which the event occurred (*past month vs 100 years ago*), increasing the likelihood that the temporal manipulation is activated when participants make their judgments. The vignettes were presented in the format of a picture of a headline from the newspaper describing a supposedly real event. Every vignette is followed by two questions. The primary measure for moral outrage was phrased as follows: “To what extent does this event make you feel moral outrage?” Analogously, the question regarding disgust read as follows: “To what extent do you find this event disgusting?” Participants were forced to respond to these questions on a 7-point Likert scale (1 = “Not at all”, 7 = “A great deal”).

The eight MFVs are displayed in Table 1:

*Table 1: The Selected Eight MFVs*

A Boy Threw Rocks At Cows That Were Grazing In The Local Pasture
A Man Beat His Pony To Death
A Wife Hit Her Husband With A Hammer On The Head For Coming Home Late
A Woman Vandalized The House Of Reykjavik's Mayor
A Family Ate The Carcass Of Their Pet Dog That Had Been Run Over
A Worker At A Morgue Ate His Dinner Off Of A Dead Body
Local Official Proposes A Ban To Prevent People From Hugging And Kissing In Public
A Pastor Banned His Congregants From Wearing Bright Colors In The Church

Choosing Iceland as a contextual framework was a conscious choice. It is a country with a very small population, which helps with the ambiguity of the country, and relatively few Americans would have visited Iceland or would be acquainted with someone from Iceland. These features make Iceland a relatively ambiguous country, making it less likely for participants to dismiss the possibility of the events described by the headlines actually occurring. Perceiving the events as impossible or unauthentic might have an effect on the judgment so I have tried to minimize that likelihood as much as possible. To that end, Morgunblaðið is truthfully a top Icelandic newspaper and the most popular Icelandic website and also serves the purpose of providing authenticity. Such is also the purpose of showing an actual picture of Reykjavik in addition to helping participants with the ease of imagination. The reason why the survey presents the vignettes as headlines from a newspaper that represent real-life events is to get as close as possible to the way people make moral judgments in real-life. Additionally, the images depicting the headline were manipulated using Photoshop to look exactly like what the Morgunblaðið newspaper looks like nowadays or a hundred years ago depending on the respective condition. This is another step to maximizing the authenticity of the experience and believability of the target situations that are being morally evaluated.

### 4.3 Results

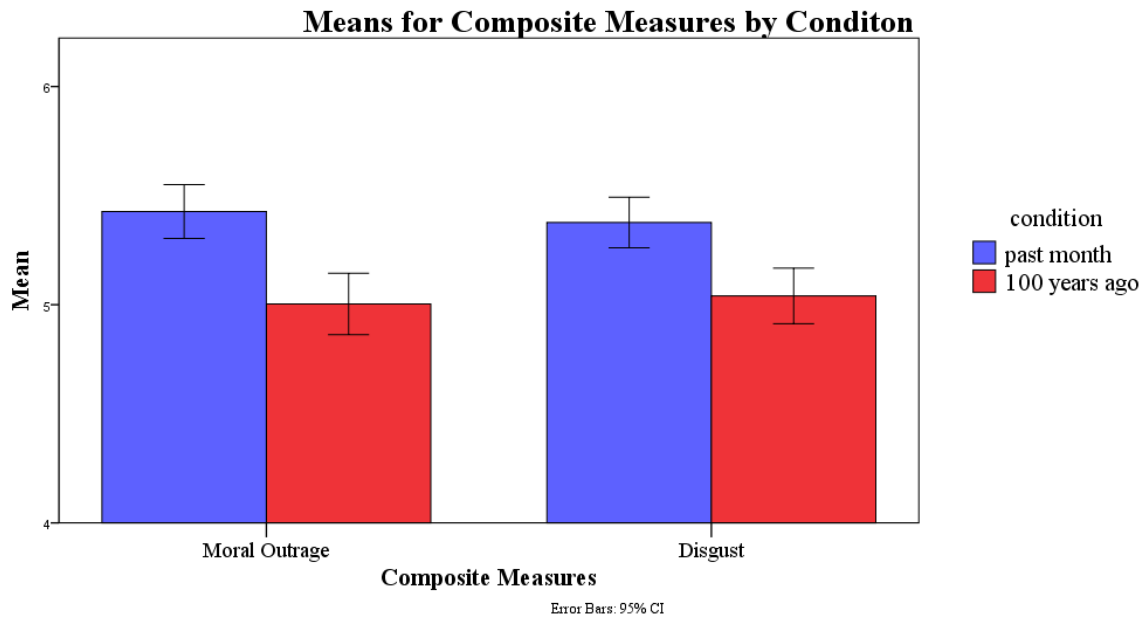
*Table 2: Reliability Statistics of Study 1*

Reliability Statistics		
	Cronbach's Alpha	N of Items
<b>Moral Outrage</b>	0.81	8
<b>Disgust</b>	0.785	8



Firstly, I performed a scale reliability analysis, the results of which are detailed in Table 2. Cronbach's Alpha measures internal consistency between items in a scale. For the moral outrage measure, a Cronbach's Alpha of 0.810, which is considerably above the widely accepted 0.7 cutoffs for the inter-item correlation, reveals that this is a reliable scale. Analogously, the disgust measure is associated with a Cronbach's Alpha of 0.785 which also passes the test for a reliable scale successfully.

*Figure 1: Means for Composite Measures by Condition*



*Table 3: Main Results for Moral Outrage: Study 1*

Moral Outrage					
condition	N	Mean	Std. Deviation	Std. Error	Statistical Significance
Past Month	297	4.93	1.08	0.06	$p < 0.001$
100 Years Ago	298	4.50	1.24	0.07	
Total	595	4.72	1.18	0.05	

Figure 1 and Table 3 above illustrate the means of the composite measures of all eight vignettes for both moral outrage and disgust. A one-way analysis of variance (ANOVA) reveals that the main effect of time on moral outrage is statistically significant ( $p < 0.001$ ). In the case of moral outrage, participants in the *past month* condition ( $M = 4.93$ ;  $SD = 1.08$ ) report to be more severely morally outraged than participants in the *100 years ago* condition ( $M = 4.50$ ;  $SD = 1.23$ ). As expected, people experience significantly more moral outrage if the moral transgression has occurred more recently than if it said to occur a further in time,  $F(1,593) = 20.11, p = .000$ .

Table 4: Main Results for Disgust: Study 1

Disgust					
condition	N	Mean	Std. Deviation	Std. Error	Statistical Significance
Past Month	297	4.88	1.02	0.06	$p < 0.001$
100 Years Ago	298	4.54	1.12	0.06	
Total	595	4.71	1.08	0.04	

Similarly, a one-way ANOVA reveals that the main effect of time on disgust is also statistically significant ( $p < 0.001$ ) (see Table 4). In the case of disgust, participants in the *past month* condition ( $M = 4.88$ ;  $SD = 1.02$ ) report to be more severely morally outraged than participants in the *100 years ago* condition ( $M = 4.54$ ;  $SD = 1.12$ ). People are significantly more disgusted by moral transgressions if they are said to have occurred more recently than if the events are said to have occurred a while ago,  $F(1,593) = 15.22, p = .000$ .

Figure 2: Means for Moral Outrage for All Moral Vignettes by Condition

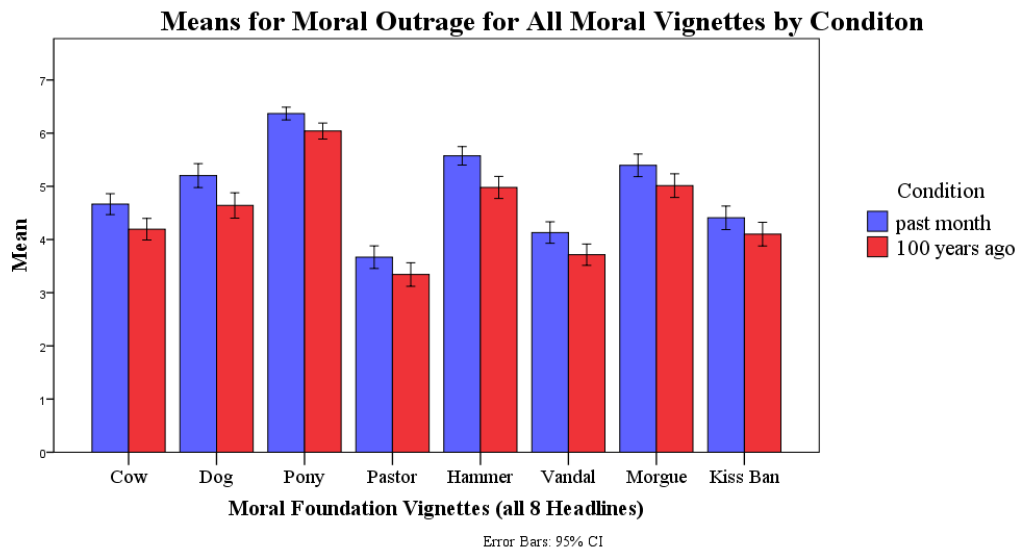


Figure 2 above breaks down the measure for moral outrage by headlines. A one-way ANOVA analysis shows that the effect of manipulating time on moral outrage is statistically significant ( $p < 0.05$ ) for each individual item. This evidence is particularly strong and further supports the hypothesis that moral judgments exhibit time decay.

