THE ELUSIVE MORAL CONSTRUCT:
AN EXAMINATION OF REMORSE FROM A FUNCTIONAL PERSPECTIVE

by

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Abstract

Little is known about the affective, cognitive, or functional underpinnings of remorse. The Dual Process Functional Theory (DPFT) of remorse offers a theoretical framework to build our understanding of remorse and the dual functions that it is hypothesized to serve: a self and social function. The self function refers to the distress experienced by the remorseful transgressor which contributes to the learning and/or reinforcement of social norms, helping ensure the individual does not commit the act again. Further, expressing remorse – most often through the means of an apology – communicates to others that the transgressor understands the moral violation and leads to relational repair (social function). Due to the social function of remorse, transgressors lacking remorse are highly motivated to feign it in hopes of garnering the benefits bestowed upon those perceived to be sincere. Given that it is frequently feigned, it is important to explore the manner in which remorse may be differentially communicated, and how accurately sincerity can be detected. The present dissertation tested the self and social functions proposed by the DPFT, and examined the ways in which genuine versus false remorse is appraised. Overall, findings supported both proposed functions of remorse in line with the DPFT. More specifically, the proposed cognitive (i.e., responsibility) and affective (i.e., distress) aspects of remorse were confirmed; however, given the low-stakes nature of the induction procedures, behavioural cues to remorse could not be identified. Further, the experience of remorse was associated with predicted outcomes that would communicate to a social group that the transgressor had learned from his/her actions. Interestingly, genuine and false remorse was differentiated by observers on various measures, including degree of remorsefulness, degree of sincerity, and likelihood of reoffending. Lastly, observers seemed well-attuned to the components of remorse in offenders’ statements in a sentencing hearing context, perceiving
greater remorse when genuine facial expressions of distress and verbal descriptions of empathy for the victim were included.
Lay Summary

The overarching goal of the present dissertation was to contribute to our (limited) understanding of remorse – an influential construct in many different contexts. More specifically, it aimed to identify the emotional and cognitive features of remorse following a transgression. Given the influence remorse displays have interpersonally, it also examined the social consequences associated with communicating remorse to those around the transgressor, and whether genuine and false remorse can be differentiated. Generally, findings supported the proposed features of remorse and suggested that observers are quite adept at differentiating genuine and false remorse, particularly when assessed in less explicit ways.
Preface

The University of British Columbia’s Okanagan Behavioural Research Ethics Board granted ethical approval for this research on December 10th, 2013, September 21st, 2015, and March 7th, 2017. The ethics approval certificate numbers for this research are H13-02067, H15-01814, and H15-01815, respectively. As of the date of this submission, the data included in this dissertation have not been published.
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Dedication

To my family and friends (whom have now become the former). This chapter of my life could not have been written without you.
Chapter 1 Introduction

Most of us have experienced a “guilty conscience” regarding something we have done to another person. And apologies – some accompanied by remorse and others not – are ubiquitous and contribute to social harmony; a successful one can restore the perception that the transgressor is, for the most part, trustworthy (Kim, Ferrin, Cooper, & Dirks, 2004). Whether expressed following a revelation of infidelity or by a murderer during his or her sentencing hearing, apologies are communicated to express remorse and to repair damage done by past transgressions. However, some apologies are perceived by observers as being sincere while others ring hollow – perhaps depending on the level of apparent remorse accompanying these socially-expected monologues.

Despite its prominence in the human condition, there has been minimal research on the experience of remorse (cf. Keltner & Buswell, 1996) and, as such, it is ripe for attention from psychological researchers (Bandes, 2013). Remorse has been defined as the intense negative emotional experience resulting from the violation of one’s moral standards (Keltner & Buswell, 1996; Tangney & Dearing, 2002), including moral or emotional distress from one’s past transgressions (e.g., lying, cheating, or failure at a particular duty; Corwin, Cramer, Griffin, & Brodsky, 2012), and it has been proposed to be a form of self-punishment that discourages committing a similar transgression in the future (Slovenko, 2006). One Canadian judge opined that “Remorse connotes a feeling of genuine sense of sorrow arising from recognition that one has done something wrong…‘I was wrong and I deeply regret it’” (Boldt v. Law Society of Upper Canada, 2011, p. 17). As such, remorse arises from a focus on a specific action, or non-action, that violates societal or personal standards.
Although the scientific understanding of the basic nature of remorse is limited, the weight given to perceptions of remorse during decision-making has been documented in various contexts and transgressions varying in gravity. A basic search in the Canadian Legal Information Institute’s database reveals that the term “remorse” is referenced in judges’ decision transcripts in almost 14,000 Canadian cases between 2008-2018, illustrating its importance within the legal system. The relevance of perceived remorse has been explicitly stated in sentencing: “the absence of a showing of remorse is a legitimate concern at sentencing” (Hall v. State, 1998; see also Slovenko, 2006). Perpetrators who show remorse also are considered to be good candidates for treatment and rehabilitation: “[The defendant’s] remorse, guilt, and shame should provide him with a strong motivation to work at changes that will prevent future acts of violence” (R. v. Struve, 2007, p. 8). Empirical studies corroborate this apparent emphasis placed on perceived remorse in legal decision-making. Judges’ perceived remorse in adult offenders is associated with less severe sentences (MacLin, Downs, MacLin, & Caspers, 2009; Pipes & Alessi, 1994; Taylor & Kleinke, 1992; Wiener & Reinhart, 1986). Moreover, judges have been explicitly instructed in law to consider the presence of remorse during sentencing decisions (Brown & Pratt, 2000; Martel, 2010). Collectively, anecdotal/legal and empirical findings highlight the major impact impressions of remorse can have on a number of consequential decisions within our legal system.

1.1 Remorse: A Self-Conscious Emotion

Emotions have been defined as “patterns of perception, experience, physiology, action, and communication that occur in response to specific physical and social challenges and opportunities” (Keltner & Gross, 1999, p. 468). In line with this definition, remorse has important cognitive, affective, and action components (Baumeister, Stillwell, & Heatherton,
1994) – each with a prominent communicative function similar to other moral constructs. Other related, but arguably distinct, moral experiences include regret and shame (Tangney, Stuewig, & Hafez, 2011). Collectively, these constructs have been previously referred to as self-conscious emotions because of unique features that differentiate them from basic emotions (e.g., Izard, Ackerman, & Schultz, 1999). Basic emotions (e.g., happiness, anger, fear; Ekman, 1992) are those found cross-culturally and even cross-species with a well-understood biological basis (e.g., Ekman, 1993, 2007; Sauter, Eisner, Ekman, & Scott, 2009; Scherer, 1984; Waller & Micheletta, 2013). Basic emotions typically occur with quick onset and offset serving an adaptive purpose; that is, it is evolutionarily advantageous for us to experience these basic emotions, communicate them, and notice these expressions in others. For example, disgust is generally experienced in response to a noxious stimulus (e.g., rotting meat). The expression both reduces nasal airflow and the respiration of potential pathogens (Chapman, Kim, Susskind, & Anderson, 2009), but also warns others to avoid the dangerous stimulus.

Self-conscious/moral emotions have been differentiated from the basic emotions in that they manifest as a result of taking into account the welfare of others within society (Haidt, 2000, 2003). These emotions are more complex than basic emotions in that they are characterized by longer duration, require advanced cognitive antecedents, and play a greater role in the attainment of social goals, relative to basic emotions (see Tracy & Robins, 2004 for extensive discussion). Similar to basic emotions, these more advanced emotions also serve an important function: They communicate to others that the transgressor understands that the behaviour was not socially acceptable, and this expression is likely to restore trust allowing him/her to continue attaining the benefits bestowed upon those in the “in-group.” Not only do these emotions have an effect at a social level, they also have an influence internally by causing negative affect, helping the
individual to learn socially appropriate behaviour, and inhibiting the act in the future.

Importantly, self-conscious emotions require a self-appraisal during which the transgressor compares himself/herself with social expectations (Tracy & Robins, 2004) and acknowledges incongruence between actual and expected behaviours – otherwise transgressors would exist in ignorant bliss and these emotions would not be experienced. Tracy and Robins (2004) point out that emotion researchers have dedicated great efforts to the basic emotions but have generally ignored the self-conscious and socially-relevant emotions, relatively speaking. Specifically, remorse has received less attention than other moral constructs, yet maintains an influential status within legal decision-making and our society at large.

1.2 A Dual Process Functional Theory (DPFT) of Remorse

In order to elucidate the complex nature of remorse and the communicative function it serves, a Dual Process Functional Theory (DPFT) of remorse is being proposed, founded on related functional frameworks of emotion (e.g., Ekman, 1992; Horberg, Oveis, & Keltner, 2011; Keltner & Gross, 1999). In line with these proposals (e.g., Keltner & Haidt, 1999), this framework agrees that emotions should be examined from a social functional perspective. From an evolutionary standpoint, the experience and expression of emotion serves a goal relating to survival and reproductive success in our primordial past (Ekman, 1992; Izard, 1977; Keltner & Haidt, 1999). Keltner and Haidt (1999) promote the analysis of emotions from four main levels; of greatest interest to the current discussion is the intra-level (i.e., individual) and the dyadic level of analysis (see also Barrett, 1995). At the intra-level, the experience of distress resulting from one’s actions contributes to the transgressor’s learning and alteration of behaviour, reducing the likelihood that he/she will re-commit the act. At the dyadic level, the explicit communication of emotion to others within the social group allows for observers to discern that
the transgressor understands the violation of social standards and seeks to rebuild the previously held trust within the community; ultimately, this helps avoid ostracism, and enhances the survival of the transgressor and insularity/strength of the group. Building on these previous functional frameworks of emotion, DPFT posits that remorse evolved with two primary functional components: *self* and *social*.

**1.2 Self Function.** The *self* or intrapersonal function (Keltner & Haidt, 1999) relates to the self-distress experienced as a result of committing a transgression (Nelissen, 2012), which should lead to specific psychological outcomes. In particular, it is hypothesized that the experience of remorse involves cognitive/verbal, affective, physiological, and action-oriented components.

**1.2.1 Cognitive components and subsequent verbal characteristics of remorse.** A central cognitive feature of remorse is that an individual acknowledges that the outcome of the transgression or current situation was a result of his/her own behaviour as opposed to the behaviour of others (Gaita, 2004; Roberts, 2003) and acknowledges that the action violated personal or societal standards. In other words, the experience of guilt is a result of accepting personal responsibility for a transgression\(^1\) (see Tangney & Dearing, 2002 for a review).

Tracy and Robins (2004) proposed a multi-step process that determines whether an individual will experience guilt versus another self-conscious emotion. First, the individual must have some form of self-identify (actual or ideal), be aware that the event is relevant to this self-representation, and engage in a determination as to whether the event is congruent with the self-

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\(^1\) Past literature has referred to the construct of guilt in various ways. Oftentimes, guilt is described as “feeling badly”; that is, it has been referred to as an emotional experience. Throughout the present dissertation, however, a definition of guilt that focuses on the cognitive experience (i.e., accepting personal responsibility) is used.
representation. If the transgressor feels that the event is relevant and incongruent with his/her self-identity, he/she then appraises the causal locus (i.e., whether he/she is responsible for the outcome). If internal attribution is determined – and that the event reflects a behavioural issue rather than a character issue – the individual will experience guilt.

Transgressions in which the individual was not the primary actor can also result in the experience of guilt with a degree of separation, such as when actions are carried out under another’s command or when transgressions are carried out by a group. Roberts (2003) argued that it indeed is possible to experience “second-hand” remorse and that the intensity of remorse is dependent on the degree of separation from the decision-making process or actual commands (i.e., degree of responsibility). For example, many modern German citizens may feel remorse for atrocities perpetrated by other German citizens during World War II (i.e., collective remorse) and surrounding countries also may feel remorse for not intervening (but likely to a lesser degree). Relatedly, in group decision-making settings, there likely is an inverse relationship between individual remorse and the number of decision-makers as a result of a distribution of blame – a relationship often found in other group contexts (e.g., Forsyth, Zywniewiski, & Giammanco, 2002). In short, the extent to which one acknowledges responsibility (i.e., experiences guilt) for the transgression and resulting consequences is directly related to the experience of remorse.

Remorse is hypothesized to be associated with certain verbal communication patterns that reflect unique cognitions. For example, individuals experiencing remorse are expected to use first-person pronouns as well as descriptors of the action taken and the resulting harm, indicating an acceptance of personal responsibility (Villar, Arcuili, & Paterson, 2013). Indeed, accepting responsibility is one of the primary components of an apology and serves as a way to convey that
the transgressor understands that a social norm rule has been broken (Scher & Darley, 1997; Shapland, 2016).

