INVESTIGATION OF THE PROCESS OF PERCEIVING SOCIAL CUES THROUGH THE PROCESSES OF RECOGNIZING, INFERRING AND ATTRIBUTING EMOTIONS FROM FACIAL EXPRESSIONS IN VIOLENT AND NONVIOLENT OFFENDERS

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Approval of the Institute of Social Sciences

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ABSTRACT

INVESTIGATION OF THE PROCESS OF PERCEIVING SOCIAL CUES THROUGH THE PROCESSES OF RECOGNIZING, INFERRING AND ATTRIBUTING EMOTIONS FROM FACIAL EXPRESSIONS IN VIOLENT AND NONVIOLENT OFFENDERS

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In communication, emotional expressions are highly important. Individuals use facial expressions in order to figure out the existing social context, to understand their own expectations and their emotions, to provide themselves instant feedback and to produce appropriate answer according to current social context. In this thesis, it is aimed to investigate recognition, inferring and interpretation of emotional expressions in violent and non-violent offenders. The study conducted with 51 violent offenders, 32 non-violent offenders, and 28 control participants in Forensic Science Institution (N = 111, mean age: 31.94). Participants were given a test battery including Facial Emotion Identification test, Facial Emotion Discrimination Test, Reading the Mind in the Eyes test, Positive and Negative Affection Scale, and 20 black-white human face photographs, which include no expressions, and they were asked to attribute one of the six basic emotion (happiness, anger, sadness, disgust, fear, and surprise) for these photographs. In order to investigate group differences, one-way ANOVA method was used. According to results, violent and non-violent offenders performed poorly at recognizing emotions, $F(2,108) = 18.85$, $p < .001$**]**, discriminating emotions, $F(2,106) = 18.85$, $p < .001$, and interpretation of emotions, $F(2,110) = 15.48$, $p < .001$, as compared to the control participants. Violent offenders more frequently interpreted “anger” emotion to the neutral expressions than the two other

groups, $F(2,108) = 7.73$, $p = .011$; meanwhile the control group more frequently interpreted “happiness” emotion to the neutral expressions, $F(2,106) = 8.70$, $p < .001$. Moreover, participants with poor ability to recognize emotions are more likely to interpret “fear” emotion to the neutral expressions, $r = -.187$, $p < .05$. As a result, it is found that offenders performed poorly at recognizing, inferring and interpretation of emotional expressions as compared to normal individuals and this situation might have destructive effects in perceiving social situations correctly and may produce inappropriate answers. It is suggested that these findings might be helpful for rehabilitation and re-gain of offenders into the society.

Keywords: emotion recognition, emotion attribution, crime, social cues, violent crimes

ÖZ

ŞİDDET İÇEREN SUÇ İŞLEYEN VE ŞİDDET İÇERMEYEN SUÇ İŞLEYEN BİREYLERDE SOSYAL İPUÇLARINI ALGILAMA SÜREÇLERİNİN YÜZ İFADELERİNDEN DUYGU TANIMA, ÇIKARSAMA YAPMA VE ATFETME SÜREÇLERİNİN İNCELENMESİ

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Yüz ifadelerinin sözel olmayan iletişimde rolü büyüktür. Kişiler o an içinde bulundukları durumu, kişisel beklentileri ve duygularını anlamak, iletişim sırasında anlık geri bildirim sağlamak ve uygun cevap üretmek için yüz ifadelerine başvururlar. Bu araştırma, şiddet içerikli suç işleyen bireylerde yüz ifadelerinden duygu tanıma, çıkarsama yapma ve atfetme süreçlerinin şiddet içerikli suç işlemeyen kişilerle karşılaştırmalı olarak incelenmesini amaçlamaktadır. Araştırma, Adli Tıp Kurumunda yatmakta olan 51 şiddet içerikli suç işleyen, 32 şiddet içerikli olmayan suç işleyen ve 28 suç işlemeyen kişi (N=111, yaş ortalaması: 31.94) ile yürütülmüştür. Kişilere Yüz İfadelerinden Duygu Tanıma testi, Yüz İfadelerinden Duygu Ayırt Etme testi, Gözlerden Zihin Okuma testi, Pozitif ve Negatif Duygu ölçeği ve 20 adet nötr yüz ifadesi içeren fotoğraf gösterilmiş ve kişilerden bu fotoğraflara altı temel duygudan birini (mutluluk, öfke, üzüntü, şaşkınlık, tiksinme, korku) atfetmeleri istenmiştir. Gruplar arası skorların farklılığının anlamlı olup olmadığını anlamak için tek yönlü ANOVA analizi kullanılmıştır. Buna göre, şiddet içerikli ve şiddet içerikli olmayan suç işleyen kişiler yüz ifadelerini tanıma, $F(2,108) = 18.85$, $p < .001$, ayırt etme, $F(2,106) = 18.85$, $p < .001$, ve çıkarsama yapmada, $F(2,110) = 15.48$, $p < .001$, kontrol grubuna göre daha düşük bir performans sergilemişlerdir. Şiddet

içerikli suç işleyen bireyler nötr ifadelere daha sıklıkla ‘öfke’ duygusunu atfetmişler, $F(2,108) = 7.73$, $p = .011$; kontrol grubu ise nötr ifadelere diğer iki gruba kıyasla daha sıklıkla ‘mutluluk’ duygusunu atfetmişlerdir, $F(2,106) = 8.70$, $p < .001$. Yüz tanıma performansı kötü olan katılımcılar nötr yüz ifadelerine daha fazla korku duygusunu atfettikleri bulunmuştur, $r = -.187$, $p < .05$. Suç işleyen kişilerin, duygu okuma, atfetme ve çıkarsama yapma süreçlerinin normal katılımcılardan farklı olduğu, bu durumun suç işleyen kişilerin sosyal durumlarda doğru algılama ve uygun cevap üretme süreçlerinde bozucu bir etki oluşturabileceği değerlendirilmiştir. Elde edilen bulguların, suç işleyen kişilerin topluma yeniden kazandırılmaları ve rehabilite edilmeleri noktasında faydalı olabileceği öngörülmüştür.

Anahtar kelimeler: duygu tanıma, duygu atfetme, suç davranışı, sosyal ipuçları, şiddet suçları

To my beloved family

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LISTS OF ABBREVIATIONS

SIP	Social Information Process
FEI	Facial Emotion Recognition
FED	Facial Emotion Discrimination
REFM	Reading Mind from the Eyes
PANAS	Positive and Negative Affection Scale
PANAS-P	Positive Affection Score
PANAS-N	Negative Affection Score
TUIK	Turkish Statistical Institute

CHAPTER 1

INTRODUCTION

Crime rates is rising in Turkey (Tuzunturk, 2009) as well as around the world (Blumstein, 1998). In order to create a better society, criminal behavior should be prevented. Only if criminals are understood better, it become possible to prevent crime. Recent approaches claim whether criminals' reading social cues is in the same way that normal people do (Dodge, 1980). In this thesis, it is aimed to investigate criminals perceiving social cues from faces.

In this chapter, firstly, crime theories and emotions are going to be explained. Secondly, social information theory is going to be introduced. Then, facial expressions, recognition of facial expressions, and their relation to delinquency behavior are going to be discussed. Finally, the purposes and the hypotheses of the present study are going to be explained.

1. CRIME THEORIES

There is no consensus on the definition of the crime in the literature. In the earlier times, Williams (1961) stated that "Crime is an act that is capable of being followed by criminal proceedings, having one of the types of outcomes (punishment, etc.) known to follow these proceedings" (p. 21, as cited in Feldman & Feldman, 1993). Crime is also a multidisciplinary concept, therefore lots of disciplines such as sociology, psychology, and biology try to explain different facets of the crime concept (Hollin, 1989). Still, psychology is a rather new discipline to explain this concept (Aichorn, 1955; Freud, 1961).

In psychology, there are three major approaches for explaining the criminal behavior. These approaches are considered as basic approaches in psychology. Psychoanalytic approach, learning theory approach, and cognitive approach put forward different aspects in explaining crime behavior. These approaches are going to be explained in the subsequent sections.

1.1. Psychoanalytic Theories of Crime

Freud – who is one of the most effective figures in psychology – comes up with two basic instincts: the life instinct and the death instinct. The life instinct is as known as *eros* and it provides a desire to live. On the contrary, the death instinct is destructive. These two instincts are in constant conflict in human beings. That means individuals are in a constant fight with these two instincts. While death instinct pushes humans to be more destructive, more aggressive, life instinct motives humans to live (Freud & Brill, 1961).

Freud (1961) claims that all individuals have aggressive tendencies. The origin of this aggression stems from the death instinct. However, when explaining criminal behavior, unfortunately, Freud said very little. In psychoanalytic view, the origin of behavior stems from the early life experiences; therefore, crime behavior is based on negative early life experiences. Freud stated that the majority of crimes was committed due to the sense of guilt. The guilt whose origin remains unknown needs to be attached to something. Therefore, when one commits a crime, the sense of guilt is no longer groundless. Individual's crime becomes the reason of the sense of guilt. In other words, the sense of guilt would be justified. Even though Freud mentions that crime behavior arises mostly from the sense of guilt, he also states that some crimes exist because the individual has no moral principles or due to the conflict between society rules and individual's own rules.

Some scientists like August Aichorn, one of the followers of Freud, tries to explain crime concept by the help of psychoanalytic approach (Hollin, 1989). Heavily influenced by Freud, Aichorn added a new concept to his theory: latent delinquency). Latent delinquency is the tendency by the help of which prepares a child for offending his behavior. Aichorn (1925, 1955) stated that an infant born with asociality in which he follows his own drives and considers only his own well-being. However, a normal child is expected to be more socialized, since the ego develops, as well (as cited in Hollin, 1989). Therefore, the child could start to understand society rules, and then he can start to follow these rules. Nevertheless, some children's process of socialization could not go in its way as it is supposed to be. In this case, latent delinquency becomes dominant, so the child exhibits delinquent behavior. Aichorn (1925), indeed, thought that crime behavior is the outcome of lack of psychologic development, as Freud (1961) puts forward.

In psychoanalytic view, the origin of behavior is supposed to be originated from the early life experiences; therefore, crime behavior takes its source from early negative life experiences. After studying with delinquent children, Healy and Bronner (1936) demonstrated that 91% of these children have emotional discomfort with their parents. The explanation of these authors is that these crimes are caused by early life experiences, but more specifically because of parental relationships. They continue that emotional dissatisfaction, deprivation of affection, and other negative feelings have also impacts on the crime behavior.

Even though aforementioned studies were departed away from the psychoanalytic concept, their effects on the succeeding studies have remained. For instance, Reckess and Dıntız (1967) studied in a neighborhood in which crime rate was found to be very high. Children who came from the same neighborhood demonstrated delinquency behavior as expected, but some of them did not. Therefore, Reckess and Dintz tried to understand why some children did not show delinquency behavior, despite their "criminal" family and friends did. They found that self-concept influences crime behavior. Self-concept is "individual's belief about himself or herself; the answer of "who am I"" (Baumeister, 1999, p. 3). Another example is that criminal's self-esteem was found to be low as compared to people who did not commit a crime (Bennet, Sorensen & Forshay, 1971). Thus, it could be understood that inner processes might take place in delinquency behavior.

In summary, psychoanalytic theories stress out the importance of the intrinsic processes. This does not mean that these theories neglect extrinsic factors such as family and environment, but the importance is mostly on the intrinsic bases such as psychological traumas and early life experiences.

Psychoanalytic theories have received lots of criticism from many circles (Hollin & Hollin, 1989). First, these theories cannot be proven or can be falsified since their notions are too abstract. Additionally, these theories say barely few things about how to prevent crime. Despite all the criticisms, psychoanalytic theories have remarkably increased our psychological understanding of crime concept (Hollin & Hollin, 1989).

1.2. Learning Theories of Crime

At the very beginning of the studies on learning, Skinner (1951) discovered that even without a stimulus a behavior could be conditioned. Skinner stated that a behavior could be determined by its environmental consequences. If those consequences are appealing, then the frequency of this behavior is expected to be increasing – that is called *reinforced*. If it is not appealing, then the frequency of this behavior is expected to be decreasing, in other words, *punished*. Skinner added a new term in his theory, that is, "operant behavior". He states that many responses in turn of behavioral consequences could be possible. A behavior might surface as a result of different responses. Therefore, these possible responses are called operants. Operant behavior is defined as the following: "the behavior *operates* upon the environment to generate consequences (Skinner, 1951, p. 65)". In sum, learning theories claim that behavior does not emerge at random but environmental cues unveil it through reinforcement or punishment (Hollin, 1989).

One of the early attempt to explain crime behavior by using learning theories is "Differential Association Theory" by Sutherland (1939). The theory was first developed in 1939, but modified multiple times (1974, 1978). Although it was categorized as sociological theories of crime, the origin of this theory is about the learning theories. Sutherland (1978) states that explaining crime behavior should be kept apart from explaining any other human behavior, because conditions and processes for constituting a crime are very specific. He observed that there are many people who live in neighborhoods with high crime rates; nevertheless, they never commit a crime. Therefore, just learning crime solely is not enough to explain such behavior. His theory claims that there a more than one condition that may lead to crime behavior. Sutherland (1978) puts forward nine different components in order to explain crime behavior:

1- The theory firstly claims that criminal act is learned. Just like a person who has never been trained in mechanics cannot explore new things in mechanics, so as crime behavior: one cannot produce a crime without any knowledge.