Figure 3: Means for Disgust for All Moral Vignettes by Condition

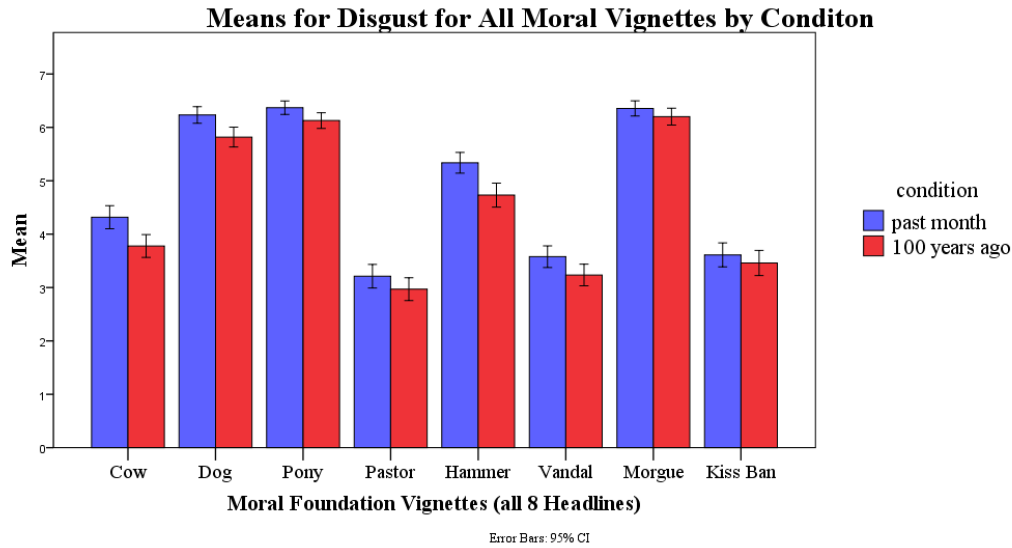


Figure 3 above breaks down the measure for disgust by headlines. Analogously, one-way ANOVA analysis shows that the effect of manipulating time on disgust is statistically significant (cow, dog, pony, hammer, vandal:  $p < 0.05$ ) for most individual items but not for all (pastor:  $p = 0.1$ ; morgue:  $p = 0.15$ ; kiss ban:  $p = 0.3$ ). The composite measure is much more indicative of the effect that the study is interested in. In addition, two of the three non-significant items (pastor and kiss ban) are simply not disgusting, while the morgue item arguably exhibits a ceiling effect.

Income, age, gender, or political views do not have significant interactions with the effect of manipulating time.

## 4.4 Discussion

For both moral outrage and disgust, I observe that manipulating time produces a strong effect on the target judgment. Both of these effects are novel and undocumented and will hopefully push the boundaries of research on moral judgment and the influence of time further. As hypothesized, moral outrage, which is easily generalizable to moral judgment more broadly, is subject to time decay. The severity of moral judgment increases if the target of the judgment is

temporally closer to the present. The further removed temporally the target of the moral judgment is, the less severe the judgment itself. The fact that this effect is significant not only for the composite measure but also for each individual situation speaks to the robustness of the effect. It is fascinating that both moral judgments are made in real time. Regardless of when the event occurred, the decision maker is learning about it in the present moment and that is when the judgment is made. Importantly, this is not an incidental exposure effect but rather it is an effect of belief.

There are two main reasons for the inclusion of the measure of disgust in Study 1. First and foremost, the extensive literature clearly establishes the link between moral judgment and disgust. It is an accepted way in which researchers ask about moral reactions and the extremity of moral reactions. In this way, the study gets at the actual emotions that people are experiencing as they are taking the survey apart from their judgment of perceived moral transgressions. As such, Study 1 reveals that there are differences in actual, felt emotion in response to those the events under time manipulation.

Secondly, the fact that there is movement in the disgust measure is suggestive of processes that are consistent with contagion. Thus, the measure for disgust aims at providing an initial indication of what the mechanism behind this effect might be. I hypothesized that the effect of time on moral judgments might be explained by temporal contagion. The fact that the intensity of real-time disgust will depend on how close or far from the present moment the target object, event, person, or place is, is consistent for the hypothesis but certainly not sufficient.

## **5. Study 2: Replicate and Explore a Causal Mechanism**

Study 2 has two main goals: (1) to replicate the main effect of time on moral judgment and (2) to find evidence for or against a potential source mechanism causing or at least

contributing to the main effect. The hypothesis for the suggested mechanism is based on the paper by Paul Rozin and Sharon Wolf on attachment to sacred land, detailed in the literature review. The paper demonstrates that is that people think that place can become imbued with the essence of moral transgression. Based on the idea of temporal contagion (Smith, Newman & Dhar, 2015), perhaps this essence also dissipates with time. The idea is that people think about moral transgression as contaminating a place and space in time, and that contaminating factor, just like a physical substance, dissipates. Like a natural physical structure might erode over time, I hypothesize that the contagious properties of a moral event might also erode over time.

## **5.1 Participants**

Four hundred participants were recruited from Amazon's Mechanical Turk (MTurk). The same stringent and rigorous screening procedure from Study 1 was applied to Study 2 as well. After excluding all of the participants who did not comply with the exclusion principals, out of the initial five hundred and thirty-eight participants who started the survey, three hundred and ninety-eight were left ( $M_{\text{age}} = 36.87$  years;  $SD_{\text{age}} = 11.69$  years;  $N_{\text{male}} = 218$ ) ( $N = 398$ :  $N_{\text{past month}} = 201$ ,  $N_{100 \text{ years ago}} = 197$ ).

## **5.2 Design and Procedure**

Study 2 closely resembles the design of Study 1. There is only one very significant difference. The questions being asked as dependent measures are different. While the question about moral outrage is kept exactly the same, the measure of disgust is removed. In its place, two new questions are asked: "How pleasant or unpleasant would it be to visit the precise location where this event occurred?" and "To what extent does this event have the potential to impact you

personally?” Once again, participants were forced to respond to these questions on a 7-point Likert scale (1 = “Not at all”, 7 = “A great deal”). The scale is kept the same between questions in order not to confuse the participants who might make a mistake if the scale change between questions. Both of these measures are collected in order to attempt to find direct support for or evidence against a specific potential mechanism underlying the main effect. The former question represents the contagion mechanism and the question is worded in accordance with previous research on contagion described in the literature review. The latter measure is trying to understand if the mechanism behind the described phenomenon has to do with the potential to impact the decision-maker personally. This notion also ties in with temporal contagion principles.

### 5.3 Results

*Table 5: Reliability Statistics of Study 2*

<b>Reliability Statistics</b>		
	<b>Cronbach's Alpha</b>	<b>N of Items</b>
<b>Moral Outrage</b>	0.821	8
<b>Contagion</b>	0.83	8
<b>Impact</b>	0.879	8

Firstly, I performed a scale reliability analysis, the results of which are displayed in Table 5. Cronbach’s Alpha measures internal consistency between items in a scale. For the moral outrage measure, a Cronbach’s Alpha of 0.821, which is considerably above the widely accepted 0.7 cutoffs for the inter-item correlation, reveals that this is a reliable scale. Analogously, the

contagion measure is associated with a Cronbach's Alpha of 0.830 and the impact measure has a Cronbach's Alpha of 0.879, both of which also pass the test for a reliable scale successfully.