1.2.1.2 Affective components of remorse. Arguably remorse not only entails accepting personal responsibility for a transgression (i.e., guilt), but also a certain degree of tension/distress. Due to the violation of one’s moral standards, intense, negative affect/distress should accompany experiences of remorse. This emotional distress arguably arises in response to the acknowledgment of the suffering experienced by, and empathy for, those impacted by the transgression. As such, empathy is likely a requirement for genuinely experienced remorse. Despite the recent popularity of empathy in the scientific literature, a concrete definition has yet to be agreed upon (Zahavi, 2012); however, it has been argued that the ability to empathize with others is a direct result of being able to approximate others’ perspectives (cognitive empathy; Kogler & Stueber, 2000; Hollan, 2012) and to feel the pain that the other is experiencing (affective empathy). Subsequently, these two constructs arguably are required for the experience of remorse. Consistent with this theorizing is research on the psychopathic personality – individuals who are characterized by both empathy deficits and a lack of remorse for their criminal actions (Hare, 1999, 2003).

1.2.1.2.1 Facial expressions of remorse. Due to the intimate relationship between affective parts of the brain and facial muscles, the human face is a rich canvas from which observers can infer emotional states of others (Darwin, 1872/2005). As such, facial expressions can provide valuable information about one’s remorsefulness. Because of the intense emotional distress experienced during remorse, it is hypothesized that the corrugator and inner frontalis muscles (the “grief muscles”), which act in tandem to pull the inner eyebrows upward and together, will be the prominently engaged muscles during the experience (e.g., Davyдов,
Stewart, Ritchie, & Chadieu, 2012; Ekman, 1992; Hess, Kappas, McHugo, Lanzetta, & Kleck, 1992). Relatedly, ten Brinke, MacDonald, Porter, and O’Connor (2012) found that remorse was associated with this combination of facial actions during descriptions of an unethical act committed in the past for which transgressors felt remorse. Further, nonverbal actions associated with other emotions experienced at the time also may be exhibited by the remorseful transgressor, such as facial displays of pain (Cole & Zahn-Waxler, 1992; Keltner, Moffit, & Stouthamer-Loever, 1995), nonverbal displays of sympathy (head tilt; Eisenberg et al., 1989), self-contempt (unilateral lip raise; Higgins, 1987), and shame (which includes facial reddening and a downward gaze; Keltner & Buswell, 1996).

1.2.1.3 Action-oriented components of remorse. As a result of the negative affect and distress experienced from the transgression, immediate and long-term behaviours should be associated with experiences of remorse. Immediate behaviours include those that aim to make reparations, with the most common one being an apology. Further, engaging in self-punishment likely accompanies experiences of remorse for various reasons. Research suggests that not only does self-punishment help provide relief from the negative affect (e.g., Inbar, Pizarro, Gilovich, & Ariely, 2013; Nelissen & Zeelenberg, 2009; Bastian, Jetten, & Fasoli, 2011) but also it has been viewed as a social signal of atonement (Nelissen, 2012).

Action-oriented components of remorse may also include long-term behaviours that require significant investment and commitment, such as volunteering, programming/treatment (e.g., counseling, AA/NA), taking active steps to minimize risk, and following court orders. Successful completion of these behavioural commitments serves as a way to communicate to others that the transgression was an anomaly, that the offender understands the gravity of his/her actions, and that it is unlikely to recur. Indeed, Tangney, Stuewig, and Martinez (2014) found
that offenders with a greater propensity to experience distress following transgressions were less likely to recidivate after one year, potentially suggesting that when a more comprehensive understanding of objective markers of remorse are discovered, a similar pattern between remorse and recidivism would likely be seen (i.e., reduction in re-offense rate).

1.2.2 Social Function. The social or interpersonal function relates to the communication of remorse to observers (Baumeister et al., 1994). Relying on Keltner and Haidt’s (1999) model, the appraisal of remorse is an important process following transgressions in various interpersonal contexts, from individual relationships (e.g., an intimate relationship) to specific groups of observers within society (e.g., political and legal arenas). Remorse demonstrates to others – whether it be the victim, judge, or larger social group – that the transgression was anomalous, is unlikely to recur, and that the transgressor should be forgiven. Even 5-year-olds prefer to interact with a remorseful transgressor and judge unremorseful transgressors to be “meaner” (Vaish, Missana, & Tomasello, 2011). Further, apologies – arguably the primary way in which remorse is communicated – lead to attributions of behavioural stability and forgiveness (Day & Ross, 2011; Schwartz, Kane, Joseph, & Tedeschi, 2011).

1.3 “Hacking” the Social Function of Remorse

Because of the benefits afforded to transgressors who display remorse, perpetrators lacking in remorse can be highly motivated to feign it and garner undeserved benefits (e.g., Martel, 2010). For example, a murderer facing a severe punishment might issue an apologetic statement suggesting remorsefulness, seeking to reduce his sentence, or feign remorse at a subsequent parole hearing to gain conditional release. Indeed, such attempts can be successful.

“This would not be the first time the parole board has been deceived;” this admission came from the Parole Board of Canada responding to criticisms of its decision to release Robert
Moyes, despite his serious criminal record and psychopathic tendencies (The Star, 2006). Upon release in 1996, he murdered five people in British Columbia, and later spoke to the media about how he had “acted” his way out of parole hearings. How could the Parole Board have been so mistaken in accepting his claims of remorse and rehabilitation?

The foundation of this type of emotion evaluation originates in our evolutionary past; humans evolved to “read” one another to appraise emotional states and intentions (Porter & ten Brinke, 2008, 2010). Sometimes emotion is “written all over” the face – a salient and true representation of an affective state (Matsumoto, 2007). An observer in any culture can quickly recognize rage as someone approaches exhibiting lowered brows to produce nose wrinkles, flared nostrils, flashing eyes, and a clenched jaw. However, the evolutionary development of deception – via the manipulation of facial expressions, body language, and words – enhanced the complexity of this evaluative process.

Indeed, during court proceedings, the jury “reads” the faces of the defendant to make inferences about his/her emotions and credibility (e.g., Porter & ten Brinke, 2009). The case of Moyes, among many others, highlights the motivations of transgressors to feign remorse in order to be granted shorter sentences and undeserved conditional release (e.g., Hakkanen-Nyholm & Hare, 2009), while judges and parole boards are likewise motivated to detect such duplicity. Consequently, the perceived sincerity of remorse may determine the fate of an offender and the safety of society. And it is clear that many perpetrators lacking remorse can act remorseful in a convincing way. Ruback and Hopper (1986) investigated predictions made by parole boards regarding offenders’ success on parole both before (via file review) and after an interview, finding that predictions became less accurate post-interview. Similarly, psychopathic offenders, known for their lack of remorse and ability to manipulate others (Hare, 2003), are more likely to
be granted parole after the interview compared to non-psychopaths despite re-offending much more quickly and violently than their counterparts (e.g., Porter, ten Brinke, & Wilson, 2009). One explanation for this pattern is that decision-makers were duped during interviews, persuaded by false displays of remorse. This may not be surprising given that observers generally are unable to discriminate genuine and false facial expressions (Heath, 2009; Porter & ten Brinke, 2008), and that psychopathic traits are associated with skill at adopting false expressions of sadness that mimic real ones (Porter, ten Brinke, Baker, & Wallace, 2011).

Despite the importance of this evaluative process, research suggests that observers typically cannot discriminate truth from lies generally above the level of chance (Bond & DePaulo, 2006; Ekman & O’Sullivan, 1991; Vrij, Granhag, & Porter, 2010). Researchers have put forth many explanations to account for humans’ poor ability to detect deception, despite its evolutionary importance. For example, some point to the absence of a single reliable cue (or “Pinocchio’s nose”) and that deceptive behaviour may be influenced by individual differences (e.g., DePaulo et al., 2003; Hartwig & Bond, 2011; O’Sullivan, 2005). Observers also tend to exhibit a truth bias – with a default perception of others as truthful – contributing to poor appraisal abilities (Hartwig & Bond, 2011; Porter & ten Brinke, 2010; Vrij, 2008; Vrij et al., 2010). Further, stereotypes of deceptive behaviour have been implicated because many perceivers rely on invalid cues to deceit, such as “looking up and to the left” (Wiseman, Watt, ten Brinke, Porter, Couper, & Rankin, 2012) or fidgeting (e.g., DePaulo et al., 2003; see Porter and ten Brinke, 2010 for further discussion). Conclusions about a target’s trustworthiness and emotional state made instantaneously upon seeing his/her face (Willis & Todorov, 2006) also can influence credibility assessments (Baker, Porter, ten Brinke, & Evanoff, 2016), especially because these inferences often are irrational and influence how subsequent information about a
target is interpreted (Bar, Neta, & Litz, 2006; Todorov, 2008; Willis & Todorov, 2006). In sum, although there is substantial evidence suggesting that lie detection accuracy may be poor, no research has been conducted examining the accuracy for displays of genuine versus false remorse, in particular.

1.4 How is Remorse Currently Appraised by Observers?

Oscar Pistorius stood in the defendant’s box crying, howling, and vomiting during his South African trial for murdering his girlfriend, Reeva Steenkamp. While some onlookers considered his display as “over-the-top,” others expressed empathy with tears of their own (The National Post, 2014). His display begs the question: Was his emotional pain overly dramatic and instrumental, or passionate and sincere? While it is clear that observers attend heavily to remorse displays, what behavioural indicators do they rely on to appraise it and is there inter-rater reliability in appraisal strategies? Based on self-reports in legal transcripts, trial judges rely on both verbal and behavioural indicators to assess remorse (Wood & MacMartin, 2007), including apologies to the victim (verbal), “observable” suffering (non-verbal), bowing the head (non-verbal), and a willingness to enter rehabilitation programs (action-oriented); however, they report considering admissions of responsibility (e.g., guilty pleas) as the strongest evidence for remorse. In an examination of historical Canadian legal cases, Weisman (2009) found that remorseful offenders typically were identified through admissions of responsibility, gestural expressions perceived to be congruent with remorseful feelings, and evidence of personal transformation (see also Weisman, 2004). Although these findings collectively may suggest some level of inter-judge consistency in remorse appraisals, Ward (2006) examined trial transcripts and found that judges’ appraisals were characterized by ambiguity and inconsistency. Similarly, research has found that laypeople – and therefore, jurors – rate targets as being remorseful when they verbalize
apologies, accept responsibility, offer compensation, and promise not to repeat the behaviour (Proeve & Tudor, 2010; Scher & Darley, 1997).

These elements of remorse appraisal are predominantly indicators that are communicated verbally and may not necessarily be accompanied by any other indicators of sincerity (e.g., distress facial expression). While verbal apologies may accompany genuine remorse, sometimes remorse may be “silent.” Indeed, it has been proposed that remorse requires non-verbal behavioural elements, whereas apologies are spoken and can simply accept responsibility for the transgression; that is, non-verbals can aid in communicating the negative emotions presumed to be integral to remorse (Corwin et al., 2012; Weisman, 2004). As such, genuine remorse cannot simply be assumed from a verbal apology.

Moreover, some observers associate remorse with action-oriented behaviours that suggest that the transgressor accepts responsibility for his/her actions, such as pleading guilty (e.g., Weisman, 2009). Although accepting responsibility is a behaviour that may result from remorse, remorse is not a requirement for the expression of responsibility because of the numerous motivating factors that may lead an individual to (selfishly) communicate it. For example, an offender who agrees to plead guilty may be motivated to express remorse in order to have his/her charge reduced from first-degree to second-degree murder or manslaughter. Alternatively, one may accept responsibility for his/her behaviour, because he/she actually committed the transgression, but that does not necessarily mean that remorse is present. For example, an individual who is charged with viewing child pornography may enter a guilty plea which acknowledges the transgression but he/she may feel no remorse, instead secretly rationalizing that he/she did not victimize children directly.
In sum, despite relying on a variety of features while evaluating a target’s expression and degree of remorse, observers appear to be relying on inconsistent signals of remorseful behaviour, similar to the literature on detecting deception more generally (e.g., Granhag & Stromwall, 2004; Porter & ten Brinke, 2010; Vrij, 2000, 2004; Vrij et al., 2010). Differing views held about the manifestation of remorse can be attributed to both the difficulty of drawing inferences about others’ internal feelings and, more specifically, a consequence of human observers’ limited “natural” ability to discriminate genuine and faked emotions (e.g., Porter & ten Brinke, 2008; Ward, 2006). Further, the lack of education provided to judges and their inefficiency at evaluating sincerity with any degree of accuracy contributes greatly to unfounded appraisals (e.g., Shaw, Porter, & ten Brinke, 2013) – a problem that is exacerbated by a lack of scientific inquiry into the nature of remorse (Wood & MacMartin, 2007) that could inform such training.

1.5 Signals of False Remorse

Although characteristics of fabricated remorse have received little scientific attention (until recently; ten Brinke et al., 2012), research and theory on high-stakes emotional deception suggest that extremely consequential remorseful displays, such as those given during an offender’s parole hearing, should be accompanied by a wealth of emotional information indicative of his/her level of sincerity. Put simply, the cognitive and emotional experience of engaging in deception may reveal behaviours that will indicate that a transgressor’s remorse is feigned (e.g., Ekman, 2007; Vrij, Edward, & Bull, 2000; Vrij et al., 2010).