2- Criminal behavior is learned through other people. The interaction with other people might be verbal or may only contain gestures.

3- Group dynamics effect crime-learning process directly.

4- When a crime is learned, the learning process includes drives, motives, and techniques.

5- Motives and drives needed for crime behavior are learned from legal codes as to how people perceive them: favorable or unfavorable. Some people interact with people who hold definitions of favoring legal codes and some people hold the other way around.

6- People who hold favorable definitions of crime or delinquent behavior become delinquent. This is the principle of Differential Association Theory. A person commits a crime due to his contact with criminal pathways and isolation from anti-criminal pathways.

7- Associations, which are held by people, might vary in duration, priority, and frequency. Therefore, it could change from person to person.

8- The association process includes all of the mechanisms of the learning process.

9- Crime behavior is similar to any behavior when it comes to fulfilling needs and values. A thief might steal wallets in order to gain money so does an honest worker works for 8 hours in a day in order to attain the same amount of money. Ways of attaining an aim may differ.

1.3. Cognitive Theories of Crime

The concept of cognition is usually used to refer to the acquisition of knowledge. The acquisition of knowledge and using the acquired knowledge involve many different mental processes (Dalgleish & Power, 1999). These processes are memory, perception, attention, and thinking processes. Cognitive psychology tries to explain crime by using these mental processes.

Yochelson and Samenow (1973) put forward that there are some connections between cognition and criminal behavior. In their book called *The Criminal Personality* (1973), after interviewing over 400 people who committed a crime, they discovered the

thinking patterns of the criminals. According to the results of this study, criminal thinking patterns may involve many processes. For example, their thinking processes is very rapid which might cause some flaws. They have short attention span, do not take irresponsible decisions, and cannot show enough achievement to show empathy towards others. It is demonstrated that criminals experiencing emotions differ as compared to the normal people. In addition, criminal's experience of anger tends to be more destructive. Their pride is also more apparent and they tend to be more sentimental.

After the book was published, Yochelson and Samenow's views received many support and at the same time, it has become the target of criticism. Still, their aspect was unique and useful to understand the concept of crime, since they provided more than fifty thinking styles and thinking errors in their book. Criticisms consist of both methodological and theoretical problems (Hollin, 1989). The sample used in this study was not only criminals but they had several mental illnesses. In the study, there were no control group in order to compare with the crime group. That is why the study might not provide the best results. Other than these, the book showed severe stigma towards the population of criminals. It consisted lots of negative biases towards criminals such as they all being a perfectionist, they all being energetic and so on. This was considered as problematic, since these points might not be seen in the real life.

More recent cognitive research on criminology focused on various cognitive skills. Among these, failure of self-control is thought to bring forth criminal behavior due to its effects on causing impulsivity (Glueck, S. & Glueck, E., 1950). Here, impulsivity can be defined as "the faculty of controlling the discharge and expression of affectivity" (p. 237). Two separate studies with delinquent adolescents showed that impulsivity was highly related to delinquency (Glueck, S. & Glueck, E., 1950; Ahlstrom & Havinghurst, 1971). However, consecutive studies found out mixed results. Some studies confirmed the previous studies, which claimed that impulsivity is related to offensive behavior (Higgins, Kirchner, Ricketts, & Marcum, 2013); meanwhile, some studies did not find any differences between delinquent adolescents and control group (Saunders, Reppuci & Sarata 1973). Perhaps the reason for these mixed results is because of the definition of impulsivity and the way how it was measured. For example, Glueck & Glueck (1950) used a Rorschach test, which is known as a projective measurement in order to measure impulsivity tendency; meanwhile, Saunders and his colleagues (1973) preferred objective tests to measure it.

Another cognitive skill, the locus of control, has taken scientists interest in order to explain delinquency (Beck & Ollendrick, 1976). Locus of control is defined as individuals' monitoring and perceiving degree to their own behavior; whether it is in their own internal control or being controlled by other forces (Rotter, 1966). It has been found that delinquent adolescents tend to have external control as compared to normal adolescents (Beck & Ollendrick, 1976). However, opposite results do also exist. Groh and Goldenberg (1976) studied with prison population and this population was found to be more internally focused.

As humans live in a community, they need to evaluate people around them in order to survive. While they try to understand other people, they develop their social perception. Social perception may consist of many things. One of them is the ability of "seeing things from someone else's perspective" (Ioannidou & Konstantikaki, 2008, p. 119). That is called empathy. People with delinquency is thought not to be successful in showing empathy as compared to normal people. In fact, the literature shows many links between lack of empathy and delinquency (Kaplan & Atbuthnot, 1985; Megraya, 2014; Carr & Lutjemeirer, 2005; Ellis, 1982). In one of the early studies, Kaplan and Arbuthnot (1985) found that delinquent individuals demonstrated lack of empathy as compared to non-delinquent individuals. As a result, it was found out that individuals with lack of empathy cannot perceive and use social cues effectively.

2. EMOTION

In the 19th century, psychological theories of emotion began to develop. The first psychological theory of emotion was developed by William James in 1884. James claims that emotions are caused by physical arousal (as cited in Kowalski & Westen, 2010). Hypothetically speaking if a man sees a bear, he starts to run and because of his running, he feels the emotion of fear. Opposite to this view, it is pointed out by Connan (1927) and Bard (1934) that emotional reaction is immediate; therefore, it cannot occur after the physical arousal. Connan-Bard theory argued that arousal and the emotional reaction occur at the same time (as cited in Kowalski & Westen, 2010). According to their theory, if a man sees a bear, he runs and feels afraid at the same time. The primary function of emotion is to provide the ability for organisms to adjust their life events and to respond to them quickly (Ekman, 1992).

When it comes to the last half-century, cognitive theories draw lots of attention. According to the cognitive theorists, emotions are caused by appraisal and the subject does interpretation processes (Schachter & Singer, 1962). Schachter and Singer propose several propositions in order to explain the role of cognition in the process of emotion. The first one is that when the subject feels the non-specific physical arousal, he labels it with the available cognition. Therefore, an arousal might be labeled as "joy", "hatred" or "jealous" depending on the cognition. The second proposition is the labeling process, which could be done multiple times. However, if the subject is satisfied with the labeling result, then it will not be necessary for him to appraise it once again.

2.1 Definition of Emotion

Unfortunately, there is no exact definition of emotion that all scientists would agree on. Izard (1977) argues that to make a definition of emotion, the definition must cover three elements. The first one is that experience of emotion has to be felt, then the process has to occur in the nervous system, and finally, observable patterns such as facial expressions or vocal expressions have to be seen.

Rather than supplying a definition, Thompson (1994) describe the processes that include emotions and he states that these are "multifaceted phenomenon involving physiological arousal, neurological activation, cognitive appraisal, attention process and response tendencies" (p. 30). Salovey and Mayer (1990) use organized terms in their definition of emotion. They state that these are "organized responses, crossing the boundaries of many psychological subsystems, including the physiological, cognitive, motivational, and experiential systems" (p. 186). According to Salovey and Mayer, emotion concept is rather complicated and organized process in which many parts take role.

Ekman (1993) defines emotion as a process and states that "a particular kind of automatic appraisal is influenced by our evolutionary and personal past, and then a set of physiological changes and emotional behaviors begin to deal with the situation" (p. 30). Ekman stresses out the importance of appraisal in the process of emotion.

Another definition structured by Lazarus (1991) who defines emotions in a way that "emotions are internal, mental, and affective experiences, and emotions thereby restricted to affective states, either as the sole meaning or combined with actions or thought" (p. 46).

To Kowalski and Westen (2010), emotion is “a positive or negative feeling state that typically includes arousal, subjective experience and behavioral expression” (p. 361). It can be seen that emotion concept has different definitions and all of these definitions stresses out a different facet of the emotion concept.

One of the factors that makes harder to define the emotion concept is that it is difficult to distinguish emotions from other similar concepts such as mood, reflex, and even emotional disorders. In order to differentiate emotions from similar concepts, Ekman (1984, p. 330) describes 10 characteristics of emotions:

1) Emotions have distinctive universal facial expressions regardless of culture. Therefore, emotions are universal.
2) Ekman adopts Darwin ideas that emotional expressions are evolved. Therefore, universal facial expressions have to be seen in lower animal forms.
3) With emotional facial expressions, another signal such as in voice or body posture have to be presented.
4) The expressions of emotions have a short duration.
5) Emotional expressions’ duration is related to its strength or specificity for the subject.
6) Expressions’ intensity varies according to its strength.
7) Hiding emotional expression is hard but it is not impossible.
8) Expressions can be faked.
9) Elicitors of emotions are shared commonalities by all cultures.
10) Emotions consist of distinctive changes in autonomic nervous system

2.2. Categorization of Emotions

There are two basic approaches to categorize emotions: dimension approach and basic emotion approach.

2.2.1. Dimension Approach

According to this approach, emotions are not separated from each other; they actually highly related (Russell, 1980). Watson and Tellegen (1985) argued that there are two basic dimensions for emotions. The first dimension includes positiveness and negativeness and the second dimension includes low arousal and high arousal. According to this aspect, it is possible to experience positive emotion and negative emotion at the same time.

2.2.2. Basic Emotion Approach

Basic emotion approach was structured on Darwin's vision and later on, it has become a common belief among emotional theorists. In fact, it has been shown that the 55% of the scientists who studied on emotions internalize the basic emotion approach (Ekman, 2006). According to this theory, there is a limited number of emotions.

There are different opinions about whether emotion is basic or not. Johnson-Laird and Oathley (1989) claim there are five basic emotions: happiness, sadness, fear, anger, and disgust. Meanwhile, Ekman (1992) states that anger, sadness, surprise, happiness, fear, and disgust are the basic emotions.

Emotions can be positive, negative, or both. Happiness is the only positive basic emotion. Fear, sadness, disgust, and anger are the negative ones. Surprise can be in both dimension. Because in order to survive, human beings need negative emotions. That is why negative emotions superior in number comparing to positive emotions. For instance, disgust provides disease avoidance for humans; meanwhile, fear and anger is helpful for taking action against a possible danger (Curtis & Biran, 2001).

2.2.2.1 Disgust

Starting with Darwin (1987), disgust is defined as a protection mechanism in order to keep the living things safe from danger. Disgust is also an adaptation mechanism for the organism to protect itself from diseases (Curtis & Biran, 2001). "Disgust protects from diseases" hypothesis is being supported by a number of studies (Darwin, 1987; Barra, Islam & Curtis, 2004). In their studies, Barra and his colleagues (2004) used binary photo series. The first photo is a normal one and the other one contains disease material. For instance, the first photo is a photo with a male with a normal skin condition and the second

one is the same person with red spots in his skin. In this study, it has been found that regardless of the nationality of the participants, the photos with disease material have been found more disgusting than the normal photos.

Ekman (1992) evaluated disgust as one of the basic emotions; disgust has a distinctive universal facial expression (nose wrinkling, upper lip raised), distinctive physiology (nausea, low blood pressure) and has specific action (avoiding the disgusting object), hence disgust fulfills the basic emotion criteria. However, some researchers argue that disgust is not an emotion but an instinct like thirst or hunger (Panker, 2007).

Disgust mechanism activates immunocompetence system in order to protect the organism from diseases. Moreover, through these system individuals that are more vulnerable become more sensitive against potential dangers (Fessler, Eng, & Navarrate, 2005). It has been found that woman's disgust sensitivity increases in the first trimester in their pregnancy due to highest health risk for embryo, and as health risk decreases, disgust sensitivity decreases, as well (Fessler et al., 2005).

Tybur and his colleagues (2013) suggested that disgust might take part in choosing a mate for living creatures. Evolutionarily, the living creatures need to reproduce in order to keep their species safe. However, two sexes have different costs by doing so, as investment is expensive for a female (for instance, female part does caregiving for offspring). It has been suggested that "disgust motivate the avoidance and rejection of sexual contact with those sexual value was relatively low (i.e., poor genetic compatibility) among potential pool of mates" (p. 72). These findings are also coherent with the idea that disgust sensitivity is high for females as compared to males since reproduction process is costlier for females (Tybur, Bryan, Lieberman, Hopper, & Merriman, 2010).

2.2.2.2. Happiness

Veenhoven (1984) defines happiness as "the degree to which an individual judges the overall quality of his life-as-a-whole favorably. In other words, how well he likes the life he leads" (p. 22). However, economists and psychologists consider sources of happiness differently. Economists claim that happiness is related to the financial situation of an individual, meanwhile psychologists argues that happiness is a subjective appraisal of a situation made by an individual (Power & Dalgleish, 2008).

