Criminal and Remorseful Face-type Effects on Legal Decision Making

Beth B. Stevens

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ABSTRACT

Both defendant remorse and criminal appearance contribute to how harshly defendants are sentenced during a criminal trial, wherein signs of remorse are associated with more lenient sentencing punishments, and criminal appearances are associated with harsher punishments. Recent literature suggests that defendants’ faces can naturally look more remorseful or criminal, despite intent, and that these facial cues can impact legal outcomes. The current study investigated the extent to which face-type judgments of remorse and criminality interact to influence legal system punishments for different crimes. Using an online face-judgment task, participants made parole decisions and recidivism judgments while viewing a series of either morphed criminal and remorseful faces or composite faces depicting both remorse and criminality paired with crime scenarios. Results suggest that face-type and crime-type biases significantly influence parole decisions and recidivism beliefs. The findings are discussed in the context of face-type and crime-type biases in the criminal justice system.

INDEX WORDS: Remorse, Criminality, Face-type, Legal decision making
Criminal and Remorseful Face-type Effects on Legal Decision Making

by

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DEDICATION

This research is dedicated to my family, especially my parents, who have always supported my aspirations and goals. Not only have they always provided me with continual unconditional love and encouragement, but they have also endured many sacrifices so that I may pursue my educational goals and dreams. I would also like to give a special thanks to my fiancé Clay Weldon for his continuous support, encouragement, and love—he has been my biggest supporter during this process. For all these things, I am grateful.
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# TABLE OF CONTENTS

DEDICATION ................................................................................................................................................ IV

ACKNOWLEDGMENTS ................................................................................................................................. V

LIST OF TABLES ........................................................................................................................................... X

LIST OF FIGURES ........................................................................................................................................ XI

1 INTRODUCTION ....................................................................................................................................... 1

1.1 Facial Perceptions and First Impressions .......................................................................................... 4

  1.1.1 Accuracy of Facial Perception and Trait Inference ....................................................................... 5

  1.1.2 Timing of First Impressions .......................................................................................................... 6

  1.1.3 Effects of First Impressions and Trait Inference in the Criminal Justice System .................. 7

1.2 Mitigating Factors ............................................................................................................................... 8

  1.2.1 Defining Remorse .......................................................................................................................... 9

  1.2.2 Remorse in Legal Circumstances .................................................................................................. 10

  1.2.3 Perceptions of Remorse ................................................................................................................. 12

  1.2.4 Remorseful Face-Type ................................................................................................................ 13

  1.2.5 Defining Criminality .................................................................................................................... 14

  1.2.6 Criminality in Legal Circumstances ............................................................................................. 14

  1.2.7 Perceptions of Criminality ........................................................................................................... 15

  1.2.8 Criminal Face-Type .................................................................................................................... 16

1.3 Aggravating Factors – Nonviolent vs. Violent Crime-Types ............................................................ 17
1.3.1 Crime-type Statistics on Sentencing Decisions ....................................................... 18

2 PILOT STUDY ............................................................................................................. 22

2.1 Participants ............................................................................................................. 22

2.2 Materials ............................................................................................................... 22

  2.2.1 Criminal and Remorseful Face-Types ................................................................. 23

  2.2.2 Criminal-Remorseful Composite Face-Types ...................................................... 27

  2.2.3 Baseline-Remorseful Composite Face-Types ..................................................... 29

  2.2.4 Crime-Type Scenarios ....................................................................................... 31

2.3 Procedure .............................................................................................................. 31

2.4 Selection of Stimuli ............................................................................................... 32

  2.4.1 Criminal and Remorseful Face-Types ................................................................. 32

  2.4.2 Composite Face-Types ....................................................................................... 34

  2.4.3 Crime-Type Scenarios ....................................................................................... 34

3 EXPERIMENT 1 ......................................................................................................... 35

3.1 Participants ............................................................................................................. 35

3.2 Materials ............................................................................................................... 35

3.3 Procedure .............................................................................................................. 36

3.4 Hypotheses ............................................................................................................. 37

3.5 Results .................................................................................................................... 38

  3.5.1 Parole Outcome - Primary Analyses .................................................................. 38
3.5.2 Parole Outcome - Follow-Up Analyses ................................................................. 39

3.5.3 Recidivism Outcome - Primary Analyses ............................................................. 40

3.5.4 Recidivism Outcome – Follow-Up Analyses ......................................................... 41

4 EXPERIMENT 2 ........................................................................................................... 43

4.1 Participants ............................................................................................................... 43

4.2 Materials .................................................................................................................. 43

4.3 Procedure ................................................................................................................. 44

4.4 Hypotheses .............................................................................................................. 45

4.5 Results ...................................................................................................................... 46

4.5.1 Parole Outcome – Primary Analyses ................................................................. 46

4.5.2 Recidivism Outcome – Primary Analyses ......................................................... 46

5 DISCUSSION ............................................................................................................. 48

5.1 Findings .................................................................................................................. 50

5.1.1 Experiment 1 ..................................................................................................... 50

5.1.2 Experiment 2 ..................................................................................................... 56

5.2 Limitations and Future Directions ......................................................................... 62

5.3 Conclusion .............................................................................................................. 64

6 REFERENCES ........................................................................................................... 66

APPENDICES ............................................................................................................. 76

Appendix A .................................................................................................................. 76
LIST OF TABLES

Table 1 List of Crime Scenarios ........................................................................................................ 76
LIST OF FIGURES

Figure 1 Criminal Continuum Face Creation Explanation .......................................................... 25
Figure 2 Remorseful Continuum Face Creation Explanation ................................................. 26
Figure 3 Criminal-Remorseful Composite Face Creation Explanation .................................. 28
Figure 4 Baseline-Remorseful Composite Face Creation Explanation ................................. 30
Figure 5 Face-Type X Feature-Level interaction on average likelihood to grant parole scores. 40
Figure 6 Face-Type X Feature-Level interaction on average likelihood to recidivate scores. .... 42
Figure 7 Crime-Type X Face-Type on average likelihood to recidivate scores. .................... 48
Figure 8 Example of remorse facial stimuli used in Experiment 1 ........................................... 79
Figure 9 Example of criminal facial stimuli used in Experiment 1 ......................................... 79
Figure 10 Example of Criminal-Remorseful Composite facial stimuli used in Experiment 2 .... 80
Figure 11 Example of Baseline-Remorseful Composite facial stimuli used in Experiment 2 ..... 80
1 INTRODUCTION

It is well established that physical appearance significantly influences impression formation, affecting interpersonal, social, and cognitive relations. Dating back to 19th-century studies of physiognomy (i.e., the study of how physical and behavioral attributes are inferred from outward appearances or facial structure), researchers have frequently explored how facial perceptions influence stereotypes and first impressions of others (Lombroso, 2005; McNeill, 1998; Merriam-Webster, n.d.). This research has revealed that in the absence of factors such as clothing and body language, facial stimuli alone can elicit trait inferences and stereotypes about another’s personality, competence, future and past behaviors, occupation, and even intelligence (see Kleisner et al., 2014; Sacco & Brown, 2018; Secord et al., 1953; Shoemaker et al., 1973; Todorov et al., 2005).

Historically, these types of inferences have been deemed evolutionarily advantageous, wherein individuals have cognitively evolved to use them in the detection and categorization of friend versus foe, mate versus kin, and safety versus danger (see Schaller, 2008). Regardless of their evolutionary advantages, however, research has revealed inconsistencies in the accuracy of the inferences formed based upon facial cues alone (see Goldstein et al., 1984; Kleisner et al., 2014; Olivola & Todorov, 2010). Furthermore, regardless of their accuracy, these inferences are known to develop rapidly (within 100 milliseconds of viewing a face) and are stable across time (Willis & Todorov, 2006). Because of the inconsistency in their accuracy and the robustness with which they develop, the current study explored inferences based on facial cues further.

Although evolutionarily advantageous, inferring personality traits and developing stereotypes about individuals from physical appearances, especially facial features alone, can have grave consequences in present-day society, such as within the criminal justice system. For
example, several empirical studies have suggested that facial stimuli can elicit assumptions about criminal tendencies and that certain facial features are more likely to be associated with stereotypes about criminality (see Shoemaker et al., 1973; Wilson & Rule, 2015). While these inferences, if accurate, may facilitate desired outcomes within the criminal justice system (i.e., a violent criminal rightfully punished or incarcerated), when inaccurate, they may lead to negative consequences (i.e., an innocent suspect wrongly accused or imprisoned). Thus, these empirical studies represent the applied importance of understanding how criminal stereotypes—elicited from facial stimuli—can influence legal system decisions and suggests a need for research to examine how the features of a face influence other legal decisions.

It is also imperative to consider how inferences obtained from impressions about defendants and inmates have guided legal punishment decisions throughout history. As standard in the United States’ court system, judges and juror members frequently rely on what are known as mitigating and aggravating factors to guide the severity of punishment decisions (Corwin et al., 2012; Legal Information Institute, n.d.; Tudor, 2008; Ward, 2006). A mitigating circumstance is a factor that provides reasoning as to why punishment should not be imposed and lessened for a criminal act while aggravating circumstances are those that increase the severity of a criminal act (Legal Information Institute, n.d.).

A common mitigating factor relied upon when sentencing defendants is remorse, such that defendants who display remorse for their actions are often granted less severe punishments for their crimes. Both laboratory studies and real-life criminal trials (see “Brookline attorney,” 2011; Corwin et al., 2012; Neil, 2011) have exhibited how frequently remorse mitigates the severity of punishment decisions. Remorse as a mitigating factor, however, is complicated to interpret in the legal system as it can be displayed by verbal and non-verbal cues. Recent
literature has even suggested that some people can naturally look more remorseful, or criminal based on facial features and structure alone (Funk et al., 2017). Similar to how remorse mitigates the severity of sentencing decisions, the aggravating factor of violent crime-type also contributes to punishment decisions (see Kaeble, 2018). Specifically, as an aggravating circumstance, those who commit violent crimes (i.e., murder, assault, etc.) are typically sentenced more harshly as compared to those who commit non-violent crimes (i.e., property and rule violations, theft, etc.).

Although research suggests that remorse influences sentencing decisions, researchers have not addressed whether remorseful and criminal face-types, independently and together, influence legal decisions beyond sentencing decisions, such as the granting of parole and recidivism judgments. Furthermore, the literature has not considered whether crime-type influences the relationship between face-type and parole decisions or recidivism judgments. Because various factors influence courtroom outcomes, some of which are not evidentiary, such as facial cues and perception of those cues, identifying the impact these subjective cues have on parole, and other decisions, is of applied importance. To that end, the current study consisted of three experiments. The first was a pilot study wherein a set of facial stimuli was created by morphing the features of real faces to mimic facial cues associated with various traits. These morphed face stimuli were then pre-rated for the extent to which they were perceived as remorseful and the extent to which they were perceived as criminal. Those stimuli were used in Experiment 1, which tested two aims. The first was how do real-faces that are electronically modified to appear remorseful on a continuum (i.e., highly remorseful, moderately remorseful, low remorseful, and baseline/natural in appearance) influence parole decisions and predictions of recidivism. Similarly, the second aim of Experiment 1 was to test this continuum on criminal-
looking faces (i.e., highly criminal, moderately criminal, low criminal, and baseline/natural in appearance) and similarly considered parole and recidivism judgments.

Experiment 2 expanded upon Experiment 1 and consisted of two aims. The first aim assessed if a face that looks naturally criminal can ever look expressive of remorse. Specifically, this aim considered how faces that are a mix of both criminal and remorseful face-types (what will be referred to as criminal-remorseful composite faces in the current manuscript) influence parole decisions and recidivism judgments in comparison to faces that are a mix of neutral/baseline and remorseful face-types (what will be referred to as baseline-remorseful composite faces). The second aim of Experiment 2 tested whether crime-type is a factor in these decisions made about these composite face-types.

1.1 Facial Perceptions and First Impressions

Though the physiognomic belief that facial appearance and perceptions can be utilized to infer accurate information about one’s personality is now considered a pseudoscience, several scientists have believed in its legitimacy throughout history. For example, the founder of criminology, Cesare Lombroso, frequently argued that certain types of crimes were committed by men with particular physiognomic characteristics, and he frequently provided this notion as testimony in criminal trials (Lombroso, 2005; McNeill, 1998). Though historically used in criminal trials, physiognomy has been discredited in modern science as laboratory research has indicated that perceptions inferred from facial stimuli are not always accurate representations of true behaviors and personal traits (see Kleisner et al., 2014; Olivola & Todorov, 2010). This recent discreditation of using physiognomic practices formally within the criminal justice system, however, does not guarantee that judges, jurors, parole board members, and lawyers may not implicitly utilize a defendant’s or inmate’s facial cues to inform their decisions about an
individual’s past and future behaviors. Thus, it is important to consider how first impressions informed by facial cues lead to stereotypes that implicitly bias courtroom decisions.

1.1.1 Accuracy of Facial Perception and Trait Inference

Although physiognomy has been deemed pseudoscience, research by Little and Perrett (2007) has indicated that individuals can accurately utilize specific facial features to inform decisions about the Big Five personality traits (i.e., openness, neuroticism, agreeableness, extraversion, & conscientiousness). In this study, participants were asked to rate a series of composite faces representative of real individuals on the Big Five factors. Results indicated that participants scored higher than chance at accurately rating the personality factors of the composite faces, suggesting that participants can accurately infer personality characteristics from facial features alone and sometimes make these inferences with high accuracy.