1.5.1 Cognitive Components and Subsequent Verbal Cues to Falsified Remorse.

Similarly to genuine remorse, there are likely unique cognitions associated with false remorse that manifest as a result of the transgressor’s lack of empathy and understanding for those
impacted by his/her actions. For example, transgressors may be more likely to express remorse for the negative consequences he/she experienced as a result of getting reprimanded or for the negative effect it has had on his/her life (rather than focusing on the negative effects for the victims, for example). In short, the cognitive focus will likely be selfishly directed and lack empathy for those impacted by the behaviour. As such, it is expected that deceptive accounts of remorse will be associated with fewer instances of simultaneously using first-person pronouns (e.g., Tausczik & Pennebaker, 2010) and remorse-related words (“sorry,” “sad”; Villar et al., 2013) that are specifically referring to the harm that has been caused. Further, cues suggesting increased cognitive complexity experienced by those falsely communicating remorse will likely be present, such as providing longer apologies (in line with findings from the general deception literature; DePaulo et al., 2003; Vrij & Heaven, 1999).

1.5.2 Affective Cues to Falsified Remorse. Given the absence of genuine distress, it is predicted that other emotional experiences may co-occur with false remorse, including signs of contempt and anger. For example, a transgressor who feels no remorse for his/her actions may experience feelings of contempt at his/her “outers” and anger for getting caught – evidence of which can be found by attending to the face (e.g., ten Brinke & Porter, 2012).

1.5.2.1 Facial expressions of falsified remorse. Because of society’s expectations that emotional displays should be congruent with one’s behaviours or circumstances, disingenuous transgressors may be motivated to display expressions of sadness/distress while discussing their transgressions. Affect Control Theory (ACT; Robinson & Smith-Lovin, 1999) posits that individuals attempt to influence others’ impressions by exhibiting expressions congruent with society’s expected schemas for particular situations. Indeed, research has found that people who exhibited the expected emotion in relation to their actions received the highest interpersonal
ratings (e.g., Robinson & Smith-Lovin, 1999) and a greater likelihood of forgiveness (Davis & Gold, 2011; Gold & Weiner, 2000).

Although the face can be intentionally manipulated by simulating, masking, or neutralizing expressions (Ekman & Friesen, 1975), emotional “leakage” can, nevertheless, be detected (ten Brinke, Porter, & Baker, 2012). Previous studies examining the behavioural consequences of self-conscious/moral emotions, including remorse, have relied on either vignette or memory paradigms. For example, ten Brinke et al. (2012) used an unethical memory paradigm which asks participants to select and speak about two transgressions – one that they feel remorse for and the other that they do not. During this statement, their behaviour was videotaped and later analyzed. ten Brinke et al. (2012) established that true and feigned remorse displays have distinctive features; false remorse was associated with more neutral emotion and a mix of brief expressions of surprise and happiness whereas true remorse was associated with primarily sad but also neutral expressions and rarely did other emotional expressions emerge. However, because participants were discussing a past transgression, it is possible that their remorse experience and associated behavioural cues were less salient than immediately after the transgression.

In sum, the affective and cognitive cues associated with false remorse arguably are the most valuable in assessing sincerity. Indeed, relying solely on action-oriented markers to infer remorse is unwise as these can be selfishly motivated such as to serve only as a mode of reducing correctional or social punishments, potentially in the absence of remorse. For example, a transgressor may enroll in a treatment program to improve the likelihood that he/she receives forgiveness. More specifically, acceptance of responsibility for a transgression (i.e., guilt) and a
lack of distress/tension combined with reparative action (e.g., verbal apology) is a hallmark of faked remorse and is hypothesized to be associated with an increased likelihood of recidivism.

1.6 Overview of the Present Dissertation

The present dissertation aimed to address a number of novel questions relating to our theoretical and empirical understanding of remorse. Specifically, it tested the Dual Process Functional Theory by using a remorse induction paradigm to examine various outcomes associated with genuine and false remorse that are relevant both internally and socially (Study 1). Further, it examined whether (in)sincere remorse can be differentiated by observers (Study 2) and to what degree certain cognitive and affective components impact perceptions of remorse (Study 3).
Chapter 2 Study 1

2.1 Overview

In Study 1, the Dual Process Functional Theory was tested using a remorse induction paradigm adapted from previous research (Buckels, Jones, & Paulhus, 2013; Bushman & Baumeister, 1998). After manipulating a hypothesized requirement for genuine remorse – that is, responsibility for a transgression (i.e., guilt) – several outcomes were assessed based on the proposed theory, including self-reported self-conscious emotions, likelihood of apologizing, degree of sincerity associated with the apology, likelihood of committing a similar transgression in the future, and degree of self-punishment. It was predicted that those who were (purportedly) responsible for harming another person would experience more remorse compared to those who were not responsible for the harm experienced by another person. From a functional perspective, it was expected that these same individuals would be more likely to apologize, be less likely to indicate they would commit the same transgression in the future, and would self-punish to a greater degree. Further, it was hypothesized that the cognitive and emotional aspects of remorse would manifest in facial, nonverbal, and linguistic cues during apologies.

2.2 Participants

Undergraduate participants (N = 139) attending a Canadian university were recruited through an online research participant pool and received course credit for completing the study. The sample consisted of 100 women and 39 men with a mean age of 19.17 years (SD = 1.99 years). The genuine and false remorse conditions included 14 and 18 women, respectively; 8 and 2 men comprised the genuine and false remorse conditions, respectively.
2.3 Procedure and Materials

Participants were recruited to take part in a study on “individual differences in reaction time and temperature tolerance.” They were told that they would be competing in a computer game against an opponent who was seated in another room. This opponent was visible via a “live stream” on the computer located in the participant’s research room which would be activated (i.e., visible to the participant) between each trial; however, the “live stream” was a videotaped recording with playback controlled by the researcher. To enhance believability of the game, the researcher prompted an introduction between the players over a microphone used to communicate between research rooms. At this time, a recording played that displayed the opponent nodding and giving a wave.

2.3.1 Computer Game. The researcher then explained the rules of the computer game. The goal of the game was to press a button faster than the opponent during several timed trials. The participant was told that on each trial the winning player has the opportunity to expose the opponent to white noise for 5 sec – a stimulus that is detrimental to task performance. They were also told that the white noise blasts were set at a gradient that gradually increased up to 100 dB as the game progressed. Lastly, they were informed that the winner of the game would receive a $20 reward.

2.3.1.1 Practice and experimental rounds. Participants then began the computer game which included one practice round (with one trial) – allowing them to get comfortable with the procedures. The practice round was pre-determined such that the participant lost and they experienced a “test” white noise blast at 70 dB to enhance believability of the game. Participants then completed the experimental round with five trials. Similarly, the experimental trials were pre-determined by the researcher. For Trials 1–3, the participant won one trial and the opponent
won two; however, after each win the opponent chose not to deliver the white noise (to ensure that any future choice by the participant to send the white noise would not be out of retaliation). At the beginning of Trial 4, the participant was led to believe that they were approaching the end of the game and that the opponent was in the lead but that the score was close. This was done to increase motivation to send the white noise.

After Trial 4, participants were notified that they won the trial and were given the opportunity to deliver white noise to the opponent prior to the fifth and final trial. If participants did not send white noise during this critical point in the study, they finished the game and then proceeded directly to the questionnaire portion of the study. If participants chose to send white noise to the opponent prior to the final round, this action prompted the “live stream” to show the opponent displaying signs of extreme ear pain, getting up, and leaving the room. After the researcher left the room to purportedly check on the opponent in the hallway, she returned to tell the participant that the opponent was reporting a headache and that he rated the headache as an 8 out of 10 on an administered pain scale.

2.3.1.2 Condition assignment. At this point, participants who decided to send the white noise prior to Trial 5 were randomly assigned to one of two conditions which influenced the information they received next. Critical information was provided with the intent to manipulate participants’ experience of responsibility (i.e., guilt) for the opponent’s pain. Those assigned to the genuine remorse condition were told that the pain was due to the white noise that they sent after the last trial; those assigned to the false remorse condition were told that they could not have caused the discomfort experienced by the opponent because the white noise connection had malfunctioned. More specifically, they were told that the research assistant responsible for setting up the study did not adequately connect the cord and, as such, the opponent would not
have heard the white noise that the participant sent to him. This critical detail eliminates the participants’ responsibility for the pain experienced by the opponent and calls into question whether the opponent is malingering. Participants in both conditions were then given an opportunity to send a message via the “live stream” which was recorded (unbeknownst to participants). The recorded messages sent by participants were later coded for facial, behavioural, and verbal cues.

2.3.2 Post-Induction Questionnaire. Regardless of whether a message was sent to the opponent, participants then answered several questions. The Post-Induction Questionnaire was constructed for the purposes of the present study to examine participants’ experience following the remorse induction procedures. Although additional items were included in the questionnaire as fillers (see Appendix A for the full version), there were several critical questions of interest. To assess experiences of responsibility, participants were asked to report how responsible they felt for the opponent’s discomfort on a 7-point Likert scale, ranging from 1 (not at all responsible) to 7 (very responsible). Participants reported, on a 7-point scale, to what degree they experienced remorse, regret, or shame for exposing their opponent to the white noise. The questionnaire also asked participants to indicate how sincere/genuine their message was (if they chose to send one) on a 7-point Likert scale, ranging from 1 (insincere) to 7 (sincere). Lastly, participants indicated whether they would send white noise if they had the opportunity to play the game again (yes/no). After completing the Post-Induction Questionnaire, participants completed a demographic questionnaire.

2.3.3 Cold Pressor Task. Self-punishment has been an outcome of interest to emotion researchers in several contexts (e.g., Inbar et al., 2013; Nelissen, 2012; Nelissen & Zeelenberg, 2009), particularly in regards to those that are hypothesized to be associated with negative “inner
turmoil” or tension. A proposed aspect of the DPFT is that not only does a genuinely remorseful individual experience greater levels of distress for their actions but also that this inner turmoil serves a function of helping ensure the person does not commit the transgression again. An extension of this logic is that engaging in a task that is uncomfortable can serve as a further reminder that they have done something wrong. It is likely that those who experience genuine remorse will self-punish to a greater degree.

To measure participants’ self-punishing behaviour, participants who decided to send white noise prior to Trial 5 completed a cold pressor task (see Inbar et al., 2013). The apparatus consisted of two plastic containers – one that was filled with warm water (at 36–37 degrees Celsius), and another filled with cold water and ice (maintained at a temperature of 4–6 degrees Celsius). The ice was wrapped in a plastic tuck net that was fixed on the side of the container to prevent the participant’s hand from touching the ice directly. To begin, a baseline temperature was administered by having participants place their right hand in the warm water for 2 min and then move their hands into the cold water immediately. The participants were instructed to keep their hands in the cold water as long as they could and to terminate immersion when they could no longer tolerate the discomfort (with a limit of 5 minutes). After ensuring no prolonged discomfort was experienced by participants, they were partially debriefed and thanked for their time.

2.4 Video Coding Procedures

Of interest to the current investigation was the portion of video during which the participant sent a message to the opponent. As proposed by the DPFT, genuine and false remorse are associated with different cognitive and emotional experiences that may be revealed behaviourally. Facial action units, body language cues, and language cues were coded to assess
behaviours that may differentiate apologizers based on veracity. For example, the negative affect experienced by a person who is genuinely remorseful should manifest via activation of certain facial muscles indicative of distress.

2.4.1 Facial Action Units. A (blind to condition and hypotheses) coder comprehensively coded for the presence of selected facial action units (AUs). Training in this coding method involves intensive study and practice with the Facial Action Coding System (FACS; Ekman, Friesen, & Hagar, 2002). AU combinations of interest to the present study were related to activation of the muscles associated with the basic emotions sadness, happiness, and contempt (Ekman, 1992). See Appendix B for a comprehensive list of combination AUs that were coded and descriptions of how these action units manifest on the face when activated.

Coders studied the entire FACS manual, but paid specific attention to AUs 1, 2, 4, 6, 7, 9, 10, 12, 14, 15, and 20. Coders studied these AUs in detail, and completed image and video examples provided in the manual, achieving high accuracy in these exercises. To ensure reliability of coding, a second experienced coder completed AU coding for the entire sample of videos. Cohen’s Kappa for dichotomous data indicated high reliability between coders (Kappa = .58–1.00, ps < .05). Subsequently, disagreements between the two coders were identified and resolved through discussion.

2.4.2 Language. Videos were transcribed by a research assistant who was blind to hypotheses and veracity. A different trained coder reviewed the transcripts for the presence of various theoretically-based linguistic cues. Each transcript was coded for the presence of an apology – defined as using the term “sorry” or some variation of “apologize” (Scher & Darley, 1997). Various aspects of the apology were also coded. Whether the apology was in reference to the action (i.e., sending the white noise blast) and/or the harm experienced by the opponent was
coded. Further, whether the participant took responsibility was coded based on the use of first-person pronoun (i.e., “I” statements). Similar to the apology, of interest was what was being referenced in the responsibility statement; as such, the coder indicated whether the participant was taking responsibility for the action (i.e., sending the white noise) and/or for causing harm to the opponent. Lastly, whether the apologizer referenced experiencing negative emotions was coded based on pairing a pronoun with a negative emotion word, including any variation of “remorse,” “regret,” “bad,” or “sad,” and “shame.” To ensure reliability of coding, a second experienced coder completed language coding for the entire sample of videos. Cohen’s Kappa indicated high reliability between coders (Kappa = .89–1.00, ps < .05). Subsequently, disagreements between the two coders were identified and resolved through discussion.