Ekman (2003) argues that happiness is often misinterpreted with pleasure and excitement. Although these terms can be used interchangeably, Ekman states that pleasures are "positive physical sensations"' (p. 99) and they are the opposite feeling of pain. Meanwhile, excitement is the opposite of feeling bored. He argues that not all the feeling of happiness is the same but there are different types of happiness. Excitement and pleasure often consist of happiness; therefore, it can be named as excitement-happiness and pleasure-happiness. Ekman (2003) suggests the third type of happiness called "relief happiness". After one experiences negative emotions such as fear and anger, he often feels relief. This relief consists of happiness. Finally, self-concept-happiness is that when one achieves a goal that he aims or when something happens that triggers his self-concept in a positive way he feels happiness. Further, Ekman (2003) discusses not only the types of happiness but also the varieties of happiness in intensity. One can feel extremely happy or one can just feel good.

Happiness can be blended with other emotions. For example, homesickness is the mixed feelings of sadness and happiness (Power & Dalgleish, 2008). When a person experiences a loss; meanwhile, the memories belonging to that loss make him happy; he might feel homesickness.

Happiness often shows itself in the lower parts of the face. Ekman (2003) describes the facial expression of happiness in a way that "the corner of the lips is drawn back and slightly up" (p. 103). He also argues that smiling is often used to mask the existing emotion at that time. It was also shown that happiness is the most recognizable emotion along with sadness (McAndrew, 1986).

2.2.2.3. Sadness

Sadness is usually linked to loss of something. It could be a loss of a person one loves; it could be a value that matters for somebody or a social role that one is in to (Lazarus, 1991). The loss could be permanent or temporary. Also, it could be in the past, in the future, or even just in imagination (Power & Dalgleish, 2008). When one evaluates his lost greater, the intensity of his sadness he experiences would be greater, as well.

Sadness could last longer than other emotions (Ekman, 1975). Rather than being an active emotion, it is considered as a passive emotion. Ekman (2003) distinguishes sadness and agony, as well. Unlike sadness, agony is active, consists of objection, and it leads to

people to fight with the lost itself. Due to this passiveness, it is questioned whether it is an emotion or not (Lazarus, 1991).

Ekman (2003) describe sadness expression in a way that "inner corners of the eyebrows draw up; the corners of the lips are down or the lip is trembling" (p. 126). Like the other emotions, sadness is blended with other basic emotions such as anger and fear that are very common mixes (Ekman, 2003).

2.2.2.4 Fear

By human nature, people are programmed to avoid from any kind of harm. The harm might be physical or psychological. When people perceive a threat to their body or psychological well-being, they feel the emotion of fear (Ekman, 2003). Fear triggers the fight and flight mechanism against a possible danger. Therefore, it is crucial for survival. Indicators of fear are rather specific such as a dry mouth, tension in muscles, trembling and sweating (Power & Dalgleish, 2008; Ekman, 2003). It was shown that fear is the most challenging emotion to be recognized by normal individuals (McAndrew, 1986).

As mentioned above, fear is very functional; however, it might become dysfunctional, as well. Anything could arouse fear, even if is not dangerous and that is a well- known fact on the subject. These specific fears are called phobias. The term phobias are defined as "irrational fears of an object or a situation" (Kowalski & Westen, 2010, p. 167). Not only phobias, but also post-traumatic stress disorder, panic attack, and anxiety have direct relations to fear.

Fear varies in three ways according to Ekman (2003). First one is the intensity of fear which could be modified according to subject's appraisal that how dangerous the current situation is. The second one is whether the danger is immediate or impending. Finally, it could vary whether the subject can handle the situation or not.

Despite fear being a negative emotion, people often enjoy experiencing it (Dursun, 2007). Many books and movies are designed to trigger fear. It can be said that these things do not carry potential danger within themselves, therefore they are enjoyable. However, there are highly risky sports that might lead to serious injuries and death that people actually enjoy. Why people enjoy experience of fear remains unknown. It has been noticed that when fear occurs, often the eyebrows get up, the eyes are wildly open, and lips get tense (Ekman, 2003; Darwin, 1872).

2.2.2.5. Surprise

According to Ekman (2003), surprise has the shortest duration among all emotions that only takes few seconds at most. Surprise is the response when something unexpected occurs (Dursun, 2007). It occurs when an individual tries to understand what is happening. Generally, when surprise occurs, it is followed by other emotions, mostly fear and anger (Ekman, 2003).

Ekman (1984) distinguishes startle from surprise. He comes up with a couple of differences that prove startle is not an emotion. He states that startle is a reflex; therefore, it is impossible to resist. However, emotions could be altered. Another difference is that it is nearly impossible to imitate a reflex, unlike emotions. Lastly, since startle is a reflex, it appears faster in the face than surprise does (Ekman, 2003).

In daily life, the terms of surprise and fear are often used interchangeably. When people describe their surprise, they often say that they feel afraid. Ekman (2003) argues that fear and surprise differ in three ways. Firstly, surprise is the briefest emotion, meanwhile fear is not. Secondly, surprise occurs when something unexpected happens. Final difference is that fear is considered as a negative emotion; meanwhile, surprise could be either negative or positive. Surprise could be seen in facial expression in a way that usually eyebrows are raised and eyes open wide (Ekman, 2003).

2.2.2.6 Anger

Among all basic emotions, anger is the most dangerous one. Because when anger occurs, it might become destructive. Generally speaking, anger tends to be elicited when frustrations and insults take place (Frijda, 2006).

According to Ekman (2003), there are different causes of anger. Anger occurs when subject perceives something that blocks him to achieve a goal (Ekman, 2003). For example, if subject concludes that if he studies more, he could score higher on the exam. He might feel anger towards himself. If there is an open threat against subject's physical or

psychological well-being, anger could be felt. When subject perceives that there is something happening that is against his moral and ethical values, then again anger could occur. For instance, a subject who cares about animal rights comes across with an animal abuse, even there is no threat to him, he might feel angry. Another common reason why people become angry is that someone displays anger towards them.

Anger is a negative emotion and the common belief is that people do not enjoy being angry. However, Lazarus (1991) argues that when people express their anger, they feel relief. According to Ekman (2003), when the threat is gone, people feel relief. Izard (1977) also argues that long time-suppressed anger might be a risk for physical health.

When anger occurs, often the eyebrows come close, the eyes become narrow and lips get together firmly. Often, face becomes red (Izard, 1977). Additionally, anger is blended with other emotions. Anger-sadness, anger-fear, anger-disgust could be seen in general (Ekman, 2003).

3. SOCIAL INFORMATION PROCESSING THEORY

Many studies have been carried out in order to understand children who expressed themselves in more aggressive ways than their peers (Kendal & Wilcox, 1979; Eron, 1980). In order to increase our insight, researchers mainly focused on social cognition process (Eron, 1980; Kendal & Wilcox, 1979). Eron (1980) and Kendal and Wilcox (1979) assumed that aggressive children might have some social cognition deficits that could result in their aggressive attitudes. One of the early studies that was conducted by Eron (1980) showed that children need to socialize in order to learn alternative ways of problem-solving. It is proposed that aggressive children might have some cognitive deficits that cause them not to be able to produce socially appropriate responses to fit the present social context.

In fact, studies provide supportive evident regarding this phenomenon. A study conducted with 45 delinquent aggressive young individuals demonstrated that aggressive individuals have difficulty to perform role taking as compared to their non-aggressive peers (Chandler, 1973). Additionally, Chandler also mentions that this cognitive deficit might actually show improvements by the help of proper interventions. However, not all studies indicate the same outcomes. For example, contrary to the previous studies, Kurdek

(1978) found that high scores of perspective taking are actually related to aggressive attitudes. It is possible to say that the relationship between social cognition and aggression has not been fully understood yet.

Researchers in the area of social cognition meanly focus on the concepts like role-taking and problem-solving skills (Eron, 1980). In these studies, correlational relationships have been found as it was mentioned above in Eron's (1980) study; however, it cannot be explained why these correlational relationships exist even in the first place.

In explaining the relationship between aggression and social cognition, Dodge (1980) comes up with a theory called "Social Information Theory". The theory first appears in 1980; however, multiple reforms and advancing process continued. The final version of this theory has been developed by Dodge and Cricks in 1994. Dodge (1980) claims that aggressive behavior cannot be explained by a single notion. There are multiple factors included when one performs an aggressive behavior. Social Information Process (SIP) asserts that all these factors are actually related to how one perceives social clues and how to choose to respond them accordingly. The process of processing social clues occurs in different levels, which is called "steps". Dodge claims that not all these steps occur with consciousness but the unconscious process also takes part in. SIP theory consists of six distinct steps as it can be seen below.

3.1. First Step: Encoding

The first step of the SIP model is to encode the cues. When a person meets with a social situation, he receives them through the sensory process and encodes the social cues from the environment. Coding cues are highly personal and depend on lots of external and internal factors. Encoding process relies on personal database. Each person has a database which consists of a memory store, acquired rules, social schemas, and social knowledge in which every cue has a special meaning for each individual (Dodge, 1980). Another factor is that it is nearly impossible to encode all the cues. Therefore, some cues captures attention while others are ignored (Dodge & Cricks, 1994).

Attention process does not operate randomly, but a number of factors is involved.

One of them is attention selectivity (Eysenck, 1982). It is argued that some cues are encoded more accurately and more precisely than others (Dodge, 1991). In addition, some cues selectively take more attention than others do. It is learned in early infancy that infants pay attention to human faces and facial expressions because human expressions carry lots of information about the existing social context (Dodge, 1991). Infants learn to code human's facial expressions in order to reference their own emotional reactions and to regulate their own emotions (Walden, 1991). Human's facial expressions are one of the best social cues in order to understand social clues.

Attention selectivity in the context of processing social information attracts attention from researchers, particularly in order to explain aggressive behavior. One of the studies demonstrated that aggressive children pay less attention to social cues than non-aggressive children (Dodge & Newman, 1981). Additionally, aggressive adolescents were found not to be utilized from relevant cues but to use their own schemas. Encoding step is the first step for processing social information; therefore, it is highly important for producing accurate social responses to social situations (Dodge & Newman, 1981). In order to produce appropriate responses to social cues, the first step, namely encoding cues, is highly important.

3.2. Second Step: Interpretation

Once the cues are coded, they are needed to be given proper meanings within a social context. The interpretation process exists independently from the cognitive process itself. Crick and Dodge (1994) stated that the followings are the processes in the interpretation process:

1- Recall of the personal representations of the social cues in long-term memory.

2- Assessment process of the current event including whether or not the goal was a success.

3- Assessment of others' perspective in the current situation including intent attributions.

4-Assessment of the previous situations in similar contexts.

5-Evaluation of the possible outcomes out of the situation.

6- Evaluation of the meaning of the situation for the self and the others.

All these cognitive processes are related to the personal database as it is stated above. The two initial processes are critical, because they are determined by how one responds to and acts when he comes across a situation. When interpretation goes incorrectly, delinquent behavior and a crime might occur. For instance, it was discovered that convicted rapists cannot read negative social cues stemming from women so they are not able to give proper meanings to existing social cues (Lipton, Mcdonel, & McFall, 1987).

3.3. Step 3: Clarification of Goals

After interpretation process is finished, it is proposed that one needs to select the desired outcome for himself. These desired outcomes may differ for each person and in each situation. For example, when a person experiences a proactive act, he might decide *to put in his place* or simply he might choose *to stay out of trouble*.

3.4. Step 4: Response Access or Construction

After the desired outcome is selected, one needs to produce a response. If the current situation is similar, long-term memory might help to create a response to the social cues. If not, one needs to construct a new behavior. Produced response does not always have to be in the same direction with the selected outcomes.

Dodge (1980) states that response access is related to associative networks in memory. For example, once a person exposed to a provocation and if he thinks that provocation behavior needs to be punished, he might choose to exhibit physical aggression in return.

3.5. Step 5 and 6 : Respond Decision and Behavioral Enactment

After possible responses are evaluated, the final response needs to be selected. It is hypothesized that a number of factors is included in determination of the final response, including outcome expectations, their perceived self-efficacy to act, a possible response, and more. At the final step, the selected final response is behaviorally expressed by the subject.

3.1.2. Emotions and SIP

SIP theory has become the target of criticism, because it did not give any credit to emotions. Dodge (2006) replies to this criticism that the whole process itself is actually "emotional". Especially, when it comes to expressed aggressive behavior, the role of fear and anger cannot be denied (Dodge, 2006). It is possible to explain the role of emotion within the SIP theory from the perspective of different approaches. Moreover, it depends on how one defines "emotion" concept.

SIP theory underlines the importance of environmental factors and how the subject perceives and processes these factors. The first approach, which explains the role of emotion in SIP, claims that there are internal physiological factors of individual, such as mood, physiological arousal, etc. It has effects on the process of social information. It was found that high physiological arousal decreases the chance of paying attention to existent cues (Easterbrook, 1959). Emotions should be given more importance in order to increase our understanding in the process of social information processes.

Second approach proposes that emotions emerge as a consequence of social information processing. After reading process of social cues, subject feel an emotion according to his/her interpretation. For example, if subject concludes that the current

situation is frustrating, he/she might feel angry. Other approaches state that emotions and SIP are not intertwined; rather they might be actually separated processes from each other. If he has been threatened by the social cues from environment, he might feel fear.

The final approach – perhaps the most specific one for this thesis – is that the last step of SIP is the expression of emotion. Here, this question is important: "What is the importance of facial expressions in social information processing?" Considering the fact that facial expression carries rich social information about the context, the role of expression should be enlightened. Below, emotional expression and its importance are going to be explained.