While some research has indicated accuracy in using facial cues to inform personality or behavioral beliefs about another, much of the current research opposes this notion. For example, Kleisner and colleagues (2014) conducted an experiment examining how accurately one can perceive the intelligence of another person by looking at facial stimuli. Their results confirmed that facial stimuli do elicit perceptions about another’s personal characteristics, such as IQ level, even if the characteristic is not related to the individual’s facial features at all. It also suggested that perceptions formed from facial cues are not always accurate as participants judgments about female faces were not representative of the females’ actual IQ levels. While participants were relatively accurate at assessing IQ levels for male faces, the results of this study exemplify the inconsistencies and inaccuracies that occur when inferring personal characteristics from facial cues alone.
Similarly, Olivola and Todorov (2010) examined the accuracy of appearance-based inferences by utilizing an online platform wherein participants judged others based on facial appearances. In a second study, the authors had participants guess the political affiliation of US politicians based on facial stimuli after being informed of which category of political affiliation would be the most frequently represented in the study (i.e., the base-rate). In both studies, participants performed more poorly in predicting personality characteristics and political candidate affiliation if they relied on the appearance of the individual rather than the base-rate knowledge given to them. Both studies indicated that participants were less accurate at judging behavioral characteristics of the pictured individual when they relied on appearance cues alone rather than the feedback and base-rate information they were given about the behaviors.

1.1.2 Timing of First Impressions

Regardless of the accuracy of inferring behavioral characteristics from traits, a series of experimental studies have revealed trait inferences occur quickly after viewing facial stimuli and that these trait inferences remain stable across time. For example, Willis and Todorov (2006) had participants rate a series of 66 facial photographs by asking them to judge the degree to which the person pictured matched a series of characteristics (e.g., attractive, trustworthy, aggressive, etc.). Researchers randomly divided the stimuli into categories where participants viewed the faces for either 100 milliseconds (ms), 500 ms, or 1,000 ms. Their results revealed that judgments based upon facial perceptions occur in as little as 100 ms, as indicated by a high correlation between those judgments made at 100 ms and those made under no time constraints in a previous task. Furthermore, when the time constraint changed from 100 to 500 ms, participants’ judgments became more negative and their confidence increased. Finally, when
participants were allowed to view the face for 1,000 ms, most of the trait judgments and response times remained stable, and on average, their confidence increased.

In total, these results indicate that regardless of accuracy, first impressions based upon trait inferences inferred from facial features/stimuli occur quickly, and confidence in these first impressions increases with time (Willis & Todorov, 2006). Though occurring rather quickly, Willis and Todorov (2006) do suggest that increasing exposure time to facial stimuli does facilitate differentiated impressions, but these differential impressions are still based upon the initial inference developed about the face within the first 100 ms. This indicates that although first impression judgments change over time, they are still relatively stable as newly developed judgments are analogous to the initial trait inferences made in under 100 ms.

1.1.3 Effects of First Impressions and Trait Inference in the Criminal Justice System

The speed with which people form first impressions and how relatively stable these impressions are across time, regardless of their accuracy, indicates the importance of considering the impact of trait inferences. To that end, a myriad of psychological research has examined how inferences based on defendant and inmate appearances influence courtroom outcomes. One early empirical study by Shoemaker and colleagues (1973) investigated whether facial stereotypes about criminal deviants exist by having individuals rate the degree to which a crime could have been committed by the pictured individual. A pattern emerged in their results wherein specific individuals were categorized as criminal perpetrators more often than innocent individuals. Consistent with other literature, this research exhibited that facial stimuli, in the absence of additional information, can elicit stereotypes about behavior, specifically, criminal behavior. The results also indicated that guilty verdicts were elicited more frequently from those faces that participants previously categorized as criminal-looking than those deemed non-criminal-looking.
Recently literature has also suggested that criminal verdicts can be influenced by the appearance of an individual’s face. Wilson and Rule (2015) conducted a set of experiments investigating how trustworthiness, inferred from facial characteristics, influences criminal sentencing decisions (i.e., death row or life in prison). In the first study, the authors asked participants to rate the faces of real inmates to assess if those rated as less trustworthy were sentenced to death row more often than those rated more trustworthy. Results indicated that inmates deemed less trustworthy were sentenced the most to death row in real-criminal trials.

The second study further revealed that the trustworthiness ratings predicted death row sentences, even when the court had exonerated the inmates after the initial sentencing. It is important to note that the authors of this study examined the outcome of sentencing decisions rather than criminal verdicts of guilt because sentencing decisions of either life in prison or death row are situations in which the defendant’s trustworthiness should not be relevant to the outcome. This suggests that stereotypes from an individual’s face can elicit trait inferences that inform consequent decisions about that individual, even when the decision should not be influenced by those elicited inferences. The results of both Shoemaker and colleagues (1973) and those presented by Wilson and Rule (2015) represent the applied importance of understanding how negative stereotypes elicited from facial stimuli and features can bias courtroom decisions. They further suggest a need for research to examine how the features of a face influence legal decisions beyond criminal verdicts of guilt.

1.2 Mitigating Factors

Within the criminal justice system, judges and jurors commonly rely on mitigating and aggravative factors when sentencing defendants. As previously noted, defendant remorse is a mitigating factor that judges commonly consider when making sentencing decisions throughout
legal history and has been exemplified in many recent cases. In fact, researchers deem it one of the most influential factors in courtroom decisions, such as parole and probation hearings, clemency determinations, forensic examinations, verdict and death row decisions, and teens tried as an adult (Bandes, 2015). This indicates how influential remorse is in a myriad of contexts within the criminal justice system, and it reveals a need to consider how remorse is defined and the contexts in which it implemented within the courtroom.

1.2.1 Defining Remorse

In the literature, remorse is defined differently depending on the context in which it is considered. As noted by Funk and colleagues (2017), under certain circumstances, it can be defined as a “deep regret or guilt for doing something morally wrong” (p. 1431). In other instances, however, remorse extends beyond just a deep feeling of regret and is sometimes viewed as a two-part component in which an individual accepts responsibility for a mistake and then actively promises not to commit a similar act in the future (Scher & Darley, 1997). Additionally, remorse is commonly associated with moral and emotional distress and is often considered a form of self-punishment (Corwin et al., 2012).

Not only is it defined by the context in which it is examined, but remorse is also conceptualized by internal and external dimensions (Brooks & Reddon, 2003). The internal dimension is the feeling associated with the remorse, whereas the external dimension is characterized by the expression (verbal or non-verbal) of remorse (Brooks & Reddon, 2003). The two dimensions are also defined by their source, in which the internal component typically results from failing to meet personal standards, and the external dimension commonly results from fearing the consequences of breaking some societal norm or rule (Brooks & Reddon, 2003).
In considering the external dimension of remorse, it is important to note that it can be displayed through both verbal and non-verbal actions. For example, an individual can verbally promise not to commit a similar act in the future, or the individual can display non-verbal cues of emotional distress (Corwin et al., 2012; Scher & Darley, 1997). However, expressing remorse through verbal and non-verbal cues is distinctly different from giving an apology. Remorse is a complimenting component of an apology that individuals express through behavior, and it encompasses internal and external dimensions that reflect deep regret for a particular action. Apologies, however, are specific to spoken language (Corwin et al., 2012).

1.2.2 Remorse in Legal Circumstances

Regardless of how remorse is defined, researchers have noted that judges and jurors commonly act more leniently in sentencing decisions when a defendant expresses any remorse (i.e., verbal, or physical; “Brookline attorney,” 2011; Corwin et al., 2012; Funk et al., 2017; Neil, 2011). For example, in 2011, Eric Levine, a Massachusetts lawyer, faced 20 years in prison due to his involvement in mortgage fraud. Upon sentencing, however, the U.S. District Judge sentenced Levine to only 12 years in prison due to Levine's verbal expression of remorse for the crime committed. Such real-life examples exemplify how defendant remorse commonly mitigates the severity of punishment in sentencing decisions (“Brookline attorney,” 2011; Corwin et al., 2012; Neil, 2011).

Not only have real-life criminal trials exhibited the mitigating effects of defendant remorse, but laboratory studies have also exemplified its robust effect in mock crime scenarios. MacLin and colleagues (2009) had participants act as mock jurors in a trial where they were read a transcript about a murder and presented the accompanying evidence. After hearing about the case, the mock jurors viewed photographs of the perpetrator with varying facial-cues of emotion
(i.e., remorse, anger, etc.) and participated in a deliberation group to determine a final verdict. Participants who viewed remorseful photographs of the perpetrator were more likely to vote not guilty and charge the perpetrator with manslaughter rather than second-degree murder. These results exhibit how remorse serves as a mitigating factor, even within mock trials. Most importantly, it exhibits that verdict and sentencing decisions can be influenced by factors beyond the presented case evidence. It further supports the notion that remorse is not always related to an actual verbal admission of guilt but can be inferred by an individual’s cues of emotional expression.

Remorse is an influential factor in sentencing decisions because of its role as a mitigating circumstance in courtroom proceedings. Theological perspectives of remorse have indicated that its role in sentencing decisions is rooted in the fact that the judicial system is interested in punishing criminals. Beyond punishment, however, the goal of the judicial system is to rehabilitate the offender back into society (Eisenberg et al., 1998; Ward, 2006). Based on this notion, researchers have indicated that remorse is considered in sentencing decisions because it is traditionally indicative of an offender’s likelihood to recommit a crime (i.e., recidivate), such that showing remorse is indicative of ease of rehabilitation and return to society for the offender (Eisenberg et al., 1998; Ward, 2006).

However, whether judges and jurors should consider remorse as a mitigating factor in courtroom proceedings is a controversial topic based on its ambiguity. For instance, Eisenberg and colleagues (1998) note that remorse, as an applied mitigating factor, is very subjective and is complicated by factors such as judge and juror prejudices. As previously noted, it is also inherently complicated to interpret because of its dual composition of verbal and non-verbal cues and internal and external factors (Brooks & Reddon, 2003). For example, one can look
remorseful through an expression on their face, while another individual can express remorse through an apology. Thus, the extent to which judges and jurors evaluate defendant remorse remains subjective across different courtrooms as they can choose to interpret and consider a defendant’s remorseful behaviors differentially.

1.2.3 **Perceptions of Remorse**

The role of remorse in sentencing decisions depends significantly on juror perceptions of the defendant’s expression of remorse. As previously noted, remorse is influential in sentencing decisions because it can indicate a defendant’s likelihood of recidivism, thus exemplifying that expressed emotions can influence one’s perceptions about an individual. This notion in which remorse is indicative of future behavior is strongly dependent upon the overgeneralization of facial features as indicators of behaviors. Zebrowitz (2004) explored these overgeneralizations by examining the origin of first impressions and proposed a series of hypotheses to explain the phenomenon.

Grounded in ecological theories of social perceptions in which inferring personality traits from facial characteristics is an adaptive/survival function, Zebrowitz (2004) proposes the Emotion Face Overgeneralization Hypothesis. This hypothesis suggests that as a part of an adaptive response, individuals respond to facial features that resemble particular emotional expressions, such as remorse, by overgeneralizing the facial features as a trait of the individual. Research about angry expressions has evidenced this effect wherein high-intensity expressions of anger have been linked to low affiliative personality traits such as a lack of sociability, friendliness, and sympathy. Similarly, researchers have found an association between happy expressions and impressions of high affiliative traits (Zebrowitz, 2004). Neutral expressions that only slightly resemble certain emotions also foster emotional overgeneralizations. Research has
indicated that there is greater activation of neural networks that are trained to respond to happy versus angry faces when a neutral face that resembles more of a happy emotion is presented (Zebrowitz, 2004).

This hypothesis offers a possible explanation as to why remorse is so widely used to inform sentencing decisions in courtroom settings and why trait inferences form so readily from facial stimuli. Specifically, the Emotion Overgeneralization hypothesis would suggest that remorseful facial features are perceived and overgeneralized to indicate an individual’s likelihood to recidivate. Because overgeneralization is likely to occur when observing remorseful faces, one aim of the current study was to investigate whether facial cues of remorse also influence decisions to grant someone parole and beliefs about recidivation.

1.2.4 Remorseful Face-Type

Recent literature has revealed that the interpretation and perception of remorse are more complicated than observing a defendant or inmate displaying an intentional verbal or non-verbal expression. For example, Funk and colleagues (2017) utilized data-driven models to systematically manipulate facial features of facial stimuli from two databases; one that manipulated computer-generated faces, The Princeton Face Database, and one that manipulated realistic faces, The Basel Face Database. After manipulating the facial features of these faces, they had participants rate the faces on the dimensions of remorse and criminality. Their results indicated that an individual, despite intent, may naturally look more remorseful or criminal based solely on a set of facial features. Specifically, they suggest that a natural-looking remorseful face-type is characterized by the three features of lighter skin pigmentation, lips corners that are pulled downward, and raised inner corners of the eyebrows (Funk et al., 2017). This research established the features people are believed to rely on when making remorse judgments and
exhibited a need for the current study to explore how such remorseful face-types bias courtroom decisions.

