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Future Time Orientation and Criminal Thinking Style

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Abstract

Individuals who commit criminal behaviors are often thought to prioritize short-term goals rather than long-term goals (i.e., a present vs. a future time orientation). Though previous theories of crime and empirical research support a relationship among future time orientation, criminal thinking, and illegal behaviors, there is disagreement in the literature about how to operationalize future time orientation. Moreover, prior research has usually only included a single measure of future time orientation, making generalizability of the results across different measures (reflecting different operationalizations of the construct) difficult. The primary aim of the current thesis was to measure multiple components of future time orientation (impulsivity, self-control, delay discounting, and future time perspective) in a single study, and examine their bivariate and incremental predictive relationships with both overall criminal thinking style and illegal behaviors. The bivariate results generally supported prior research: a negative relationship was found between future time orientation (i.e., low impulsivity, high self-control, high future time perspective) and criminal thinking style. The relationship between delay discounting and criminal thinking was in the hypothesized direction but failed to reach statistical significance. Multiple regression analyses indicated that the measure of self-control had the most consistent and incrementally significant relationship with both criminal thinking style and illegal behaviors. Theoretical implications of the results are discussed along with study limitations and future directions.

Keywords: future time orientation, impulsivity, self-control, delay discounting, future time perspective, criminal thinking, criminal behaviors

MONTCLAIR STATE UNIVERSITY

Future Time Orientation and Criminal Thinking Style

by

Danielle Squillaro

A Master's Thesis Submitted to the Faculty of

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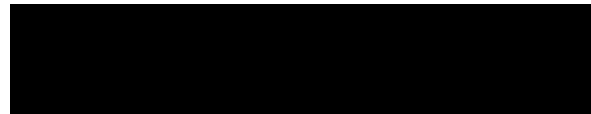
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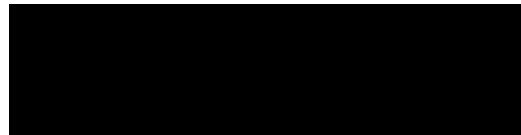
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FUTURE TIME ORIENTATION AND CRIMINAL THINKING STYLE

A THESIS

Submitted in partial fulfillment of the requirements

For the degree of Master of Arts

By

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Contents

Future Time Orientation and Criminal Thinking Style.....	8
Criminal Thinking Style.....	9
Criminal Thinking, Criminal Behavior, and Psychosocial Factors.....	10
Future Time Orientation.....	12
Impulsivity.....	13
Self-Control.....	15
Delay Discounting.....	16
Future Time Perspective.....	18
Overview of Thesis.....	19
Hypotheses and Research Questions.....	21
Method.....	23
Participants and Procedure.....	23
Materials.....	24
Future Time Orientation Measures.....	24
Impulsivity.....	25
Self-control.....	25
Delay Discounting.....	25
Future Time Perspective.....	26
Criminal Thinking Style Measures.....	26
Texas Christian University Criminal Thinking Scale (TCU-CTS).....	26
Criminogenic Cognitions Scale (CCS).....	27
Illegal Behaviors.....	27
Control Measures.....	27
Psychopathy.....	28
Substance Dependency.....	28
Data Analysis Plan.....	28
Results.....	29
Bivariate Correlations (Hypotheses 1a, 1b, 1c).....	29
Multiple Regression Analyses (Research Question 1a, 1b, 1c).....	32
Exploratory Analyses.....	35

Multiple Regressions with Control Variables Included	35
Indirect Effect Analyses	36
Discussion	37
Summary of Results	37
Limitations and Future Directions.....	40
References.....	43

List of Tables

Table 1: Descriptive Statistics	30
Table 2: Correlations for All Study Variables	31
Table 3: Multiple Regression Analysis with the Texas Christian University Criminal Thinking Scale as the Dependent Variable.....	33
Table 4: Multiple Regression Analysis with the Criminogenic Cognitions Scale as the Dependent Variable.....	34
Table 5: Multiple Regression Analysis with Illegal Behaviors as the Dependent Variable.....	35