Figure 4: Means for Composite Measure of Moral Outrage by Condition

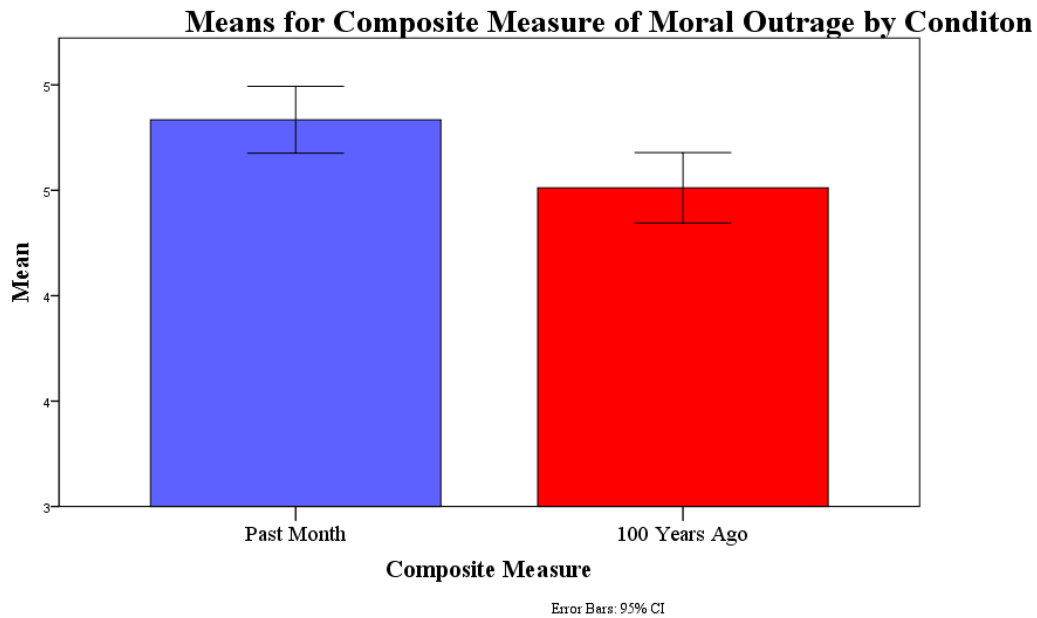


Table 6: Main Results for Disgust: Study 2

Moral Outrage					
condition	N	Mean	Std. Deviation	Std. Error	Statistical Significance
Past Month	201	4.83	1.14	0.08	$p = 0.006$
100 Years Ago	197	4.51	1.19	0.08	
Total	398	4.67	1.17	0.06	

Figure 4 and Table 6 above illustrate the means of the composite measures of all eight vignettes for moral outrage. A one-way analysis of variance (ANOVA) replicates the main effect of time on moral outrage which is statistically significant ( $p < 0.01$ ). In the case of moral outrage, participants in the *past month* condition ( $M = 4.84$ ;  $SD = 1.14$ ) report to be more severely



morally outraged than participants in the *100 years ago* condition ( $M = 4.51$ ;  $SD = 1.19$ ). As expected, people experience significantly more moral outrage if the moral transgression has occurred more recently than if it said to occur a further in time,  $F(1,396) = 7.657$ ,  $p = .006$ . Moreover, as in Study 1, all of the individual vignettes show a significant effect of time on moral outrage.

*Table 7: Main Results for Contagion: Study 2*

Contagion					
condition	N	Mean	Std. Deviation	Std. Error	Statistical Significance
Past Month	201	2.90	0.99	0.07	$p = 0.491$
100 Years Ago	197	2.84	0.94	0.07	
Total	398	2.87	0.96	0.05	

*Table 8: Main Results for Impact: Study 2*

Impact					
condition	N	Mean	Std. Deviation	Std. Error	Statistical Significance
Past Month	201	2.33	1.29	0.09	$p = 0.711$
100 Years Ago	197	2.28	1.22	0.09	
Total	398	2.30	1.25	0.06	

Table 7 and 8 above, summarize the main results of the effect of time on the measures for contagion and impact such as they are. A one-way analysis of variance (ANOVA) reveals that the main effect of time on the measures of contagion and impact are not statistically significant ( $p > 0.05$ ). In the case of contagion, participants in the *past month* condition ( $M = 2.90$ ;  $SD =$

0.99) report that it would be similarly pleasant or unpleasant for them to visit the precise location where this event occurred as those in the *100 years ago* condition ( $M = 2.84$ ;  $SD = 0.94$ ),  $F(1,396) = 0.475$ ,  $p = .491$ .

Analogously, in the case of impact, participants in the *past month* condition ( $M = 2.33$ ;  $SD = 1.29$ ) do not report that the described event have the greater potential to impact them personally than those in the *100 years ago* condition ( $M = 2.28$ ;  $SD = 1.22$ ),  $F(1,396) = 0.138$ ,  $p = .711$ .

Income, age, gender, or political views do not have significant interactions with the effect of manipulating time.

## 5.4 Discussion

Study 2 successfully replicated the results from Study 1 to demonstrate the robustness of the main effect of time on moral judgment. The severity of moral judgment increases if the target of the judgment is temporally closer to the present. The further removed temporally the target of the moral judgment is, the less severe the judgment itself. It turns out, however, that Study 2 does not find any direct support for the hypothesis that temporal contagion can explain the effect at least in the way that contagion was measured. The time manipulation did not affect participants' responses on how pleasant or unpleasant it would be to visit the location where the event described in the MFVs occurred or on the potential for said events to impact them personally.

## 6. General Discussion

Across a pilot study and two main studies, this paper finds and documents the novel effect of time on real-time moral judgments. As hypothesized moral outrage is subject to time decay. The severity of moral judgment increases if the target of the judgment is temporally closer to the present, while the further temporally removed the target of the moral judgment is, the less severe the judgment itself is. This is true not only of the composite measures for moral outrage but also for the individual vignettes given to participants. This effect is further tested and supported by the measure of disgust as an alternative measure of the severity of moral transgressions.

This effect is novel, robust and is important both on academic merit and because it bears significant real-life implications. From an academic stance, this paper document a novel and previously unexplored effect and contribute to the advancement of research and understanding of the moral judgment domain. In addition, this effect has real-life implications on various domains such as court cases or repatriations. Repatriation is defined as “the process of returning an asset, an item of symbolic value or a person – voluntarily or forcibly – to its owner or their place of origin or citizenship.” The amount in repatriations paid from one party to another will depend on the current judgment of the decision-maker of the moral transgression done in the past. As such, the newly discovered effect would predict that the further away from the present the moral transgression occurred, the less intense the moral judgment will be and by extension, the smaller the repatriation this judgment will result in. Understanding that moral violations seem to have a decay function is crucial in such circumstances and allows the decision maker to account for the effect in order to produce the most adequate and fair repatriation. The implication for court cases is similar. The further away from the present, the event of a dispute is, the less severe punishment of the moral actor would be. As such, it is easy to see how lengthy legal processes

may lead to unjust outcomes. The effect also bears implications on the statute of limitation, which would limit the impact of the main effect. This, however, prevents people from seeking justice past that period even if they might have been impeded from filing a lawsuit previously. Perhaps, rather than a statute of limitation, courts could impose a method of accounting for the effect of time on moral judgments on lawsuit past the statute of limitation.

The paper does not find direct evidence for the proposed mechanism that temporal contagion explains the effect of time on moral judgment. Thus, it is either the case that the contaminating factor associated with moral transgression that occupies a place and space in time, does not dissipate, or simply the measures used in Study 2 do not measure contagion. The latter brings the discussion to the limitations of the studies.

## **6.1 Limitations**

As mentioned above, it is possible that the questions that are asked in Study 2 (i.e. “How pleasant or unpleasant would it be to visit the precise location where this event occurred?” and “To what extent does this event have the potential to impact you personally?”) are not a good measure of contagion. Thus, discounting the hypothesis completely is a questionable decision.

Arguably, the biggest limitation of the present studies is the time frame of the time manipulation. One can argue that the *100 years ago* condition is too far out in the past and that rather than manipulating time, the study is manipulating cultural similarity instead. The claim can be supported by the fact that Study 1 and 2 present participants with pictures of Reykjavik (old and modern) as well as pictured of the newspaper (old and modern). In some sense, culture and senses of cultural relativism will always be confounded with time because there is no discrete time boundary that indicated where one culture end and another begins. I have attempted to avoid such issues to the best of my abilities. The pilot study does not show pictures to

participants but the main effect persists. In addition, Iceland was purposefully chosen because Americans are not familiar with the culture. Thus, in both instances, the culture is different and foreign that it makes it harder to differentiate between already different cultures. Since the manipulation is between subjects, the comparison of the cultural context of the described events is compared to the cultural context of the decision maker (i.e. present-day U.S.). This, at least to an extent, should avoid confounding cultural manipulation with time manipulation.

In addition, much of the philosophical literature explains that there is a single objective truth about the moral evaluation of moral actions (Railton, 1986; Shafer-Landau, 2003; Smith, 1994). In other words, the widespread claim is that lay people are moral objectivists and it is associated with a remarkable level of agreement between many moral philosophers (Blackburn, 1984; Brink, 1989; Mackie, 1977; Shafer-Landau, 2003). The fact that people have a difficult time being moral relativists and that they tend to apply their moral standards egocentrically goes directly against the claim that cultural manipulation is confounded with the time manipulation.