4. EMOTIONAL EXPRESSIONS

Emotional expressions are defined as "the variety of models (e.g., facial expression, posture, hand gestures, voice tone) through which people express feelings" (Kowalski & Westen, 2010, p. 367). Facial expressions are also important for expressing internal emotional states (Lazarus, 1991). In daily life, we communicate with each other through monitoring ourselves and others in order to carry out a conversation and to react to each other properly. Ekman (1992) states that "emotional expressions are crucial to the development and regulation of interpersonal relationship" (p. 177).

Facial expressions consist of rich information about social context such as intentions, goals, behaviors, etc. Ekman (2003) claims that when people communicate, they trust facial expressions of emotion more than words. He claims that people more easily change their words but not their faces. Moreover, it is easier to watch words than facial expressions. Therefore, one of the basic communication components is to read facial expressions correctly and to interpret them.

Human face consists of dozens of muscles in order to produce expressions. It is assumed that human face could show thousands of different expression (Ekman, 1992). For example, it is known that there are 60 different expressions, which indicate anger.

It has been shown that facial expressions are universal. Ekman and Friesen (1969, 1971) demonstrated that there are six basic emotions (happiness, sadness, disgust, anger, fear, and surprise). Western or non-western, even preliterate communities understand and interpret certain facial expressions in the same way. Izard (1977, 1994) also found that

emotions are universal. Furthermore, unlike Ekman, he claims that interest, shame, contempt, and guilt are the basic emotions, as well. Although it has been shown that certain emotion recognitions such as fear and surprise might differ across different cultures (Ekman & Friesen, 1971). In order to explain this difference, Ekman and Freisen (1969) come up with a term called *display rules.* Display rules which are shaped by culture are the principles that determines which emotions to show or whom we show. It is suggested that there are factors that have effect on the display roles. Social roles and sex roles are influential on these display rules (Park et al., 2013). For instance, in Turkish culture, men's weeping out loud are not welcomed. Women's being angry are not welcomed, either (Dokmen, 2009). Therefore, it can be said that facial expressions could have both universal and cultural context at the same time.

Beside social roles, people have their own personal display rules and habits to express their expressions. Additionally, sometimes, facial expressions are need to be masked. If one argues with his boss, then by the context, he is not supposed to show anger to his boss.

4.1. Recognition of Emotion

In daily life, when we interpret a social interaction, facial expressions become significant. First, facial expressions provide individuals to monitor themselves and to regulate accordingly (Salovey & Mayer, 1990). Facial expressions are useful to try to regulate other's emotions, as well. If we notice someone precious to us is upset, we might attempt to make him feel better by trying to make him laugh. Furthermore, facial expressions could be used to assess intentions of others (Hess & Hareli, 2015). It has been shown that happiness and anger particularly have effect on people's approach to others. Individuals tend to perceive happy people being more trustworthy and being easy to cooperate (Stouten & Cremer, 2009).

It appears that difficulties in coding facial expressions are associated with poorer personal relationships, feeling isolated, and reduction of perceived well-being (Carton, Kesser, & Lape, 1999). For instance, children well-liked by their peers appear to be recognizing facial expressions better (Edwards, Manstead, & Macdonald, 1984).

Researchers demonstrated that women are better than men are in recognizing facial expressions other than anger (Niedenthal, Halberstadt, Margolin, & Innes-Ker, 2000;

Kirouac, & Dore, 1985). Others researchers showed that men are better to interpret anger than women are (Wagner, MacDonald, & Manstead, 1984; McAndrew, 1986).

Individuals own emotional states at the current moment are effected by their judgments about their interpretation of others' facial expressions. It was shown that happy participants tend to perceive facial expressions more positively; meanwhile, sad participants do vice versa (Niedenthal et al., 2000). Furthermore, personal traits have some effects on recognizing facial expressions. It was shown that females with non-assertive personality traits are not good at reading facial expressions (Toner & Gates, 1985). The authors explain that it could be because of the fact that non-assertive females do not look directly at the face in social interactions. An individual's non-assertive traits could not accommodate enough to experience for gaining the ability to read facial expressions. In this situation, the experience is important. Research demonstrated that as one gets older, reading facial expressions become easier for him (Izard, 1971; Zabel, 1979; Ellis et al., 1997).

Even though, Ekman and Freisen (1969) claim that individuals usually make inferences from facial expression accurately, some other research indicates the other way around. In patients with schizophrenia, deficits in reading facial expressions were demonstrated in multiple times (Herrmann, Reif, Jabs, Jacob, & Fallgatter, 2005; Mueser et al., 1996). It appears that they are worse at identifying negative emotions, more particularly anger and fear (Mandal, Pardey, & Prasad, 1998). The paranoid subgroup appears to be the worst among patients with schizophrenia (Herrmann et al, 2005). It has been shown that due to this deficit, schizophrenic patients perceived social competence was found to be poorer (Mueser et al., 1996). As recognizing facial expressions is getting worse in schizophrenia, the possibility of criminal behavior is increasing (Weiss et al., 2006).

Research showed mixed result for generalized anxiety disorder. While some research found that anxiety disorder associated with deficits in recognizing emotions (Csukly, Czobor, Szily, Takács, & Simon, 2009; Feinberg, Rifkin, Schaffer, & Walker, 1986), another research did not report any deficits (Linardatos, 2011).

Moreover, children who have behavioral, social or emotional problems are found to be less accurate at recognizing basic emotion than their peers (Zabel, 1979; Ellis et al., 1997; Sully, Sonuga-Barke, & Fairchild, 2015). Additionally, children with psychopathic

tendencies are found to be less accurate especially at recognizing sad and fearful expressions (Blair et al., 2000).

Whether recognizing expression deficits exist in autism remains unclear. Studies show mixed results, as well (Uljarevic & Hamilton, 2013). Poljac (2012) found that autistic individuals show deficits at recognizing emotions, meanwhile Ozonoff, Pennington, and Rogers (1990) and Gumustas, Yilmaz, Yulaf, Gokce, and Sabuncuoglu, (2017) indicate that they are good as the healthy participants. Boraston, Blakemore, Chilvers, and Skuse (2007) state that autistic individuals show deficits at recognizing especially sadness expression.

For a long time, depression has been linked to deficits in emotional expressions, in fact, studies showed that patients with depression perform poorly at recognizing expressions as compared to healthy individuals (Mikhailova, 1995; Mendlewicz, Linkowski, Bazelmans, & Philippot, 2005; Jeager, Board, & Peselow, 1986; Renneberg, Heyn, Gebhard, & Bachmann, 2005). Mendlewicz et al., (2005) argue that patients with depression are especially bad at recognizing anger; meanwhile, Jeager, Board, and Peselow (1986) demonstrated that they show severe deficits towards negative emotion recognition.

4.2. Crime and Recognizing Emotional Facial Expressions

Recent approaches claim that there is a connection between deficits in recognizing facial expressions and criminal behavior. It is claimed that misinterpreting social cues might cause inappropriate social responses, such as aggression (Lansford et al., 2002; Dodge & Newmann, 1981; Crick & Dodge, 1994; Dodge, 2006). In social context, facial expressions might carry critical information about communication. Misreading facial expressions might cause aggressive behaviors.

It is indicated that psychopaths are less accurate at recognizing expressions than healthy controls (Decety, Skelly, Yoder, & Kiehl, 2004; Blair et al., 2004; Hastings, Tangney, & Stuewig, 2007; Kosson, Suchy, Mayer, & Libby, 2004; Dolan & Fullam, 2006; Wilson, Juodis, & Porter, 2011). Most of the research claims that psychopathic individuals especially show deficits for fearful expressions (Blair et al., 2004; Iria & Barbosa, 2009); however, later studies show mixed results. Decety et al. (2004) found that these individuals are bad at recognizing fear and sadness; while, Hastings, Tangney, and Stuewig (2007) found that they are bad at recognizing sadness and happiness. Additionally,

Jones, Forster and Skuse (2007) provides support for the fact that young offenders were poor at recognizing anger expression more specifically. Although research demonstrates deficits, Glass & Newman (2006) report that there is no significant difference between psychopathic individuals and healthy controls. Therefore, further research is needed.

In addition, Hooken, Allaby, & Early (2007) conducted a study in order to understand crime and its relation to the interpretation of expression with three groups of people: violent offenders, non-violent offenders, and a control group. It has been demonstrated that violent offenders perform poorly as compared to the two other groups. Another highlight of this study is that violent offenders assess neutral faces by using negative emotions, mostly disgust; while, the two other groups rather use irrelevant emotions, such as sadness.

Gillespie and his colleges (2015) conducted a study regarding crime and emotional expression in which participants were sexual offenders and violent criminals. It was found that criminals regardless of sexual or violent crime type performed poorly at emotion recognition. However, in this study participant number was pretty limited; therefore, further investigation is needed.

The literature is very limited on the recognition of facial expressions and its relations to crime. There are not enough studies to provide better understanding of the nature of this relationship. In this thesis, different from the previous studies, emotion recognition, discrimination, and attribution of facial cues are explored together. It is assumed that the processes of perception of facial expression take role in crime behavior. Individuals who lack of understanding and misreading of social facial cues might produce undesirable responses. In this thesis, not only emotion understanding but also attribution to different facial expression are explored. In Turkish culture, there is no such study to explore the facial cues and its relation to criminal behavior, to the best of the author's knowledge. Additionally, the number of participants in this thesis is more than the previous studies; therefore, it is expected that it could provide more valuable information about criminal behavior and its relations to facial cues.

4.4. Hypothesis

1) It is expected that identification of expressions for basic emotions are going to differ among groups.

1-a) It is expected that participants with violent crime will score lower than the participants with non-violent crimes and the control group.

1-b) It is expected that participants with non-violent crime will score lower than the control group.

1-c) It is expected that the control group will score the best among all groups.

2) It is expected that discrimination of expressions for basic emotions will differ among groups.

2-a) It is expected that participants with violent crime will score lower than the participants with non-violent crimes and the control group.

2-b) It is expected that participants with non-violent crime will score lower than the control group.

3-c) It is expected that the control group will score the best among all groups.

3) It is expected that participants with violent crime will score lower at understanding social clues than the non-violent and the control group.

3-a) It is expected that participants with violent crime will score lower than the participants with non-violent crimes and the control group.

3-b) It is expected that participants with non-violent crime will score lower than the control group.

3-c) It is expected that the control group will score the best among all groups.

4) It is expected that the violent crime group will interpret neutral faces as having the emotional expressions of disgust, fear, and anger more frequently than the non-violent group and the control group.

5) It is expected that the control group will interpret neutral faces as having the emotional expressions of surprise, sadness and happiness more frequently than the two other groups.

6) It is expected that the performance of participants will not differ depending on their moods (being either positive or negative).

CHAPTER 2

METHOD

1. Participants

In order to test the hypotheses, 111 volunteers participated in the current study. Participants who have committed violent crime (45.9%) and non-violent crime (28.9%) were patients in Observation Department of Istanbul Forensic Science Institution. Ethical approval from Ankara Yıldırım Beyazıt University and Forensic Science Institution were obtained before data collection. The control group (25.2%) consisted of participants who are currently working in the same institution. The control group included security officers, soldiers, drivers, and cleaning staff in order to match the education, age, and gender of the two other groups. The control and offender groups were matched as much as possible in terms of these criteria.

The participants were mostly males (94.6%) and there were a few number of females, as well (5.4%). Participants who have active psychotic disorder and who have no criminal discretion were excluded from the study. Participants who cannot read and write were also excluded from the study.

Participants are divided into three group: violent offender group, non-violent offender group, and non-criminal group. Violent group is considered to commit a crime against people's life; meanwhile control group is considered to commit crime against properties (Hookan et al., 2007).

The mean age of all participants was 31.94 (SD = 10.092, range = 18-62). The mean age of the violent crime group was 34.57 (SD = 9,71, range =18-52); and the mean age of non-violent crime and control group were 31.20 (SD = 11.08, range = 18-62) and 27.93 (SD = 8.41, range = 20-52), respectively.

2. Materials

All three groups have been applied a battery of measures which include Demographic Information Form, Facial Expression Identification test, Facial

Discrimination test, Reading Mind from Eyes test, 20 pieces of white-black photographfor measuring emotion attributions to expressions, and Positive and Negative Affect scale (PANAS).

2.1. Demographic Information Form

Demographic Information form was developed by the author in order to collect socio-economic information about the participants. It includes questions about gender, age, marital status, education level, monthly income, parental marital status, the number of jail entrance, and the total of jail time (see Appendix A).

2.2 Facial Expression Identification Test

Facial Expression Identification test was developed by Kerr & Neale (1993) in order to investigate schizophrenic patient's emotion perception. Nineteen different human photos, which display different emotional expressions, are used. The photos were collected from Ekman & Friesen's (1976) and Izard's (1971) studies. Photos display six different emotions, which are happiness, sadness, anger, shame, fear, and surprise. Originally, the test is presented in a slide projection; however, due to the restriction of forensic science institution, these photos were printed out. While printing out, the original sizes of photos were protected. In this test, participants were asked to identify the emotion they perceive while they are attending to the photos. The answers were noted by the researcher. The correct answer is 1 point; meanwhile the wrong answer has 0 point. The minimum-maximum score for this test is 0-19. Validity and reliability tests were conducted by Erol, Ünal, Gülpek and Mete (2003) in Turkish population.