1.2.5 Defining Criminality

Contrary to the definition of remorse, criminality has a more standard definition that is tied directly to the action of committing a crime. Formally, the Merriam-Webster Dictionary defines it as “the quality or state of being criminal” (Office of Justice Programs – “Criminality,” n.d.), while others refer to it as the propensity of an individual to commit a crime (MacLin & MacLin, 2004). Beyond these simplistic definitions, criminality is also closely related to the perception of an individual who is deemed criminal. Specifically, in its most complex form, criminality is used by researchers to indicate “the extent to which a person’s appearance triggers stereotypes about criminals” (MacLin & MacLin, 2004, p. 145). Because criminality refers to how an individual’s appearance can trigger stereotypes about their criminal behavior, it is imperative to analyze criminality in the legal context.

1.2.6 Criminality in Legal Circumstances

Because criminal-type faces have historically been used to indicate psychological dispositions, one being the propensity to offend (see Courtine & Haroche, 1994; Dumas & Teste, 2006; Le Breton, 1992 as cited in Dumas & Teste, 2006, p. 237; Lombroso, 2005; McNeill, 1998), research has examined how such perceptions and assumptions influence courtroom proceedings. One theory known as the criminal face effect indicates that if an individual is charged with a crime, they are more likely to be found guilty if they have a face type that matches or is representative of the crime that was committed (Macrae & Shepherd, 1989; Shoemaker et al., 1973). A vast body of research has also indicated that perceptions of criminality are importantly linked to the categorization of faces (Goldstein et al., 1984). One
study by Goldstein and colleagues (1984) examined the categorization of faces as belonging to someone who is a highly regarded professional or a heinous criminal. Their research indicated that faces categorized as criminals were never categorized as highly regarded professionals.

In addition to the association between certain face types and criminal activity, criminality also significantly affects eyewitness lineup decisions. Researchers have identified a tendency known as criminal face bias in which faces rated high in criminal appearance are more likely to be identified by participants out of a police lineup (Flowe & Humphries, 2011). In one study, lineup procedures were evaluated to determine if criminal appearance would be associated with eyewitnesses’ selection of the suspect. When mock witnesses were not given a description of the crime committed, they based their lineup choice on face type, specifically those faces that had a criminal appearance (Flowe & Humphries, 2011). Furthermore, research has indicated that faces deemed highly criminal are easier recognized than non-criminal faces and that the criminal appearance of a suspect can enhance eyewitness identification (MacLin & MacLin, 2004).

### 1.2.7 Perceptions of Criminality

As noted, criminality strongly relates to the perception of one’s propensity to offend. Specifically, the belief that an individual is likely to offend is based on how well their appearance matches that of a stereotypical criminal, which is associated with individual perceptions and biases. Research examining criminality has considered first impressions, overgeneralizations, and facial dimensions as they affect criminality perceptions. Like perceptions of remorseful face types, the Emotion Overgeneralization hypothesis suggested by Zebrowitz (2004) also explains how perceptions of criminality are inferred.

Regarding criminality, this hypothesis would suggest that specific facial cues and emotions are overgeneralized and attributed to infer criminal personality traits about an
individual. As such, research by Oosterhof and Todorov (2008) suggested that the two facial dimensions of valence and dominance contribute to perceptions of criminality. As consistent with the Overgeneralization hypothesis, Osterhof and Todorov (2008) suggest that the valence dimension of a face is suggestive of happiness and anger, and these components are overgeneralized to indicate whether an individual can be approached (i.e., whether the individual is trustworthy). Similarly, the dominance component of a face is suggestive of masculinity and maturity, and these components are overgeneralized to indicate how capable an individual is of causing harm (i.e., how physically strong the individual is). These suggestions exemplify how one may utilize facial dimensions to perceive an individual as criminal looking.

1.2.8 Criminal Face-Type

In complement to research about perceptions of criminality, recent studies have sought to determine what specific facial factors and features influence stereotypes and misguided perceptions about criminal tendencies. Notably, criminal stereotypes infer that all criminals participate in a similar series of behaviors and possess a similar appearance. Among these stereotypical appearances, criminals are associated with shaggy dark hair, tattoos, beady eyes, and facial scars or pockmarks (Flowe, 2012). Furthermore, early research by Lombroso (2005) has indicated that criminal face stereotypes could be based on specific features related to the physiognomy of the face.

In considering how the physiognomy of the face influences a criminal stereotype, other studies have focused on the racial cues that are tied to face-type bias (see Blair et al., 2002; Blair et al., 2004; Eberhardt et al., 2006; Kleider et al., 2012; Knuycky et al., 2014). This research has found that faces prototypical of a racial category are also more likely to be associated with stereotypical expectations tied to that category. Consequentially, these faces receive biased
judgments that lead to harsher punishments within the courtroom. Regarding judgments of
criminality, research has also indicated that faces that are more representative of stereotypical
Black features, regardless of whether they belong to Black or White individuals, are more likely
deemed criminal (Kleider et al., 2012). Moreover, Eberhardt and colleagues (2006) investigated
if capital punishment decisions are influenced by defendant and victim race. Focusing on the
degree to which a defendant is perceived stereotypically Black, their research found that the
more stereotypically Black a defendant looked, the more likely they were to be sentenced to
death. This occurred even when the victim was White. Thus, suggesting that facial features and
certain face types can stereotypically be associated with criminality and influence laboratory and
courtroom outcomes.

Although research points to face types typically associated with criminality and the
possible gestalt of a criminal face, Funk and colleagues (2017) identified the specific facial
features associated with a criminal face type. Utilizing systematically computer-generated faces,
their research indicated that criminal-looking faces have more prominent chins, smaller eyes,
dark pigmentation, and lowered eyebrows. Because this research indicates that a criminal face-
type can be systematically generated through the manipulation of specific facial features and that
face-types can influence criminal biases, the current study considered how criminal face-types
bias courtroom decisions.

1.3 Aggravating Factors – Nonviolent vs. Violent Crime-Types

In contrast to the mitigating factors, there are a secondary set of factors known as
“aggravating factors” that increase the severity of criminal punishment decisions. Aggravative
factors are typically associated with the severity and brutality of the committed crime such that
they are considered those factors that make a crime heinous (Garvey, 1998). Within the U.S.
court system, the severity and brutality of a crime categorize them into either violent or non-violent crimes. According to Kalvin & Bierman (2016) and the U.S. Department of Justice, violent crimes are those that use threats directed toward an individual. These heinous crimes include murder, rape, sexual and non-sexual assault, and robbery. In contrast, non-violent crimes are less heinous and include property and rule violations such as theft, burglary, and drug activity. Based on their heinous nature, violent crimes typically serve as aggravating factors in sentencing decisions wherein those who commit them receive harsher sentences.

### 1.3.1 Crime-type Statistics on Sentencing Decisions

In 2018, the U.S. Department of Justice reported time served in prison based on crime-type for 2016. Individuals convicted of violent crimes, including murder, negligent manslaughter, rape/sexual assault, robbery, and assault, spent an average of 15 years in prison (Kaeble, 2018). Those serving time for non-violent crimes were serving much shorter sentences, wherein the average reported time served for property crimes was 26 months and 22 months for drug crimes. Similarly, individuals served an average of 20 months for non-violent public orders (Kaeble, 2018). Because of the clear differential sentencing guidelines and decisions for violent and non-violent crimes, as exhibited by current statistics with the U.S. Justice System, the current study also considered crime-type when analyzing how facial types influence parole decisions. Given that aggravating and mitigating factors can influence sentencing decisions, it is imperative to consider how both factors may interact to inform sentencing decisions.

Even though research has suggested that remorse and criminality influence sentencing decisions for defendants, research has not indicated whether these factors influence courtroom decisions beyond sentencing outcomes, such as the granting of inmate parole, or how these factors influence beliefs about an inmate’s recidivism. Furthermore, the research has examined
courtroom outcomes based on remorse and criminality on their own, but it has failed to consider how these face-types interact with crime-type to influence parole and recidivism decisions. There is also a gap in the literature as researchers have not considered how a face may look both criminal and remorseful.

As such, the current study consisted of three separate experiments. The first was a pilot study conducted to validate the facial stimuli that were created for all subsequent experiments. Experiment 1 was then conducted and consisted of two aims. Both aims determined how real faces that are electronically modified to represent a natural-looking remorseful or criminal face based on specific facial features (see Funk et al., 2017) influenced the likelihood of an inmate being granted parole and the belief that they will recidivate. Specifically, these two aims considered how remorseful and criminal faces manipulated on a continuum (i.e., highly remorseful/criminal, moderately remorseful/criminal, low level of remorse/criminality, and baseline in appearance) influenced parole and recidivism decisions.

Experiment 2 extended Experiment 1 and included two aims. Because previous literature has failed to consider that an individual can have a criminal face-type but actually express non-verbal aspects of remorse such as facial emotions (see Brooks & Reddon, 2003; Corwin et al., 2012; Funk et al., 2017; Scher & Darley, 1997), the first aim of Experiment 2 considered if a face that is perceived as criminal (i.e., based on facial structure) can ever look expressive of remorse. Specifically, this aim considered how faces that combine both stereotypical criminal and remorseful facial features (i.e., a criminal-remorseful composite type face) affect parole decisions and recidivism judgments in comparison to those faces that combine just baseline and remorseful features (i.e., a baseline-remorseful composite type face) at different levels/amounts
of remorseful features (i.e., feature-level). The second aim of Experiment 2 determined how crime-type interacted with these composite-type faces to influence the two outcomes of interest.

For Experiment 1, three hypotheses are proposed. Based on literature that suggests remorseful defendants receive more lenient sentencing decisions than non-remorseful defendants (i.e., Eisenberg et al., 1998; Ward, 2006), we hypothesized that there would be a main-effect of face-type where remorseful faces would have higher averages for the likelihood of being granted parole and lower averages in the likelihood of recidivism in comparison to criminal face-types. Because remorseful and criminal-type faces are considered on a continuum (see Funk et al., 2017), there may be varying levels of remorse and criminality. Therefore, those faces displaying any amount of remorse would receive higher averages for the likelihood to grant parole and lower averages for the likelihood of recidivism in comparison to baseline faces (i.e., a natural face that has not been manipulated). Finally, for those faces manipulated on a criminal continuum, those that displayed any amount of criminality would receive lower averages for the likelihood to grant parole and higher averages for the likelihood of recidivism in comparison to baseline faces.

Experiment 2 included four hypotheses. First, because violent crimes are typically sentenced more harshly in the U.S. (see Kaeble, 2018), it was hypothesized that there would be a main effect of crime-type wherein violent crimes would receive a lower likelihood of being granted parole and a higher likelihood of recidivating in comparison to non-violent crime-types. Second, when comparing faces that were a composite of either criminal and remorseful features (i.e., criminal-remorseful composite faces) or a composite of baseline and remorseful features (i.e., a baseline-remorseful composite faces), there would be a main effect of face-type. Specifically, faces containing any level of criminal features (i.e., criminal-remorseful composite
faces) would receive lower averages for the likelihood of being granted parole and higher averages for the likelihood of recidivism in comparison to faces that don’t contain criminal features (i.e., baseline-remorseful composites).

Next, we hypothesized that participants would be able to recognize remorseful-cues on both sets of composite faces; therefore, for faces that are a mix of baseline and remorseful features (i.e., baseline-remorseful composite faces; See Appendix B.4 for an example of these faces), there would be an interaction between face-type and feature-level wherein the faces that have a higher amount of remorse (high baseline-remorseful composite faces; See Appendix B.4) would be more likely to be granted parole, less likely to recidivate than those that contain a lower amount (low baseline-remorseful composite faces; See Appendix B.4). Thirdly, it was predicted that this interaction would also occur for those faces that are a mix of criminal and remorseful features (i.e., criminal-remorseful composite faces; See Appendix B.3 for an example of these faces), wherein faces that have higher feature-level (i.e., amount) of remorse (high criminal-remorseful composite faces; See Appendix B.3) would be more likely to be granted parole and less likely to recidivate receive compared to those that contain lower feature-levels of remorseful features (low criminal-remorseful composite faces; See Appendix B.3).

Finally, because research suggests that facial criminality is heavily influential in the courtroom (see Blair et al., 2002; Blair et al., 2004; Eberhardt et al., 2006; Flowe & Humphries, 2011; Kleider-Offutt et al., 2012; Knuycky et al., 2014; MacLin & MacLin, 2004), the amount of remorseful features a face has may not influence sentencing decisions if a person has a criminal looking face. Therefore, alternatively, it is hypothesized that participants will not be able to recognize inmate remorse, and there will be no difference in the average likelihood of granting parole and judgments of recidivism at different amounts of remorse for criminal-remorseful
composite faces. Participants will only be able to recognize this remorse on the baseline-
remorseful composite faces.

2 PILOT STUDY

The goal of the pilot study was to obtain pre-ratings of the remorseful, criminal, and
composite-type faces to ensure the validity of the stimuli that were used in subsequent studies.
Ratings of the violent and non-violent crime-type descriptions were also obtained to ensure
correct categorization of the crime-types.

2.1 Participants

Participants were 134 undergraduates recruited from Georgia State University’s
undergraduate participation pool. The majority of them identified as female \( (n = 89) \) with the
remainder as male \( (n = 45) \). Of the participants, 65 self-reported their race as Black; 21 as White;
20 as Asian; 20 as Hispanic; and 8 as Bi-racial. The age of the sample ranged from 18 to 29
years old \( (M = 19.17) \).