Future Time Orientation and Criminal Thinking Style

Individuals who commit criminal behaviors are often thought to prioritize short-term goals rather than long-term goals. Åkerlund et al. (2016) found that delay discounting, which is a behavioral tendency to prefer smaller immediate rewards over larger future rewards, significantly predicted criminal behavior. Specifically, delay discounting measured at 13 years old significantly predicted subsequent criminal behavior over the following 18 years. These results align with some models and theories of crime that describe how in certain contexts the immediate benefits of a crime can outweigh future consequences. However, an issue in the research literature is that there is disagreement in how to operationalize this tendency to be more oriented towards future consequences vs. immediate gratification (e.g., impulsivity, self-control, delay discounting). Moreover, as described below, many prior studies that have investigated the relationship between future time orientation and criminality-related outcomes have usually included only a single measurement of the former construct, making it unclear if prior results generalize across these different operationalizations of future time orientation. This is particularly relevant for clinicians and forensic psychologists who may be using such measures to evaluate these constructs in real-world evaluations. As a result, a better understanding of how various measurements of future time orientation jointly and uniquely relate to criminality-related outcomes will aid both theory and practice.

The main aim of the current thesis was to contribute to the above topic by including a more comprehensive measurement of future time orientation (i.e., multiple measures and operationalizations) within a single study design. A second issue in the previous literature is that prior studies have sometimes included only a measure of criminal thinking/attitudes/sentiments or criminal behaviors. It is of course important to distinguish between criminal thoughts and

criminal behaviors. Therefore, an additional aim of the current thesis was to investigate the relationship between future time orientation and both criminal thinking style and illegal behaviors in a single study. This afforded the ability to explore similarities and differences via patterns of relationships across the two constructs.

Criminal Thinking Style

Walters (2006b) defined criminal thinking style as “a content, matter of thought, and a process leading to the initiation and maintenance of behavior characterized by the habitual violation of the law” (p. 23). Recent studies have demonstrated that general criminal thinking can be split into two subordinate categories. The first, proactive criminal thinking, is the calculated and neutralized aspect of criminal thought processes (Sykes & Matza, 1957). Some more specific aspects of this style of thinking include mollification (blaming external factors for the causes of one’s behaviors); entitlement (an attitude of ownership, such as not letting anything get in the way of one’s wants); power orientation (attempting to gain maximum control over the environment, such as sizing up to a weaker person); and super-optimism (overestimating one’s ability to evade the consequences associated with criminal behavior; McCoy et al., 2006). The second sub-category, reactive criminal thinking, is the spontaneous, rash, and impulsive aspect of criminal thought processes (Walters, 2008). Some more specific aspects of a reactive criminal thinking style include cutoff (the removal of common psychological deterrents to crime, such as using alcohol or drugs to cope with stress); cognitive indolence (lazy thinking and short-cut problem solving, such as being uncritical of ideas and ignoring problems until it is too late); and discontinuity (disruption of thoughts and an inability to follow through, such as starting a project and never finishing it; McCoy et al., 2006). These criminal thinking styles are thought to facilitate and maintain criminal behavioral patterns, with prior research demonstrating an

association between scores on self-report measures of criminal thinking styles and criminal or delinquent behavior (Gonsalves et al., 2009; Palmer & Hollin, 2004; Walters, 2002; Walters & Elliott, 1999).

Walters' (1990; 1995) Lifestyle Theory focuses on the functioning of those who commit crimes operate, and especially why and how they think in line with the commission of crime. This theory has concepts known as the "three C's" (conditions, choice, and cognition) that serve as influences of a criminal lifestyle. According to this theory, "Conditions are features of an internal (heredity, intelligence), external (family, peers) or interactive (person and situation) nature" (Walters, 1995, p. 307). Choices result from one's conditions, which can lead to criminal activity in certain contexts. Cognitions arise in support of choice and modify the decision-making process and perceptions of one's life conditions. These choices are thought to be associated with thinking errors. Though general thinking errors can be pervasive throughout everyday decision making (e.g., West et al., 2008), criminal thinking styles and errors can develop into thinking patterns and behaviors that contribute specifically to crime.

Criminal Thinking, Criminal Behavior, and Psychosocial Factors

There are many theories that have been advanced as to why criminal thinking and criminal behaviors develop in some individuals and not others (Boduszek & Hyland, 2012). The discussion below is meant to be illustrative of this, rather than exhaustive.