Originally, Kerr & Neale (1993) found that reliability coefficients of the scale ranged from .72 to .74. Erol et al. (2003) test-retest reliability ranged from .84 to .93. The results demonstrate that the Facial Expression Identification test is a valid and reliable instrument for Turkish population (Erol et al., 2003). The task material could not be supplied in the appendix because of copyright issues.

2.3 Facial Expression Discrimination Test

Facial Expression Discrimination test was developed by Kerr & Neale (1993) in order to measure schizophrenic patient's ability to discriminate emotions. Thirty black-and-white photos that display happiness, sadness, anger, fear, surprise, and shame are used. The photos were collected from Ekman & Friesen's (1976) and Izard's (1971) studies. Two photos are shown to participants at the same time and the participants were asked whether these two photos display the same emotion or not. Participants' answers were noted by the researcher. Originally, the test is presented in a slide projection; however, due to the restriction of forensic science institution, these photographs were printed out. While printing out, original sizes of photographs were protected. The minimum-maximum score for this test is 0-30.

Originally, Kerr & Neale (1993) found that reliability coefficients of the scale ranged from .70 to .74. Erol et al. (2003) test-retest reliability ranged from .58 to 1.0. The resulted demonstrated that the Facial Expression Discrimination test is a valid and reliable instrument for Turkish population (Erol et al., 2003). The task material could not be supplied in the appendix because of copyright issues.

2.4. Reading the Mind in the Eyes test

Initially, Reading the Mind in the Eyes test was developed by Baron-Cohen et al. (1997). After multiple changes, the final version of the test published in 2001. The test was developed to investigate social cognition in both clinical and non-clinical groups. The original version consists of 36 photos on which only eyes and eyebrows can be seen. All photos are designed to be in the same size (15 x 10 cm). There are four options with only one correct answer for each photograph. In order to provide a better understanding for the participants, the first photo was used as a practice item; thus, the test was introduced to participant. This practice item score was not added to the total score. After the practice item, participants were asked for a total of 30 test items. For each correct answer, 1 point is given for the participant and for each incorrect answer, the participant receives 0 point. The minimum-maximum score for this test is 0-30.

Validity and reliability tests were conducted by Yıldırım et al., (2011) in Turkish population. With the approval of the original test developers, four items were excluded for the current study due to the low internal consistency. Thus, the Turkish version of this measure consists of 32 items. The internal consistency of this test was found as .67 (Yıldırım et al., 2011). As a result, Reading from Eyes test is found to be a valid and reliable instrument for Turkish population. The task material could not be supplied in the appendix because of copyright issues.

2.5. Positive and Negative Affect Schedule scale (PANAS)

Positive and Negative Affect Schedule Scale (PANAS) was developed by Watson, Clark, and Tellegen (1988) in order to measure emotional mood at that moment for the participant. The scale consists of 20 items and two dimensions, which are negative and positive (see Appendix B). Participants were asked to think how they feel during that week and to score this on a 5-point Likert-type scale (1= None; 5 = Extremely). The scale is found both valid and reliable in Turkish example (Gencoz, 2003). In this sample, Cronbach alpha score was found to be .86 and .83 for positive and negative dimensions respectively (Gencoz, 2003). The minimum-maximum score for this scale is 0-25 for both positive and negative dimensions. Positive dimension of this scale provides information about participant positive feelings at that moment. Meanwhile, negative dimension demonstrates subject's negative feelings at that moment.

2.6. METU-Face Database

The photographs of faces with no expressions were obtained from METU-face database (Dovencioglu, 2008). Twenty black-and-white photos were selected (by the author and the thesis advisor) and these photos were used as an instrument in the present study. The photos are face-centered and there is no additional material in these photos such as jewelry or make-up. Participants were asked which emotion they perceive from these photos while they were attending to (even though there is no expression in these faces). Their given options were happiness, sadness, fear, anger, surprise, and disgust. The task material could not be supplied in the appendix because of copyright issues.

3. Procedure

During the study, participants were patients in the Observation Department of Istanbul Forensic Science Institution. They were explained about the current study and asked whether they would like to participate in this study. Then, firstly, participants were asked to read the approval form. They were told that they have right to quit the study at any time they would like to. The procedure lasted between 30 to 40 minutes. A test room was used for the study in which only a participant and the researcher were present during the study. However, due to the safety reasons, the test room has no door and a guardian was waiting outside the door, as well. Instruments were given to the participants in different orders in order to eliminate order effect. At the end of the study, PANAS and demographic form were given to participants. Facial Expression Identification and Discrimination test were given to participants in a mixed order. Reading the Mind in the Eyes and neutral faces were also given in a mixed order. Therefore, there were 12 different orders of all instruments in the study.

4. Statistical Analysis

The dataset was examined by the help of SPSS 24 packet program. To examine the group differences, one-way ANOVA method was used. In addition, in order to examine the relations among emotion recognition, discrimination and interpretation processes, bivariate and partial correlation analyses were conducted. Moreover, multiple regression analyses were used in order to explain emotion recognition and interpretation process of neutral faces.

CHAPTER 3

RESULTS

First of all, data was investigated. Total of 111 cases were examined.

3.1. Demographic Characteristic of Participants

Based on the demographic form, education level, marital status, occupational status, and types of criminal act were determined. Regarding the age of the participants (N = 111), the mean age was 31.94 (SD = 10.092, range = 18-62) (see Table 1). Regarding the gender, 105 participants were males (94.6%) and six participants were females (5.4%). According to the results, among all participants (N = 111), 30 participants were married (27%), 58 participants were single (52.3%), 18 participants were divorced (16.2%), and 5 participants were widow (4.5%) (see Table 2). Regarding the education level of the participants, 32 participants were in the elementary educated level (28.8%), 32 participants were in the middle school level (27.9%), 43 participants were in the high school level (38.7%), and four participants were in the university education level (3.6%)

Table 1. Demographic Variables (participant groups)

	Participant group	N	Mean	S.D.
Age	Violent group	51	34.57	9.71
	Non-violent group	30	31.20	11.08
	Control group	28	27.93	8.41

Table 2. Demographic Variables (education & marital status)

		N	%
Education			
Elementary	Violent	15	29.4
	Non-violent	13	40.6
	Control	4	14.3
Middle School	Violent	19	37.3
	Non-violent	10	31.3
	Control	2	7.1
High School	Violent	14	27.5
	Non-violent	9	28.1
	Control	20	71.4
University	Violent	2	3.9
	Non-violent	0.0	0.0
	Control	2	7.1

Table 2. Demographic Variables (education & marital status) (continued)

Marital Status			
Married	Violent	12	23.2
	Non-violent	13	40.6
	Control	5	17.9
Single	Violent	23	45.1
	Non-violent	13	40.6
	Control	20	40.1
Divorced	Violent	12	23.5
	Non-violent	3	9.4
	Control	3	10.7
Widow	Violent	4	7.8
	Non-violent	1	3.1
	Control	0	0

Regarding the crime type, 51 participants were violent crime offenders (45.9%), 32 participants were non-violent crime offenders (28.8%). Twenty-eight participants were

used as a control group who have never committed a crime (25.2%). Types of criminal act were presented in Table 3.

Table 3. Crime Types

	N	%
Violent Crime Group		
Murder	23	45.1
Attempt to Murder	7	13.7
Wounding	9	17.6
Plunder	4	7.8
Sexual Harassment	4	7.8
Rape	4	7.8
Non-violent Group		
Theft	12	37.5
Drug Dealing	11	34.4
Damage to Property	6	18.8
Fraud	3	9.4

3.2 Main Task

In this thesis, facial expression recognition is considered as a main task since emotion recognition is considered as the most important part in perceiving facial cues. In addition, discrimination and inferring emotional expressions and attributions to neutral faces considered as an additional tasks. In order to examine the group differences one-way ANOVA analyses were conducted. Additionally, multiple regression analyses were applied

in order to explain emotional expression recognition and attributions to neutral faces. In order to examine relation among emotion recognition, discrimination, and attribution bivariate and partial correlation analyses were conducted.

3.2.1 Identification of Facial Expressions

In this analysis, participants' ability to identify emotional expressions was measured. For each participant, the total score was calculated in SPSS. Before conducting the statistical analyses, the normality test was conducted. Skewness and Kurtosis values were found -.111 and -.230, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference on the expression identification, one-way ANOVA was conducted on the total scores for groups. The result showed that groups did differ from each other in terms of emotion identification. To put in other words, it was found that the violent crime group and the non-violent crime group could identify emotional expression worse than the control- group, $F(2,108) = 18.85$, $p = .00$ w = .57 (see Table 4 and 5). Group differences were presented at Figure 1. Planned contrasts revealed that, in general, criminals significantly worse at identifying expressions, $t(108) = 5.99$, $p = .000$. However, violent criminals and non-violent criminals did not show any differences, $t(108) = -0.63$, $p = .53$. According to the literature, age (Mill, Allik & Valk, 2009) and education level (Kirovac, 1985; Trauffer, 2013) might have effect on the performance of emotion recognition. In order to control education level and age of the participants, ANCOVA analysis were conducted. According to the result, when age and education level were controlled, group differences remain the same. The covariate education $F(2, 106) = .077$, $p = .383$, and the covariate age, $F(1, 105) = 0.40$, $p = .526$, did not change between these two groups. Additionally, the group scores were close to each other in terms of age and education level (see Table 1 and 2). Therefore, hypothesis 1-a were not supported. Meanwhile, hypothesis 1-b and 1-c were supported.

Table 4. ANOVA Results for Facial Expression Identification Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	360.03	2	108.01	18.85	.000
Within Gr.	1031.66	108	9.55		
Total	1391.70	110			

Table 5. Descriptive Statistics for Identification of Emotional Expression

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	51	9.32	3.24
	Non-violent Crime	32	9.76	3.56
	Control Group	28	13.70	2.04
Total		111	10.52	3.56

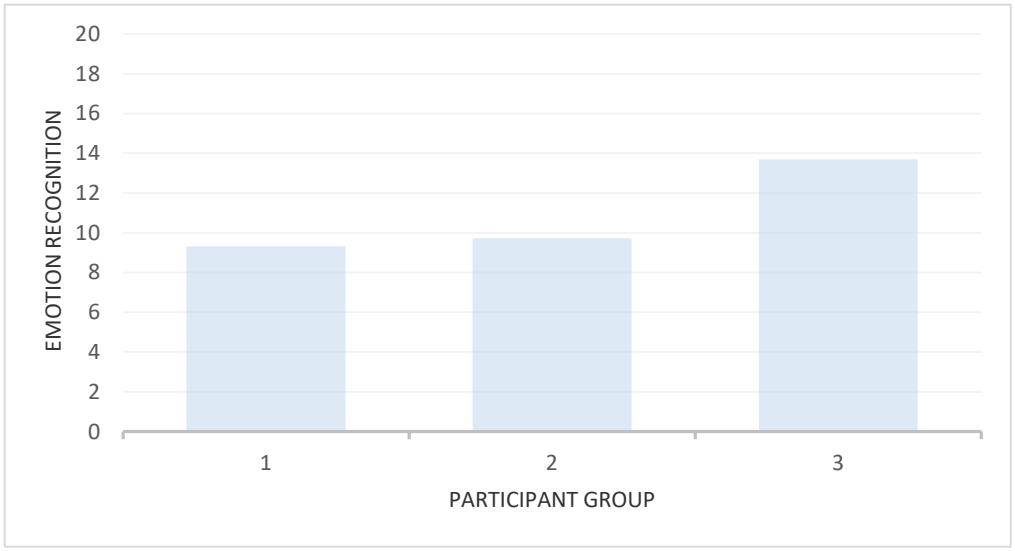


Figure 1. Group differences at recognizing basic emotional expressions (1 = violent group; 2 = non-violent group; 3 = control group).

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3.3 Additional Tasks

3.3.1 Results for Facial Expression Discrimination Test

In this task, participants' ability to discriminate emotional expressions was measured. For each participant, the total score was calculated in SPSS. Before conducting the statistical analysis, the normality test was conducted. Two extreme values were excluded in order to ensure homogeneity. Skewness and Kurtosis values were found as -.615 and -.181, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference on the expression discrimination, one-way ANOVA was conducted on the total scores for groups. The result showed that groups did differ from each other in terms of emotion identification. To put in other words, it was found that the violent crime group and the non-violent crime group discriminated emotional expression worse than the control

group, $F(2,106) = 18.85$, $p = .000$ (see Table 6 and 7). Group differences were presented in Figure 2. Planned contrasts revealed that criminals were significantly worse at discriminating emotional expressions, $t(106) = 4.63$, $p = .000$. However, the violent criminals and the non-violent criminals did not show any differences, $t(106) = 0.47$, $p = .640$. Therefore, Hypothesis 2-a was not supported. Meanwhile, hypothesis 2-b and 2-c were supported.