2.4.3 Body Language. Two coding schemes were used to code body language cues for the present study. First, the presence of cues relevant to the experience of shame were coded from the self-conscious emotions literature (Tracy & Matsumoto, 2008; Tracy & Robins, 2007). Specifically, actions that involved the head tilting forward/down, moving the hands to cover the face or part of the face, and hiding the face by moving the face or head were coded. These behaviours were coded on a 6-point Likert scale from 0 (not at all present) to 5 (extreme intensity).

Second, a behavioural coding scheme was constructed based on a review of the deception literature (e.g., DePaulo et al., 2003; ten Brinke & Porter, 2012). Coders noted the number of illustrators, self-manipulators, and face-manipulators. Illustrators were classified as any movement/gesture of the arms and/or hands, used to illustrate what is being said. Self-manipulators were defined as any instance where the hand, head, or body is touched/scratched (e.g., scratching of the head, wrists, etc.) – that is, any time at which the hands come into contact
with another part of the body other than the face. Face-manipulators were defined as scratching, touching, or covering of the face – that is, any time at which the hands come in contact with the face. Further, gaze aversion and blinking were measured. Gaze aversion was defined as the amount of time during which the speaker did not look at the camera and blink rate was classified as the number of times the individual fully closed his/her eyes. Each of these codes were transformed into rates by dividing the number of instances of each behaviour by the length of video (in minutes).

A (blind to condition and hypotheses) coder comprehensively coded the various body language cues. To ensure reliability, a second experienced coder re-coded all videos. Cronbach’s alpha indicated high reliability between coders on all variables ($\alpha = .79–1.00$). For variables coded based on presence/absence, any disagreement was resolved through re-review of the videos and discussion. For codes measured on a continuous scale (e.g., gaze aversion) or codes based on intensity (e.g., shame cues), averages between the two coders were used for the final analysis.

2.5 Results

2.5.1 Descriptive Statistics. Of the 139 participants, 30.20% ($n = 42$) chose to send white noise to the opponent at the critical time during the study (i.e., prior to the final trial). Twenty-two of those participants (52.40%) were randomly assigned to the genuine remorse condition and 20 (47.60%) were assigned to the false remorse condition.

2.5.2 Cognitive and Emotional Components of Remorse. As predicted, results indicated that those assigned to the genuine condition ($M = 5.18$, $SD = 1.92$) felt significantly more remorseful than the false condition ($M = 3.85$, $SD = 2.18$), $t(40) = 2.11$, $p = .04$, $d = .65$. Further, results suggest that individuals assigned to the genuine versus false remorse condition
differed in their experience of the cognitive components of remorse. An independent samples $t$ test was conducted comparing participants’ ratings of responsibility (i.e., the cognitive component of remorse) across the genuine and false remorse conditions. Results indicated that participants in the two conditions reported significantly different responsibility ratings, $t(40) = 2.89, p = .006, d = .90$. Specifically, those in the genuine remorse condition ($M = 5.27, SD = 1.75$) rated themselves as more responsible for the opponent’s discomfort than the false remorse condition ($M = 3.70, SD = 1.78$).

To examine the experience of related self-conscious emotions (i.e., regret and shame), a series of independent samples $t$ tests was conducted. Participants in the genuine condition ($M = 4.68, SD = 1.89$) experienced significantly more regret than the false remorse condition ($M = 3.20, SD = 2.12$), $t(40) = 2.40, p = .02, d = .74$. No significant differences were apparent between the two conditions on self-reported shame, $t(40) = 1.55, p = .13, d = .48$. Participants in the genuine condition ($M = 3.36, SD = 1.68$) had similar experiences of shame compared to the false condition ($M = 2.60, SD = 1.50$).

To examine whether participants were distinguishing between the various emotions, correlations were calculated for remorse and the other self-conscious emotions. Results indicated a strong correlation between self-reports of remorse and regret [$r(42) = .80, p < .001$. Similarly, the experience of remorse seemed to be related to the experience of shame, $r(42) = .62, p < .001$.

2.5.3 Functions of Remorse. Of the 42 participants who sent white noise to their opponent, 21 chose to send an apology afterwards (hereafter referred to as “apologizers” where appropriate). A chi-square was conducted to examine whether those assigned to the genuine remorse condition were more likely to provide an apology to the opponent compared to the false remorse condition. Sixty-four percent ($n = 14$) of participants in the genuine remorse condition
provided an apology whereas only 35% \((n = 7)\) of participants in the false remorse condition provided an apology – a finding that was marginally significant, \(\chi^2(1, 42) = 3.44, p = .06,\) Cramer’s \(v = .03.\) An independent samples \(t\) test indicated that sincerity ratings for apologies given by the two conditions did not differ, \(t(19) = 1.33, p = .20, d = .59.\) The average sincerity rating for the genuine and false remorse condition was 6.50 \((SD = 1.16)\) and 5.71 \((SD = 1.50)\), respectively.

A series of independent samples \(t\) tests was conducted to examine self-punishing behaviour based on the length of time participants kept their hand submerged in the cold pressor apparatus (in seconds). Overall, results indicated that those assigned to the genuine remorse condition \((M = 114.93, SD = 116.46)\) did not engage in significantly more self-punishing behaviour than the false remorse condition \((M = 108.24, SD = 130.09), t(40) = .18, p = .86, d = .05.\) Next, an independent samples \(t\) test was conducted to determine whether self-punishing behaviour differed between apologizers, specifically, in each of the conditions. It was evidenced that apologizers in the genuine remorse condition self-punished for significantly longer \((M = 120.65, SD = 117.97)\) than those in the false remorse condition \((M = 23.82, SD = 6.66);\) Levene’s test indicated unequal variances so adjusted degrees of freedom were used, \(t(13.17) = 3.06, p = .01, d = 1.16.\) However, for the non-apologizers, there was no significant difference evidenced between the genuine \((M = 104.92, SD = 121.09)\) and false remorse \((M = 153.70, SD = 132.75)\) conditions, \(p = .43, d = .38.\)

To examine the effect of condition assignment on future behaviour, likelihood of reoffending was assessed. A chi-square analysis was conducted that compared the number of participants from each condition who indicated they would send white noise if they had the opportunity to play again. Thirty-six percent of participants in the genuine remorse condition
reported they would send the white noise again whereas 65% of those assigned to the false remorse condition reported they would send the white noise again if given the chance – a finding that was marginally significant, $\chi^2(1, 42) = 3.44, p = .06$, Cramer’s $v = .03$.

Next, a chi-square analysis was conducted to determine whether an indication of reoffending differed between apologizers in each of the conditions. Specifically focused on those who apologized, there was no significant association between interest in reoffending and condition assignment, $\chi^2(1, 21) = 2.68, p = .10$, Cramer’s $v = .05$. Of the apologizers in the genuine remorse condition ($n = 14$), 21.40% ($n = 3$) indicated they would send white noise again if given the opportunity to do so whereas 57.10% ($n = 4$) of the false remorse condition indicated that they would do so. Further, there was no significant association between interest in reoffending and condition assignment for non-apologizers, $\chi^2(1, 21) = .10, p = .75$, Cramer’s $v = .05$.

### 2.5.4 Behavioural Analysis of Apologizers.

#### 2.5.4.1 Facial action units.

Several chi-square analyses were conducted to examine whether the frequency of certain action unit combinations differed between conditions. Although there were no significant relationships, some associations were marginally significant at $p < .10$ including activations of AU1+4 and AU6+12+15. See Table 1 for frequencies and test statistic values for all action unit combinations.
Table 1

Chi-Square Results for Facial Actions Units

<table>
<thead>
<tr>
<th>Action Unit Combination</th>
<th>Genuine Remorse ($n = 14$)</th>
<th>False Remorse ($n = 5$)</th>
<th>$\chi^2(df)$</th>
<th>$p$ value(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU1+2</td>
<td>11 present 3 absent</td>
<td>2 present 3 absent</td>
<td>2.54(1)</td>
<td>.11</td>
</tr>
<tr>
<td>AU1+2+4</td>
<td>13 present 1 absent</td>
<td>5 absent 0 present</td>
<td>.38(1)</td>
<td>.54</td>
</tr>
<tr>
<td>AU1+4</td>
<td>14 absent 0 present</td>
<td>4 present 1 absent</td>
<td>2.96(1)</td>
<td>.09</td>
</tr>
<tr>
<td>AU9+10</td>
<td>13 present 1 absent</td>
<td>5 absent 0 present</td>
<td>.38(1)</td>
<td>.54</td>
</tr>
<tr>
<td>AU12+14</td>
<td>8 present 6 absent</td>
<td>2 present 3 absent</td>
<td>.43(1)</td>
<td>.51</td>
</tr>
<tr>
<td>AU10+14</td>
<td>12 present 2 absent</td>
<td>4 present 1 absent</td>
<td>.09(1)</td>
<td>.76</td>
</tr>
<tr>
<td>AU20+15</td>
<td>12 present 2 absent</td>
<td>5 absent 0 present</td>
<td>.80(1)</td>
<td>.37</td>
</tr>
<tr>
<td>AU1+2+4+15</td>
<td>14 present 0 absent</td>
<td>5 absent 0 present</td>
<td>_(^a)</td>
<td>_(^a)</td>
</tr>
<tr>
<td>AU6+12</td>
<td>2 present 12 absent</td>
<td>1 present 4 absent</td>
<td>.09(1)</td>
<td>.76</td>
</tr>
<tr>
<td>AU1+2+12</td>
<td>12 present 2 absent</td>
<td>3 present 2 absent</td>
<td>1.47(1)</td>
<td>.23</td>
</tr>
<tr>
<td>AU7+12+14</td>
<td>14 present 0 absent</td>
<td>5 absent 0 present</td>
<td>_(^a)</td>
<td>_(^a)</td>
</tr>
<tr>
<td>AU6+12+15</td>
<td>14 present 0 absent</td>
<td>4 present 1 absent</td>
<td>2.96(1)</td>
<td>.09</td>
</tr>
<tr>
<td>AU6+12+14</td>
<td>10 present 4 absent</td>
<td>2 present 3 absent</td>
<td>1.56(1)</td>
<td>.21</td>
</tr>
</tbody>
</table>

\(^a\) Chi-square statistics unavailable due to all cases classified as absent. \(^b\) For all variables, Cramer’s $v = .05$.

2.5.4.2 **Language.** A series of chi–square analyses was conducted on the language variables; however, no significant associations were evidenced between the genuine and false condition. See Table 2 for frequencies and test statistic values.
Table 2

Chi-Square Results for Language Variables

<table>
<thead>
<tr>
<th>Language Variable</th>
<th>Genuine Remorse (n = 14)</th>
<th>False Remorse (n = 5)</th>
<th>$\chi^2(df)$</th>
<th>$p$ value$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>absent</td>
<td>present</td>
<td>absent</td>
<td>present</td>
</tr>
<tr>
<td>sorry</td>
<td>1</td>
<td>13</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>sorry for action</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>sorry for harm</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>responsibility</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>responsibility for action</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>responsibility for harm</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>negative emotion words</td>
<td>13</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

$^a$ For all variables, Cramer’s $v = .05$.

2.5.4.2 Body language. A series of independent samples $t$ tests was conducted to compare body language cues evidenced by apologizers in the genuine and false conditions. There were no significant differences present. See Table 3 for frequencies and test statistic values.
Table 3

*Descriptive and Independent Samples t Test Statistics for Body Language Variables*

<table>
<thead>
<tr>
<th>Body Language Variable</th>
<th>Genuine $(M, SD)$</th>
<th>False $(M, SD)$</th>
<th>$t$ statistic $(df)$</th>
<th>$p$ values</th>
<th>$d$ values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shame cues</td>
<td>.77 (.72)</td>
<td>1.43 (.82)</td>
<td>-1.72 (17)</td>
<td>.10</td>
<td>-.86</td>
</tr>
<tr>
<td>Rate of illustrators</td>
<td>4.88 (7.19)</td>
<td>8.28 (12.98)</td>
<td>-.73 (17)</td>
<td>.47</td>
<td>-.32</td>
</tr>
<tr>
<td>Rate of self-manipulators</td>
<td>7.10 (12.61)</td>
<td>5.56 (9.62)</td>
<td>.25 (17)</td>
<td>.81</td>
<td>.14</td>
</tr>
<tr>
<td>Rate of face-manipulators</td>
<td>1.98 (4.14)</td>
<td>3.21 (4.39)</td>
<td>-.56 (17)</td>
<td>.58</td>
<td>-.29</td>
</tr>
<tr>
<td>Proportion of gaze aversion</td>
<td>30.60 (16.52)</td>
<td>34.21 (14.13)</td>
<td>-.43 (17)</td>
<td>.67</td>
<td>-.25</td>
</tr>
<tr>
<td>Blink rate</td>
<td>18.78 (11.14)</td>
<td>24.70 (20.89)</td>
<td>-.81 (17)</td>
<td>.43</td>
<td>-.35</td>
</tr>
<tr>
<td>Length of speech</td>
<td>10.64 (6.49)</td>
<td>10.20 (3.77)</td>
<td>.17 (17)</td>
<td>.87</td>
<td>.08</td>
</tr>
</tbody>
</table>

**2.6 Discussion**

The primary aim of Study 1 was to directly test the Dual Process Functional Theory framework of remorse by manipulating a primary component of the experience: responsibility for harm. As expected, individuals who were responsible for (purportedly) causing pain to another participant experienced higher levels of responsibility. Further, those who believed they were responsible for the confederate’s pain (i.e., individuals in the genuine remorse condition) also self-reported feeling more remorse for their actions, as compared to those who were told they were not responsible for the confederate’s pain (i.e., individuals in the false remorse condition).
condition). Further, genuine remorse was accompanied by increased self-conscious emotions such as regret.