In a meta-analysis, Walters (2022) found that crime relates to early social cognitive processes such as thrill seeking and neutralization. The theory of neutralization (Sykes & Matza, 1957) states that a majority of individuals who commit crimes do not view themselves as criminals or antisocial individuals per se, but instead justify their criminal behaviors through various types of rationalization. As summarized by Boduszek and Hyland (2012), there are five

main rationalizations that have been found to be commonly used: (1) denial of responsibility, (2) denial of injury, (3) denial of the victim, (4) condemnation of the condemners, and (5) appeal to a higher authority. However, according to these authors, neutralization and rationalization tend to occur because of engaging in criminal activity, and not necessarily as a predictor of said activity.

Not only do criminal thinking styles consist of individuals neutralizing their actions, but a sense of entitlement can also be experienced. A part of proactive criminal thinking, entitlement is when one feels they have “a right to take what they want from whoever has what they desire” (Walters & White, 1989, p. 4). Research has demonstrated that a sense of entitlement can predict property offending such as theft and shoplifting (Fix & Fix, 2015), which could stem from entitled feelings that one has a right to the enjoyment of others’ personal belongings.

Certain theories posit that early social environments and social activity serve as contributing factors to the development of criminal attitudes and behaviors. For example, Differential Association Theory (Sutherland & Cressey, 1978) describes how having social networks that include those who commit crime can lead to the development of criminal behavior and identity. Other social learning theories, such as Differential Reinforcement Theory (Akers et al., 1979), suggest that individuals develop delinquent behavioral patterns due to associations with other antisocial or delinquent peers. Through group and social interaction, individuals learn how to make decisions and exhibit behaviors that increase rewards and minimize punishments. Holsinger (1999) also suggested that being socialized in pro-criminal environments, especially if paired with antisocial personalities, puts individuals at higher risk of subsequent criminal activity.

Previous research within justice-involved populations has shown a significant relationship between personality traits and criminal thinking style (Boduszek et al., 2013).

Psychoticism has been found to be a particularly strong predictor of criminal attitudes (Boduszek et al., 2011). Psychoticism is “characterized by aggression, impulsivity, aloofness, and antisocial behavior, indicating a susceptibility to psychosis and psychopathic disorders” (American Psychological Association, n.d.). Boduszek et al. (2011) explored relationships among a set of predictors (psychoticism, associations with criminal friends, and levels of recidivism) and criminal attitudes. The particularly strong unique association with psychoticism may be due to psychoticism being associated with hostility, an insensitivity to others, and aggression. Eysenck (1997) suggested that based on biological and conditioning processes, individuals who commit criminal behaviors tend to score higher on all three basic dimensions of his personality theory (psychoticism, extraversion, and neuroticism).

Antisocial personality is another psychological factor relevant to the development of criminal thinking and criminal behaviors. Antisocial personality disorder is associated with, or can reflect, impulsive, irresponsible, and law violating behaviors (e.g., graffiti, drug use, fighting) and often involves a failure to satisfy family, work, and school requirements (Mayo Foundation for Medical Education & Research, 2019). Those with antisocial personality disorder may also exhibit manipulateness, deceitfulness, recklessness, and a lack empathy for other people’s feelings. Fix and Fix (2015) found evidence that in a sample of male forensic patients, there was a significant positive relationship between an impulsive, antisocial personality and criminal thinking.

Future Time Orientation

Decisions often involve tradeoffs between short- and long-term consequences. Certain behavioral patterns are associated with a focus on the more distal future, where delayed consequences are weighed more heavily than immediate gratification. Conversely, some

individuals are more prone to making decisions and exhibiting behavioral patterns that prioritize short-term pleasure. Future time orientation a general psychological construct that describes the extent individuals incorporate delayed or future consequences into their behavior and thought patterns (Gjesme, 1983). Some traditional theories of criminal behavior posit immediate gratification as a core element or predictor of the decision to commit a criminal act (e.g., Gottfredson and Hirschi, 1990).