Table 6. ANOVA Results for Facial Expression Discrimination Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	301.114	2	150.56	10.71	.000
Within Gr.	1489.66	106	14.05		
Total	1790.78	108			

Table 7. Descriptive Statistics for Facial Expression Discrimination Test

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	51	20.28	4.32
	Non-violent Crime	32	19.88	3.87
	Control Group	26	24	4.07
Total		109	21.04	3.56

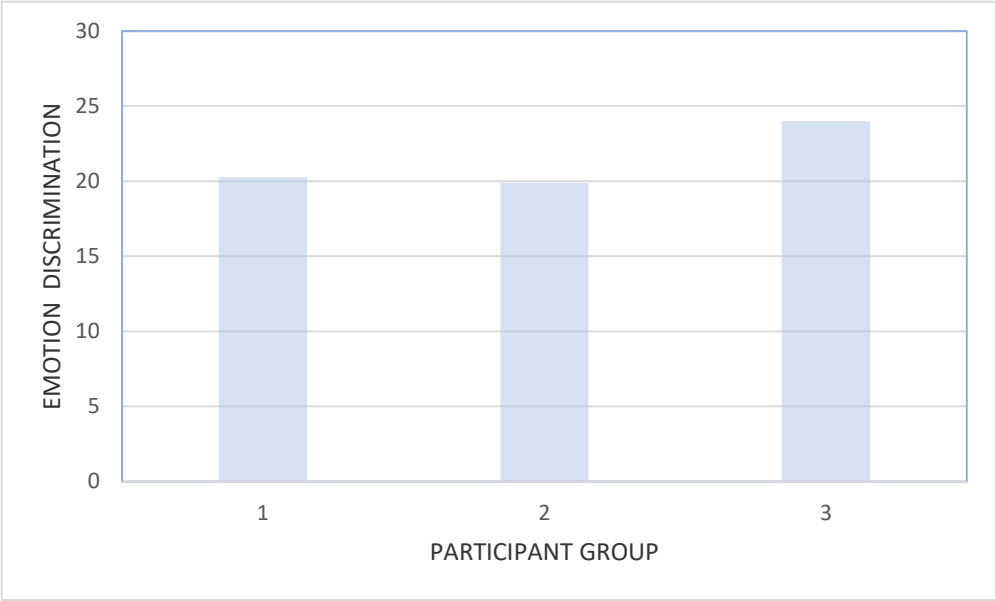


Figure 2. Group differences at discriminating basic emotional expressions (1 = violent group; 2 = non-violent group; 3 = control group).

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3.3.2 Result for the Reading Mind from the Eyes test

In this task, participants' ability to perceive intentions from facial expressions was measured. For each participant, the total score was calculated in SPSS. Before conducting the statistical analysis, the normality test was conducted. Skewness and Kurtosis values were found as .14 and -.67, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference on the expression discrimination, one-way ANOVA was conducted on the total scores for groups. The result showed that groups did differ from each other in terms of perceiving emotional expressions. To put in other words, it was found that inferring of violent crime group and non-violent crime group for emotional expression were worse than the control group, $F(2,110) = 15.48$, $p = .000$ (see Table 8 and 9). Group differences were presented in Figure 3. Planned contrasts revealed that criminals were significantly worse at interfering emotional expressions, $t(108) = 5.13$, $p = .000$. However,

violent criminals and non-violent criminals did not show any differences, $t(106) = -1.55$, $p = .125$. Therefore, hypothesis 3-a was not supported. Meanwhile, hypothesis 3-b and 3-c were supported.

Table 8. ANOVA Results for Interfering Emotional Expressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	968.75	2	484.38	15.48	.000
Within Gr.	3379.48	108	31.30		
Total	4348.23	110			

Table 9. Descriptive Statistics for Interfering Emotional Expressions

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	51	13.39	5.83
	Non-violent Crime	32	15.34	6.05
	Control Group	28	20.68	4.49
Total		111	15.80	6.28

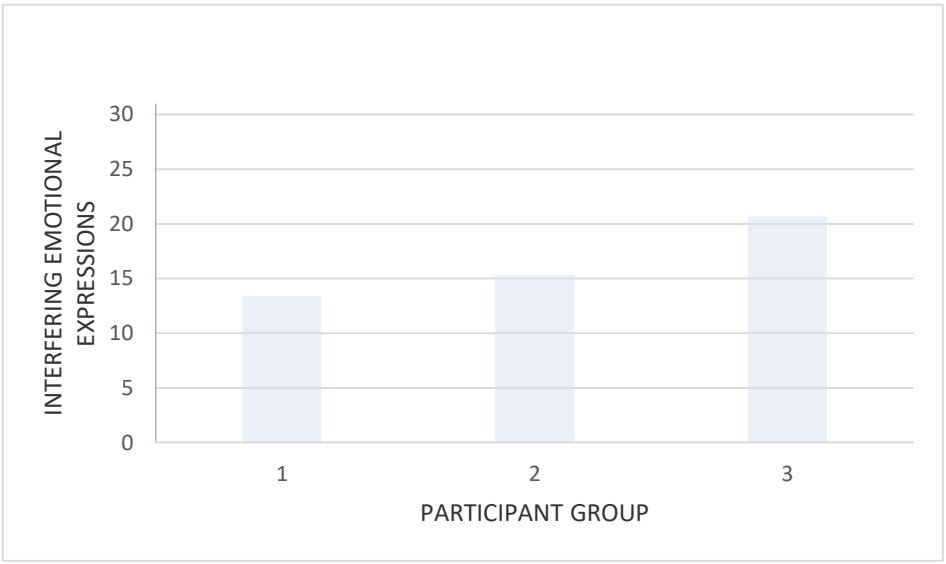


Figure 3. Group Differences at Interfering Emotional Expressions (1 = violent group; 2 = non-violent group; 3 = control group).

3.3.3 Control Task: Results for Positive and Negative Affect Schedule Scale

Participants were asked about their emotional mood at current moment. In results, their positive and negative emotional moods were calculated.

3.3.3.1. Results for Positive Emotion Dimension

For this dimension, Skewness and Kurtosis values were found .15 and -.42, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. A total of 17 data were missing because of missing values. The result showed that groups did differ from each other in terms of positive mood. To put in other words, it was found that the violent crime group and the non-violent crime

group were in a less positive mood than the control groups, $F(2,92) = 10.70$, $p = .000$ (see Table 10 and 11). Planned contrasts revealed that violent group and non-violent group did not differ regarding positive mood, $t(92) = 4.13$, $p = .000$; meanwhile, the control group were in a more positive mood than the two other groups, $t(92) = -1.52$, $p = .133$. Therefore, the hypothesis 6 was not supported.

Table 10. ANOVA Results for Positive Mood Scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	1080.89	2	540.45	10.70	.000
Within Gr.	4646.27	92	50.50		
Total	4348.23	9			

Table 11. Descriptive Statistics for Positive Mood Scores

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	48	26.00	7.38
	Non-violent Crime	27	28.60	6.59
	Control Group	20	34.75	7.12
Total		95	28.58	7.80

3.3.3.2. Results for Negative Emotion Dimension

For this dimension, Skewness and Kurtosis values were found as .19 and -.53, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. A total of 6 data were missing because of missing values. The result showed that groups did differ from each other regrading negative mood. To put in other words, it was found that the violent crime group and the non-violent crime group were in a more negative mood than the control group, $F(2,99) = 19.75$, $p = .000$ (see Table 12 and 13). Planned contrasts revealed that violent group and non-violent group did not differ in terms of positive mood, $t(97) = -5.93$, $p = .000$; meanwhile, the control group were in a more positive mood than the two other groups, $t(97) = 1.23$, $p = .220$. Therefore, the hypothesis 6 was not supported.

Table 12. ANOVA Results for Negative Mood Scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	1439.77	2	719.89	19.75	.000
Within Gr.	3535.14	97	36.45		
Total	4974.92	99			

Table 13. Descriptive Statistics for Negative Mood Scores

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	47	29.83	6.90
	Non-violent Crime	27	28.03	5.32
	Control Group	26	20.70	4.93
Total		100	26.97	7.08

3.3.4 Correlations between the additional tasks (+ control task)

Correlational relations between Facial Emotion Discrimination (FED) test, the Reading the Mind from the Eyes test, PANAS positive (PANAS-P) and PANAS negative (PANAS-N) test were revealed. Exclude cases list wise analysis was used. According to the results, a total of 94 participant's data were used. There was a significant positive relationship between FED and FRME, $r = .50$, $p < .01$. There was a significant positive relationship between FED and PANAS-P, $r = .29$, $p < .01$. Moreover, there was a significant positive relationship between Panas-P and FRME, $r = .34$, $p < .01$. Remaining correlations were not significant. The results were presented in Table 14.

Table 14. Correlation Results for FED, RMFE, and PANAS

	FED	RMFE	PANAS-P	PANAS-N
FED	1			
RMFE	.50**	1		
PANAS-positive	.29**	.34**	1	
PANAS-negative	.08	-.10	-.15	1

** $p < .01$

3.4 Multiple Regression for Facial Expression Identification test

Before conducting regression analyses, bivariate and partial correlation analyses were run. Bivariate correlation analyses revealed that there is a positive correlational relationship between FEI and FED, $r = .45$, $p < .001$. There is a positive correlational relationship between FEI and RMFE, $r = .59$, $p < .01$. There is a positive correlational relationship between FEI and PANAS-P, $r = .34$, $p < .01$. And, there is a negative correlational relationship between FEI and PANAS-N, $r = -.23$, $p < .05$. Additionally, there is no significant correlation between the answers to neutral faces and FEI. In order to conduct partial correlation analysis, FEI and the answers to neutral faces were controlled. Results revealed that there was no significant correlational relationship between these variables (see Table 15). Bivariate and partial correlations revealed that when FEI was controlled, relationship among other variables were disappeared.

Table 15. Partial Correlation Results for FED, RMFE, PANAS-P, and PANAS-N

	FED	RMFE	PANAS-P	PANAS-N
FED	1			
RMFE	.27	1		
PANAS-positive	.10	.12	1	
PANAS-negative	.09	.09	-.05	1

In the first regression analysis, enter method were used. In the first step, participant group was added to the model. In the second step, FED and RFME were included. Models were found significant for step 1 and 2, $F(1,109) = 29.34$, $p = .000$; $F(3,107) = 27.50$, $p = .000$, respectively. Results can be seen in Table 16.

Table 16- Multiple Regression for Facial Expression Identification test

	B	SE B	β
Step 1			
Constant	6.95	.73	
Participant Group	1.95	.37	.46
Step 2			
Constant	2.02	1.22	
Participant Group	.86	.36	.19
FED	.16	.07	.20
RMFE	.23	.05	.40

Note: R^2=. 21 for step 1, ΔR^2= .16 for Step 2, p <.001

The second regression analysis was conducted with enter model but this time PANAS scores were included. In the first step, the participant group was added to the

model. In the second step, PANAS-P and PANAS-N were added. In the third step, FED and RFME were included. Models were found as significant for step 1, step 2 and step 3, $F(1,92) = 18.48$, $p = .000$; $F(3,90) = 7.88$, $p = .000$, and $F(5,88) = 12.44$, $p = .000$, respectively. Results can be seen at Table 17.

Table 17- Multiple Regression for Facial Expression Identification test

	B	SE B	β
Step 1			
Constant	7.18	.79	
Participant Group	1.81	.42	.41
Step 2			
Constant	6.25	.47	
Participant Group	1.30	.49	.29
PANAS-P	.09	.47	.21
PANAS-N	-.03	.038	-.08
Step 3			
Constant	3.59	1.87	
Participant Group	.17	.47	.04
PANAS-P	.05	.04	.10
PANAS-N	-.05	.03	-.14
FED	.13	.07	.18
RFME	.25	.06	.43

Note: R^2=. 17 for step 1, ΔR^2= .08 for Step 2, ΔR^2= .15 for Step 3 p <.001

3.5 Additional Analyses

In additional analyses, neutral face analysis, its relation with facial emotion identification and multiple regression for neutral faces were analyzed.

3.5.1 Neutral Faces

Participants are received 20 black-white human facial photos with natural expressions. They were asked that which emotion they perceive.

3.5.1.1 Results for "Happiness" Answer for the Neutral Faces

Participants' "happiness" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Two extreme values were excluded from the dataset in order to ensure normality. Skewness and Kurtosis values were found as .22 and -.47, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in perceiving neutral faces as being happy, one-way ANOVA was conducted on the total scores for groups. The result showed that groups did differ from each other regarding the perception of "happiness". To put in other words, it was found that the violent crime and the non-violent crime group perceived neutral faces as being happy less frequently than the control groups, $F(2,106) = 8.70$, $p = .000$ (see Table 14 and 15). Planned contrasts revealed that the criminal group were less likely to interpret neutral faces as being happy, $t(106) = 3.50$, $p = .001$. However, the violent criminals and the non-violent criminals did not show any differences, $t(106) = -1.89$, $p = .062$. Therefore, the hypothesis 5 was supported.