What is more, the Moral Foundations Vignettes have been rigorously tested in order to determine their universality. MFVs are said to be controlled on various dimensions including format, syntactic structure, content, comprehensibility, complexity, ease of imagination. Thus, the cultural aspect should not influence the way the vignettes are perceived.

In addition, the measure of disgust in Study 1 gets at the actual emotions that people are experiencing as they are taking the survey. In other words, participants are not just giving culturally relativistic responses for moral outrage but rather the felt disgust in the moment of judgment, the intensity of which also varies with the manipulation is dismissive of the cultural manipulation as a confounding variable.

An easy way to dissociate the manipulations and prove that the effect is indeed solely due to the manipulation of time and not of culture would be to ask participants to rate how wrong each moral transgression is. If participants in both conditions rate the same event as equally wrong but still feel different degrees of disgust or moral outrage depending on the condition, then the effect of cultural manipulation would be discredited.

The practicality or authenticity of the target events might come into question. If there is no effect of personal relevance, this is likely because the items are not very practical or realistic. As explained earlier, the pictures of the city at the beginning of the studies, the name of the newspaper, the country that frames the context, and the Photoshopped newspaper images, among other choices, all aim at assuring the authenticity of the moral judgment. Moreover, the MFVs were in part created due to the lack of measures of moral judgment that are consistent with how people make judgments in real life. As such, the vignettes are perceived as realistic and practical.

Since no evidence was found for the temporal contagion hypothesized mechanism, the paper is limited in its lack of explanation of the underlying mechanism. This should be one future direction that research on this topic can take.

## **6.2 Future Directions**

Studying different mechanism that could explain the effect of time of moral judgment should be one future direction that research on this topic can follow. For example, testing the temporal contagion hypothesis in a better way would be important. A potentially better way to test for contagion is to take ask participants of the perceived value of an object that belonged to a notorious figure from the time in each condition. That would be consistent with the design of Rozin et al. (1989).

Another possible mechanism might relate to the degree to which participants feel “close” to the moral actors in the moral vignettes. Assessing the degree to which participants relate to the moral actors and whether that degree varies with time, would give an indication of whether this might be the underlying mechanism.

The present studies focus exclusively on negative events and moral transgressions. Consequently, future research might explore whether the effect of time persists with positive events as well. In addition, the same effect should be studied in domains other than moral judgment. It would be interesting to see the same framework applied to hot button issues such as women’s right, minorities’ right, political issues, etc.

This paper does not explore the individual moral foundations in detail. Future research might explore the effect in the context of the individual moral foundation. This would be an easy extension of the present study and can be achieved simply by breaking down the data by each foundation. Future studies could use more than 8 vignettes each broken down by moral foundation.

Arguably the most exciting aspect of future research on the topic would include testing the boundary conditions of the effect. Figuring out how close together and how far apart the events could be said to occur before the effect breaks is important. Ideally, future research should aim to find the full extent of the decay function over various points in time. This would also be a foolproof solution to discrediting the criticism that cultural manipulation is confounded with time manipulation. Finding discontinuities over time would be exciting. In addition, future research might explore what are the particular sub-domains within a domain that exhibit a decay function and which ones do not.

### **6.3 Concluding Remarks**

This paper documents an exciting and novel effect of time on moral judgment, which bears valuable academic and real-life implications. The results demonstrate that real-time moral judgments are influenced by the manipulations of the time associated with the moral act in question. In other words, there is evidence that moral transgressions exhibit a time decay. There is, however, much work yet to be done regarding the boundary conditions of the effect and the underlying theoretical mechanism that explains the described effect. Both are crucially important to the full understanding of the effect as well as its application.



## **7. Acknowledgments**

I am incredibly grateful to Professor George Newman for his generous mentorship, constant guidance, and unwavering support throughout the course of the senior thesis and beyond. It is an honor and a pleasure to be his student and mentee. He has been the best advisor I could have asked for. I am particularly indebted to Professor Gal Zauberman for his irreplaceable teachings, mentorship, and abiding support. I am immensely thankful to Minju Han, who posted the studies on MTurk and helped me with the data analysis of the pilot study. This project would not have been possible without these incredible people, especially in the context of six-course credits and three senior theses.

## 8. References

- Alicke, M. D. (1992). Culpable causation. *Journal of Personality and Social Psychology*, 63(3), 368-378.
- Amit, E., & Greene, J. D. (2012). You See, the Ends Don't Justify the Means: Visual Imagery and Moral Judgment. *Psychological Science*, 23(8), 861-868.
- Angyal, Andras. "Foundations for a science of personality." (1941).
- Argo, Jennifer J., Darren W. Dahl, and Andrea Morales (2008), "Positive Consumer Contagion: Responses to Attractive Others in a Retail Context," *Journal of Marketing Research*, 45 (6), 690–701.
- Ask, K., & Pina, a. (2011). On Being Angry and Punitive: How Anger Alters Perception of Criminal Intent. *Social Psychological and Personality Science*, 2(5), 494-499.
- Avni-Babad, D., & Ritov, I. (2003). Routine and the perception of time. *Journal of Experimental Psychology: General*, 132, 543–550.
- Belk, Russell W. (1988), "Possessions and the Extended Self," *Journal of Consumer Research*, 15 (2), 139–67.
- Beverland, Michael B. (2005), "Crafting Brand Authenticity: The Case of Luxury Wines," *Journal of Management Studies*, 42 (5), 1003–29.
- Beverland, Michael B. and Francis J. Farrelly (2010), "The Quest for Authenticity in Consumption: Consumers' Purposive Choice of Authentic Cues to Shape Experienced Outcomes," *Journal of Consumer Research*, 36 (6), 838–56.
- Blackburn, S. 1984: *Spreading the Word: Groundings in the Philosophy of Language*. New
- Block, R.A. (1974). Memory and the experience of duration in retrospect. *Memory & Cognition*, 2, 153–160.
- Block, R.A., & Zakay, D. (1997). Prospective and retrospective duration judgments: A meta-analytic review. *Psychonomic Bulletin & Review*, 4, 184–197.
- Bratfisch, O., Ekman, G., Lundberg, U., & Kruger, K. (1971). Subjective temporal distance and emotional involvement. *Scandinavian Journal of Psychology*, 12, 147–160.

- Brink, D. O. 1989: *Moral Realism and the Foundations of Ethics*. New York: Cambridge
- Broeders, R., Bos, K. van den, Muller, P. A., & Ham, J. (2011). Should I save or should I not kill? How people solve moral dilemmas depends on which rule is most accessible. *Journal of Experimental Social Psychology*, 47(5), 923-934.
- Burt, C.D., & Kemp, S. (1991). Retrospective duration estimation of public events. *Memory & Cognition*, 9, 252–262.
- Cameron, C. D., & Payne, B. K. (2012). The Cost of Callousness: Regulating Compassion Influences the Moral Self-Concept. *Psychological Science*, 23(3), 225-229.
- Carnes, N. C., Lickel, B., & Janoff-Bulman, R. (2015). Shared Perceptions: Morality Is Embedded in Social Contexts. *Personality and Social Psychology Bulletin*, 41(3), 351-362.
- Chaiken, S. (1987). The heuristic model of persuasion. In *Social Influence: The Ontario Symposium* (Vol. 5, pp. 3-39).
- Chakroff, A., Dungan, J., Koster-Hale, J., Brown, A., Saxe, R., Young, L. (2015). When minds matter for moral judgment: intent information is neurally encoded for harmful but not impure acts. *Social Cognitive & Affective Neuroscience*.
- Chapman, H., Kim, D., Susskind, J. M., & Anderson, K. (2009). In bad taste: evidence for the oral origins of moral disgust. *Science* (New York, N.Y.), 323(5918), 1222-1226.
- Cheng, J. S., Ottati, V. C., & Price, E. D. (2013). The arousal model of moral condemnation. *Journal of Experimental Social Psychology*, 49(6), 1012-1018.
- Clifford, Scott et al. "Moral foundations vignettes: a standardized stimulus database of scenarios based on moral foundations theory" *Behavior research methods* vol. 47,4 (2015): 1178-1198.
- Clifford, Scott, et al. "Moral foundations vignettes: A standardized stimulus database of scenarios based on moral foundations theory." *Behavior research methods* 47.4 (2015): 1178-1198.
- Condon, P., & DeSteno, D. (2011). Compassion for one reduces punishment for another. *Journal of Experimental Social Psychology*, 47(3), 698-701.
- Crockett, M. J., Clark, L., Hauser, M. D., & Robbins, T. W. (2010). Serotonin selectively influences moral judgment and behavior through effects on harm aversion. *Proceedings of the National Academy of Sciences*, 107(40), 17433-17438.