Yet, future time orientation is operationalized differently across research areas. For example, it is sometimes measured as a personality construct (e.g., impulsivity); as a behavioral self-regulation construct (e.g., self-control); as a decision-making phenomenon (e.g., delay discounting); or as a cognitive orientation (e.g., future time perspective); among other operationalizations. As described below, though conceptually similar, these different measurements of future time orientation do not always produce similar patterns of results. As a result, although they may partially measure a general tendency towards a future time orientation, they likely reflect specific subdimensions of the overall construct. Moreover, most prior research that has investigated the relationship between future time orientation and criminality-related outcomes have only used one measure of future time orientation. Therefore, the main research aim of the current thesis was to include a more comprehensive measurement of future time orientation, by including measures of impulsivity, self-control, delay discounting, and future time perspective in a single study design. We next describe each of these four operationalizations of future time orientation and some of the prior research that has related these measurements to criminality-related outcomes.

Impulsivity

Impulsivity is often conceptualized as a personality trait or facet. In this framework, impulsivity is associated with decisions and behavioral patterns that are driven by more immediate circumstances and a tendency to disregard more long-term considerations. According to the well-known self-report Barratt model/measure of impulsivity (Patton et al., 1995), the construct consists of the following three subcomponents: attentional impulsivity, motor impulsivity, and non-planning impulsivity. All three subcomponents focus on the degree that an individual behaves in a fashion that prioritizes quick and immediate thinking at the expense of more long-term deliberation. This self-report measure of impulsivity has been shown to relate to various risk-taking behaviors in teenagers and young adults (Stanford et al., 1996).

Regarding criminal-oriented behaviors, impulsive behavior is defined as an urge to perform an action in response to a stimulus, which can result in the drive to harm a person or multiple people (Foroozandeh, 2017). People with impulsive behaviors take more risk when seeking a reward or pleasure and have less capability to stop and think about how to respond to an issue in a social setting (McMurrin et al., 2008). This relates to reactive criminal thinking, which is the type of criminal thinking style that is spontaneous and not well thought out. Impulsive behaviors are linked to executive functions and self-regulation skills (Enticott et al., 2006), which are the mental processes that help people focus, plan, and multitask. These features are associated with the frontal lobe, and when damaged or not formed properly in the early stages of life, can be associated with criminal behavior. Specifically, people with high rates of violent and criminal behaviors exhibit aggressive dyscontrol and brain injuries more commonly in the frontal lobes (Brower & Price, 2001; Foroozandeh, 2017).

Many justice-involved individuals exhibit personality disorders (most often antisocial or borderline personality disorder), which can stem from or reflect impulsive behaviors (Baker et al.,

2009). Komarovskaya et al. (2007) studied justice-involved women in a maximum-security prison and found that women with higher levels of impulsivity were more likely to satisfy the diagnostic criteria for antisocial and borderline personality disorders. These personality disorders can relate to the types of crimes a person commits. For instance, Whiteside and Lynam (2001) suggested that a lack of premeditation most likely relates to antisocial behavior, with individuals with borderline personality disorder being more prone to be sensation seekers who look for exciting but dangerous and self-destructive behaviors, such as gambling or substance abuse. Huddy et al. (2017) also found evidence consistent with this possibility. Their study evidenced that higher self-reported impulsivity was associated with substance and drug abuse, gambling problems, and a positive screen for personality disorders.

Self-Control

Self-control is often seen as the opposite of impulsivity (Kalenscher et al., 2006). That is, whereas impulsive behaviors are associated with quick and rash decisions, self-control is seen as a self-regulation mechanism that overrides short-term impulses in the service of long-term goals. Self-control is measured in several ways in the research literature. In some instances, self-control is measured in motor response tasks, where prepotent responses must be inhibited to achieve a task goal (e.g., Go/No-Go tasks). In other instances, self-report measures are used to quantify the extent to which individuals endorse self-regulatory behaviors. A commonly used example of this is the Brief Self-Control Scale (Tangney et al., 2004). In the original validation study of this measure, self-control was found to associate with a variety of positive outcomes in students, such as higher grade point average, less alcohol abuse, lower psychopathology, and higher self-esteem (Tagney et al., 2004).