2.2 Materials

In a previous task, 32 White male faces (taken from the Face Research Lab London Face
Database Set; DeBruine & Jones, 2017) were pre-rated on attractiveness and criminality. For
purposes of the current project, 14 faces were selected from this dataset, each of which had a
mean attractiveness rating that was neither 2 standard deviations above or below the mean of the
sample, and also had the lowest criminality rating. This ensured similarity of the experimental
faces used below.

These 14 baseline faces were then manipulated via Psychomorph (Chen & Tiddeman,
2010), a desktop version of the program WebMorph (see DeBruine, n.d.), that allows users to
change, manipulate, and move facial features within the photograph of a face. The creation of
faces for this pilot study followed the methodology used by Funk and colleagues (2017) in which specific features of the face were moved to create remorseful and criminal-type faces as outlined below. To create the final 84 faces to be pre-rated, face-templates of remorse and criminality were created for each of the initial 14 baseline photographs. The 14 remorseful face-templates were constructed by pulling the lip corners of the faces downward, raising the inner corners of the eyebrows, and lightening the skin pigmentation. The 14 criminal face-templates were created by making the eyes smaller, darkening the skin pigmentation, lowering the eyebrows, and making the chin more prominent.

### 2.2.1 Criminal and Remorseful Face-Types

After manipulating the baseline faces to create 14 templates that were a remorseful face-type and 14 that were a criminal face-type, the original baseline face was morphed with the newly created remorseful templates or the criminal templates to create a total of 84 criminal or remorseful faces (42 remorseful; 42 criminal). The Psychomorph program has a feature in wherein two faces or templates may be morphed allowing users to select a percentage of features to be pulled from one of the two faces. This process was utilized to create the desired continuum of features for both the remorseful and criminal face-type categories. The newly created template (i.e., either the remorseful template or the criminal template) and the corresponding baseline face were morphed three times. For the first morph, 50% of the features in the resulting face were pulled from the template, 75% in the second morph, and 100% in the third morph. This resulted in a series of morphed photographs wherein each baseline face had three corresponding feature-levels of the face at low, moderate, and high criminality or remorsefulness. A total of 84 faces were created from this (42 remorseful and 42 criminal; for example, see Appendices B.1 and B.2). It is important to note that each initial baseline face (14) selected from the database had
three corresponding remorseful and three corresponding criminal faces. These faces looked like the same individual except they were modified to include the different facial structures that represent criminal or remorseful face-types (See Figures 1 & 2 for stimuli creation description).
Criminal Continuum Faces

Face-templates created to look criminal were morphed with the natural, unedited baseline face. They were morphed at three feature-levels of criminally (i.e., high, moderate, and low). High pulled 100 of the features from the criminal template, moderate pulled 75%, and low pulled 50% into the newly created criminal continuum faces.

<table>
<thead>
<tr>
<th>Criminal face-template</th>
<th>+</th>
<th>Baseline Face</th>
</tr>
</thead>
<tbody>
<tr>
<td>High criminal face</td>
<td>or</td>
<td>Moderate criminal face</td>
</tr>
<tr>
<td>(i.e., 100% of features)</td>
<td></td>
<td>(i.e., 75% of features)</td>
</tr>
</tbody>
</table>

This resulted in a new face-type referred to as “criminal continuum faces,” at three feature-levels of criminality (i.e., high, moderate, or low). Those faces highly demonstrative of criminal features (i.e., 100%) are referred to as “high criminal faces,” those moderately demonstrative of criminality (i.e., 75%) as “moderate criminal faces,” and those with a low amount of criminality (i.e., 50%) as “low criminal faces.”

Figure 1 Criminal Continuum Face Creation Explanation.
Note. The moderate category was dropped from the experimental design following the pilot study.
Remorseful Continuum Faces

Face-templates created to look remorseful were morphed with the natural, unedited baseline face. They were morphed at three feature-levels of remorse (i.e., high, moderate, and low). High pulled 100 of the features from the remorse template, moderate pulled 75%, and low pulled 50% into the newly created remorseful continuum faces.

Remorseful face-template + Baseline Face

High remorseful Face (i.e., 100% of features) or Moderate remorseful face (i.e., 75% of features) or Low remorseful face (i.e., 50% of features)

This resulted in a new face-type referred to as “remorseful continuum faces,” at three feature-levels of remorse (i.e., high, moderate, or low). Those faces highly demonstrative of remorse features (i.e., 100%) are referred to as “high remorseful faces,” those moderately demonstrative of remorse (i.e., 75%) as “moderate remorseful faces,” and those with a low amount of remorse (i.e., 50%) as “low remorseful faces.”

Figure 2 Remorseful Continuum Face Creation Explanation.

Note. The moderate category was dropped from the experimental design following the pilot study.
2.2.2 Criminal-Remorseful Composite Face-Types

In addition to the faces created on a continuum of remorse and criminality, a set of 56 composite faces were created in Psychomorph to represent faces that have a mix of both criminal and remorseful features as well as baseline and remorseful features. The 28 criminal-remorseful composite faces were made by morphing the highest criminal and highest remorseful faces that were made for each baseline face in the previous task. Each pair of faces were morphed twice. For the first morph, 75% of the features in the resulting face were pulled from the remorseful face, and in the second morph, 25% of the features in the resulting face were pulled from the remorseful face. This resulted in a criminal face with two feature-levels of remorseful (i.e., a high criminal-remorseful composite face and a low criminal-remorse composite face). For an example of these criminal-remorseful composite faces at high and low levels of remorsefulness see Appendix B.3. See Figure 3 for stimuli creation description.
Criminal-Remorseful Composite Faces

High criminal faces created in Experiment 1 were morphed with high remorseful faces created in Experiment 1. They were morphed by pulling either a high percentage of remorseful features (i.e., 75% of features) or a low percentage of remorseful features (i.e., 25% of features) into the newly created criminal-remorseful composite faces.

<table>
<thead>
<tr>
<th>High criminal faces from Experiment 1</th>
<th>+</th>
<th>High remorseful faces from Experiment 1</th>
</tr>
</thead>
</table>

This resulted in a new face-type referred to as a “criminal-remorseful composite face,” at two feature-levels of remorse (i.e., high or low). Those faces morphed with a high percentage of remorseful features (i.e., 75%) are referred to as “high criminal-remorseful composite faces” and those morphed with a low percentage of remorseful features (i.e., 25%) as “low criminal remorseful composite face.”

*Figure 3 Criminal-Remorseful Composite Face Creation Explanation.*
2.2.3 **Baseline-Remorseful Composite Face-Types**

The remaining 28 composite style faces were created by morphing the highly remorseful continuum faces with the baseline faces for each of the originally selected 14 faces. Using the same method outlined for the criminal-remorseful composite faces, the levels of the baseline-remorseful composite face were created by pulling 75% and 25% of the features for the resulting face from the remorseful face. This resulted in 28 baseline-remorseful faces with two levels of remorseful features (i.e., a high baseline-remorseful composite face and a low baseline-remorse composite face; see Appendix B.4). For all the studies that follow, the resulting photographs were in color and were all young adult males. The pictured individuals were in front of a plain white background, and the photographs only displayed the head of the individuals. See Figure 4 for stimuli creation description.
Baseline-Remorseful Composite Faces

Natural, unedited baseline faces utilized in Experiment 1 were morphed with the high remorseful faces created in Experiment 1. They were morphed by pulling either a high percentage of remorseful features (i.e., 75% of features) or a low percentage of remorseful features (i.e., 25% of features) into the newly created baseline-remorseful composite faces.

Baseline faces from Experiment 1 + High remorseful faces from Experiment 1

High baseline-remorseful composite face (i.e., morph at 75% remorseful features)

Low baseline-remorseful composite face (i.e., morph at 25% remorseful features)

This resulted in a new face-type referred to as a “baseline-remorseful composite face,” at two feature-levels of remorse (i.e., high or low). Those faces morphed with a high percentage of remorseful features (i.e., 75%) are referred to as “high baseline-remorseful composite faces” and those morphed with a low percentage of remorseful (i.e., 25%) as “low baseline-remorseful composite face.”

Figure 4 Baseline-Remorseful Composite Face Creation Explanation.
2.2.4 Crime-Type Scenarios

Descriptions of violent and non-violent crimes were created based on information found on the Bureau of Justice Statistics (Office of Justice Programs – “Crime Type,” n.d.) regarding what is deemed a violent and non-violent crime and from crime scenarios that have been written to be used by the current laboratory. The scenarios were modified from both sources to reflect distinct crime-types, and the scenarios were shortened in length. From this, 28 crime scenario descriptions (14 non-violent; 14 violent) were then constructed consisting of a single statement that reads “The individual pictured below has been serving a prison sentence for” and followed with a description of a type of crime (i.e., aggravated assault, larceny, etc.). All 28 crime descriptions were 25 to 43 words in length. A list of the crime scenarios pre-rated in the current study are presented in Appendix A - Table 1.

2.3 Procedure

The pre-rating task was randomized such that participants were asked to view half of the 140 faces. In this online task, each face was presented for an unlimited amount of time on its own screen with the corresponding questions following the presentation of the face. Participants were asked to rate separately how remorseful and criminal each face was on a 7-point Likert type scale of (1 = not at all remorseful/criminal, 7 = extremely remorseful/criminal). They were also asked to indicate if the pictured face looked more remorseful or criminal, and they responded with either a choice of remorseful, criminal, or neither.

Participants were then asked to rank the 84 faces that were manipulated on a continuum from the highest/most remorseful/criminal to least remorseful/criminal. This was to ensure that the faces were viewed at the proper level of the manipulation. In this task, participants viewed the three faces that were apart of each continuum on its own screen. They were then instructed to
drag each face to the corresponding box of either highest/most remorseful/criminal, moderately remorseful/criminal, and lowest remorseful/criminal. The task was randomized so that participants viewed half of the criminal faces and half of the remorseful faces.

For the crime-type ratings, participants viewed half of the 28 crime descriptions and were asked to rate the crime-types on a 7-point Likert type scale of (1 = not violent at all, 7 = extremely violent). They were also asked if they found the crime description more violent, non-violent, or neutral in nature. It is important to note that the pilot study was designed such that participants viewed the faces before viewing the crime-types. This ensured that participants were not primed by any of the crime-types before rating the faces. Also, the face ratings appeared before the and crime-type ratings to prevent any order effects. At the end of the pilot study, participants were also asked a series of follow-up questions about the faces. Specifically, participants indicated how real they found the faces in the study to look (1 = not real at all to 7 completely real/natural) and if they believe the individuals pictured looked of the same age. They were also asked to write a small description of the criteria they used to rate the faces and to report their own demographics.

2.4 Selection of Stimuli

2.4.1 Criminal and Remorseful Face-Types

The 84 remorseful and criminal faces that were created on a continuum were evaluated on several criteria. For the first two criteria, the faces were evaluated on whether they were ranked in the appropriate category and if the means of how remorseful or criminal the face was deemed fell in the appropriate order (i.e., high, medium, to low). The faces of the middle category did not rank appropriately according to this criteria; therefore, the face-types were dichotomized wherein this category was dropped from the remaining of the experiments. Only
those high and low remorseful or criminal faces were utilized in the follow-up experiments. This helped to ensure the facial stimuli selected were of the highest quality and the most salient.

The faces were then checked to see if the remaining high and low criminal and remorseful faces matched the correct categorization of remorseful or criminal. This was determined by whether 50% of the sample correctly identified the face-type as matching a criminal or remorseful appearance. It is important to note here that the faces had to be selected in pairs wherein the remorseful and criminal stimuli for a face had to both match this criteria. This ensured that all faces selected for the experiments were of the same baseline face and would allow for fully validated stimuli for the composite faces. Only five faces validated wherein more than 50% of the sample correctly categorized the face during this criteria; however, the sixth and final face was selected based on the one that had the next highest percentage of the sample that correctly validated. To ensure that this face would not bias results, a mean split revealed that this face fell above and below the grand mean for both the ratings of criminality and remorsefulness. This helped ensure the dichotomy of the face.

The average range of how remorseful the six faces selected for the low-remorseful face-type category was deemed was from 3.16 to 4.44 and from 4.65 to 5.15 for the high-remorseful face-type (on a scale of 1 to 7). For those low-criminal faces, the range of how criminal the low-criminal faces were deemed ranged from 4.06 to 4.49. The high-criminal faces ranged from 4.65 to 5.25. It is important to note that when selecting stimuli, special attention was given such that faces with any distinctive markings or features, or those that did not appear of the same age were not selected.
2.4.2 Composite Face-Types

Because both sets of composite faces were created utilizing the above mentioned remorseful and criminal facial-stimuli, the composite faces selected were based solely off those criminal and remorseful continuum faces that validated. This resulted in 12 criminal-remorseful composite faces (6 high criminal-remorseful composites and 6 low criminal-remorseful composites) and 12 baseline-remorseful composite faces (6 high baseline-remorseful composites and 6 low baseline-remorseful composites) that were used in Experiment 2.

2.4.3 Crime-Type Scenarios

The 28 crime scenarios were first evaluated to determine which items were correctly categorized as a non-violent or violent crime. This was determined based on those scenarios in which more than 50% of the sample correctly identified the crime as belonging to the correct category when they were asked about the nature of the crime. Then among those that matched the correct category, 6 crimes that had the highest average violence rating, and 6 that had the lowest average violence rating were selected as the final 12 violent and non-violent crime scenarios, respectively. This helped to ensure that the scenarios shown in Experiment 2 were the most extreme.