Cushman, F. (2008). Crime and punishment: Distinguishing the roles of causal and intentional analyses in moral judgment. *Cognition*, 108(2), 353-380.

Cushman, F. (2013). Action, outcome, and value a dual-system framework for morality. *Personality and Social Psychology Review*, 17, 273-292.

Ditto, P. H., & Liu, B. (2011). Deontological dissonance and the consequentialist crutch. *The Social Psychology of Morality: Exploring the Causes of Good and Evil*, 51-70.

Ditto, P. H., Pizarro, D. A., & Tannenbaum, D. (2009). Motivated Moral Reasoning. In H. R. Brian (Ed.), *Psychology of Learning and Motivation*, 50, 307-338.

Eskine KJ, Kacinik NA, Prinz JJ. A bad taste in the mouth: Gustatory disgust influences moral judgment. *Psychological Science*. 2011;22(3):295–299.

Eskine, K. J., Kacinik, N., & Prinz, J. J. (2011). A Bad Taste in the Mouth: Gustatory Disgust Influences Moral Judgment. *Psychological Science*, 22(3), 295-299.

Faro, D., Leclerc, F., & Hastie, R. (2005). Perceived causality as a cue to temporal distance. *Psychological Science*, 16, 673–677.

Feinberg M, Willer R, Antonenko O, John OP. Liberating reason from the passions: Overriding intuitionist moral judgments through emotion reappraisal. *Psychological Science*. 2012;23(7):788–795.

Feldman, J.M., & Lynch, J.G. (1988). Self-generated validity and other effects of measurement on belief, attitude, intention, and behavior. *Journal of Applied Psychology*, 73, 421–435.

Fiske, A. P. (1991). Structures of social life: The four elementary forms of human relations: Communal sharing, authority ranking, equality matching, market pricing. Free Press.

Frazer, J. G. (1922). *The golden bough: A study in magic and religion* (abridged ed., T.H. Gaster, Ed.). New York: Macmillan. (Original work published 1890)

Friedman, W.J. (1993). Memory for the time of past events. *Psychological Bulletin*, 113, 44–66.

Friedman, W.J. (1996). Distance and location processes in memory for the times of past events. In D.L. Medin (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 35, pp. 1–41). San Diego, CA: Academic Press.

Frimer JA, Biesanz JC, Walker LJ, MacKinlay CW. Liberals and conservatives rely on common moral foundations when making moral judgments about influential people. *Journal of Personality and Social Psychology*. 2013;104(6):1040–1059

Ginges, J., & Atran, S. (2011). War as a moral imperative (not just practical politics by other means). *Proceedings. Biological Sciences / The Royal Society*, 278(1720), 2930-2938.

Graham J, Haidt J, Nosek BA. Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*. 2009;96(5):1029–1046

Gray, K., & Wegner, D. M. (2009). Moral typecasting: divergent perceptions of moral agents and moral patients. *Journal of Personality and Social Psychology*, 96(3), 505-520.

Gray, K., Knickman, T., & Wegner, D. M. (2011). More dead than dead: Perceptions of persons in the persistent vegetative state. *Cognition*, 121(2), 275-280.

Gray, K., Knobe, J., Sheskin, M., Bloom, P., & Barrett, L. F. (2011). More than a body: mind perception and the nature of objectification. *Journal of Personality and Social Psychology*, 101(6), 1207-20.

Grayson, Kent and Radan Martinec (2004), “Consumer Perceptions of Iconicity and Indexicality and Their Influence on Assessments of Authentic Market Offerings,” *Journal of Consumer Research*, 31 (September), 296–312.

Greene, J. D., Cushman, F. A., Stewart, L. E., Lowenberg, K., Nystrom, L. E., & Cohen, J. D. (2009). Pushing moral buttons: The interaction between personal force and intention in moral judgment. *Cognition*, 111(3), 364-371.

Greene, J. D., Morelli, S. A., Lowenberg, K., Nystrom, L. E., & Cohen, J. D. (2008). Data for Impersonal Dilemmas and Low-Conflict Personal Dilemmas. *Cognition*.

Greene, J. D., Nystrom, L. E., Engell, A. D., Darley, J. M., & Cohen, J. D. (2004). The neural bases of cognitive conflict and control in moral judgment. *Neuron*, 44(2), 389-400.

Greene, J. D., Sommerville, R. B., Nystrom, L. E., Darley, J. M., & Cohen, J. D. (2001). An fMRI investigation of emotional engagement in moral judgment. *Science*, 293(5537), 2105-2108.

Haidt, J. (2001). The emotional dog and its rational tail: a social intuitionist approach to moral judgment. *Psychological review*, 108(4), 814.

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research*, 20(1), 98-116.

Harenski CL, Antonenko O, Shane MS, Kiehl KA. Gender differences in neural mechanisms underlying moral sensitivity. *Social Cognitive and Affective Neuroscience*. 2008;3(4):313–321.

Harenski CL, Hamann S. Neural correlates of regulating negative emotions related to moral violations. *NeuroImage*. 2006;30(1):313–324.

Heekeren HR, Wartenburger I, Schmidt H, Prehn K, Schwintowski HP, Villringer A. Influence of bodily harm on neural correlates of semantic and moral decision-making. *NeuroImage*. 2005;24(3):887–897.

Helzer, E. G., & Pizarro, D. A. (2011). Dirty liberals! Reminders of physical cleanliness influence moral and political attitudes. *Psychological science: A Journal of the American Psychological Society*, 22(4), 517-522.

Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology*, 97(6), 963.

Hutcherson, C. A., & Gross, J. J. (2011). The moral emotions: a social-functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology*, 100(4), 719-737.

Inbar, Y., Pizarro, D. & Cushman, F. (2012). Benefiting From Misfortune: When Harmless Actions Are Judged to Be Morally Blameworthy. *Personality and Social Psychology Bulletin*, 38(1), 52-62.

Inbar, Y., Pizarro, D., Gilovich, T., & Ariely, D. (2013). Moral masochism: On the connection between guilt and self-punishment. *Emotion*, 13(1), 14-18.

Inbar, Jordan, A. H., & Monin, B. (2008). From sucker to saint: moralization in response to self-threat. *Psychological Science*, 19(8), 809-815.

Lammers, J., Stapel, D., & Galinsky, A. D. (2010). Power increases hypocrisy: moralizing in reasoning, immorality in behavior. *Psychological Science*, 21(5), 737-44.

Landy, D. (2013). Talking human rights: How social movement activists are constructed and constrained by human rights discourse. *International Sociology*, 28(4), 409-428.

Landy, J.F., & Goodwin, G.P. (2015). Does incidental disgust amplify moral judgment? A meta-analytic review of experimental evidence. *Perspectives on Psychological Science*, 10(4), 518-536.

Lee, Charles, Sally A. Linkenauger, Jonathan Z. Bakdash, Jennifer A. Joy-Gaba, and Dennis R. Proffitt (2011), "Putting Like a Pro: The Role of Positive Contagion in Golf Performance and Perception," *PLoS ONE*, 6 (10), e26016.

Lee, S. W. S., & Schwarz, N. (2010). Dirty hands and dirty mouths: embodiment of the moral-purity metaphor is specific to the motor modality involved in moral transgression. *Psychological Science*, 21, 1423-1425.

Lerner, J. S., Goldberg, J. H., & Tetlock, P. E. (1998). Sober Second Thought: The Effects of Accountability, Anger, and Authoritarianism on Attributions of Responsibility. *Personality and Social Psychology Bulletin*, 24(6), 563-574.

Lerner, Jennifer S., Deborah A. Small, and George Loewenstein. "Heart strings and purse strings: Carryover effects of emotions on economic decisions." *Psychological science* 15.5 (2004): 337-341.

Leslie, A. M., Knobe, J., & Cohen, A. (2006). Acting intentionally and the side-effect effect theory of mind and moral judgment. *Psychological Science*, 17(5), 421-427.

Li, M., Vietri, J., Galvani, A. P., & Chapman, G. B. (2010). How do people value life? *Psychological Science*, 21(2), 163-7.

Lucas, B. J., & Livingston, R. W. (2014). Feeling socially connected increases utilitarian choices in moral dilemmas. *Journal of Experimental Social Psychology*, 53, 1-4.

Mackie, J. L. 1977: *Ethics: Inventing Right and Wrong*. New York: Penguin.

Mauss, M. (1972). *A general theory of magic* (R. Brain, Trans.). New York: Norton. (Original work published 1902)

Mishra, Arul (2009), "Influence of Contagious versus Noncontagious Product Groupings on Consumer Preferences," *Journal of Consumer Research*, 36 (June), 73–82.