2.6.1 Self Function. Predictions regarding action-oriented behaviours that decrease the likelihood of repeating the behaviour were partially supported. Individuals who had transgressed against their opponent self-punished by holding their hand in ice water for a longer period of time than those who were not responsible for harming the other player; however, this effect was specific to apologizers. Given power constraints, behavioural and linguistic cues to distress could not be used to differentiate genuine and false apologizers.

2.6.2 Social Function. Genuine remorse also was associated with a form of reparative behaviour – that is, providing an apology. Although marginally significant (p = .06), a greater number of genuinely remorseful participants chose to send an apology to their opponent in the computer game relative to those assigned to the false remorse condition. Interestingly (and contrary to predictions), the self-reported sincerity of the apologies provided from the genuine and false remorse participants were not significantly different, and the presence of various behavioural cues did not differentiate genuine and false remorse apologizers.

Although exploratory in nature, Study 1 provided valuable support relating to the proposed dual functional account. This research also provides apologies for future investigation. Despite only being able to obtain a relatively small number of videos, they provide an avenue for further study of the social functions of apologies varying in responsibility for harm – and therefore, remorse.
Chapter 3 Study 2

3.1 Overview

As proposed by the DPFT, displays of remorse also function to communicate to the social group that the transgressor understands a violation has occurred and that he/she will not commit the transgression again in the future. In line with this prediction, transgressors perceived to be genuinely remorseful in their apologies should be rated more favourably by observers than their false counterparts. To test this aspect of the theory, observers’ perceptions of individuals displaying genuine remorse and false remorse were examined in Study 2. In particular, I asked observers to provide estimates regarding transgressors, such as likelihood of reoffending and whether punishment is deemed appropriate. It was predicted that genuinely remorseful targets would be less likely to receive a punishment and would be considered to be at a reduced risk of recidivism.

A secondary aim of Study 2 was to determine whether observers are able to directly identify genuine versus false remorse in the videotaped apologies. Because transgressors can be motivated to display remorse in order to receive social benefits (i.e., reduced punishment, forgiveness), it is imperative for decision-makers to be able to assess sincerity. However, given the poor accuracy rates (54%; Bond & DePaulo, 2006) at which people assess the sincerity of emotions and messages that have been reported in previous research, I also examined whether observers would have different indirect reactions to genuine versus false remorse with respect to punishment and likelihood of recidivism. This hypothesis is consistent with research suggesting that some implicit judgements (e.g., inquiring about degree of thinking) are more accurate than explicit veracity judgments (e.g., Street & Richardson, 2015; Vrij et al., 2001). Indeed, explicit judgments require deliberate processing (versus intuitive processing) which may lead observers
astray, such as when incorrect stereotypes are activated, and undermine observers’ ability to make accurate veracity decisions (e.g., Albrechtsen, Meissner, & Susa, 2009; Evans & Stanovich, 2013; Gilbert, 1999; Wilson & Schooler, 1991).

3.2 Participants

One hundred and eighty-six undergraduate students enrolled at a Canadian university were recruited as participants through an online research participant pool and were given course credit upon completing the study. The sample consisted of 134 women and 52 men with a mean age of 20.35 years ($SD = 5.18$ years). Inclusion criteria were that participants had to be able to read and speak English fluently. Although this was an explicitly stated requirement for signing up, two students exhibited significant comprehension difficulty while in the lab and their data were excluded.

3.3 Procedure and Materials

Participants were recruited to take part in a study focused on assessing emotional displays. They were told that it involved viewing several videos and answering questions based on their impression of the individuals in the videos. The study was completed either online or in the lab.

3.3.1 Videos. Twelve videos of individuals sending an apology from Study 1 were selected for use in the present study. Six of the apologizers in the videos believed they were responsible for causing discomfort to their opponent and six apologizers were led to believe they were not responsible for causing discomfort. As such, half of the videos portrayed genuine remorse and the other half portrayed deceptive remorse\(^2\).

\(^2\) This was confirmed by subsequent analyses. Selected apologizers in the genuine remorse condition self-reported experiencing significantly more remorse for their actions than the false
Although the genuine remorse videos were randomly selected from the larger group of individuals from Study 1 that chose to send a message ($N = 14$), the false remorse videos were not randomly selected because all eligible videos were used\textsuperscript{3}. Both the genuine and false remorse videos included one man and five women. The genuine and false remorse videos were $5 – 21$ sec ($M = 10.64$) and $6 – 16$ ($M = 10.20$) sec in length, respectively.

3.3.2 Appraisal Questionnaire. After viewing each video\textsuperscript{4}, participants were asked to report (in a dichotomous format) whether they thought the apologizer in the video was responsible for the discomfort experienced by the opponent and their confidence in this decision on a 7-point scale ranging from 1 (not at all) to 7 (extremely). Participants then provided a rating of how sincere they believed the apologizer was on a 7-point scale, ranging from 1 (insincere) to 7 (sincere), and how confident they were in this rating, also on a 7-point scale. To examine participants’ perception of the apologizer’s experience, they indicated the degree to which they felt they were experiencing remorse, regret, shame, and empathy on a 7-point scale, ranging from 1 (not at all) to 7 (very).

Several secondary questions were asked to indirectly assess participants’ perception of the apologizer. To assess post-incident behaviour, participants indicated how likely they thought the apologizer would cause discomfort to an opponent if given the opportunity to play the game again on a 7-point Likert scale, ranging from 1 (not at all likely) to 7 (very likely). On the same

\textsuperscript{3} One false remorse video was excluded because it was less than 5 seconds long.

\textsuperscript{4} Participants were told that the individuals in the video participated in a competitive game during which their opponent experienced discomfort and that may or may not have been the result of the participant’s behaviour (i.e., the target in the video). They also were told that they would be watching the message the target chose to send to the opponent when given the opportunity to do so.
scale, they were asked to report how likely they would share the winnings from the game with their opponent and how likely they would engage in self-punishing behaviour following the game. In a dichotomous format, participants reported whether they thought the apologizer should be allowed to participate in research studies in the future. After viewing and answering the questions for all 12 videos⁵, participants were debriefed and thanked for their time.

3.4 Results

3.4.1 Perceived Sincerity and Responsibility. To assess observers’ impressions of sincerity, a paired samples t test was conducted comparing sincerity ratings of apologizers from the genuine and false remorse conditions (in Study 1). Results indicated that those in the genuine condition (M = 4.83, SD = .88) were perceived as being significantly more sincere than the false condition (M = 3.34, SD = .82), t(173) = 22.92, p < .001, d = 1.74; however, there was no significant difference evidenced for confidence in sincerity ratings, t(173) = -.32, p = .75, d = -.02. Observers’ decisions about sincerity for genuine (M = 5.22, SD = .75) and false (M = 5.24, SD = .82) apologizers were made with similar confidence.

A paired samples t test was conducted to determine whether there was an effect of veracity on responsibility ratings. Prior to the analysis, dichotomous responsibility decisions were summed and averaged for the genuine remorse apologizers and false remorse apologizers to represent the average number of apologizers from each condition that were judged as responsible by observers. There was no significant difference in responsibility ratings⁶ – that is, indicating

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⁵ Participants were given the opportunity to indicate whether they knew the target in the video and report if the video did not play properly. Anyone who replied affirmatively to either of these questions were removed from analyses.

⁶ To determine whether study setting had an effect on these results, a paired samples t test was conducted comparing conditions on the responsibility variable for the in-person and online version of the study. Results indicated no significant differences for the online version, p = .16; however, in the in-person version of the study, observers perceived the genuine apologizers (M
that a target was responsible for causing harm to the opponent – between apologizers from the genuine \((M = .76, SD = .28)\) and false \((M = .75, SD = .25)\) remorse conditions, \(t(173) = .41, p = .68, d = .03\). Collectively, these findings suggest observers are able to discriminate the groups based on sincerity, but are not able to differentiate apologizers by responsibility.

### 3.4.2 Functions of Remorse

A series of paired samples \(t\) tests was conducted to examine observers’ ratings of remorse, regret, shame, and empathy. Analyses indicated that observers rated apologizers from the genuine condition significantly higher on all of the variables, \(p < .001\). See Table 4 for \(t\) values, means, standard deviations, and \(d\) values.

<table>
<thead>
<tr>
<th>Comparison Variable</th>
<th>Genuine ((M, SD))</th>
<th>False ((M, SD))</th>
<th>(t) statistic ((df))</th>
<th>(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remorse</td>
<td>3.90 (1.11)</td>
<td>2.64 (.93)</td>
<td>20.02 (174)*</td>
<td>1.55</td>
</tr>
<tr>
<td>Regret</td>
<td>3.67 (1.19)</td>
<td>2.45 (.93)</td>
<td>18.19 (174)*</td>
<td>1.43</td>
</tr>
<tr>
<td>Shame</td>
<td>3.22 (1.23)</td>
<td>2.20 (.92)</td>
<td>15.70 (174)*</td>
<td>1.26</td>
</tr>
<tr>
<td>Empathy</td>
<td>4.12 (1.15)</td>
<td>2.80 (.92)</td>
<td>19.03 (175)*</td>
<td>1.48</td>
</tr>
</tbody>
</table>

*All significant at a \(p < .001\).

\(= .77, SD = .27\) to be significantly more responsible than the false apologizers \((M = .71, SD = .27)\), \(t(80) = 2.25, p = .03, d = .25\).
A series of paired samples $t$ tests was conducted on observers’ ratings of several variables, including the likelihood of “reoffending” (i.e., sending the white noise if given the opportunity to play again), likelihood of sharing the winnings, and likelihood of engaging in self-punishing behaviour. Analyses indicated that apologizers from the false remorse condition ($M = 3.80, SD = .96$) were considered to be more likely to reoffend than those from the genuine remorse condition ($M = 2.68, SD = .96$), $t(173) = -15.59, p < .001, d = -1.18$. In contrast, apologizers from the genuine remorse condition ($M = 3.69, SD = 1.19$) were perceived as being more likely to share their winnings from the computer game with the opponent than their false counterparts ($M = 2.71, SD = 1.02$), $t(174) = 13.57, p < .001, d = 1.04$. Similarly, likelihood estimates of self-punishing behaviour were significantly different between the two conditions, $t(174) = 6.27, p < .001, d = .49$. Apologizers from the genuine remorse condition ($M = 2.15, SD = 1.03$) were perceived as being more likely to self-punish than those from the false remorse condition ($M = 1.78, SD = .82$).

To assess the effect of observers’ impressions in a punishment context, a paired samples $t$ test was conducted on ratings of whether apologizers should be allowed to continue to participate in the research study pool. Prior to analyses, dichotomous decisions were summed and averaged for genuine remorse apologizers and false remorse apologizers to represent the number of which were permitted to continue participating in the research study pool. A significant difference between the groups was evidenced, $t(184) = 7.95, p < .001, d = .61$. On average, apologizers from the genuine remorse condition ($M = .92, SD = .14$) received more endorsements to continue participating in the study pool than those from the false remorse condition ($M = .77, SD = .27$).
3.5 Discussion

The first aim of Study 2 was to determine whether observers could discriminate between apologizers’ displays of genuine and false remorse. Observers were able to differentiate genuine and false remorse displays based on perceived sincerity and remorse. Further, they rated the genuine apologizers as experiencing significantly greater levels of empathy and related self-conscious emotions such as regret and shame, relative to apologizers from the false remorse condition. Given that the majority of past research has documented that people are generally poor at assessing others’ emotions and detecting deception more generally (DePaulo & Bond, 2006; Porter & ten Brinke, 2008), these findings are inconsistent with my predictions. Interestingly, however, the two groups of apologizers did not receive significantly different ratings on responsibility for the transgression (i.e., causing harm to the opponent) – a component of remorse that did differ, both objectively and subjectively, across the groups.