Table 18. ANOVA Results for Interpreting Neutral Expressions as Being "Happy"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	141.79	2	70.86	8.70	.000
Within Gr.	863.57	106	8.15		
Total	1005.28	108			

Table 19. Descriptive Statistics for Interpreting Neutral Expressions as Being "Happy"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	49	4.65	2.60
	Non-violent Crime	32	5.87	3.09
	Control Group	28	7.46	2.99
Total		109	5.73	3.05

3.5.1.2 Results for "Sadness" Answer for the Neutral Faces

Participants' "sadness" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Three extreme values were excluded from the dataset in order to ensure normality. Skewness and Kurtosis values were found as .55 and -.12, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in the perception of neutral faces as being "sad", one-way ANOVA was conducted on the total scores for sadness answer. The result showed that groups did not

differ from each other regarding inferring "sadness" to neutral expressions, $F(2,105) = 0.67$, $p = .512$ (see Table 16 and 17). Therefore, the hypothesis 5 partly disproved.

Table 20. ANOVA Results for Interpreting Neutral Expressions as Being "Sad"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	8.46	2	4.23	0.67	.512
Within Gr.	863.57	105	6.28		
Total	667.43	107			

Table 21. Descriptive Statistics for Interpreting Neutral Expressions as Being "Sad"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	50	4.08	2.33
	Non-violent Crime	31	4.67	2.64
	Control Group	27	4.60	2.65
Total		109	4.38	2.50

3.5.1.3 Results for "Disgust" Answer for the Neutral Faces

Participants' "disgust" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Two extreme values were excluded from the

dataset in order to ensure normality. Skewness and Kurtosis values were found 1.12 and .97, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in the perception of neutral faces as having "disgust", one-way ANOVA was conducted on the total scores for groups. The result showed that groups did not differ from each other regarding perception of neutral faces as having "disgust", $F(2,106) = 8.70$, $p = .000$ (see Table 18 and 19). Therefore, the hypothesis 4 was not supported.

Table 22. ANOVA Results for Interfering Neutral Expressions as Having "Disgust"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	3.69	2	1.85	1.39	.254
Within Gr.	141.07	106	1.33		
Total	1005.28	108			

Table 23. Descriptive Statistics for Interpreting Neutral Expressions as Having "Disgust"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	50	1.08	1.26
	Non-violent Crime	31	1.03	1.19
	Control Group	28	0.64	0.87
Total		109	0.95	3.05

3.5.1.4 Results for "Fear" Answer for the Neutral Faces

Participants' "fear" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Four extreme values were excluded from the dataset in order to ensure normality. Skewness and Kurtosis values were found as .87 and 1.22, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in the perception of neutral faces as having "fear", one-way ANOVA was conducted on the total scores for groups. The result showed that groups did not differ from each other regarding perception of neutral faces as having "fear" expression, $F(2,104) = 3.05$, $p = .051$ (see Table 20 and 21). Therefore, the hypothesis 4 was not supported.

Table 24. ANOVA Results for Interpreting Neutral Expressions as Having "Fear"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	14.22	2	7.11	3.06	.051
Within Gr.	241.95	104	2.33		
Total	256.17	106			

Table 25. Descriptive Statistics for Interpreting Neutral Expressions as Having "Fear"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	49	2.23	1.66
	Non-violent Crime	31	1.78	1.43
	Control Group	27	1.33	1.55
Total		109	0.95	3.05

3.5.1.5 Results for "Anger" Answer for the Neutral Faces

Participants' "anger" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Skewness and Kurtosis values were found as .58 and -.030, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in perceiving neutral faces as being "angry", one-way ANOVA was conducted on the total scores for groups. The result showed that groups did differ from each other regarding the perception of neutral expressions as being "angry". To put in other words, it was found that the violent crime and the non-violent crime group perceived neutral faces as being "angry" less frequently than the control group, $F(2,108) = 7.73$, $p = .011$ (see Table 22 and 23). Planned contrasts revealed that violent crime group were more frequently interpreted neutral faces as having "anger" expressions than the two other groups, $t(108) = 3.29$, $p = .003$. However, the non-violent criminals and the control group did not show any differences, $t(108) = .67$, $p = .504$. Therefore, the hypothesis 4 was supported.

Table 26. ANOVA Results for Interpreting Neutral Expressions as Being "Angry"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	39.13	2	19.56	4.73	.011
Within Gr.	447.78	108	4.14		
Total	1005.28	110			

Table 27. Descriptive Statistics for Interpreting Neutral Expressions as Being "Angry"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	51	2.21	2.21
	Non-violent Crime	32	2.53	2.10
	Control Group	28	2.18	1.52
Total		111	2.90	2.03

3.5.1.6 Results for "Surprise" Answer for the Neutral Faces

Participants' "surprise" answers for the neutral faces were measured in order to discover interpretation process of faces with no expression. Before conducting the statistical analyses, the normality test was conducted. Three extreme values were excluded from the dataset in order to ensure normality. Skewness and Kurtosis values were found as .66 and .45, respectively. According to Tabachnick and Field (2013), values between -1.5 and +1.5 are considered as normal distribution. To investigate whether there is any group difference in perception of neutral faces as having "surprise", one-way ANOVA was conducted on the total scores for groups. The result showed that groups did not differ from

each other regarding the perception of neutral faces as having "surprise" expression, $F(2,105) = .101$, $p = .904$ (see Table 24 and 25). Therefore, the hypothesis 5 was not supported.

Table 28. ANOVA Results for Interpreting Neutral Expressions as Having "Surprise"

	Sum of Squares	df	Mean Square	F	Sig.
Between Gr.	3.69	2	1.84	1.39	.904
Within Gr.	141.07	106	1.33		
Total	1005.28	108			

Table 29. Descriptive Statistics for Interpreting Neutral Expressions as Having "Surprise"

	Participant Group	N	Mean	SD
Identification Scores	Violent Crime	49	3.34	2.12
	Non-violent Crime	32	3.41	2.48
	Control Group	27	3.15	2.41
Total		108	3.31	2.28

3.5.2 Relation between FEİ & the Neutral Faces

It was considered that there might be a relationship between FEI and interpreting emotions to neutral faces. It has been suggested that participants with low ability to identify emotional expressions perform differently when interpreting the neutral expressions. Therefore, correlation analysis was conducted. A total of 111 participants' data was used. The correlation between FEI and interfering "happiness" emotion was not significant, r = -.23, p > .05. The correlation between FEI and interfering "sadness" emotion was not significant, r= .064, p > .05. The correlation between FEI and interfering disgust emotion was not significant, r = -.082, p > .05. The correlation between FEI and interfering "anger" emotion was not significant, r = -.116, p > .05. The correlation between FEI and interfering "surprise" emotion was not significant, r = -.017, p > .05. Lastly, the correlation between FEI and interfering "fear" emotion was significant, r = -.187, p < .05. According to these results, the participants who have poor ability to recognize emotions are more likely to interpret "fear" emotion to the neutral expressions. It was assumed that due to uncertainty of expression, subject might tend to protect themselves; therefore, "fear" emotion could be attributed to unknown, complicated emotional expressions. Therefore, if anything happens, subject can take a position.

3.5.3 Possible Effects of Time Spent in Prison

It is thought that emotion identification, emotion discrimination, and interpretation of neutral faces and emotional state might have connections to total time spent in prison. Participant's average time in prison were found 15.73 months. When the violent group was considering, their average prison time was 18.82 months; meanwhile, the non-violent group average prison time was 24.97. Additionally, the control group did not spend time in prison. Therefore, the variable for "the time spent in prison" could not be examined with the other variables due to the lack of variation. It was suggested if the data were more varied, the performance of offenders in perception, identification, and attribution of emotional expression, which could be related to offenders' spent time in prison, could be investigated.

CHAPTER 4

DISCUSSION

The main purposes of this study is to understand whether there are differences among violent offenders, non-violent offenders, and control group in terms of recognition and discrimination of facial emotional expressions and interpretation process of unclear facial expressions (the neutral expressions). The results indicated that the violent and the non-violent group were poor at recognition, discrimination, and interpretation of emotional expressions as compared to the control group. In addition, the violent group and the non-violent group did not differ in terms of interpreting emotional expressions.

The violent group more frequently interpreted neutral faces as being angry; meanwhile, the control group more frequently interpreted the neutral faces as being happy. For the other basic emotions (fear, disgust, surprise, and sadness), there did not occur any significant intergroup differences. It has been found that participants with poor ability in recognition of emotional expressions were more likely to interpret "fear" emotion for the neutral expressions. Participants with poor recognition of emotional expressions performed poorly at discrimination and interpretation of emotions, as well.

4.1. Identification of Facial Expressions in the Violent, the Non-violent, and the Control Group

Facial expressions carry valuable information about the existing social context (Ekman, 1993). It helps individuals to collect social information from the environment, and according to this information, an appropriate answer could be produced (Dodge, Price, Bachorowski, & Newman, 1990). In this study, it was suggested that individuals who commit crime perceive social cues coming from the facial expressions in a different way. Results indicated that participants who commit violent crimes (such as murder, wounding, rape) and non-violent crimes (such as theft and drug dealing) performed poorly as compared to participants who have no criminal history. The results are consistent with Hoakan, Allaby, & Early (2007) study, which indicates that offenders were poor at

recognizing emotions. It is suggested that due to lack of understanding of basic emotions, criminals were unable to produce socially appropriate answers. These appropriate answers might even consist of aggression and violence. For example, if a person performs a facial expression of "sadness", it is possible that criminals take that expression as "anger", and that might lead to inappropriate answer such as aggression. These misinterpretations might negatively affect criminal's interpersonal relationships. The relevant literature suggests that individuals who are lacking recognition of emotions also experiences interpersonal difficulties (Ekman, 1992; Hooker & Park, 2002; Kornreich et al., 2002; Kornreich & Philippot, 2006). It is suggested that due to inability to recognize emotions, offenders more likely tend to experience interpersonal problems with other people.

4.1.1 Possible Explanations of Lacking Emotion Identification Skills

As this thesis and similar studies findings suggested (Hookan et al., 2007; Jonas et al., 2007; Gillespie et al., 2015) criminal individuals have poorer skills to understand basic emotions from facial expressions. It has suggested that there are some factors that might contributed to explain criminal's lacking expression of reading skills as mentioned below.

4.1.1.1 Psychopathy

It is known that psychopathy is very common in the prison population (Coid, Yang, Ullrich, Roberts, & Hare, 2008). Moreover, previous studies demonstrated that psychopathic individuals have poor skills in recognition of emotions (Decety et al., 2014; Blair et al., 2004; Hastings, Tangney, & Stuewig, 2007; Kosson et al., 2002; Dolan & Fullam, 2006; Wilson, Juodis, & Porter, 2011). Similar to this thesis' results, it has been shown that prison population has poor skills at emotion recognition. It could because of the fact that these participants have psychopathic traits.

4.1.1.2 Emotional Intelligence

Recognition of facial expressions is considered as a part of emotional intelligence (E.I.) (Megreya, 2014). According to the literature, criminal individuals tend to have lower

E.I. than normal individuals do (Hemmati, Mills, & Kroner, 2004; Copestake, 2013; Megreya, 2014). It is suggested that these results support the idea that criminals might have lower E.I. that could cause their lack of understanding of social cues. It is suggested that there are other factors that might contribute to understanding of misreading facial cues. For example, the literature demonstrated that abused children have poorer skills in identification of emotion. For instance, abused children are more likely to become criminals in their later lives (Weiler & Widom, 1996). It is suggested that having abused parents might have contributed to some deficits at recognition of emotions in the criminal population.

4.1.1.3 Isolation

Once a criminal is imprisoned, consequently s/he is isolated from her/his social life (Cochran & Mears, 2013). It is useful to note that criminals are not isolated from their personal relationships entirely due to other inmates and visits from their loved ones, but still their social lives decrease remarkably. It is suggested that due to the isolation of social life, criminals' ability to recognize emotion might become worse. Additionally, after discharge, the lack of understanding social cues increases the probability of committing more crimes and possible repetition of the crime behavior.

4.2. Discrimination and Misattribution of Facial Expressions in the Violent, the Non-violent, and the Control Group

The results demonstrated that offenders were bad at discriminating and attributing appropriate intentions according to facial expressions. Additionally, discrimination task and attributing task have positive correlations. In other words, participants who were poor at discriminating emotional expressions were also bad at attributing intentions. Although this result is correlational, it could be the case that it could be because of the fact that individuals were bad at attributing to expressions when they were not sure about what expression is.

Furthermore, participants were given Reading the Mind in the Eyes test, which allows us to investigate their interpretation process of social cues. Results indicated that criminals cannot only identify and discriminate basic emotions, but they also misinterpret

facial cues. The relevant literature demonstrated that there is a relationship between hostile attribution bias and crime behavior (Dodge et al., 1990; Dodge, 2006; Walters, 2007; Schönenberg & Jusyte, 2014). In addition, it was suggested that due to that bias, criminals might misinterpret facial cues.

4.3. Emotional Mood Differences between the Violent and the Control Group

Results demonstrated that groups were different at perceiving their emotional mood. The control group has more positive mood; meanwhile, offender groups were rather negative. Contrary to current results, it was assumed that the groups will not differ in their emotional mood. It was predicted that due to stressful condition of offender's (in prison condition); they were more likely to feel in negative way. Moreover, the results showed that participants' emotional mood were effective on their discrimination and attribution performances. Initially, it was suggested that their mood would not affect their task performance. However, the results indicated the other way around. According to the results, participants who perceive themselves in a better emotional mood performed better at discrimination and attribution task. It might be because of the fact that negative emotions have destructive effect on cognitive tasks that may lead them to perform poorly (Scheibe & Blanchard-Fields, 2009).