Moll J, de Oliveira-Souza R, Bramati IE, Grafman J. Functional networks in emotional moral and nonmoral social judgments. *NeuroImage*. 2002a;16(3):696–703.

Morwitz, V.G. (1997). It seems like only yesterday: The nature and consequences of telescoping errors in marketing research. *Journal of Consumer Psychology*, 6, 1–29.

Nemeroff, C., & Rozin, P. (2000). The makings of the magical mind. In K. S. Rosengren, C. N. Johnson, & P. L. Harris (Eds.). *Imagining the impossible: magical, scientific, and religious thinking in children* (pp. 1–34). New York: Cambridge University Press.

Newman, George E. and Paul Bloom (2012), “Art and Authenticity: The Importance of Originals in Judgments of Value,” *Journal of Experimental Psychology: General*, 141 (3), 558–669.

Newman, George E. and Paul Bloom (2014), “Physical Contact Influences How Much People Pay at Celebrity Auctions,” *Proceedings of the National Academy of Sciences*, 111 (10), 705–8.

Newman, George E. and Ravi Dhar (2014), “Authenticity Is Contagious: Brand Essence and the Original Source of Production,” *Journal of Marketing Research*, 51 (3), 371–86.

Newman, George E. and Ravi Dhar (2014), “Authenticity Is Contagious: Brand Essence and the Original Source of Production,” *Journal of Marketing Research*, 51 (3), 371–86.

Newman, George E., Gil Diesendruck, and Paul Bloom (2011), “Celebrity Contagion and the Value of Objects,” *Journal of Consumer Research*, 38 (2), 215–28.

Niemi, Y., & Young, L. (2014). Blaming the Victim in the Case of Rape. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, 25(2), 230-233.

O’Guinn, Thomas C. (1991), “Touching Greatness: The Central Midwest Barry Manilow Fan Club,” in *Highways and Buyways: Naturalistic Research from the Consumer Behavior Odyssey*, ed. Belk Russell W., Provo, UT: Association for Consumer Research, 102–11.

Ornstein, R.E. (1969). *On the experience of time*. Harmondsworth, England: Penguin.  
Parkinson C, Sinnott-Armstrong W, Koralus PE, Mendelovici A, McGeer V, Wheatley T. Is morality unified? Evidence that distinct neural systems underlie moral judgments of harm, dishonesty, and disgust. *Journal of Cognitive Neuroscience*. 2011;23(10):3162–3180.

Pastötter, B., Gleixner, S., Neuhauser, T., & Bäuml, K. H. T. (2013). To push or not to push? Affective influences on moral judgment depend on decision frame. *Cognition*, 126(3), 373-377.  
Paxton, J. M., Ungar, L., & Greene, J. D. (2012). Reflection and reasoning in moral judgment. *Cognitive Science*, 36(1), 163-177.



Pennycook G, Cheyne JA, Barr N, Koehler DJ, Fugelsang JA. The role of analytic thinking in moral judgments and values. *Thinking & Reasoning*. 2013;0(0):1–27.

Petrinovich, L., & O'Neill, P. (1996). Influence of wording and framing effects on moral intuitions. *Ethology and Sociobiology*, 17(3), 145-171.

Petty, R. E., & Cacioppo, J. T. (1986). *The elaboration likelihood model of persuasion* (pp. 1-24). Springer New York.

Pizarro, D., Uhlmann, E., & Salovey, P. (2003). Asymmetry in judgments of moral blame and praise: The Role of Perceived Metadesires. *Psychological Science*, 14(3), 267-272.

Rai, T. S., & Fiske A. P. (2011). Moral psychology is relationship regulation: Moral motives for unity, hierarchy, equality, and proportionality. *Psychological Review*, 118, 57–75.

Rai, T. S., & Holyoak, K. J. (2010). Moral principles or consumer preferences? Alternative framings of the trolley problem. *Cognitive Science*, 34(2), 311-321.

Railton, P. 1986: Moral realism. *The Philosophical Review*, 95, 163–207.

Rozin, P., & Nemeroff, C. J. (1990). The laws of sympathetic magic: A psychological analysis of similarity and contagion. In J. Stigler, G. Herdt & R. A. Shweder (Eds.), *Cultural Psychology: Essays on comparative human development* (pp. 205–232). Cambridge, England: Cambridge University Press.

Rozin, P., & Royzman, E. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5, 296–320.

Rozin, P., Millman, L., & Nemeroff, C. (1986). Operation of the laws of sympathetic magic in disgust and other domains. *Journal of Personality and Social Psychology*, 50, 703–712.

Rozin, P., Nemeroff, C., Wane, M., & Sherrod, A. (1989). Operation of the sympathetic magical law of contagion in interpersonal attitudes among Americans. *Bulletin of the Psychonomic Society*, 27, 367–370.

Rozin, Paul, and April E. Fallon. "A perspective on disgust." *Psychological review* 94.1 (1987): 23.

Rozin, Paul, and Sharon Wolf. "Attachment to land: The case of the land of Israel for American and Israeli Jews and the role of contagion." *Judgment and Decision Making* 3.4 (2008): 325

Schaich Borg J, Lieberman D, Kiehl KA. Infection, incest, and iniquity: Investigating the neural correlates of disgust and morality. *Journal of Cognitive Neuroscience*. 2008;20(9):1529–1546.

Schaich Borg J, Sinnott-Armstrong W, Calhoun VD, Kiehl KA. Neural basis of moral verdict and moral deliberation. *Social Neuroscience*. 2011;6(4):398–413.

Schnall S, Haidt J, Clore GL, Jordan AH. Disgust as embodied moral judgment. *Personality & Social Psychology Bulletin*. 2008;34(8):1096–1109.

Schnall, S., Benton, J., & Harvey, S. (2008). With a clean conscience: Cleanliness reduces the severity of moral judgments. *Psychological Science*, 19(12), 1219-1222.

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin*, 34(8), 1096-1109.

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2015). Landy and Goodwin confirmed most of our findings then drew the wrong conclusions. *Perspectives on Psychological Science*, 10, 537-538.

Shafer-Landau, R. 2003: *Moral Realism: A Defence*. New York: Oxford University Press.

Small, D. A., Lerner, J. S., & Fischhoff, B. (2006). Emotion priming and attributions for terrorism: Americans' reactions in a national field experiment. *Political Psychology*, 27(2), 289-298.

Smith, M. 1994: *The Moral Problem*. Oxford: Blackwell

Strohming, N., Lewis, R. L., & Meyer, D. E. (2011). Divergent effects of different positive emotions on moral judgment. *Cognition*, 119(2), 295-300.

Suter, R. S., & Hertwig, R. (2011). Time and moral judgment. *Cognition*, 119, 454-458.

Tremoliere, B., Neys, W. D., & Bonnefon, J. F. (2012). Mortality salience and morality: Thinking about death makes people less utilitarian. *Cognition*, 124(3), 379-384.

Tylor, E. B. (1974). *Primitive culture: Researches into the development of mythology, philosophy, religion, art, and custom*. New York: Gordon Press. (Original work published 1871).

Uhlmann, E. L., Pizarro, D. a, Tannenbaum, D., & Ditto, P. H. (2009). The motivated use of moral principles. *Judgment and Decision Making*, 4(607), 479-491. University Press

- Valdesolo, P., & DeSteno, D. (2006). Manipulations of emotional context shape moral judgment. *Psychological Science*, 17(6), 476-477.
- Valdesolo, P., & Desteno, D. (2007). Moral hypocrisy: Social groups and the flexibility of virtue. *Psychological Science*, 18(8), 689-690.
- Valdesolo, P., & DeSteno, D. (2008). The duality of virtue: Deconstructing the moral hypocrite. *Journal of Experimental Social Psychology*, 44(5), 1334-1338.
- Waldmann, M. R., & Dieterich, J. H. (2007). Throwing a bomb on a person versus throwing a person on a bomb: Intervention myopia in moral intuitions. *Psychological Science*, 18(3), 247-253.
- Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science*, 16(10), 780-784.
- Wright, J. C., & Baril, G. (2011). The role of cognitive resources in determining our moral intuitions: Are we all liberals at heart? *Journal of Experimental Social Psychology*, 47(5), 1007-1012.
- Young, L., & Saxe, R. (2011). When ignorance is no excuse: Different roles for intent across moral domains. *Cognition*, 120(2), 202-214.
- Young, L., Bechara, A., Tranel, D., Damasio, H., Hauser, M., Damasio, A. (2010). Damage to ventromedial prefrontal cortex impairs judgment of harmful intent. *Neuron*, 65, 845-851.
- Young, L., Camprodon, J., Hauser, M., Pascual-Leone, A., Saxe, R. (2010). Disruption of the right TPJ with TMS reduces the role of beliefs in moral judgments. *PNAS*, 107, 6753-6758.
- Zakay, D., & Block, R.A. (2004). Prospective and retrospective duration judgments: An executive-control perspective. *Acta Neurobiologiae Experimentalis*, 64, 319-328.
- Zauberman, Gal, et al. "1995 feels so close yet so far: The effect of event markers on subjective feelings of elapsed time." *Psychological Science* 21.1 (2010): 133-139.
- Zhong, C. B., Strejcek, B., & Sivanathan, N. (2010). A clean self can render harsh moral judgment. *Journal of Experimental Social Psychology*, 46(5), 859-862.