A second aim of Study 2 was to examine the influence of remorsefulness on observers’ perception of the transgressor. It was predicted that apologizers expressing genuine remorse would be perceived differently by observers in several ways. Findings supported our predictions; genuine apologizers were considered to be less likely to reoffend in the future, be more likely to make reparations (i.e., share their winning from the computer game with the opponent), and be more likely to engage in distress-reduction and atonement actions (i.e., self-punishing behaviour via the cold pressor task). Similarly, apologizers from the genuine remorse condition were more likely to receive an endorsement to continue participating in the research study pool. That is, they were less likely to be punished and socially ostracized, relative to those displaying false remorse.
Chapter 4 Study 3

4.1 Overview

It is well-documented that perceived remorse plays an important role in legal decision-making (e.g., MacLin et al., 2009; Martel, 2010; Pipes & Alessi, 1994); however, the specific features of such displays that contribute to a determination of genuine remorse remain unclear. The aim of Study 3 was to examine the impact of emotional expression and verbal characteristics theorized to be indicative of genuine and falsified remorse on legal decisions in a controlled lab setting. Because I was unable to identify behavioural features from the apologizers in Study 1 and there was evidence to suggest observers may be highly attuned to cues to veracity, the selected expression and verbal characteristics were manipulated in line with previous research (Hollan, 2012; Kogler & Stueber, 2000; Scher & Darley, 1997; ten Brinke et al., 2012) and the DPFT. It was expected that participants would be most persuaded by the combination of variables consistent with genuine remorse: a genuine expression of distress and empathy for those impacted by the transgression.

4.2 Participants

Undergraduate participants \((N = 259)\) attending a Canadian university were recruited through an online research participation pool and received course credit for completion of the study. The sample consisted of 202 women and 57 men with a mean age of 20.41 years \((SD = 3.18 \text{ years})\).

4.3 Procedures and Materials

Participants were recruited to complete a study on decision-making in legal settings. To begin, participants were randomly assigned to read a news article that either provided
information about a sexual assault or violent physical assault, which included the actions of a perpetrator and details about a victim.

4.3.1 News Articles. Vignettes modelled after published news articles were created for the purpose of the study (see Appendix C and D). Two violent crime vignettes were created – one described a sexual assault and one described a violent physical assault resulting in death. The vignettes described the moments leading up to the crime, what happened during the offence, and the consequences of the transgression. Although the vignettes differed on specific details tailored to each crime type, all other details were kept consistent. For example, both vignettes indicated that the perpetrator did not have a pre-existing relationship with the victim prior to the offence and gave no indication of premeditation. Further, the vignettes reported that both the perpetrator and victim had consumed alcohol. No information was provided about what occurred during the trial, except that the offender received a guilty verdict following the trial proceedings.

4.3.2 Videos. Next, participants were told that they would be viewing a video of the perpetrator addressing the audience in his sentencing hearing. Participants were randomly assigned to view one of 16 videos (eight per vignette).

Sixteen videos were created for the purposes of this study; each depicted an actor – posing as the perpetrator – speaking to the camera and making a statement ostensibly during his sentencing trial. The actor used for the videos was a college-aged man recruited from the community via a local acting studio. The videos varied by apology type and emotional display. Based on a script produced by the researchers, two apologies were delivered that either indicated the presence or absence of the emotional component necessary for the experience of genuine remorse (i.e., negative affect aroused by another’s pain and empathy for the victim; see Appendix E for scripts). Both scripts indicated the presence of the other requirement of remorse
that is, taking personal responsibility for the criminal action and harm caused by those actions (i.e., guilt). The statements were modeled after real letters from The Apology Network, an organization that assists offenders in writing to their victims about past transgressions. Key themes were drawn from the letters to aid in constructing realistic messages that would incorporate the type of information offenders tend to include when communicating with their victim post-verdict. Finally, each script was modified to be in line with the two crime types (described above). These modifications were minor and did not alter meaning or significance of the statement; for example, in the script for a violent assault resulting in murder, the apology was directed towards the victim’s family rather than the victim.

The facial expression produced by the actor in each video also varied in line with what past research has found to be indicative of genuine versus falsified remorse and distress displays (e.g., ten Brinke & Porter, 2011; ten Brinke et al., 2012). The actor adopted one of the following expressions: a neutral expression, a feigned low-distress expression [frontalis muscles (AU1+2) engaged and frown (AU15)], a feigned high-distress expression [frontalis muscles (AU1+2) engaged, frown (AU15), and tearful], or a genuine distress expression [corrugator (AU4) and inner frontalis muscles (AU1) engaged with frown (AU15)]. Because simulating facial expressions (i.e., adopting a facial expression associated with a certain emotion that is not actually felt) is a difficult task, the actor was extensively trained in genuine and falsified distress expressions in line with previous literature (Ekman & Friesen, 1975; ten Brinke et al., 2012).

Recording of the videos for use as stimuli only began once the researchers determined that the actor had an adequate understanding and skill at simulating the basic emotions.

4.3.3 Appraisal Questionnaire. After watching the video, participants completed an appraisal questionnaire. The questionnaire was created to assess participants’ impression of the
perpetrator and the crime. To assess perceived sincerity of the perpetrator, participants were asked to rate his sincerity on a 7-point Likert scale, ranging from 1 (not at all sincere) to 7 (very sincere). Further, participants were asked to report the main cues they used to assess sincerity in an open-ended format (up to a maximum of three cues). The cues reported by participants were coded as facial, verbal content, verbal speech, non-verbal/non-facial, and vague to examine the appraisal process. To assess perceived remorse, participants indicated whether they believed the defendant was genuinely remorseful for his actions versus experiencing false remorse, in a dichotomous response format.

To address perceptions of likelihood of recidivism, participants were asked to indicate how likely they think the perpetrator would commit the same crime again in the future and how likely they think the perpetrator would commit any crime in the future, both on a 7-point Likert scale from 1 (unlikely) to 7 (very likely). After completing the appraisal questionnaire, participants completed a demographics questionnaire before reading a debriefing form.

4.4 Results

4.4.1 Sincerity. A 4 (emotional expression: neutral, feigned-low, feigned-high, and genuine) × 2 (apology type: empathy-absent and empathy-present) × 2 (crime type: assault and murder) factorial analysis of variance (ANOVA) was conducted on sincerity ratings. A significant main effect of expression was present, $F(3, 258) = 8.84, p < .001, \eta^2 = .10$, but this was qualified by a two-way interaction between expression and apology type, $F(3, 258) = 2.59, p = .05, \eta^2 = .03$. See Table 5 for the complete statistics.
To investigate the nature of the interaction, follow-up ANOVAs were conducted separately for each type of apology. For the empathy-absent apology, a significant effect of expression was evidenced, $F(3, 131) = 2.73, p = .05$, $\eta^2 = .06$. Follow-up pairwise comparisons indicated that both the feigned-low expression ($M = 4.09, SD = 1.35$) and the genuine expression ($M = 4.12, SD = 1.31$) were perceived as significantly more sincere than the feigned-high expression ($M = 3.21, SD = 1.70$), $ps < .20$. For the empathy-present apology, a significant effect of expression also was present, $F(3, 127) = 9.37, p < .001$, $\eta^2 = .19$. Follow-up pairwise comparisons indicated that for the empathy-present apology, the genuine expression ($M = 5.06, SD = 1.37$) was perceived as significantly more sincere than neutral ($M = 3.08, SD = 1.62$), $ps < .05$. 

---

**Table 5**

*Factorial Analysis of Variance Test Statistics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$F$</th>
<th>$dfs$</th>
<th>$p$ value</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression</td>
<td>8.84</td>
<td>3</td>
<td>.00*</td>
<td>.10</td>
</tr>
<tr>
<td>apology type</td>
<td>.10</td>
<td>1</td>
<td>.75</td>
<td>.00</td>
</tr>
<tr>
<td>crime</td>
<td>2.20</td>
<td>1</td>
<td>.14</td>
<td>.01</td>
</tr>
<tr>
<td>expression $\times$ apology type</td>
<td>2.59</td>
<td>3</td>
<td>.05*</td>
<td>.03</td>
</tr>
<tr>
<td>expression $\times$ crime</td>
<td>.41</td>
<td>3</td>
<td>.75</td>
<td>.01</td>
</tr>
<tr>
<td>crime $\times$ apology type</td>
<td>3.15</td>
<td>1</td>
<td>.08</td>
<td>.01</td>
</tr>
<tr>
<td>expression $\times$ apology type $\times$ crime</td>
<td>1.15</td>
<td>3</td>
<td>.33</td>
<td>.01</td>
</tr>
</tbody>
</table>
feigned-low ($M = 3.82, SD = 1.65$), and feigned-high ($M = 3.34, SD = 1.93$) expressions, $ps < .01$.

To further examine the interaction, follow-up $t$ tests were conducted comparing the apology types for each expression. For the neutral expression, there was no significant difference between the empathy-present and empathy-absent apology types, $t(69) = 1.49, p = .14, d = .35$. Similarly, there was no significant difference between the two apology types for the feigned-low [$t(60) = .69, p = .49, d = .17$] and feigned-high [$t(65) = -.30, p = .76, d = .07$] expressions. A significant difference was evidenced between the empathy-present ($M = 5.06, SD = 4.12$) and the empathy-absent ($M = 4.12, SD = 1.31$) apologies when paired with a genuine facial expression, $t(56) = -2.68, p = .01, d = .71$.

4.4.1.1 **Cues to sincerity.** To provide additional information regarding the relationship between expression and apology type on sincerity, frequencies were produced for the various cues participants reported relying on for their sincerity ratings (see Table 6). Based on the percentages, it appears that observers relied on facial cues the most for all expressions and apology types.


**Table 6**

*Percentage of Cues Reported for Sincerity Ratings*

<table>
<thead>
<tr>
<th>Expression</th>
<th>Facial</th>
<th>Verbal Content</th>
<th>Verbal Speech</th>
<th>Nonverbal/Non-facial</th>
<th>Vague</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>38.00%</td>
<td>18.30%</td>
<td>28.20%</td>
<td>2.80%</td>
<td>9.90%</td>
</tr>
<tr>
<td>Feigned-low</td>
<td>38.70%</td>
<td>21.00%</td>
<td>24.20%</td>
<td>3.20%</td>
<td>12.90%</td>
</tr>
<tr>
<td>Feigned-high</td>
<td>53.70%</td>
<td>16.40%</td>
<td>9.00%</td>
<td>1.50%</td>
<td>19.40%</td>
</tr>
<tr>
<td>Genuine</td>
<td>41.40%</td>
<td>34.50%</td>
<td>6.90%</td>
<td>1.70%</td>
<td>12.10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apology Type</th>
<th>Expression</th>
<th>Facial</th>
<th>Verbal Content</th>
<th>Verbal Speech</th>
<th>Nonverbal/Non-facial</th>
<th>Vague</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy absent</td>
<td>40.50%</td>
<td>24.40%</td>
<td>21.40%</td>
<td>.80%</td>
<td>12.20%</td>
<td></td>
</tr>
<tr>
<td>Empathy present</td>
<td>45.70%</td>
<td>19.70%</td>
<td>13.40%</td>
<td>3.90%</td>
<td>15.00%</td>
<td></td>
</tr>
</tbody>
</table>

**4.4.2 Remorse Judgments.** A logistic regression on dichotomous remorse judgments was conducted with expression, apology type, crime, and all possible interactions between these variables entered as predictors. Results indicated that apology type, \( B = -4.14, \text{Wald } \chi^2 = 4.09, p = .04 \), was a significant predictor of remorse decisions, but this was qualified by a significant interaction between expression and apology type, \( B = 1.68, \text{Wald } \chi^2 = 4.75, p = .03 \).

To examine the interaction further a series of chi-square analyses was conducted separately for each expression (see Table 7 for the observed number of remorse judgments associated with each condition). For the neutral expression, a significant difference was
evidenced for empathy-absent and empathy-present apology types, $\chi^2 (1, 71) = 6.26, p = .01$, Cramer’s $\nu = .02$. There was no significant difference between observed counts for the feigned-low [$\chi^2 (1, 62) = 1.07, p = .30$, Cramer’s $\nu = .02$] and feigned-high [$\chi^2 (1, 67) = .78, p = .38$, Cramer’s $\nu = .11$] expressions. The genuine expression and empathy-present apology received the greatest number of remorse judgments, although it was not perceived as significantly more remorseful than the genuine expression and empathy-absent apology, $\chi^2 (1, 62) = 1.07, p = .30$, Cramer’s $\nu = .02$.

Table 7

*Observed Counts for Remorse Judgments Associated with Empathy-Present and Empathy-Absent Apologies*

<table>
<thead>
<tr>
<th>Expression</th>
<th>Empathy-Absent</th>
<th>Empathy-Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>Feigned-low</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Feigned-high</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Genuine</td>
<td>16</td>
<td>24</td>
</tr>
</tbody>
</table>

**4.4.3 Likelihood of Reoffending Estimates.** To examine perceptions of likelihood of reoffending, factorial ANOVAs were conducted that included expression, apology type, and crime as factors influencing likelihood ratings of committing the same crime and any crime in the future. For likelihood of recommitting the same crime, a significant main effect was evidenced for crime type, $F(1, 258) = 4.70, p = .03$, $\eta^2 = .02$. Participants who read about a violent physical assault resulting in murder ($M = 3.72, SD = 1.50$) estimated the likelihood of reoffending to be higher than those who read about a sexual assault ($M = 3.30, SD = 1.63$).
Although no other significant main effects or interactions were present, the interaction between expression and apology type was marginally significant, $F(3, 258) = 2.38, p = .07, \eta^2 = .03$.