The average range of the violence ratings for those final scenarios selected for the non-violent crime condition was from 2.05 to 2.85 (on a scale of 1 to 7). The percentage of participants who correctly identified the category of these crimes ranged from 72% to 89%. For the six violent crimes, 95% to 97% of the participants correctly categorized the crime scenarios. The violence ratings averages ranged from 5.74 to 6.67 (on a scale of 1 to 7). See Appendix A for these scenarios.
3 Experiment 1

Experiment 1 examined how real faces that have been electronically manipulated to depict two levels of remorse and two levels of criminality (i.e., the continuum faces) influence parole decisions and the judged likelihood of inmate recidivation.

3.1 Participants

A total of 529 participants were recruited from Georgia State University’s undergraduate participation pool and Amazon’s Mechanical Turk (i.e., MTurk). To ensure high quality responses, those participants recruited from MTurk were required to have a hit approval rate of at least 97% (see Buhrmester et al., 2011; Peer et al., 2014). These participants were also required to be from the United States, to ensure that participants were familiar with the parole system of the U.S. All participants were required to pass a series of attention check and CAPTCHA questions to ensure high-quality responses. A total of 247 participants were removed from the data based on those that failed the attention check and CAPTCHA questions and those who did not complete the full survey. The remaining 282 participants were utilized for the final data analyses reported here.

Participants’ ages ranged from 18 to 99 years old ($M = 24.28$). Majority of the 282 participants reported their gender as female ($n = 199$) while the remaining identified as male ($n = 73$), non-binary ($n = 9$), and one chose not to report their gender. The race of the sample was as follows 109 Black; 88 White; 34 Hispanic; 28 Asian; 13 Bi-racial; 7 reported their race as other; and 3 preferred not to answer.

3.2 Materials

The subset of 24 continuum faces selected from the first pilot study that were representative of criminal and remorseful faces were used for the Experiment 1. A total of 12
faces were remorseful (6 highly demonstrative of remorse and 6 low demonstrative of remorse) and 12 criminal (6 highly demonstrative of criminality and 6 of low demonstrative of criminality). In addition to the continuum faces, 6 of the corresponding original-neutral faces from the Face Research Lab London Face Database Set (DeBruine & Jones, 2017) were used to serve as baseline faces in the experiment (see Appendix B.1 & B.2 for example of these stimuli).

To isolate face judgment without context, the 12 validated crime scenarios from the pilot study were not utilized in the current study, but rather a control statement that read, “The individual below has been serving time for a crime they committed. They are now up for parole.” Parole decisions were evaluated using a 7-point Likert type scale in which participants were asked, “What is the likelihood that you would grant this individual parole?” (1= very unlikely, 7 = very likely). In addition, the likelihood of recidivism was assessed by asking, “What is the likelihood that you think this individual will recidivate (i.e., commit a crime again)?” on a 7-point Likert type scale (1= very unlikely, 7 = very likely).

3.3 Procedure

Experiment 1 followed a 2 (face-type: remorseful or criminal) x 3 (feature-level: baseline, low, and high) mixed design wherein participants viewed either remorseful or criminal face-types at varying levels of the face features (i.e., baseline face, highly remorseful/criminal, low remorse/criminal; see section 2.2 for the descriptions of the face photographs). Because the continuum faces were made from only 6 faces, we did not want participants to see the same person twice even though the feature-level differed; therefore, the experiment was block randomized by the original face. This resulted in participants viewing a total of 6 unique faces that were created from different original faces in the experiment (2 baseline, 2 low remorseful or criminal, 2 highly remorseful or criminal).
In an online task, the unitary presentation of the control crime-statement and face pair occurred one at a time. Because in a courtroom setting, the judge and parole board are allowed to look at the defendant/inmate for an extended amount of time, participants were allowed to view the face and control statement for as long as they wanted, and their decision was untimed. While viewing each face, participants were asked how likely it is that they would grant the individual parole and the likelihood they think it is the individual would recidivate. After viewing all six faces and making the judgments, participants reported their own demographics (i.e., race, age, & gender).

Participants recruited from Georgia State University were granted credit in their respective psychology courses and participants recruited from MTurk were paid $1.15 for their participation (commensurate with the MTurk market rate). The study took approximately 10 to 15 minutes to complete.

3.4 Hypotheses

1. There will be a main effect of face-type wherein remorseful faces will receive higher likelihoods of being granted parole and lower likelihoods of recidivism, in comparison to criminal faces.

2. High-level and low-level remorseful faces will receive higher averages for the likelihood to grant parole and lower averages for the likelihood of recidivism in comparison to baseline.

3. High-level and low-level criminal faces will receive lower averages for the likelihood to grant parole and higher averages for the likelihood of recidivism in comparison to baseline.
3.5 Results

All data analyses that follow were conducted in R (R Core Team, 2022) using the aov_4 function within the afex package (Singmann et al., 2022).

3.5.1 Parole Outcome - Primary Analyses

A 2 (face-type: remorseful or criminal) x 3 (feature-level: baseline, low, and high) mixed ANOVA was conducted to examine how face-type and feature-level influence parole outcomes. The results revealed no main-effect of face-type, $F(1, 280) = 0.11, p = 0.74, \eta^2_p < .001$. However, there was a significant main-effect of feature-level, $F(1.94, 544.10) = 3.50, p < .05, \eta^2_p = .01$; however, this main-effect was further qualified by a significant interaction between face-type and feature-level, $F(1.94, 544.10) = 34.31, p < .001, \eta^2_p = .11$ (see Figure 5).

The interaction between face-type and feature-level was probed utilizing Tukey pairwise comparisons. This method was selected over others, as Tukey is more appropriate when the number of comparisons is large, as was the case in the current experiments (Field, 2018). Results revealed when the face-type category was remorseful, the average likelihood to grant parole was higher for those faces with high remorseful features ($M = 4.35, SD = 1.44$) compared to baseline faces ($M = 3.53, SD = 1.56; p < .001$). Highly remorseful faces ($M = 4.35, SD = 1.44$), also received higher averages for the likelihood to grant parole than those with low remorsefulness ($M = 3.90, SD = 1.53; p < .001$). Additionally, low remorseful faces ($M = 3.90, SD = 1.53$) received higher averages for the likelihood to grant parole than those at baseline presented among the remorseful condition ($M = 3.53, SD = 1.56; p < .05$).

For criminal faces, those at a high level of features ($M = 3.71, SD = 1.59$) received lower averages for the likelihood to grant parole than baseline faces ($M = 4.14, SD = 1.55; p < .01$). Similarly, those high in criminality ($M = 3.71, SD = 1.59$) were deemed less likely to receive
parole than those low in criminality ($M = 4.04, SD = 1.52; p < .05$). Unexpectedly, criminally low faces were not deemed less likely to get parole than those at baseline ($M = 4.14, SD = 1.55; p = .94$).

### 3.5.2 Parole Outcome - Follow-Up Analyses

Given that the main-effect of face-type was not significant, but the interaction between face-type and feature-level was, additional pairwise comparisons at each level of face-type were constructed to better understand why there was not an overall effect of remorseful versus criminal face-types when collapsed across feature-level. As expected, results revealed that when either face-type was high in associated features, criminal faces ($M = 3.71, SD = 1.59$), were less likely to receive parole than remorseful faces ($M = 4.35, SD = 1.44; p < .001$). What was unexpected, however, was that there was a significant difference between baseline faces presented between the remorseful and criminal face-type conditions. Specifically, those baseline faces within the criminal condition (meaning they were presented with other criminal featured faces; $M = 4.14, SD = 1.55$) were more often granted parole than those baseline faces within the remorseful condition ($M = 3.52, SD = 1.56; p < .001$).

When comparing across all levels of face-type and feature-level, results revealed that criminally low ($M = 4.04, SD = 1.52$) faces received higher averages for the likelihood to grant parole than those baseline faces presented within the remorseful face-type condition ($M = 3.52, SD = 1.56; p < .001$). All other pairwise comparisons were non-significant ($ps > .05$). See Figure 5.
3.5.3 Recidivism Outcome - Primary Analyses

To examine how face-type and feature-level influence recidivism decisions a 2 (face-type: remorseful or criminal) x 3 (feature-level: baseline, low, and high) mixed ANOVA was conducted. Face-type was entered as the between-subjects variable and feature-level as the within. There was no main effect of face-type, $F(1, 280) = 1.18, p = 0.28, \eta_p^2 = .004$, nor was there a main of effect of feature-level, $F(2, 560) = 0.08, p = 0.92, \eta_p^2 < .001$. There was, however, a 2-way interaction between face-type and feature-level, $F(2, 560) = 26.45, p < .001$, $\eta_p^2 = .09$ (see Figure 6).

The interaction between face-type and feature-level was probed utilizing Tukey pairwise comparisons. As expected, results revealed that when the face-type was remorseful the belief that the pictured individual would recidivate was lower for those faces showing a high amount of...
remorse ($M = 4.00, SD = 1.58$) in comparison to the baseline faces ($M = 4.59, SD = 1.45; p < .001$). Similarly, the average belief of recidivism was lower for highly remorseful faces ($M = 4.00, SD = 1.58$) than those of low remorse ($M = 4.36, SD = 1.53; p < .01$). Unexpectedly, there were no significant difference in the belief of recidivism between faces that were of low in remorse ($M = 4.36, SD = 1.53$) versus the baseline faces ($M = 4.59, SD = 1.45; p = .34$).

Additionally, when faces were of a criminal face-type, those that were of a high-level of features ($M = 4.47, SD = 1.46$) received a higher-likelihood in the belief that they would recidivate in comparison to those at baseline ($M = 3.95, SD = 1.53; p < .001$). This same pattern followed when comparing highly criminal faces to those with lower level of features wherein faces of a high-level of criminality ($M = 4.47, SD = 1.46$) received higher beliefs of recidivism in comparison to those faces with a low-level of criminality ($M = 4.16, SD = 1.49; p < .05$). Finally, there was no significant difference in the belief of recidivism between low-criminal ($M = 4.16, SD = 1.49$) and baseline faces ($M = 3.95, SD = 1.53; p = .40$).

### 3.5.4 Recidivism Outcome – Follow-Up Analyses

Given that the main-effect of face-type was not significant, but the interaction between face-type and feature-level was, additional pairwise comparisons at each level of face-type were constructed to better understand why there was not an overall effect of remorseful versus criminal face-type when collapsed across level. As expected, results revealed that when the feature-level of face was high, criminal faces ($M = 4.47, SD = 1.46$) received higher averages for the likelihood of recidivism in comparison to remorseful faces ($M = 4.00, SD = 1.58; p < .05$). What was unexpected, however, was the baseline faces shown in the context/condition of criminal faces (meaning they were presented with other criminal featured faces) were deemed,
on-average, less likely to recidivate than those baseline faces shown in the context/condition of remorseful faces ($M = 4.59, SD = 1.45; p < .001$).

Finally, when comparing across both face-type and face feature-level conditions, criminal faces low in features ($M = 4.16, SD = 1.49$) were deemed less likely to recidivate than baseline faces shown in the remorseful condition ($M = 4.59, SD = 1.45; p < .05$). Additionally, baseline faces presented within the criminal condition ($M = 3.95, SD = 1.53$) were deemed less likely to recidivate than remorseful-low featured faces ($M = 4.36, SD = 1.53; p < .05$). All other pairwise comparisons were not significant ($ps > .05$). See Figure 6.

![Figure 6](image)

*Figure 6* Face-Type X Feature-Level interaction on average likelihood to recidivate scores. *Note.* Error bars represent standard error of the mean.
4 EXPERIMENT 2

Experiment 2 examined how real faces that have been electronically manipulated to depict a mix of both criminal and remorseful features (i.e., a criminal-remorseful composite face) versus those that are a mix of baseline and remorseful features (i.e., a baseline-remorseful composite face) influence parole sentencing decisions and judgments on an individual’s likelihood to recidivate while considering crime-type (i.e., violent, and non-violent).

4.1 Participants

Similar to Experiment 1, participants were recruited from Georgia State University’s undergraduate participation pool and MTurk. The same recruitment and exclusion criteria applied in Experiment 1 were utilized in Experiment 2 to ensure high-quality responses. A total of 528 participants consented for the study. Following the exclusion criteria, 342 participants were included in the final analyses. Majority of the sample identified as Black (n = 128) followed by 89 White, 47 Hispanic, 43 Asian, 19 Bi-racial, 9 other, and 7 who chose not to report. Additionally, majority of the sample was female (n= 239) with only 97 participants identifying as male, and 6 who identified as non-binary. Age of the sample ranged from 18 to 71 (M = 25.24), with 3 participants who did not report their age.

4.2 Materials

The 12 faces that were manipulated to reflect a composite of both criminal and remorseful features (i.e., 6 at a high level of remorseful features and 6 at a low level of remorseful features) and the 12 that were manipulated to demonstrate a composite of baseline and remorseful features (i.e., 6 at a high level of remorseful features and 6 at a low level of remorseful features) were used for Experiment 2 (see description of how these are made in section 2.2). In addition, all 12 of the crime-types selected from in the pilot study were utilized (6
violent, 6 non-violent; see description in section 2.2). Furthermore, the outcomes of parole
decisions and recidivism were measured identically to the way they were in Experiment 1 (see
section 3.2 for description).