Gottfredson and Hirschi (1990) posit that criminal behavior is often driven by a lack of self-control, and that self-control can help account for much criminal thinking and criminal behavior. The authors labelled their perspective the General Theory of Crime. According to these authors, self-control is defined as the ability to manage one's own impulses, behaviors, and emotions, typically to achieve long-term goals. Self-control stems from the prefrontal cortex, which enables individuals to plan, problem solve, and make decisions (Tabibnia et al., 2011). Self-control helps people avoid actions that they may regret later, and not respond to impulses so suddenly. Much like impulsiveness, self-control usually develops early in life. Typically, self-control increases during development, but children lower in self-control, if not corrected, tend to exhibit lower self-control later in life (Reynolds and McCrea, 2017). Furthermore, LaGrange and Silverman (1999) found that adolescents with lower self-control were more prone to delinquent behavior such as property, violence, and drug offenses.

Nofziger and Rosen (2017) researched the role of parents in advancing self-control development among their children (in the Montreal Longitudinal and Experimental Study [MILES]). Participants consisted of at-risk boys from different schools who had manifested disruptive and aggressive behaviors. Parents were given training to promote prosocial behavior, effective punishment, and managing crises. The boys were also provided with social skills training, in the hopes that their self-control would be strengthened by them learning how to more appropriately interact with and be empathic toward others. Results evidenced that the participants who received training displayed lower rates of aggression and violence, suggesting that interventions targeting self-control behaviors may have beneficial consequences for reducing delinquent behaviors in adolescents.

Delay Discounting

Delay discounting is the tendency to place less value on rewards that are delayed in the future (Rodzon et al., 2011). This phenomenon has been observed in research by participants exhibiting a greater preference for smaller, sooner rewards over larger, later rewards. As an example, a high discounter may prefer \$25 now over \$100 in two months. Delay discounting is most often measured in adults by providing them a series of binary monetary choices and measuring preference for smaller, sooner rewards (Kirby et al., 1999). Higher discounting (i.e., preference for more immediate rewards) has been found to relate to a variety of maladaptive outcomes, including alcohol and drug abuse (Heil et al., 2006; Petry, 2001); pathological gambling (Alessi & Petry, 2003); and unhealthy dietary and exercise habits (Barlow et al., 2016).

Commonly associated with self-control, delay discounting can relate to criminal thinking and criminal behavior as well. For example, Arantes et al. (2013) studied delay discounting in justice-involved adults and a comparison group of non-offenders. They found that justice-involved persons discounted future rewards significantly more than the comparison group. This difference in delay discounting between the two groups held after controlling for alcohol and drug use, which has been found to relate to both delay discounting and criminal behaviors. Similarly, Hanoch et al. (2013) found that adults with a history of offending (currently and formerly incarcerated persons) exhibited significantly higher delay discounting than a comparison group of non-offenders. Varghese et al. (2014) also found that delay discounting correlated with reactive criminal thinking (impulsive and reckless behavior) but not proactive criminal thinking (planned and calculated behavior). One explanation is because reactive criminal thinking is associated with a reduced consideration for the future, such as not thinking of the potential negative consequences of committing a crime.

Åkerlund et al. (2016) looked at the long-term predictive utility of delay discounting for criminal behavior. They found that adolescents, aged 13 years, who exhibited higher discounting of delayed rewards were more likely to exhibit criminal behavior later in life (measured up to 31 years old in the study). An explanation for their results may be that the decision to commit a criminal act involves tradeoffs indicative of delay discounting, such as the weighing of the immediate gains of the criminal act and discounting the long-term costs to the individual and victim (Walters, 2006a).

Future Time Perspective

Future time perspective refers to people's thoughts, feelings, and cognitions related to their futures (Zhi et al., 2021). This includes one feeling that their life is full of possibilities or opportunities. Future time perspective is typically divided into three parts: future positive (positive and hopeful feelings about the future); future negative (hopeless and pessimistic feelings about the future); and future confusion (confused feelings about the future; Zhi et al., 2021). Operationally, future time perspective has often been measured through a self-report scale developed by Carstensen and Lang (1996). Results from this measure have helped contribute to the development of the socioemotional selectivity theory by Carstensen et al. (1999). According to this theory, younger adults view their futures as expansive and filled with opportunities. As individuals age into older adulthood, they begin to perceive their futures as more restrictive. This then leads individuals to prioritize experiences that maximize positive emotional needs.