A second factorial ANOVA was conducted to examine the effect of expression, apology type, and crime type on likelihood estimates of committing any other crime. A significant main effect of crime was found, $F(1, 258) = 35.68, p < .001, \eta^2 = .13$. Participants who read about the fatal physical assault ($M = 4.18, SD = 1.44$) estimated the likelihood of reoffending to be higher than those who received the sexual assault vignette ($M = 3.10, SD = 1.35$). No other significant main effects or interactions were present.

4.5 Discussion

The primary aim of Study 3 was to examine the effect of emotional facial expression and verbal characteristics on perceptions of apology sincerity and remorsefulness. More specifically, while all apologizers took responsibility for their crimes, sincerity of distress facial expressions were varied and the presence of empathy for the victim was manipulated via the language used by the perpetrator. There were significant interactions between emotional expression and apology type for observer ratings of both sincerity and remorsefulness. Observers were well-attuned to the emotional expressions exhibited by the perpetrator. The genuine expression of distress (AU 1+4 and AU 15) received the highest ratings of sincerity in both apology types and was significantly higher than all other expressions in the empathy-present apology. The feigned-high and neutral expressions were perceived as being the least sincere across both apology types. Regarding observers’ perception of remorse, follow-up analyses to the emotional expression by apology type interaction indicated that emotional expression was particularly influential in empathy-present apologies. Empathy-present verbal apologies accompanied by genuine distress and neutral expressions were perceived to be the most and least authentic, respectively; however,
only minor variations in remorse judgments were evidenced for the feigned-low and feigned-high expression. In general, these results suggest that observers are sensitive to both the hypothesized verbal and nonverbal components of remorse; that is, they appear to rely on a combination of verbal expressions of empathy for the victim and genuine expressions of distress on the face to guide their perceptions of remorse intensity and veracity.
Chapter 5 General Discussion

Remorse is an influential construct both in interpersonal interactions but also in more grave contexts such as the legal system; a showing of remorse (or lack thereof) can have serious implications for forgiveness following relational transgressions, for severity of sentencing recommendations, and for efficacy of restorative justice efforts. Despite this, the affective, cognitive, or functional underpinnings of remorse have been subjected to little empirical scrutiny.

In line with previous social functional perspectives of emotion (e.g., Keltner & Haidt, 1999), the present dissertation tested the DPFT—a theoretical framework of remorse that posits both self and social components. In particular, it sought to examine the cognitive and affective features of remorse, as well as the behavioural consequences of such an experience. For the self, experiencing remorse is expected to serve as a deterrent, reducing the likelihood of future transgressions. In a social context, an individual experiencing remorse is expected to receive reduced punishments. This social benefit, however, may lead to false expressions of remorse from those who are not genuinely experiencing it. As such, the present dissertation also examined the verbal and nonverbal consequences of expressing false (vs. genuine) remorse, and whether naïve observers can accurately detect the veracity of remorse displays. Across three studies, findings generally supported the proposed functional framework. Findings, implications, and directions for future research are described below.

5.1 Components of Remorse

The DPFT proposed certain components that constitute the emotional experience of remorse. The first proposed component is guilt; an individual must recognize he/she is responsible for the harm experienced by another person (Tracy & Robins, 2004). As such, this
component is cognitive in nature whereas the second component is more affective in nature. The second requirement is the distress or “inner turmoil” experienced in response to one’s behaviour. Arguably, this results from empathy toward the victim(s) of the transgression but may also come from acknowledgement that the behaviour was inconsistent with personal morals or social norms.

Study 1 provided support for the importance of accepting personal responsibility in producing the negative emotional arousal associated with remorse. Using a remorse induction paradigm, it was found that participants/transgressors, who believed that they were responsible for harming the opponent during the computer game, experienced greater self-reported responsibility than those who believed they were not responsible for the harm. Importantly, participants who believed they were responsible for the harm also experienced higher levels of remorse for their actions. Consistent with the DPFT view on the cognitive and affective components of remorse, as well as the behavioural consequences of experiencing remorse, it is encouraging to find that both higher ratings of responsibility and remorse were experienced by those in the genuine condition.

5.2 Dual-Function of Remorse: Self

Study 1 findings also provide support for the self-related function of remorse, proposed by the DPFT. The negative affective experience associated with remorse was hypothesized to serve as an aversive experience that would reduce the likelihood that the behaviour will be committed again. Several measures of this aspect of the proposed theory were incorporated into Study 1 which produced results in line with our prediction.

Individuals who were led to believe that they were responsible for their opponent’s pain (i.e., genuine remorse participants) indicated they would be less likely to engage in the same
transgression in the future and experienced more regret than those who believed they were not responsible for their opponent’s pain (i.e., false remorse participants). Further, specifically among the transgressors who apologized for their actions, genuine remorse participants self-punished to a greater degree than their false remorse counterparts. Arguably, given that reoffending may come with negative social consequences, engaging in self-punishment further reinforces that their previous behaviour should not be committed again. Collectively, these findings (from Study 1) support the proposal that the distress experienced after accepting responsibility for a transgression plays a valuable role in shaping future behaviour.

5.3 Dual Function of Remorse: Social

The second proposed function of the DPFT focuses on the social consequences of remorse; that is, the role remorse displays have in communicating to the larger group that the transgressor’s social violation was an anomaly and will not recur. Past research has suggested that providing an apology is a commonly used technique to achieve this following a social norm violation (see Scher & Darley, 1997; Shaplan, 2016). Theoretically, those who feel remorse for their actions should provide apologies more frequently than those who do not. Although only marginally significant ($p = .06$), a greater number of genuinely remorseful participants chose to send an apology relative to those assigned to the false remorse condition (Study 1).

The way in which observers assess an apology and remorse display is critical to the success of this communicative function, as unremorseful individuals may feign remorse during apologies to gain undue benefits. Although no verbal or nonverbal cues emerged in Study 1 to differentiate genuine versus false remorse displays from each other, observers (Study 2) were able to discriminate genuine and false remorse, such that the former was rated as more sincere than the latter. Interestingly, however, observer ratings of perceived responsibility did not
differentiate genuine from false remorse apologizers despite the manipulation of remorse in Study 1 being predicated on responsibility for harm. Thus, while observers did not seem to be sensitive to group differences in responsibility, they do seem to be sensitive to differences in emotional experience. Indeed, observers rated genuine remorse apologizers as experiencing higher levels of remorse and empathy than apologizers from the false condition—results that are consistent with apologizers’ own self-ratings. Similarly, they distinguished apologizers from the genuine remorse condition as being more regretful and ashamed. Although participants in the genuine remorse condition did self-report experiencing more regret than the false remorse condition, they did not self-report higher levels of shame.

5.4 Observers’ Sensitivity to Markers of Genuine Remorse

Previous research has suggested that the experience of remorse can motivate individuals to engage in behaviours aimed at social atonement (Inbar et al., 2013). Interestingly, observers were able to discriminate apologizers on the likelihood that they would engage in a social atonement strategy (Study 2); that is, observers perceived genuinely remorseful apologizers as being more likely to engage in self-punishment and predicted that these individuals would be more willing to share their earnings from the game in which they committed the transgression, relative to apologizers from the false remorse condition. These findings suggest that the intensity of a remorse display contributes to observers’ impressions regarding a transgressor’s motivation to make reparations for their actions.

A critical aspect of remorse from a functional perspective is the influence such a display has on observers’ impression about how the individual will act moving forward. In line with predictions, genuinely remorseful apologizers were perceived as less likely to reoffend and were less likely to be punished (i.e., removed from the research study participant pool). In other
words, apologizers from the false remorse condition were more likely to be punished with social exclusion. In sum, observers seem to be proficient at differentiating between the genuine and false remorse apologizers and seem to accurately predict their future behaviour (generally in line with self-reports). Unfortunately, because I was unable to identify behavioural cues that were uniquely displayed by those in the genuine or false remorse condition, it is unclear as to what cues are contributing to observers’ decisions; therefore, behaviours were manipulated based on existing literature (Hollan, 2012; Kogler & Stueber, 2000; Scher & Darley, 1997; ten Brinke et al., 2012) to help identify specific cues that influence decision-making, particularly in an applied legal context.

Although collectively the findings from Studies 1 and 2 suggest that observers may be able to assess whether apologies are sincere and characterized by genuine remorse, the specific features that comprise an effective apology were less clear. Using a mock sentencing hearing paradigm (Study 3), emotional expression and apology content were manipulated but responsibility was held constant to isolate these additional factors. Apologies were perceived as most sincere and remorseful when the perpetrator took responsibility for his actions, displayed a genuine distress expression, and demonstrated empathy for the victim. In general, these results suggest that observers are well-attuned to the hypothesized components of remorse, and rely on a combination of verbal and emotional cues to guide their perceptions of remorse.

5.5 Implications for Legal Decision-Making

Given the relevance of remorse to legal settings, the present findings have important implications. Research on deception detection has consistently demonstrated that the skill at which observers assess veracity is only marginally more accurate than flipping a coin (i.e., 54%; see Bond & DePaulo, 2006). Contrary to this literature, here, observers were able to discriminate
genuine and false apologizers on several measures, particularly those that are indirect assessments of sincerity (e.g., willingness to self-punish, willingness to share winnings, likelihood of reoffending, etc.). The majority of the lie detection research that has cited poor performance at determining veracity has had participants make explicit judgements (i.e., “is this person lying or telling the truth?”); however, a relatively recent line of investigation has considered the limitations of this direct approach and argues for greater reliance on more intuitive or indirect measures (e.g., Albrechtsen et al., 2009), such as asking whether the person is “thinking hard” (e.g., Street & Richardson, 2015; Vrij et al., 2001). Specifically focusing on a corporate context, ten Brinke and Adams (2015) examined apologies given following corporate transgressions and scandals. They found that stakeholder behaviour and subsequent market effects were influenced by subtle emotional expressions displayed during such apologies. This suggests that, although observers may not be skilled at assessing veracity when explicitly asked to do so, they may be sensitive to signals of genuine (vs. false) remorse that, in turn, influence their own behaviours and impressions. The findings from the present research lend further support to the value of assessing sincerity by focusing on indirect judgments.

5.6 Limitations and Future Directions

Despite these advances, a number of limitations of the current research should be noted as avenues for future research. In Study 1, the biggest limitation was the low number of “transgressors”; that is, there were fewer participants than expected who were willing to send white noise to the opponent during the computer game. To address this, future research could have the “opponent” (i.e., confederate) send white noise (at a lower intensity) to the participant during the experimental round on their winning trials to increase the likelihood of the participant reciprocating. Further, participants who sent white noise were given the choice to send a message
to the opponent; that is, they were not forced to. This aspect could be addressed in future research by giving one group of participants the choice to send a message following the remorse induction and requiring a second (different) group of participants to send a message following the same remorse induction. Strategies aimed at increasing the number of individuals who transgress (i.e., send the white noise) is particularly important as it allows for the experience of genuine (vs. false) remorse, the opportunity to provide an apology, and engage in self-punishment. In Study 1, the low number of transgressors had a domino effect because apologies could only be elicited from those who had sent the white noise. Alternative designs would increase the number of apologies available for behavioural analysis, potentially providing the statistical power necessary to identify behavioural cues used to discriminate genuine from false remorse.

Further, the present research was relatively “low-stakes” in nature; that is, apologizers from the genuine and false remorse conditions did not experience any consequences if they did not provide believable apologies. Motivation to provide a believable message following the transgression could have been increased by providing an incentive for the apology that was best able to “fool observers.” Indeed, emotional deception associated with greater motivation is more difficult to communicate successfully than low-stakes emotional falsification (i.e., motivational impairment effect; DePaulo & Kirkendol, 1989) due to the attentionally-demanding multi-tasking required by the deceiver. For example, a murderer attempting to communicate a remorseful apology before sentencing, despite feeling no remorse for his actions, must conceal his true emotions surrounding his crime, monitor his non-verbal behaviour, and create an appropriate remorseful plea to appear credible in court to avoid a possible life sentence. Incorporating features that further increased cognitive load also could contribute to more salient
behavioural cues (e.g., Vrij, Fisher, & Blank, 2017; Vrij & Granhag, 2012; however, see also Levine, Blair, & Carpenter, 2018). As such, a study in the future that has higher stakes is warranted and should reveal more behavioural cues exhibited by transgressors experiencing genuine and false remorse.