4.3 Procedure

Experiment 2 followed a 2 x 2 x 2 mixed-design in which crime-type (2: violent vs. non-
vviolent) was a between-subjects factor, face-type (2: criminal-remorse composite vs. baseline-
remorse composite) was a between-subjects factor, and feature-level (2: high and low) was a
within-subjects factor. Specifically, in an online task, participants viewed faces that were a
composite of criminal and remorseful features or those that were a composite of baseline and
remorseful features paired with either all non-violent or all violent crimes. Similarly, to
Experiment 1, the faces for this study were block randomized by the original face so that
participants randomly saw only one of the composite faces for each individual-unique face. This
resulted in participants viewing a total of 6 faces and because feature-level was manipulated as a
within-factor participants viewed 3-composite faces that were manipulated with a high amount of
remorseful features and 3-composite faces that were manipulated with a low amount of
remorseful features.

The presentation of the crime and face pair occurred similarly to the control crime and
face pairing in Experiment 1 (i.e., crime and face pairing showed one at a time, untimed, etc.),
except this time, participants read the actual crime description. After viewing the crime and face-
type pairing, participants answered the questions about parole and recidivism. After viewing all 6
faces and making the parole and recidivism decisions, participants reported their own
demographics. Participants were granted either course credit or paid $1.15 for their participation
in the 10 to 15-minute study.
4.4 Hypotheses

1. There will be a main effect of crime-type wherein violent crimes receive a lower likelihood of being granted parole and a higher likelihood of recidivating in comparison to non-violent crime-types.

2. There will be a main effect of face-type wherein criminal-remorseful composite faces will receive lower averages for the likelihood of being granted parole and higher averages for the likelihood of recidivism in comparison to baseline-remorseful composite faces.

3. For baseline-remorseful composite faces, there will be an interaction between face-type and feature-level wherein the faces that have a higher amount of remorse (high baseline-remorseful composite faces) will be more likely to be granted parole, and less likely to recidivate, compared to those that contain lower amounts/features of remorse (low baseline-remorseful composite faces).

4. For criminal-remorseful composite faces, there will be an interaction between face-type and feature-level wherein the faces that have a higher amount of remorse (high criminal-remorseful composite faces) will be more likely to be granted parole and less likely to recidivate, compared to those that contain lower amounts of remorse (low criminal-remorseful composite faces).

   a. Alternatively, only baseline-remorseful composite faces will show differences in the likelihood of being granted parole and the likelihood of recidivism based on the amount of remorse displayed.
4.5 Results

4.5.1 Parole Outcome – Primary Analyses

To analyze how crime-type, face-type, and feature-level influence parole outcomes, a 2 (crime-type: non-violent or violent) x 2 (face-type: criminal-remorse composite vs. baseline-remorse composite) x 2 (feature-level: high and low) mixed ANOVA was conducted. Results revealed a main effect of crime-type, $F(1, 338) = 254.19, p < .001, \eta^2_p = .43$, wherein non-violent crimes ($M = 4.53, SD = 1.79$) received a higher likelihood of parole than violent ones ($M = 2.82, SD = 1.78$). Additionally, there was a main-effect of feature-level, $F(1, 338) = 21.40, p < .001, \eta^2_p = .06$. Composite faces with a high level ($M = 3.83, SD = 1.97$) of remorseful features received a higher likelihood of parole than those with a low level ($M = 3.49, SD = 1.98$).

Unexpectedly, there was no main-effect of face-type ($F(1, 338) = 0.04, p = .85, \eta^2_p < .001$), nor was there a two-way interaction between face-type and feature-level ($F(1, 338) = 0.71, p = .40, \eta^2_p = .002$). There were no other significant main-effects or interactions ($ps > .05$).

4.5.2 Recidivism Outcome – Primary Analyses

A second 2 (crime-type: non-violent or violent) x 2 (face-type: criminal-remorse composite vs. baseline-remorse composite) x 2 (feature-level: high and low) mixed ANOVA was conducted to analyze the outcome of beliefs about recidivism. Similarly to the outcome of parole, a main-effect of crime-type emerged, $F(1, 338) = 9.72, p < .01, \eta^2_p = .03$ wherein non-violent crime-types ($M = 4.53, SD = 1.60$) were deemed less likely to recidivate than violent ($M = 4.84, SD = 1.67$). Additionally, a main-effect of feature-level emerged, $F(1, 338) = 29.81, p < .001, \eta^2_p = .08$. Composite faces with high levels of remorseful features ($M = 4.51, SD = 1.64$) were believed to be less likely to recidivate than those with a low level of remorseful features ($M = 4.71, SD = 1.63$).
\( F(1, 338) = 7.46, p < .01, \eta^2_p = .02 \) (see Figure 7).

Similarly to the outcome of parole, there was not a significant main-effect of face-type, \( F(1, 338) = 2.87, p = .09, \eta^2_p = .008 \). There also was not an interaction between face-type and feature-level, \( F(1, 338) = 0.64, p = .425, \eta^2_p = .002 \). All other interactions were not significant as well (\( ps > .05 \)).

Given the unexpected significant interaction between crime-type and face-type, interactions were probed post hoc utilizing Tukey pairwise comparisons. Results revealed that when considering baseline-remorseful composite faces, those paired with non-violent crime-types (\( M = 4.48, SD = 1.67 \)) were deemed less likely to recidivate than those paired with violent crime-types (\( M = 5.05, SD = 1.61; p < .01 \)). When the crime-type was violent, those criminal-remorseful composite faces (\( M = 4.62, SD = 1.70 \)) were deemed less likely to recidivate than those baseline-remorseful composite faces (\( M = 5.05, SD = 1.61; p < .01 \)). Finally, when comparing across both crime-type and face-type, those criminal-remorseful composite faces paired with non-violent crime-types (\( M = 4.58, SD = 1.54 \)) were deemed less likely to recidivate than those baseline-remorseful composite faces paired with violent crimes (\( M = 5.05, SD = 1.61; p < .01 \)). See Figure 7. All other pairwise comparisons were not significant (\( ps > .05 \)).
Figure 7 Crime-Type X Face-Type on average likelihood to recidivate scores.

Note. Error bars represent standard error of the mean.

5 Discussion

Impression formations based on facial cues occur rapidly and significantly inform behavioral beliefs about others. Once established, these impressions maintain stability across time (Willis & Todorov, 2006). While accurate impression formation offers evolutionary benefits (see Schaller, 2008), inaccurate impression formation causes great concern in present-day society—especially when the impression formation leads to the development of face-type biases. One such instance is within the criminal justice system wherein cues of criminality tied to face-type biases influence the severity of defendant/inmate punishment. Defendants and inmates deemed to look criminal frequently receive harsher sentences versus those whose remorseful cues mitigates the severity of their punishment (Corwin et al., 2012; Neil, 2011; Shoemaker et al., 1973; Wilson & Rule, 2015).
Interestingly, research has established that regardless of intent, an individual may look more criminal or remorseful based on their naturally occurring facial features (Funk et al., 2017). This is a growing concern for researchers, judges, lawyers, jurors, parole board members, and laypersons alike, as factors (i.e., face-type biases) outside the inmate’s and the institute's control may subjectively influence courtroom outcomes. Beyond these concerns, it is unknown how individuals who exhibit facial features/cues of both remorse and criminality are punished within the courtroom and how aggravating factors of crime-type interact with face-type to influence courtroom decisions (Brooks & Reddon, 2003; Corwin et al., 2012; Funk et al., 2017; Kaeble, 2018; Scher & Darley, 1997). These concerns and gaps in the literature highlighted the need for the current manuscript to further explore the impact subjective perceptions of criminal and remorseful facial cues have on parole decisions and beliefs about recidivism.

Thus, the current study examined how facial stimuli created to appear criminal, remorseful, or a composite of both based on specific facial-features (see Funk et al., 2017) influence parole outcomes and recidivism beliefs. Specifically, the first experiment established the likelihood an inmate would get parole and believed to later recidivate, as a function of whether their facial features was demonstrative of different levels of remorse or criminality (i.e., highly criminal/remorseful, or low criminal/remorseful). The second experiment attempted to answer the questions of “can an individual who possesses a criminal-type face ever express remorse, and how does this subsequentially influence parole and recidivism outcomes when an aggravating/mitigating factor of crime-type is taken into account?” In summation, the overall goal of the current study was to establish how individuals perceive and rely on face-type cues of criminality and remorse when making parole decisions and recidivism judgments.
5.1 Findings

5.1.1 Experiment 1

In Experiment 1, I hypothesized that remorseful faces, in comparison to criminal faces, would receive higher likelihoods of being granted parole and lower likelihoods of recidivism—two separate analyses were conducted with parole and recidivism as separate outcomes. For the outcome of parole, this hypothesis was not supported as there were no differences in the likelihood of granting parole between remorseful and criminal-faces when feature-level of the face was not considered. Similarly, this hypothesis was not supported for the outcome of recidivism. There was no difference in recidivism beliefs based on whether the face was criminal or remorseful.

While this finding is surprising given that previous literature indicates that remorseful defendants/inmates, overall, are treated more leniently during sentencing decision compared to non-remorseful and criminal-looking defendants/inmates (see Eisenberg et al., 1998; Macrae & Shepherd, 1989; Shoemaker et al., 1973; Ward, 2006), follow-up analysis revealed a difference between how highly remorseful and highly criminal faces were perceived. Those highly criminal faces were deemed more likely to recidivate and less likely to get parole than those highly remorseful faces. This indicates that the two different face-type categories (i.e., criminal, and remorseful faces) are differentially influencing parole and recidivism outcomes, but only in the most extreme feature-level conditions. This suggests that the differences in parole and recidivism outcomes between criminal and remorseful face-types only occurs when the faces look extremely remorseful and extremely criminal, thus it is likely that the absence of overall differences between remorseful and criminal face-types was driven by the amount or saliency of the remorseful and criminal features.
Next, I hypothesized that faces with high and low amounts of remorse would receive parole more often and be deemed less likely to recidivate than baseline/natural faces. This hypothesis was fully supported for the outcome of parole. Participants displayed a higher propensity to grant parole for highly remorseful faces than they did for baseline faces. Faces with a low amount of remorse also received a higher likelihood of parole in comparison to baseline faces. Noteworthy, even though not hypothesized, highly remorseful faces were also deemed more likely to get parole than low remorseful faces. These findings are not surprising as Corwin and colleagues (2012) suggest that non-verbal cues of remorse are more important than verbal cues, and Lo and colleagues (2016) suggest the degree of remorsefulness is negatively related to degree of punishment. It follows that the more remorseful an inmate looks, based on non-verbal cues of face-type, the more likely they are to get parole.

Unexpectedly, however, this hypothesis was only partially supported for beliefs about recidivism. While beliefs about the propensity to recidivate was lower for highly remorseful faces than baseline faces, there was no difference in beliefs about the propensity to recidivate between faces low in remorse and baseline faces. Even though a true continuum existed for remorseful faces as they relate to parole decisions (i.e., the higher the remorseful-cues the more likely the inmate is to get parole), the continuum did not fully replicate for recidivism outcomes. Given that there was a significant difference between high versus baseline faces, as well as high versus low faces, in the expected directionality, the results are not necessarily inconsistent with literature suggesting expressions of higher levels of inmate remorse decrease estimates of the likelihood of reoffending (see Pipes & Alessi, 1999). They, however, suggest that remorseful faces are not considered on a full continuum for beliefs about recidivism as they are for parole decisions.
Because literature suggests that recidivism beliefs are strongly tied to how trustworthy the inmate is perceived (Miller et al., 2012), and according to Funk and colleagues (2017) remorseful face-types are inherent to trustworthiness, the lack of a significant difference in recidivism beliefs between the low remorseful and baseline faces may be due in part to the fact that the low-remorseful faces do not have enough trustworthy-cues to influence recidivism beliefs. In other words, there may not have been a salient enough difference between the two faces to differentially influence recidivism beliefs. Additionally, research suggests recidivism beliefs are very subjective wherein assessors of remorse unknowingly consider factors that are unrelated to the expression of remorse itself, such as the type of crime committed by the inmate or their history of criminal behavior (Berryessa 2022; Pipes & Alessi, 1999). Given that the current experiment did not include crime-type information, its likely recidivism beliefs were compounded by a lack of saliency between these two facial manipulations, the lack of information regarding the inmate’s history, and the subjective nature of recidivism beliefs as they relate to remorse biases.

Regardless, results suggest the more remorseful one looks the more likely they are to be granted parole, even if the remorseful cues are only subtle. Those subtle remorseful cues, however, may not be salient enough to influence subjective recidivism beliefs. One must display or possess stronger facial cues of remorsefulness to influence such beliefs.

Finally, for criminal-type faces, it was hypothesized that those faces high and low in criminality would receive parole less often and would be deemed more likely to recidivate than baseline faces. Faces high in criminality were less likely to get parole than those at baseline, but when comparing faces low in criminality and those at baseline there were no significant differences between the likelihood of receiving parole. This same pattern followed for the beliefs
about the likelihood of recidivism. Highly criminal faces were believed to be more likely to recidivate than those at baseline. There was, however, no differences in the beliefs about recidivism between faces low in criminality and those at baseline.