Sieglman (1961) studied delinquent and non-delinquent groups and found that the delinquent group had lower future time perspective scores. The results suggested that delinquents may feel that time passes slowly, leading to a sense of boredom. These feelings can turn into an excessive need for stimulation, which can give rise to criminal behavior. Zhi et al. (2021) found

a negative relationship between positive future time perspective and psychological violence and risk-taking. One potential explanation for these results is that individuals with a positive outlook do not want to ruin their future by engaging in behaviors with potentially negative long-term consequences.

Those who report a higher future time perspective may think of and anticipate consequences, especially in the long term. They may also consider negative and positive effects of a decision (Kooij & Betts, 2018). While Kooij and Betts (2018) found that future time perspective was negatively related to risk taking, they also found that future time perspective was not significantly related to happiness. This could be because individuals with higher future time perspective are preoccupied with the future and are less concerned about focusing on the present.

Overview of Thesis

As reviewed above, numerous theories of and research on criminal thinking and behavior have suggested a relationship between future time orientation and criminality-related outcomes. However, future time orientation has been operationalized differently across research fields. Though conceptually similar, different operationalizations of future time orientation do not always correlate strongly with one another (Mishra and Lalumière, 2016), indicating that they may tap into different aspects of future time orientation. Because prior studies have often used a single measure of future time orientation in reference to criminality-related outcomes (e.g., Åkerlund et al., 2016; Hanoch et al., 2013; Varghese, 2014), it remains unclear if the different operationalizations of future time orientation described above similarly relate to criminal thinking styles and illegal behaviors. As a result, a primary aim of the current thesis was to include a more comprehensive measurement of future time orientation by including measures of impulsivity, self-control, delay discounting, and future time perspective. This afforded the ability

to investigate the extent to which these different measurements of future time orientation uniquely related to criminality-related outcome variables when adjusting for one another.

Another contribution of the current thesis is the inclusion of both measures of criminal thinking style and illegal behaviors. Prior studies have usually included only a measure of criminal thinking/attitudes or a measure of criminal behavior, rather than both. However, it is important to distinguish criminal thinking and criminal behaviors as two related but distinct constructs (e.g., consider: imagining engaging in illicit road rage after being cut off by another driver, without necessarily proceeding to such behavior). As a result, an additional focus of the current thesis was to investigate whether patterns of results between future time orientation and both criminal thinking styles and illegal behaviors were similar.

Numerous measures of criminal thinking styles have been developed, with the measures encompassing various and different subcomponents of criminal attitudes and cognitions. These measures include the Criminal Sentiments Scale-Modified (Shields & Simourd, 1991); the Psychological Inventory of Criminal-Thinking Styles (Walters, 1995); the Measures of Criminal Attitudes and Associates (Mills et al., 2002); the Texas Christian University Criminal Thinking Scale (Knight et al., 2006); the Measure of the Criminogenic Thinking Styles (Mandrachia et al., 2007); the Criminogenic Cognitions Scale (Tangney et al., 2012); and the Criminogenic Thinking Profile (Mitchell & Tafrate, 2012). The Texas Christian University Criminal Thinking Scale (TCU CTS; Knight et al., 2006) and the Criminogenic Cognitions Scale (CCS; Tangney et al., 2012) were chosen for the present thesis. These selections were based primarily on the following two criteria: (1) both measures encompass a variety of subcomponents of criminal thinking and cognitions; and (2) both measures include items that are still applicable to members of the general population. Because the current sample consisted of undergraduate students, it was

important that the measures did not contain items that were solely relevant to individuals previously convicted of criminal activity. Finally, although the TCU CTS and CCS include multiple sub-dimensions of criminal thinking style, aggregate criminal thinking style scores were used in all reported analyses. This was due to the current hypotheses and research questions focusing on the general criminal thinking style level without precise predictions about which sub-dimensions of criminal thinking style would involve the strongest relationships. However, we mention in the future directions the need for subsequent research to explore the relationship between future time orientation and specific styles or domains of criminal thinking.

Hypotheses and Research Questions

Based on prior theorizing and research findings concerning an inverse relationship between future time orientation and crime-related thinking and behaving, the following set of hypotheses were made about bivariate relationships between different measures of future time orientation and criminal thinking style and illegal behaviors.

Hypothesis 1a: Greater future time orientation (as measured by lower impulsivity, higher self-control, lower delay discounting, and higher future time perspective) will be associated with lower criminal thinking styles as measured by the TCU CTS.