4.4. Violent Offenders' Anger Interference from the Neutral Faces

In the task with the neutral faces, participants were asked to attribute one basic emotion to these neutral faces. According to results, the violent offenders were more likely to attribute anger emotion to the neutral faces. It is important to highlight that when "anger" emotion is not there, violent offenders might tend to see "anger" in neutral faces (Hoakan, Allaby, & Earle, 2007). It is suggested that due to attributing anger emotion to uncertain expressions, the offenders could produce inappropriate answer in social situation, which might lead them to produce unwanted behaviors such as violence and aggression (and even criminal behavior). On the other hand, control participants are more likely to see

"happy" emotion in uncertain expressions, which might lead them to produce more socially desired answers.

Considering the results of this thesis, it is concluded that the violent, the non-violent, and the control group did not differ in attributions of emotions disgust, fear, sadness, and surprise. Contrary to this result, Hoaken, et al. (2007) and Sato et al. (2013) demonstrated that violent offenders more likely to interpret "disgust" emotion for neutral faces.

These results indicate that criminals do not only misread facial cues but they also make negative attributions for uncertain expressions. Anger is the most destructive emotion, which might lead to violent behavior (Ekman, 1992). From these results, it is suggested that violent offenders use anger attributions to uncertain expressions more than non-violent and control participants do. This situation might cause permanence of their aggressive behavior. It is suggested that there might be some contributing factors to perceive anger emotions as it is mentioned below.

4.4.1. Gender

It was demonstrated that offenders with antisocial personality disorder were bad at recognizing anger when it is showed with less intensity (Bowen, Morgan, Moore, & Goozen, 2013). In this study, it was demonstrated that even if there is no anger emotion, violent offenders tend to see "anger". It was suggested that regardless of intensity and personality disorders, offenders tend to perceive anger emotion even if there are no facial cues.

4.4.2 Abusive Background

Pollak and Sinha (2002) demonstrated that children who experience physical abuse have become to perceive "anger" emotion with lesser cues than the children with no physical violent experience do. Considering the fact that violent criminals are more likely to experience physical abuse during childhood (Benoit & Kennedy, 1992), it was suggested that they have a tendency to perceive "anger" emotion from their environment even though

it is not presented. Similar to this thesis' claim, criminals might have a tendency to perceive social cues in a wrong way.

4.4.3 Present Surroundings

It is known that prison population consists of lots of inmates with antisocial personality disorders and psychopathic disorders (Ogloff, 2008). Additionally, it is found that emotions of people influence subjects' own emotions (Masuda et al., 2008). In this thesis, offenders are part of the prison population. Additionally, it was shown that they attributed "anger" emotion to the neutral faces. It is also suggested that due to the prison environment, the violent offenders might get used to receive "anger" response that might lead them develop tendencies to attribute "anger" emotion to uncertain expressions, as well.

4.4.4. Culture

When the effect of culture is considered, there could be some possible consequences of living in Turkish culture, considering the current topic. Turkey is considered to have a collectivist culture (Goregenli, 1997). It is found that individuals who come from a collectivist culture tend to attribute negative emotions to their out-group (Matsumoto, 2008). The photos, which are used in this thesis, were all unfamiliar to the participants. In other words, they were all like from an out-group. This situation might increase the offenders' tendency to perceive threat, as well. It is also suggested that due to the collectivist culture, their reaction to these photos of unfamiliar people could be more aggressive. The results could be different if familiar individual's photos were used.

Many studies demonstrated cultural differences in expressions of emotion (Matsumoto, 1990; Matsumuto, Yoo & Fontanie, 2006; Chiao, 2008; Safdar et al., 2009; Novin et al., 2009; Benitez-Garcia, Nakamura & Kaneko, 2016). Moreover, societies differ in display rules (Matsumoto, 1990; Novin et al., 2009). It was suggested that display rules influence individuals' expectation of the emotion of the person at that moment. When different cultural background is considered, people could interpret different emotions for uncertain expressions. In this thesis, only "anger" and "happiness" emotion was found as different among groups; however, the other studies demonstrated that violent offenders

attribute “disgust” emotion to neutral faces (Hoaken, et al., 2007; Sato, Uono, Matsuura, & Toichi, 2009). These differences might be explained in a way that the individuals with different cultural backgrounds might have different emotional expectations for the given neutral expression in a social context.

4.5. Control Participants’ Happiness Interference of the Neutral Faces

Results suggested that normal participants interpreted “happiness” emotion more frequently than the offender participants do. It is suggested that the control participant could have healthier environments than the offenders do and they are also less likely to have abusive parents; therefore, their attributions might not be hostile, on the contrary, they are positive. Therefore, this thesis’ findings suggest that offenders’ attributions to the neutral faces were more frequently negative; meanwhile, it was not the case in the control group.

4.6. Interpreting Fear Emotion to the Neutral Faces

The results indicated that participants who have poor ability in recognition of basic emotions are more likely to interpret “fear” emotion for the neutral faces. It is suggested that when an individual cannot identify an emotion from the facial expression of another person, s/he could attribute “fear” to that face in order to protect herself//himself (Darwin, 1872). Here, it could be suggested that from evolutionarily perspective, individuals are designed to protect themselves (Darwin, 1872). Unknown is unpredictable; therefore, in order to get prepared for the unknown, individuals could attribute high arousal emotion to the neutral situations, which is, in this case, fear.

Contrary to other similar studies, the violent group did not differ in the interpretation of the neutral expression as fearful (Benitez-Garcia, Nakamura & Kaneko, 2016; Chiao, 2008). It could be suggested that because in eastern cultures, like Turkey, individuals tend to hide their fear expressions; therefore, the participants were not expected to see fearful expressions from these photographs.

4.7 Conclusion

In this thesis, criminal's receiving of social cues from facial expressions was investigated. In the study, criminals were grouped into two according to their crime type. These crime types are violent and non-violent crimes. It is demonstrated that the violent and the non-violent group perceive facial cues differently as compared to the normal participants. The violent group is more likely to interpret "anger" emotion in uncertain expressions, which is one of the highlights of this thesis. It is suggested that this new finding might help psychologists to understand criminals more accurately and provide a new perspective about the nature of criminals.

Moreover, recidivism is one of the biggest problems in our society. Livinston (1996) states that over 60% of prisoners commit a crime again, after they release from prison. In order to prevent crime and create a healthier society, criminals are needed to be rehabilitated and be re-gained to the society. It is suggested that group therapies and role-making activities, which are designed to perceive social cues more accurately, might be helpful for rehabilitation process of criminals.

4.8 Limitations

In this thesis, a few limitations have been noticed. Unfortunately, there were only a few females who participated in the study. This limitation is seen in other similar studies due to lack of criminal women (Campbell, 2001). In Turkish Statistical Institution, it is reported that only 3.7% of prison population was women (TUIK, 2016). This situation made harder to reach for criminal female participants. It is suggested that unevenness among the participants in terms of gender makes it hard to generalize the results.

Another limitation is that when participants receive neutral faces, they were forced to choose one of the basic emotions; therefore, they were not given the 'natural' answer. Neutral option were not added as an answer, because it was aimed that when an individual has to interpret an emotion, it is important that what emotion would that be. However, if neutral answer is added into the possible choices, it might not be possible to evaluate the responses of the participants when s/he selects the neutral answer. In this way, it is not

possible to understand whether the participant perceives neutral expression as a neutral one or not.

Recent studies question whether emotional expressions are universal or not (Jack, 2012). In addition, studies demonstrated that there are expressional differences among cultures (Matsumoto, 1990; Matsumuto, Yoo & Fontanie, 2006; Chiao, 2008; Safdar et al., 2009; Novin, Banerjee, Dadkhah & Rieffe, 2009; Benitez-Garcia, Nakamura & Kaneko, 2016). Moreover, individuals with different background focuses on different facial areas when they interpret emotional expressions (Benitez-Garcia, Nakamura & Kaneko, 2016). Although the measures were adapted to Turkish culture, a new measure, which could be developed for the Turkish population might provide safer results. Unfortunately, there is no such measure in the time that this study was conducted.

It was found that the offender group was in a more negative emotional mood than the normal participants were. It is suggested that their mood might be effected because of their test performance. Lastly, due to the safety reasons, a guard was waiting outside the testing room. This situation might also have an effect on the answers of the participants.

4.9 Suggestions

For future directions, it is suggested that rather than grouping offenders group as violent and non-violent, it would be more useful to discriminate violent criminals as spontaneous criminals and non-spontaneous criminals in order to provide more detailed perspective about violent crime's nature.

Consistent with the previous studies, it was found that individuals with different cultural backgrounds might supply different answers to uncertain facial expressions (Matsumoto, 1990; Matsumuto, Yoo & Fontanie, 2006; Chiao, 2008; Safdar et al., 2009; Novin et al., 2009; Benitez-Garcia, Nakamura & Kaneko, 2016;). For a possible future study, the role of culture could be taken into account in terms of reading facial expressions. Examination of different races and different ethnical backgrounds could be useful for amplifying our insight.

Finally, this thesis aims to increase our psychological perspective on offenders in order to provide a better intervention to decrease criminal behavior. It would be useful to investigate how these findings could be used in order to rehabilitate offenders.

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APPENDICES

Appendix A
DEMOGRAPHIC FORM

Çalışmamız sizinle ilgili bazı bilgilere ihtiyaç duymaktadır, lütfen aşağıdaki soruları yanıtlayınız. Anlayamadığınız sorularda araştırmacıdan yardım isteyebilirsiniz. Verdiğiniz yanıtlar sadece araştırma dâhilinde gerekli olan istatiksel veriler için kullanılacaktır. Bunun dışında kesinlikle başka bir yerde kullanılmayacak ve başka şahıs ve kurumlarla paylaşılmayacaktır.

1)Cinsiyet (işaretleyiniz) a)Erkek b)Kadın c)Diğer

2)Yaş:___

3)Eğitim Durumu(işaretleyiniz): a)ilköğretim (5. sınıfa kadar) b)Ortaöğretim(8. sınıfa kadar) c)Lise d)Üniversite d)Yüksek Lisans/Master e)Doktora

4)Medeni hal(aşağıda işaretleyiniz)

a)Evli b)Bekar c)Boşanmış d)Dul(Eş vefatı durumunda)

5) Aylık gelir(aşağıda işaretleyiniz)

a)gelirim yok **b)**1000-2500 **c)**2000-3000 **e)**4500 ve ya daha fazla

6) Şu anki durumunuz (aşağıda işaretleyiniz)

a)Tutuklu sanık **b)** Hükümlü **c)**Denetimli serbestlik **d)**Tutuklu değilim

7)Daha önce cezaevine girdiniz mi? a) Evet **b)**Hayır

8)Cevabınız evet ise kaç kere cezaevine girdiniz? ____

9) Toplam ne kadar süre cezaevinde kaldınız? ____

9) Kaç kardeşiniz var?(Siz hariç) ___

10) Anneniz..

a)Hayatta **b)** Hayatta değil(**Anneniz hayatta değil ise siz kaç yaşında iken vefat etmişti: __ __)**

11)Babanız...

a)Hayatta **b)** Hayatta değil (**Babanız hayatta değil ise siz kaç yaşında iken vefat etmişti ____)**

12)Siz çocukken (18 yaşınıza kadar olan süre içinde) anne ve babanız

a)birliktelerdi **b)**ayrı yaşıyorlardı **c)**boşanmışlardı **d)**ayrılıp barışıyorlardı

Appendix B

Pozitif ve Negatif Duygu Ölçeği (PANAS)

Bu ölçek farklı duyguları tanımlayan bir takım sözcükler içermektedir. Son iki hafta nasıl hissettiğinizi düşünüp her maddeyi okuyun. Uygun cevabı her maddenin yanında ayrılan yere (puanları daire içine alarak) işaretleyin. Cevaplarınızı verirken aşağıdaki puanları kullanın.

11) Çok az veya hiç
12) Biraz
13) Ortalama
14) Oldukça
15) Çok fazla

1. İlgili 1 2 3 4 5
2. Sıkıntılı 1 2 3 4 5
3. Heyecanlı 1 2 3 4 5
4. Mutsuz 1 2 3 4 5
5. Güçlü 1 2 3 4 5
6. Suçlu 1 2 3 4 5
7. Ürkmüş 1 2 3 4 5
8. Düşmanca 1 2 3 4 5
9. Hevesli 1 2 3 4 5
10. Gururlu 1 2 3 4 5
11. Asabi 1 2 3 4 5
12. Uyanık 1 2 3 4 5
(dikkati açık)
13. Utanmış 1 2 3 4 5
14. İlhamlı 1 2 3 4 5
(yaratıcı düşüncelerle dolu)

15. Sinirli 1 2 3 4 5
16. Kararlı 1 2 3 4 5

17. Dikkatli 1 2 3 4 5

18. Tedirgin 1 2 3 4 5

19. Aktif 1 2 3 4 5

20. Korkmuş 1 2 3 4 5