## **9. Appendix**

---

### Start of Block: Intro

Intro Thank you for participating in our survey. Please take your time and carefully read each item. There are no right or wrong answers, we are simply interested in your first impressions.

- Please take the survey in one session.
- While completing this survey, please do not visit any other websites.
- While completing this survey, please do not open any other windows or tabs.
- Please do not view any other written material while taking this survey.
- Please do not ask anyone else for help in answering the survey questions.

During the survey, please do not use your browser's *FORWARD* and *BACK* buttons. Instead, simply click on the “>” button at the bottom of the page to move through the survey.

---

consent Please, indicate that you consent to taking this study.

- ☐ Yes, I do (1)
- ☐ No, I don't (2)

---

### End of Block: Intro

---

### Start of Block: Screener

Screener Intro **To participate in this research, you must live in the United States and be fluent in English. Please answer the questions below.**

---



high school **Which of the following terms refers to a student in their second year of high school?**

- ☐ 8th grader (1)
  - ☐ Freshman (3)
  - ☐ Sophomore (4)
  - ☐ Junior (5)
  - ☐ Senior (6)
- 



granola **Which of these is NOT usually served at a 4th of July cookout?**

- ☐ Granola (1)
  - ☐ Hot dogs (2)
  - ☐ Hamburgers (3)
  - ☐ Coleslaw (4)
  - ☐ Baked beans (6)
- 



911 **Which one of these phone numbers connects you to emergency services?**

- ☐ 112 (1)
- ☐ 999 (2)
- ☐ 789 (3)
- ☐ 000 (4)
- ☐ 911 (5)



bitten Please respond **truthfully** to the items below.

	Yes (1)	No (2)
Have you ever been bitten by an insect? (1)	<input type="radio"/>	<input type="radio"/>
Have you ever been bitten by a dog? (2)	<input type="radio"/>	<input type="radio"/>
Have you ever been bitten by a great white shark? (3)	<input type="radio"/>	<input type="radio"/>
Have you ever suffered a fatal heart attack? (4)	<input type="radio"/>	<input type="radio"/>

End of Block: Screener

Start of Block: Intro Past Month

Intro Past Month We are going to have you read headlines from articles from a newspaper in Iceland. Morgunblaðið is a top Icelandic newspaper and the most popular Icelandic website.

**The following headlines are directly pulled from articles published by Morgunblaðið in this past month.**

Please carefully read each newspaper headline and respond to the questions that refer to each headline.

Reykjavik Today This what Reykjavik, the capital of Iceland, looks like today.



Reading Check Approximately when were the headlines published?

- ☐ Yesterday (7)
- ☐ Last Week (8)
- ☐ Last Month (9)
- ☐ 100 Years Ago (10)

End of Block: Intro Past Month

---

Start of Block: Intro 100 Years

Intro 100 Years We are going to have you read headlines from articles from a newspaper in Iceland. Morgunblaðið is a top Icelandic newspaper and the most popular Icelandic website.



The the following headlines are directly pulled from articles published by Morgunblaðið over 100 years ago.

Please carefully read each newspaper headline and respond to the questions that refer to each headline.

---

Reykjavik Old This what Reykjavik, the capital of Iceland, used to look like **100** years ago.



Reading Check Approximately when were the headlines published?

- ☐ Yesterday (7)
- ☐ Last Month (8)
- ☐ 20 Years Ago (9)
- ☐ 100 Years Ago (10)

End of Block: Intro 100 Years

---

Start of Block: Cow

*Display This Question:*

*If condition = 1*

To do

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q29

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið **100 years ago**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

# Morgun

Februrary 13th, 2019

---

## A Boy Threw Rock Were Grazing in t

---

*Display This Question:*

*If condition = 2*

Q30



Cow Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)



### Cow Disgust

To what extent do you find this event **disgusting**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Cow

---

Start of Block: Dog

*Display This Question:*

*If condition = 1*

Q38

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q39

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið 100 years ago.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

Q40

# Morgun

February 25th, 2019

---

## A Family Ate the Pet Dog that Had

---

Display This Question:

If condition = 2

Q41



X→

### Dog Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
  - ☐ (2)
  - ☐ (3)
  - ☐ (4)
  - ☐ (5)
  - ☐ (6)
  - ☐ A great deal (7)
- 



Dog Disgust To what extent does this event make you feel **disgust**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Dog

---

Start of Block: Pony

*Display This Question:*

*If condition = 1*



Q44

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q45

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið **100 years ago**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

# Morgue

February 2nd, 2019

---

## A Man Beat His

---

*Display This Question:*

*If condition = 2*

Q47



Pony Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)



### Pony Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Pony

---

Start of Block: Pastor

*Display This Question:*

*If condition = 1*

Q50

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q51

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið 100 years ago.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

Q52

# Morgun

January 28th, 2019

---

## A Pastor Banned His Wearing Bright Co

---

Display This Question:

If condition = 2

Q53



### Pastor Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
  - ☐ (2)
  - ☐ (3)
  - ☐ (4)
  - ☐ (5)
  - ☐ (6)
  - ☐ A great deal (7)
- 



### Pastor Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Pastor

---

Start of Block: Hammer

*Display This Question:*

*If condition = 1*

Q56

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q57

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið **100 years ago**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*



# Morgue

February 5th, 2019

---

## A Wife Hit Her Husband on the Head for Co

---

*Display This Question:*

*If condition = 2*

Q59



#### Hammer Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)



### Hammer Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Hammer

---

Start of Block: Vandal

*Display This Question:*

*If condition = 1*

Q62

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q63

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið 100 years ago.

Please read the following headline and respond to the two questions that follow it.