Hypothesis 1b: Greater future time orientation (as measured by lower impulsivity, higher self-control, lower delay discounting, and higher future time perspective) will be associated with lower criminogenic cognitions as measured by the CCS.

Hypothesis 1c: Greater future time orientation (as measured by lower impulsivity, higher self-control, lower delay discounting, and higher future time perspective) will be associated with fewer illegal behaviors.

A more novel element of the current thesis was the inclusion of four measures of future time orientation within a single study. As a result, an additional set of research questions (exploratory aims) focused on which measures of future time orientation incrementally predicted criminal thinking styles and illegal behaviors (i.e., after adjusting for the other measures of future time orientation).

Research Question 1a: Which measure of future time orientation (impulsivity, self-control, delay discounting, and future time perspective) will incrementally relate to criminal thinking style as measured by the TCU CTS?

Research Question 1b: Which measure of future time orientation (impulsivity, self-control, delay discounting, and future time perspective) will incrementally predict to criminogenic cognitions as measured by the CCS?

Research Question 1c: Which measure of future time orientation (impulsivity, self-control, delay discounting, and future time perspective) will incrementally predict illegal behaviors?

Still additional exploratory analyses were planned for the current thesis. First, the association between the future time orientation measures and the criminal thinking style and illegal behavior measures were investigated after adjusting for well-known trait and behavioral predictors of criminality-related outcomes. Specifically, a measure of psychopathy (Jones & Paulhus, 2013) and a substance dependence screener (Hoffmann et al., 2003) were included. Psychopathy is a well-established psychological predictor of antisocial, delinquent, and criminal behavior (Edens et al., 2007; Fix & Fix, 2015; Leistico et al., 2008). Similarly, substance use and abuse can be a risk factor for other illicit behaviors (Nurco et al., 1991; Sinha & Easton, 1999). Importantly, both constructs have previously been shown to relate to measures of future time

orientation. For example, Morgan et al. (2011) found a strong relationship between a psychopathy measure and a personality measure of impulsivity (the Barratt Impulsiveness Scale-11). Moreover, major focus of research on delay discounting has been on the association between delay discounting and alcohol use, drug abuse, and other addictive behaviors (for a recent meta-analysis, see Amlung et al., 2017). As a result, in the current exploration of the incremental associations between different measures of future time orientation and criminality-related outcomes, whether any relationships remained after adjusting for these two demonstrated risk factors for criminal attitudes/thinking and behaviors was examined.

A second set of exploratory analyses concerned indirect effects between future time orientation to illegal behaviors through criminal thinking styles. The rationale for these exploratory analyses was based on conceptualizations of future time orientation, such as delay discounting, as a stable dispositional trait (Odum, 2011). Moreover, criminal thinking and attitudes have been shown to be a precursor to criminal behaviors (McCoy et al., 2006) as well as a mediator between earlier maltreatment and subsequent criminal behavior in adults (Cuadra et al., 2014). Taken together, insofar as future time orientation (e.g., impulsivity, self-control) is seen as a dispositional trait predictive of criminal behavior as some theories of crime suppose, its influence may operate through an association with criminal thinking. However, due to the exploratory and cross-sectional nature of the current study, no causal interpretations should be made. Instead, these initial analyses were performed toward future theory building and replication work using research designs that would permit causal inferences.

Method

Participants and Procedure

Participants included 250 undergraduate students who volunteered to take a survey on Qualtrics in exchange for a research credit for a psychology course. The consent form stated that the survey would take approximately 30 minutes or less to complete, and that if they consented, they would be asked to answer questions about the future and attitudes regarding criminal behaviors in the hopes to further explore these psychological constructs. Participants who consented to participate completed the future time orientation measures, criminal thinking style measures, a measure of illegal behaviors, two control variable measures, and a demographics form (see Materials below). The study was approved by the Montclair State University Institutional Review Board and was preregistered through the Open Science Framework prior to data collection (<https://osf.io/7zhs6>). Included in the preregistration were hypotheses and research questions, study design, sample size rationale, a description of all measures, and the data analysis plan (including exploratory analyses).