Given that the remorseful faces also did not display this true continuum for recidivism outcomes, it is likely the lack of a true feature-level continuum for the criminal faces was also due to salience of the facial-cues. Like remorseful-type faces, perceptions of criminal faces are negatively associated with cues of trustworthiness (i.e., the less trustworthy you look, the more criminal you appear; Funk et al., 2017). Thus, it is likely the trustworthiness cues, or lack thereof, were not apparent enough between low criminal and baseline faces to illicit differential decisions for parole decisions and recidivism beliefs.

Regardless a similar conclusion is drawn for criminal face-types as was for remorseful face-types. Results support previous research suggesting a *criminal face bias* wherein high criminality is associated with more serve punishments (see Blair et al., 2004; Eberhardt et al., 2006; Flowe & Humphries, 2011; Kleider et al., 2012; Knuycky et al., 2014). Attention, however, should be paid to the amount of criminality that is displayed as the current study revealed differential outcomes dependent about the amount of criminality a face possesses. This indicates that individuals with only subtle cues of criminality should not be as concerned with how their face is perceived during parole sentencing as those highly criminal-looking individuals should be.

In addition to the findings stated above, Experiment 1 revealed an unexpected main-effect of feature-level for the outcome of parole. Specifically, when face-type was not considered, those faces high in feature-level were deemed more likely to be granted parole than those at baseline. This finding is odd, given that highly criminal faces in the current study should
theoretically be less likely to get parole than the baseline faces. However, it is likely that when collapsing across face-type this finding was driven by the extremely high parole scores for highly remorseful faces ($M = 4.35, SD = 1.44$), rather than those highly criminal faces ($M = 3.71, SD = 1.59$). This notion is further supported by the fact that when deconstructing the interaction between face-type and feature-level, highly criminal faces were significantly less likely to get parole than baseline faces and highly remorseful faces. This suggests that the main-effect of feature-level is complicated by its interaction with face-type, wherein how the amount or degree to which facial-features influences parole and recidivism decisions is dependent upon the type of face an inmate possess.

Finally, when considering why face-type did not reveal a significant main-effect on parole or recidivism outcomes, follow-up analyses revealed that participants may be making a relative judgment within the two face-type groups. Specifically, when viewing a baseline face presented among remorseful faces, they perceived the baseline face as less favorable deeming it more likely to recidivate and less likely to get parole than the remorseful faces. When seeing a baseline face among criminal faces, participants perceived the baseline face as more favorable by granting it parole more often and deeming it less likely to recidivate. Taken together, these results suggest if a defendant or inmate has any criminal facial-features, they will be judged more harshly relative to those who have no criminal facial-features. Conversely, those defendants or inmates with any remorse will be judged less harshly than those without.

This relative comparison effect was indicated by a significant difference in parole and recidivism outcomes between baseline faces presented among criminal faces and those baseline faces presented among remorseful faces. Baseline faces in the criminal face-type condition were granted parole more often and deemed less likely to recidivate than those baseline faces in the
remorseful face-type condition. Given that the baseline faces were the same across the two face-type conditions (see pilot study for description of baseline faces), averages for the likelihood of parole and the propensity to recidivate should not differ. This effect was further evidenced by a significant difference in parole decisions and recidivism beliefs between low criminal and baseline faces presented among remorseful faces, wherein low criminal faces were deemed less likely to recidivate and were more likely to be given parole than those baseline faces. Similarly, low remorseful faces were deemed more likely to recidivate than baseline faces presented in the criminal face-type condition. Given previous literature (see Bandes, 2015; Eberhardt et al., 2006; Flowe & Humphries, 2011; MacLin et al., 2009), faces displaying any amount of criminality should have been treated more punitively, while those displaying any amount of remorse should be treated less, thus further supporting the notion that participants were making a relative comparison.

While unexpected, it is not surprising that this relative judgment effect developed in Experiment 1 as it is a relatively common phenomenon during criminal justice proceedings. For example, eyewitness memory research has indicated that when eyewitnesses are given a simultaneous lineup in which all 6 individuals are presented to the witness at the same time, the witness is inclined to make a comparison between all 6 individuals (for review see Wells et al., 2006; Lindsay & Wells, 1985). This relative comparison effect has also been exemplified in the context of crime-type wherein judges view criminal cases as more severe when they are frequently exposed to less severe cases (Leibovitch, 2016).

Some procedures (i.e., sequential line-up procedures and admonition statements; see Lindsay & Wells, 1985; Steblay et al., 2001; Wells et al., 2006), have been established to reduce such relative judgment effects during lineup procedures, but little policy has been implemented
to reduce these effects within courtroom proceedings. Given the current study replicated these relative comparison effects for face-type biases and revealed natural face structure can influence courtroom decisions, policy efforts should consider methods to reduce relative judgment effects within the courtroom for jurors, parole boards, and judges.

Overall, the findings presented here extend those of Funk and colleagues (2017) by revealing that faces modified, based on specific facial features, to appear more remorseful or criminal on a continuum does influence whether an inmate will be granted parole and whether they will be believed to recidivate, thus suggesting that the amount of criminal or remorseful facial features a face possesses does matter in a legal context. However, in some instances, the amount of facial features (either remorseful or criminal) an inmate possesses may only influence parole and recidivism outcomes for the most extreme faces (i.e., highly criminal/remorseful versus low criminal/remorseful or baseline faces). That is if an inmate has a natural extremely criminal face there is a cause for concern as they will be treated more harshly in criminal justice proceedings, especially in comparison to those who have extremely remorseful-looking faces.

5.1.2 Experiment 2

Similarly, to Experiment 1, two separate analyses, one for each outcome, were conducted to address the hypotheses that follow. Because violent crimes serve as aggravative factors that increase the severity of punishment for defendants and inmates within the criminal justice system (see Garvey, 1998; Kalvin & Bierman, 2016), the first hypothesis of Experiment 2 predicted that violent crimes presented within the face and crime-type pairs would receive lower averages for the likelihood of being granted parole and higher averages for the likelihood of recidivating in comparison to those non-violent crime scenarios. Results supported this hypothesis for both outcomes. When a violent crime-type was committed participants were less inclined to grant
parole and more likely to believe the inmate would recidivate than when a non-violent crime-type was committed. This suggests that violent-crime types increase the punishment severity of inmates who commit them, while those of non-violent variety decreased the punishment severity.

Next, there was a hypothesized main-effect of face-type wherein it was predicated that criminal-remorseful composite faces would receive lower averages for the likelihood of being granted parole and higher averages for the likelihood of recidivism compared to those baseline-remorseful composite faces. Results indicated that face-type alone was not a significant factor in parole and recidivism outcomes, thus this hypothesis was not supported for either outcome. This was surprising given research would suggest faces with any cues of criminality (i.e., those criminal-remorseful composites) would be less likely to get parole than those without any (i.e., those baseline-remorseful composites; see Blair et al., 2002; Blair et al., 2004; Eberhardt et al., 2006; Flowe & Humphries, 2011; Kleider et al., 2012; Knuycky et al., 2014; MacLin & MacLin, 2004) but the face-type effects were likely complicated by a significant main-effect of feature-level for parole and recidivism outcomes and the interaction between crime-type and face-type for the outcome of recidivism. This indicates that the decision to grant parole to a criminal looking inmate who displays cues of remorse versus an inmate who does not have a criminal looking face and displays cues of remorse, is dependent upon the type of crime the inmate committed and the amount of remorse they express. Similarly, the extent to which it is believed the inmate will commit a crime again is also dependent upon the type of crime they commit and the amount of remorse they express.

As such, there was a main-effect of feature-level for both the outcome of parole and recidivism. This main-effect revealed that across both face-types (i.e., criminal-remorseful composite and baseline-remorseful composite faces), those inmates with a higher feature-level of
remorse were more likely to be granted parole and less likely to recidivate. This finding suggests that remorse can be recognized upon criminal-remorseful and baseline-remorseful composite face-types alike, and thus criminal-looking inmates can look remorseful. While this specific main effect was not expected, it does make apparent the strength of remorseful cues, and supports literature suggesting remorse is perhaps the most highly considered factor in criminal trials (see Pipes & Alessi, 1999), but stands in contrast to those suggesting criminality-cues are influential (Blair et al., 2002; Blair et al., 2004; Eberhardt et al., 2006; Flowe & Humphries, 2011; Kleider et al., 2012; Knuycky et al., 2014; MacLin & MacLin, 2004).

It is worth noting that this main-effect of feature-level had only a moderate effect-size ($\eta^2_p = .06$) for the outcome of parole, in comparison to a strong effect size for the factor of crime-type ($\eta^2_p = .43$). This suggests that relationship between the amount of remorse an inmate shows and their likelihood of being granted parole is only moderately strong, while the relationship between the type of crime committed and the likelihood of an individual granting an inmate parole is very strong. Thus, it is possible the type of crime committed is more heavily weighed for parole decisions than the amount or level of remorseful-cues the inmate possesses. Empirical research supports this notion as despite the guidelines given to parole boards, crime severity is often the most considered and most influential factor for parole decision behavior in comparison to factors of institutional behavior, inmate mental illness, victim impact, and inmate incarceration length (for review see Caplan, 2007; Turpin-Petrosino, 1999).

While this finding suggests a disparity in how heavily crime-type and remorseful face-type cues are weighed during parole decisions, that is not to say that the way in which face-type and crime-type interact to influence courtroom decisions should be ignored, nor does it suggest that face-type biases do not implicitly influence parole decisions. In line with this notion, an
unexpected interaction between crime-type and face-type emerged for the outcome of recidivism. Unsurprisingly, for baseline-remorseful faces, those paired with non-violent crimes were deemed less likely to recidivate than those with violent-crimes, supporting the notion that non-violent crimes mitigate the severity of punishment. Similarly, criminal-remorseful composite faces paired with non-violent crimes were deemed less likely to recidivate than those baseline-remorseful composite faces paired with violent crimes. It is likely that the severity of the crime-type committed is driving this difference as well.

However, when crime-type was violent, criminal-remorseful composite faces were deemed less likely to recidivate than those faces with baseline and remorseful cues. (i.e., baseline-remorseful composite faces). This finding further extends the notion that remorseful cues are recognizable upon faces that have both remorseful and criminal cues (i.e., criminal-remorseful composite faces) and that they influence recidivism decisions. It also suggests that the remorse is more recognizable on a criminal-remorseful composite face-type than a baseline-remorseful composite, but only when the crime-type committed is violent in nature. This revealed a tendency for individuals to believe the expressed remorse upon a criminal-looking inmate’s face, even if the inmate has committed a violent crime.

This finding is potentially driven by the fact that remorseful cues on baseline-remorseful composite faces are less apparent than those on criminal-remorseful composite faces. Specifically, baseline-remorseful composite faces may appear naturally more remorseful, while criminal-remorseful composite faces have a mix of both features, and the unspoken cues of remorse may, therefore, be more apparent or salient on them. Additionally, when considering remorseful defendants and inmates, it is known that expressed remorse is conveyed by verbal and non-verbal cues (see Corwin et al., 2012; Scher & Darley, 1997). More recently, this
literature has revealed that verbal displays of remorse are not as impactful if there are no non-verbal cues, indicating that these non-verbal cues make the remorse look intentional and genuine (Hornsey et al., 2020). Given this, it is possible that participants may have heavily weighed which face the cues of remorse were more intentional and salient, thus criminal-remorseful composite faces were believed to be less likely to recidivate in comparison to baseline-remorseful composites. Additionally, judges have been shown to consider expressions of remorse more when considering more serious crimes and those involving victims (i.e., violent crimes) than those of non-violent variety (see Zhong et al., 2015), thus potentially explaining why this effect between the two faces was only found in violent crime scenarios. Participants may have been more likely to consider the remorse-cues of the criminal-remorseful inmate when the crime-type was violent than when it was non-violent.

In sum, this interaction suggests that the propensity to reoffended is believed to be less likely for criminal-looking individuals who express remorse for their violent crimes, than those remorseful-looking individuals expressing remorse. Therefore, revealing the importance of considering the combined influential effects of crime-type and face-type on courtroom outcomes.

It is important to note here that while this interaction was significant for recidivism outcomes, it was not for parole outcomes, suggesting that face-type and crime-type interactions are influencing parole and recidivism outcomes differentially in some instances. Because parole decision and recidivism beliefs should move in a consistent negative direction of one another (see Zebrowitz, 2004), it is odd that the interaction between face-type and crime-type was the only instance in Experiment 2 wherein the two outcomes diverged from one another. Future research should explore the directionality of this relationship further, as the current study cannot fully establish a statistically significant negative directional relationship between parole
decisions and recidivism beliefs given the scope of the current analyses (i.e., mixed-subjects ANOVA).

Beyond the interaction between face-type and crime-type, the third and fourth hypotheses predicted that there would be an interaction between face-type and feature-level. For baseline-remorseful faces, it was predicted faces that have a higher feature-level of remorse (i.e., high baseline-remorseful composite faces) would be more likely to be granted parole and deemed less likely to recidivate in comparison to those with a low-feature level of remorse (i.e., low baseline-remorseful composite faces). This hypothesis was not supported given the interaction between face-type and feature-level was not significant. For criminal-remorseful composite faces, this interaction was also hypothesized. It was predicted that because remorse is such a strong mitigating factor within the courtroom, perhaps the strongest mitigating factor (see Bandes, 2015), participants would be successful at recognizing remorse on a face that has both criminal and remorseful cues (i.e., a criminal-remorseful composite face), and this recognition would be indicated by this significant interaction between face-type and feature-level. High-featured criminal-remorseful composite faces, however, were not more likely to get parole and were not deemed more likely to recidivate than low-featured baseline-remorseful composites. Thus, the third and fourth hypotheses were not supported for either outcomes of parole or recidivism.