*Display This Question:*

*If condition = 1*

Q64

# Morgun

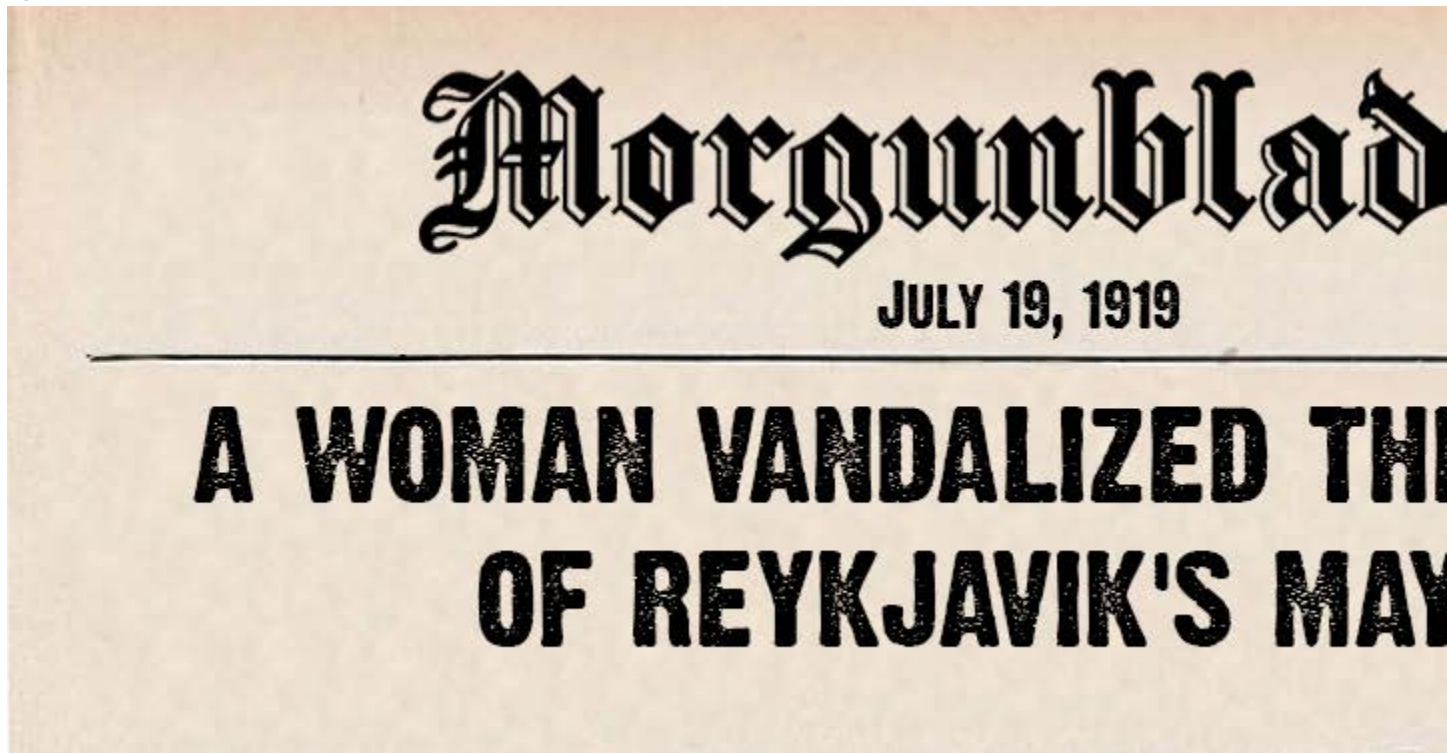
February 16th, 2019

## A Woman Van House of Reyk

Display This Question:

If condition = 2

Q65



### Vandal Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
  - ☐ (2)
  - ☐ (3)
  - ☐ (4)
  - ☐ (5)
  - ☐ (6)
  - ☐ A great deal (7)
- 



### Vandal Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Vandal

---

Start of Block: Morgue

*Display This Question:*

*If condition = 1*

Q68

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q69

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið **100 years ago**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

# Morgun

February 14th, 2019

---

## A Worker at a M Dinner Off of

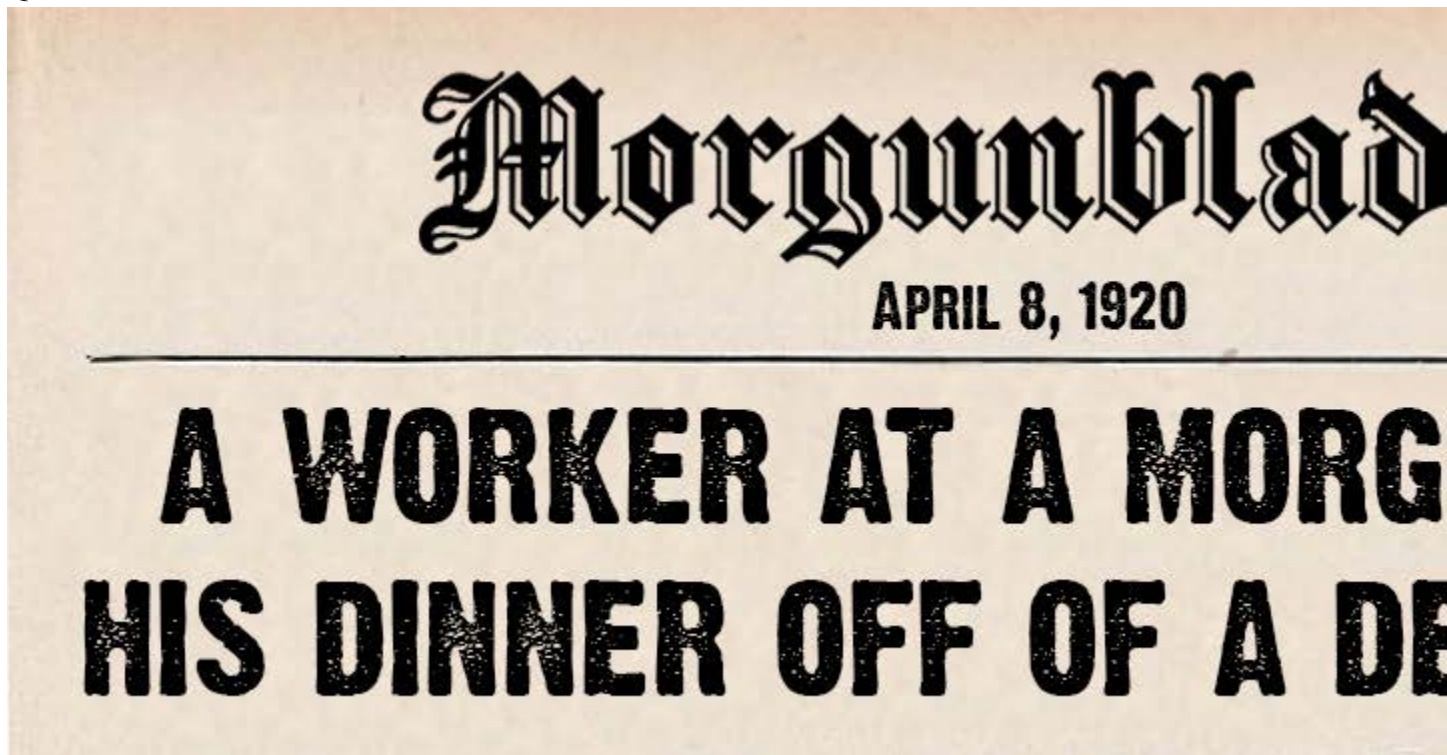
---

*Display This Question:*

*If condition = 2*



Q71



Morgue Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)



### Morgue Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Morgue

---

Start of Block: Kiss Ban

*Display This Question:*

*If condition = 1*

Q74

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið this **past month**.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 2*

Q75

This headline was directly pulled from articles published by the international Icelandic newspaper Morgunblaðið 100 years ago.

Please read the following headline and respond to the two questions that follow it.

---

*Display This Question:*

*If condition = 1*

Q76

# Morgun

February 8th, 2019

---

## Local Official Proposes People from Hugging

---

Display This Question:

If condition = 2

Q77



### Kiss Moral Outrage

To what extent does this event make you feel **moral outrage**?

- ☐ Not at all (1)
  - ☐ (2)
  - ☐ (3)
  - ☐ (4)
  - ☐ (5)
  - ☐ (6)
  - ☐ A great deal (7)
- 



### Kiss Disgust

To what extent does this event make you feel disgust?

- ☐ Not at all (1)
- ☐ (2)
- ☐ (3)
- ☐ (4)
- ☐ (5)
- ☐ (6)
- ☐ A great deal (7)

End of Block: Kiss Ban

---

Start of Block: Demographics



Gender Please indicate your gender:

- ☐ Male (1)
- ☐ Female (2)
- ☐ Other (3)
- ☐ Prefer not to answer (0)



Age Please indicate your age:

▼ 18 (18) ... 91+ (91)

State In which state do you currently reside?

▼ Select (54) ... I do not reside in the United States (53)

Income What is your annual total **household** income?

- ☐ \$0 - \$25,000 (1)
- ☐ \$25,000 - \$50,000 (2)
- ☐ \$50,000 - \$75,000 (4)
- ☐ \$75,000 - \$100,000 (5)
- ☐ \$100,000 - up (6)



Politics What is your political affiliation?

☐ Conservative (10)

☐ (11)

☐ (12)

☐ (13)

☐ (14)

☐ Liberal (15)

End of Block: Demographics

---

Start of Block: Attention Check



Country Check Which of the following countries did these events pertain to?

☐ Turkey (1)

☐ Iceland (2)

☐ Ireland (3)

☐ Japan (4)

---

Time Check Approximately when were these headlines published?

- ☐ Yesterday (1)
- ☐ Last Week (2)
- ☐ Last Month (3)
- ☐ Last Year (4)
- ☐ 20 Years Ago (5)
- ☐ 100 Years Ago (6)



Newspaper Check Which newspaper were these headlines from?

- ☐ Morgunblaðið (1)
- ☐ Víkurfréttir (2)
- ☐ Tíminn (3)
- ☐ Ísafold (4)

End of Block: Attention Check

---

Start of Block: Comment & Debrief

Comment Please let us know your comments on this survey:

---

---

---

---

---



Debrief

## **DEBRIEFING FORM**

**Thank you for participating in this study!** The general purpose of this research is to find the effect of time on emotional salience. None of the headlines that you read are real and none of these events were either published in the Icelandic newspaper Morgunblaðið or occurred in Iceland.

Please do not share the debriefing information with future participants of this study. The purpose of the debriefing is to inform you of the goals of this study and the methods involved; however, spreading this information in advance of participating could be detrimental to the interpretations of the results.

If you have further questions about the study, please contact Kai Alexander at [kai.alexander257@gmail.com](mailto:kai.alexander257@gmail.com).

End of Block: Comment & Debrief

---