Contrary to predictions, observers were unable to discriminate apologizers based on degree of responsibility for harming the opponent. This is likely because the messages sent by all apologizers suggested some degree of responsibility; that is, apologizers from the genuine and false remorse conditions indicated responsibility for the consequence and action, respectively. In other words, because even the false remorse apologizers had technically intended for the opponent to receive the white noise (i.e., engaged in the action) and referred to it in their message, they were likely perceived as being responsible in general – despite not being responsible for any consequential harm experienced by the opponent. As such, it would be beneficial for future investigations to tease apart how determinations of responsibility are made by observers.

Relatedly, another unexpected finding was that apologizers from the genuine and false remorse condition rated the sincerity of their apology similarly. Given that the conditions were equally responsible for the action (i.e., sending the white noise), the apologizers from the false remorse condition may be apologizing for sending it (as opposed to for causing any harm) and simply may be rating the sincerity of that message. This suggests that perhaps not only should the sincerity of apologies in general be examined but also the degree of sincerity for various aspects of the message – an avenue for future research that would help refine our understanding of apologies.
Future research should further investigate laypersons’ perceptions of the various self-conscious emotions. Self-ratings on these variables provided by transgressors (Study 1) were highly correlated suggesting they were potentially not differentiating between the various constructs. However, there are important theoretical differences between remorse, regret, and shame. Regret is experienced when personal attribution is given to an action (not necessarily an immoral one, nor one that causes another harm) and results from comparing reality with alternative outcomes to the present personal situation if the person decided/behaved differently (Byrne, 2002; Van Dijk & Zeelenberg, 2005; see Zeelenburg & Pieters, 2007 for a review). Although regret will frequently accompany experiences of genuine remorse, regret is a heavily cognitively-based experience but remorse has both cognitive and affective components. Similarly, shame is an experience distinct from remorse. Shame involves a painful inward focus resulting from failures and/or acts committed by the transgressor (e.g., Kim, Thibodeau, & Jorgensen, 2011; Tangney, 1995; Tangney et al., 2014) and is most pronounced when there is an audience aware of the individual’s “immoral” behaviour. Although shame may co-occur with remorse, it uniquely calls into question the individual’s character (i.e., trait-based) and, as such, is inwardly focused rather than action-oriented like other moral emotions (i.e., state-based, unstable and time bound; e.g., Ketelaar & Au, 2003; Tangney et al., 2014; Tangney, Stuewig, & Mashek, 2007).

Some methodological aspects of the present research limits the degree of generalizability. For example, an actor was used in Study 3 rather than an individual that had actually engaged in a transgression. The actor was trained to display remorse in line with our hypothesized emotional features; however, given that he had not actually committed the crime described he would not be able to experience genuine remorse but rather was displaying what was considered to be
representative of remorse. Future research could improve on this aspect by including more than one actor from both genders. Further, the observers in Study 2 and Study 3 were undergraduate students. Although these participants would be eligible to serve in a legal decision-making capacity as jury members, it would be valuable to incorporate other legal professionals as observers in subsequent research (e.g., judges, lawyers, police officers, etc.)

Lastly, an important factor that could not be investigated in the current research is the influence of culture on remorse displays. Appropriate displays of emotion are culturally-bound such that it may be more appropriate to be emotionally expressive in one culture relative to another. Similarly, the type of behavior that would be considered a transgression can vary from culture to culture. The studies presented here examine remorse from one perspective, but our understanding of the construct would greatly benefit from application of the current methodology in a cross-cultural context.

5.7 Conclusion

Remorse is a powerful experience that has the potential to not only lead to positive changes for the transgressor but also contribute to a safer and more cohesive society. Indeed, the inner turmoil associated with remorse serves as a memorable deterrent. By engaging in reparative behaviours aimed at communicating remorse and seeking social atonement, transgressors are more likely to be forgiven and reaccepted into the social group, ultimately avoiding social ostracism. Inconsistent with the well-documented lack of proficiency in other contexts, findings suggest that indirect reactions may reveal observers’ ability to detect cues of remorse. A more sophisticated understanding of the nature and appraisal of remorse can be used to inform decisions with serious social and legal implications.
References


Byrne, R. J. (2002). Mental models and counterfactual thoughts about what might have been. *Trends in Cognitive Sciences, 6,* 426-431. doi:10.1016/S1364-6613(02)01974-5


The National Post. (2014, April 11). Oscar Pistorius’ tears may be real, but that doesn’t prove anything, experts say. Retrieved from http://sports.nationalpost.com/2014/04/11/oscar-


Vrij, A. (2000). *Detecting lies and deceit: The psychology of lying and implications for*
professional practice. Chichester, UK: Wiley & Sons.


doi:10.1177/0093854808321530


doi:10.1177/0146167201277012


doi:10.1016/j.jarmac.2012.02.004


doi:10.1177/1529100610390861


Appendices

Appendix A: Post-Induction Questionnaire (Study 1)

1. How confident were you in your performance during the computer game task?

   1  2  3  4  5  6  7
   not at all  somewhat  very

2. How motivated were you to win the computer game?

   1  2  3  4  5  6  7
   not at all  somewhat  very

3. Did your motivation influence your choice to send white noise on winning trials?

   Yes   No

4. Did your opponent send white noise to you during the game?

   Yes   No

5. If so, did you experience discomfort from the white noise that you heard?

   Yes   No   Not applicable – my opponent did not send white noise during the game.

6. Did your opponent report discomfort from the white noise?

   Yes   No

7. If your opponent reported discomfort from the white noise, please indicate how responsible you feel for his/her discomfort?

   1  2  3  4  5  6  7
   not at all  very
8. If your opponent reported discomfort from the white noise, did you provide an apology/message?

Yes  No

9. If you provided an apology, please indicate how sincere your message was:

1  2  3  4  5  6  7
insincere  somewhat  sincere

10. If your opponent experienced discomfort from the white noise, please indicate how remorseful you feel for exposing your opponent to the white noise:

1  2  3  4  5  6  7
not at all  somewhat  very

11. If you had the opportunity to play the game again, would you send the white noise?

Yes  No

12. Please indicate the degree to which you feel ashamed for exposing your opponent to the white noise:

1  2  3  4  5  6  7
not at all  somewhat  very

13. Please indicate the degree to which you regret exposing your opponent to the white noise:

1  2  3  4  5  6  7
not at all  somewhat  very
Appendix B: Combination Action Units and Descriptions (Study 1)

AU1+2: Together, activation of these muscles raises the inner and outer eyebrow. This is a prototypical expression of surprise in the upper face and can manifest during failed attempts of sadness.

AU1+2+4: The activation of these upper face muscles raises the inner and outer eyebrow, as well as pulls them towards each other.

AU1+4: These muscle activations raise the inner eyebrow and pull the eyebrows towards each other. This is the prototypical expression of sadness in the upper face.

AU9+10: The activation of these muscles contributes to an expression of disgust; they produce wrinkles on either side of the nose and raise the upper lip.

AU12+14: Engagement of these muscles causes the corners of the lips to raise and tighten, commonly producing dimples. Given that this activation is often produced during the experience of contempt, it is often unilateral.

AU10+14: In the lower face, the upper lip is raised and the lip corners are tightened. This is a possible facial action during an experience of contempt.

AU20+15: Collectively, these muscles tense the lips and stretches them back laterally as well as depressing the lip corners (i.e., pulling them downwards).

AU1+2+4+15: In the upper face, the eyebrows are raised and pulled together. In the lower face, the lip corners are pulled downwards (i.e., a frown).

AU6+12: In the upper face, the cheek raises producing wrinkles (or “crow’s feet”) around the eyes. In the lower face, the lip corners are pulled up obliquely and the lips are stretched (i.e., a smile). Together, these muscle activations produce a prototypical expression of happiness.

AU1+2+12: This combination of action units results in raising of the inner and outer eyebrow in the upper face and a smile in the lower face.

AU7+12+14: In the upper face, this muscle activation results in tightening of the eyelid. In the lower face, the lip corners are pulled upwards and dimpled. Given the relevance of this combined activation to the experience of contempt, these typically manifest unilaterally.

AU6+12+15: In the upper face, this pattern of muscle activation produces wrinkling around the eyes (due to the cheeks being raised). In the lower face, the lip corners are pulled obliquely and depressed, simultaneously.

AU6+12+14: In addition to wrinkling around the eyes, engagement of these muscles results in depression and dimpling of the lip corners.
Appendix C: Sexual Assault Vignette (Study 3)

Calgary Woman Sexually Assaulted

On February 11, 2012 the victim, Sarah Emery, was at the Roadhouse Bar in Calgary visiting with a group of her friends.

According to the agreed-upon submission by the Crown and defense, the accused, Sean Colters, approached the victim later in the evening and asked if he could buy her a drink. She agreed and followed the accused to the bar.

They had had a few drinks together when the victim’s friends came to tell her that they were leaving. They asked her if she was going to leave with them but she decided to stay at the bar with Colters. They continued to drink until the bar closed at 230am.

Witnesses report that as they were leaving the bar the victim lost her balance and fell but the accused helped her up. Colters then suggested that they go back to his apartment, as it wasn’t too far away. When they arrived the accused asked if she wanted another drink and the victim accepted. They proceeded to have a few drinks and get to know each other over the next few hours. Both parties reported that they ended up drinking more than they normally would and were very intoxicated.

Before the victim finished her last drink she reportedly began flirting with the accused. She then passed out on the couch as he began to fondle her and take off her clothes. The victim reported a blurred memory except waking up every so often with the accused on top of her.

The next morning, the victim woke up on the couch without her clothes on, beside the accused.

After a month-long trial the court found the perpetrator guilty of sexual assault.
Appendix D: Violent Physical Assault Vignette (Study 3)

Vancouver Man Dies after Bar Fight

On February 11, 2012 the victim, David Jones, was at the Lamplighter Bar in Vancouver visiting with a group of friends.

According to the agreed-upon submissions by the Crown and defense, the accused Sean Moscowitz approached the group and made comments that led to a loud argument. As the argument continued to escalate, the victim asked the accused to remove himself from the situation and leave their table. The accused continued to argue with the victim and attempted to coerce the victim into engaging in a physical altercation. After the victim stated that he would not fight, the accused became more aggressive and approached the victim.

A female witness stated, “The man wouldn’t agree to fight and this seemed to fuel his anger.”

As a result, security personnel who were employed by the establishment escorted Moscowitz from the vicinity.

About an hour later the accused returned to the bar and ordered a drink. After finishing the drink, he reportedly got up from the table holding an empty beer bottle and approached the victim. As the victim looked up, Moscowitz swung at the victim’s face with the bottle. The glass shattered and created a deep gash along the victim’s forehead and caused shards of glass to implant into the victim’s face. The victim was rendered unconscious. The accused was immediately ushered out of the building where he was questioned by the police and subsequently arrested.

The victim was taken to the hospital to be treated for severe facial wounds. Shortly after being admitted doctors found that the victim had suffered severe brain trauma during the altercation that caused his brain to swell. The victim later died in the hospital.

After a month-long trial the perpetrator was found guilty of second-degree murder.
Appendix E: Crime Scripts (Study 3)

Violent Physical Assault: Empathy-Present

To David’s family members I would like to say that I am sincerely sorry for my actions and for the terrible effects this has had on you. I realize how my behaviour has caused so much pain to David’s family and friends. I have caused you unimaginable pain and hope that you will be able to be at peace one day. I have so much guilt knowing that I will never be able to take back my actions and repair the damage that I have done to you. I have ruined your life. The grief and distress of losing a loved one is horrible and I wish I had not committed my crime. I am sorry to the witnesses who also were affected by my violent act. I am just so sorry for causing David’s death and for the devastating effect this has had on his family’s life.

Violent Physical Assault: Empathy-Absent

To my family members I would like to say that I am sincerely sorry for my actions and for the terrible effects this has had. I realize how my behaviour has caused so much pain to my family and friends. I have caused you unimaginable pain and hope that you will be able to forgive me one day. I have so much guilt knowing that I will never be able to take back my actions and repair the damage I have done. I have ruined my life. The grief and distress of this conviction is horrible and I wish I had not committed the crime. I am sorry to the witnesses who were also affected by the violent act. I am just so sorry for David’s death and for the devastating effect this has had on my family and my life.

Sexual Assault: Empathy-Present

To Sarah I would like to say that I am sincerely sorry for my actions and for the terrible effects this has had on you. I realize how my behaviour has caused so much pain to you and your family. I have caused you unimaginable pain and hope that you will be able to be at peace one day. I have so much guilt knowing that I will never be able to take back my actions and repair the damage that I have done to you. I have ruined your life. The grief and distress of this is horrible and I wish I had not committed my crime. I am just so sorry for violating Sarah and for the devastating effect this has had on your life.

Sexual Assault: Empathy-Absent

To my family members I would like to say that I am sincerely sorry for my actions and for the terrible effects this has had. I realize how my behaviour has caused so much pain to my family and friends. I have caused you unimaginable pain and hope that you will forgive me one day. I have so much guilt knowing that I will never be able to take back my actions and repair the damage that I’ve done. I have ruined my life. The grief and distress of this is horrible and I wish I had not committed the crime. I am just so sorry for violating Sarah and for the devastating effect this has had on my life.