The alternative hypothesis that an interaction between face-type and feature-level would only be significant for baseline-remorseful composite faces, was not supported either. There was no significant interaction at all for either face-type; therefore, this alternative hypothesis was also not supported. Even though this lack of an interaction was unexpected it does not suggest, as originally hypothesized, that individuals cannot recognize remorse upon a criminal-type face. As
already noted, there was a main-effect of feature-level for both parole and recidivism outcomes suggesting that higher levels of remorse are perceivable on criminal-looking faces.

In sum, the findings presented for Experiment 2 further suggest that perceptions of inmates can be informed from facial cues (see Lombroso, 2005; Kleisner et al., 2014; McNeill, 1998; Sacco & Brown, 2018; Secord et al., 1953; Shoemaker et al., 1973; Todorov et al., 2005), and crime-types alike. First, over, and above other effects, results revealed that parole is most likely granted when inmates commit non-violent crimes than violent ones. Similarly, the belief that an inmate will recidivate is dependent on crime-type wherein they are believed less likely to commit a similar act in the future if they commit a non-violent than a violent one. Most interestingly, these results also suggest that individuals can and do perceived remorse upon a criminal-looking inmate’s faces and that this recognition does influence parole decisions. Therefore, if an inmate has a criminal-looking face, it is possible that parole boards will recognize cues of remorse for the crime that is committed. The chance of the board recognizing and considering this remorse for parole outcomes, however, is more likely when the remorseful cues are more salient (i.e., at a higher level or amount). Additionally, when considering recidivism beliefs, the type of crime committed by the inmate is important. If an inmate has a criminal-looking face and are displaying remorse, they are believed to be less likely to recidivate than those non-criminal looking individuals, but only when they have committed a violent crime. Thus, it is likely that criminal-looking individuals can display remorse for their acts of violence, and parole boards may, in-part, recognize it.

5.2 Limitations and Future Directions

The first major limitation of the current study was that all the facial stimuli utilized were of White males. While the choice to use White male faces in the current study was intentional to
isolate the remorseful and criminal face-type effects in the absence of stimuli race and gender, research has linked both gender and race to perceptions of remorse and criminality. As previously mentioned, when considering race within the courtroom, individuals who are black and those deemed to look more “stereotypically” Black receive harsher punishments (Eberhardt et al., 2006; Kleider-Offutt et al., 2012). Additionally, it is well established within the literature that Black men are wrongly and disproportionately associated with criminal-stereotypes in what is referred to as a “Black Criminal Stereotype” (Anderson & Raney, 2018; Welch, 2007). Thus, replicating the current study to include faces of different races is of primary importance; It will allow researchers to determine if individuals recognize remorseful cues on a Black criminal-type face or if negative racial stereotypes prevent this recognition.

Future research should also include female faces, as masculinity is directly linked to stronger perceptions of criminality and femininity to perceptions of remorse (Estrada-Reynolds et al., 2016; Funk et al., 2017). Also, research has indicated a gender gap in sentencing decisions in the United States wherein females have historically received more lenient punishments than males, even when considering offense-type and other legal factors (Bontrager et al., 2013; Doerner & Demuth, 2012; Koons-Witt et al., 2012). The replication of the current study with female faces would allow us to understand if the specific facial features associated with criminality (i.e., smaller eyes, darker pigmentation, lowered eyebrows, and a prominent chin) and remorse (i.e., downward lip corners, raised inner eyebrows, and lighter skin pigmentation) generalize across gender and influence parole and recidivism decisions as they have in the current study.

Not only are the gender of faces of primary importance for future research, but so is the gender of our participant sample. Literature has suggested that females recognize both verbal and
non-verbal cues of remorse quicker and deem these cues more valuable than males do when making legal decisions (Bornstein et al., 2002; Demenescu et al., 2014; Lambrecht et al., 2014; Lee et al., 2013; Thompson & Voyer, 2014). Males, conversely, value more concrete forms of justice, such as time-served and monetary reparations (Jaffee & Hyde, 2000; O’Malley & Greenberg, 1983). Given that majority of the participants in all three studies identified as female, future research should consider whether participant gender influenced how remorse was recognized upon the criminal-remorseful composite faces in the current study and if parole decisions and recidivism beliefs varied by participant gender.

Additionally, it is well established that older inmates are punished less harshly in the criminal justice system (Cutshall & Adams, 1983; Smith & Schriver, 2018; Steffensmeier & Motivans, 2000). As already noted, when selecting the facial stimuli for the current study, special attention was given to ensure all faces were of younger to middle-aged men; therefore, the current results cannot generalize to faces of older individuals. Thus, future research should expand both the age of the facial stimuli. Finally, the current study also measured confidence in parole decisions and recidivism beliefs, but these outcomes were beyond the scope of the current manuscript. Therefore, future research will also analyze how face-type and the crime-type committed related to outcomes of confidence in the current studies.

5.3 Conclusion

Taken together, the results of the current experiments suggest not only can face-type biases influence courtroom decisions of parole granting and recidivism beliefs, but that the degree to which a face is naturally expressive of criminality or remorse is important. That is, criminal and remorseful face-types can be manipulated to look more representative of their face-type simply based on the amount of criminal or remorseful features they possess. While
recognition of these face-types does not always impact parole and recidivism beliefs when the amount of criminal or remorseful features is small, it does happen when the face has a more salient amount of these features. Given the fact that Funk and colleagues (2017) suggest these face-types occur naturally based on the characteristics of one’s facial features, these results are concerning considering criminal justice decisions. While accurately inferring personality characteristics from these criminal and remorseful face-types may facilitate desired courtroom outcomes, the concern is that judges and parole board members may be implicitly relying on these face-type cues when they are inaccurate representations of the inmate’s past and future behaviors. Thus, the subjective nature and extent to which judges and parole board members rely on these naturally occurring facial cues is greatly concerning, and future research should continue to consider how remorse and criminality are determined, defined, and considered within the courtroom.

Of additional concern is that current studies revealed a tendency for individuals to make a relative comparison/judgment between the six faces that were presented to them in the experimental task. This begs the question of how often relative comparisons influence courtroom outcomes, especially sentencing decisions, and suggests a need for implementation of formal policies to aid in the reduction these relative comparison effects. Encouragingly, however, the current study does indicate that criminal-looking individuals can express remorse and individuals recognize and apply this recognition when making parole and recidivism decisions, even when the inmate committed a violent crime.
6 REFERENCES


Demenescu, L. R., Mathiak, K. A., & Mathiak, K. (2014). Age- and gender-related variations of


https://psycnet.apa.org/doi/10.1002/acp.1673


http://scholarship.law.cornell.edu/facpub/287


## APPENDICES

**Appendix A**

*Table 1 List of Crime Scenarios*

<table>
<thead>
<tr>
<th>Non-violent</th>
<th>Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>* The individual pictured below has been serving a prison sentence for trespassing after the owner reported the man camping in his field that had a “no trespassing” sign posted.</td>
<td>*The individual pictured below has been serving a prison sentence for murder of 7 adults after police found evidence of a shovel, ropes, and various clothing articles that belonged to each of the missing individuals in his apartment.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for burglary after he got caught breaking into his neighbor’s shed attempting to steal a lawn mower and various other gardening equipment.</td>
<td>*The individual pictured below has been serving a prison sentence for homicide after witnesses reported that he was the shooter in a drive-by-shooting that killed 3 individuals.</td>
</tr>
<tr>
<td>* The individual pictured below has been serving a prison sentence for embezzlement (i.e., theft of funds belonging to one’s employer) after being caught on video taking cash from the bank deposit box at his place of employment.</td>
<td>The individual pictured below has been serving a prison sentence for armed robbery after holding a gas station clerk at gun point and taking all of the cash out of the register before fleeing.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for theft of personal property after the manager at a gym reportedly saw him breaking into lockers and stealing the phones of other gym members.</td>
<td>*The individual pictured below has been serving a prison sentence for attempted armed robbery after a student identified this man as the one who pointed a gun at him and attempted to steal his backpack while the student was studying in the library.</td>
</tr>
<tr>
<td>*The individual pictured below has been serving a prison sentence for vandalism after police watched him spray-paint a building front in the inner-city park and running away when they approached him.</td>
<td>*The individual pictured below has been serving a prison sentence for assault and battery after striking one of his employees in the head after they messed up a customer's order.</td>
</tr>
<tr>
<td>*The individual pictured below has been serving a prison sentence for identity</td>
<td>*The individual pictured below has been serving a prison sentence for assault with</td>
</tr>
<tr>
<td>Crime</td>
<td>Individual Details</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Theft after attempting to purchase alcohol with a stolen ID and credit card at a local neighborhood grocery store.</td>
<td>A deadly weapon after striking his friend in the head with a golf club after they got into a verbal altercation.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for insurance fraud after he told his neighbors that he would soon not have a car payment and his car mysteriously burned down a few days later with no explanation.</td>
<td>The individual pictured below has been serving a prison sentence for the stalking of his ex-girlfriend after he frequently followed her, made repeated unwanted phone calls to her, and drove by her home multiple times a day across nine months.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for illegal dumping of hazardous waste material after eyewitnesses reported him dumping barrels of an unknown substance into a nearby lake.</td>
<td>*The individual pictured below has been serving a prison sentence for arson after police got a call Tuesday night from his ex-girlfriend about a house fire and her home video surveillance showed him setting the fire before fleeing the scene.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for drug possession after police found an illegal substance while searching his vehicle during a routine stop.</td>
<td>The individual pictured below has been serving a prison sentence for abduction after a young professional reported his wife missing, and police traced the ransom note back to him.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for possession of drug paraphernalia after police found a bag of syringes, pipes, and rolling papers in his backpack after a pat-down.</td>
<td>The individual pictured below has been serving a prison sentence for carjacking after a woman identified him as the man who stole her car by forcibly removing her from the vehicle at gunpoint.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for tax evasion (i.e., using illegal mean to avoid paying taxes) when the IRS found evidence of him falsifying his income records by underreporting his yearly income amount.</td>
<td>The individual pictured below has been serving a prison sentence for involuntary manslaughter after wrecking his car into a pedestrian while driving under the influence.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for theft after witnesses saw him cutting the chain off of a bicycle that belonged to someone else and riding away on the bike.</td>
<td>The individual pictured below has been serving a prison sentence for attempted abduction after a woman reported her friend missing, and individuals identified this man as the one seen attempting to put the missing person in a van.</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for shoplifting after a store employee saw him putting unpaid items in a backpack before leaving the store.</td>
<td>The individual pictured below has been serving a prison sentence for attempted assault after he and his brother got into an altercation, and he swung a punch at his brother, missed, and knocked a hole in the wall.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>The individual pictured below has been serving a prison sentence for prescription forgery (i.e., falsifying a prescription) after a pharmacist reported this individual had given her a medical prescription written on a prescription pad that was reported missing by a doctor.</td>
<td>The individual pictured below has been serving a prison sentence for voluntary vehicular manslaughter after he crashed his car into another individual during a road rage incident.</td>
</tr>
</tbody>
</table>

*Note.* * Represents crime scenarios that were validated in the pilot study and were selected to be used in Experiment 2.
Appendix B

Appendix B.1

<table>
<thead>
<tr>
<th>Baseline Face (i.e., Original face; 0% remorseful)</th>
<th>50% Remorseful (i.e., low remorse)</th>
<th>75% Remorseful (i.e., moderate remorse)</th>
<th>100% Remorseful (i.e., high remorse)</th>
</tr>
</thead>
</table>

Figure 8 Example of remorse facial stimuli used in Experiment 1
Note. The moderate category was dropped from Experiments 1 because those faces did not validate.

Appendix B.2

<table>
<thead>
<tr>
<th>Baseline Face (i.e., Original face; 0% criminal)</th>
<th>50% Criminal (i.e., low criminal)</th>
<th>75% Criminal (i.e., moderate criminal)</th>
<th>100% Criminal (i.e., high criminal)</th>
</tr>
</thead>
</table>

Figure 9 Example of criminal facial stimuli used in Experiment 1
Note. The moderate category was dropped from Experiments 1 because those faces did not validate.
### Appendix B.3

<table>
<thead>
<tr>
<th>Criminal &amp; 25% Remorseful (i.e., low criminal-remorseful composite)</th>
<th>Criminal &amp; 75% Remorseful (i.e., high criminal-remorseful composite)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Criminal-Remorseful Composite" /></td>
<td><img src="image2.png" alt="Criminal-Remorseful Composite" /></td>
</tr>
</tbody>
</table>

*Figure 10 Example of Criminal-Remorseful Composite facial stimuli used in Experiment 2*

### Appendix B.4

<table>
<thead>
<tr>
<th>Baseline &amp; 25% Remorseful (i.e., low baseline-remorseful composite)</th>
<th>Baseline &amp; 75% Remorseful (i.e., high baseline-remorseful composite)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Baseline-Remorseful Composite" /></td>
<td><img src="image4.png" alt="Baseline-Remorseful Composite" /></td>
</tr>
</tbody>
</table>

*Figure 11 Example of Baseline-Remorseful Composite facial stimuli used in Experiment 2*