One participant consented but then did not complete a single item in the survey; another consented but then only completed the impulsivity measure. As a result, results reported below reflect a final sample of 248 participants. The average age of the sample was 19.37 years old ($SD = 2.21$). The sample was 26.6% male ($n = 66$), 71.8% female ($n = 178$), 1.2% non-binary/third gender ($n = 3$), and 0.4% preferring not to say ($n = 1$). A total of 43.5% were Hispanic/Latino ($n = 108$), 56% were not Hispanic/Latino ($n = 139$), and one participant did not answer. Regarding race, participants were 49.6% White/Caucasian ($n = 123$), 22.2% Black or African American ($n = 55$), 8.1% Asian ($n = 20$), and 20.2% another race ($n = 50$).

Materials

Future Time Orientation Measures

Four measures were used to measure components of future time orientation.

Impulsivity. The Barratt Impulsiveness Scale-11 (BIS; Patton et al., 1995) is a 30-item questionnaire that measures three sub-components of general impulsivity: attentional, motor, and non-planning impulsiveness. The response scale on each item ranges from 1 (*Rarely/Never*) to 4 (*Almost Always/Always*). An example item for each of the three subcomponents include: “I often have extraneous thoughts when thinking” (attentional), “I act on impulse” (motor), and “I am more interested in the present than in the future” (non-planning). In the present thesis, the overall mean of the entire 30-item scale was used as the measure of impulsivity. The internal consistency of the scale was acceptable in the current sample (Cronbach’s $\alpha = .79$).

Self-control. The Brief Self-Control Scale (BSCS; Tangney et al., 2004) is a 13-item questionnaire that measures trait-level self-control. Example items include “I am good at resisting temptations,” “I wish I had more self-discipline,” and “I am able to work effectively toward long-term goals.” The Likert-type response options for each item range from 1 (*Not at all*) to 5 (*Very much*). The overall mean of the 13-item scale was used as the measure of self-control. The internal consistency of the scale was good in the current sample (Cronbach’s $\alpha = .83$).

Delay Discounting. The Monetary Choice Questionnaire (DD; Kirby et al., 1999) consists of 27 binary choices between a smaller, immediate monetary reward and a larger, delayed monetary reward (e.g., \$34 today vs. \$50 in 30 days). Preference for these various rewards indicates the extent to which an individual prefers smaller immediate rewards over larger delayed rewards. In the current thesis, the proportion of trials that the smaller, immediate reward was chosen was used as an index of delay discounting. The internal consistency of the scale was excellent in the current sample (Cronbach’s $\alpha = .91$).

Future Time Perspective. The Future Time Perspective scale (FTP; Carstensen & Lang, 1996) is a 10-item questionnaire that measures the extent to which an individual perceives their future as time-limited or expansive. Example items include “Many opportunities await me in the future,” “My future is filled with possibilities,” and “There is plenty of time left in my life to make new plans.” Response options for each item range from 1 (*Very Untrue*) to 7 (*Very True*). The overall mean of the 10-item scale was used as the measure of future time perspective. The internal consistency of the scale was good in the current sample (Cronbach’s $\alpha = .82$).

Criminal Thinking Style Measures

Two self-report questionnaires were used to measure criminal thinking styles.

Texas Christian University Criminal Thinking Scale (TCU-CTS). The TCU-CTS (Knight et al., 2006) consists of 36 items measuring insensitivity to impact of crime (IN), response disinhibition (RD), justification (JU), power orientation (PO), grandiosity (GR), and social desirability (SD). Example items include: “Breaking the law is no big deal if you do not physically harm someone” (IN); “When you are upset, you act without thinking” (RD); “You find yourself blaming society and external circumstances for your problems with the justice system” (JU); “You are willing to take advantage of others to get what you want” (PO); “You deserve to live a better life than the people around you” (GR); and “You have never deliberately said something that hurt someone’s feelings” (SD). The Likert-type responses for each item range from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). In the present thesis, the overall mean of the entire scale (minus the social desirability items) was used as the measure of criminal thinking style. The internal consistency of the scale was excellent in the current sample (Cronbach’s $\alpha = .92$).

Criminogenic Cognitions Scale (CCS). The CCS (Tangney et al., 2012) is a 25-item measure of external locus/failure to accept responsibility (EXT), notions of entitlement/demands of respect (RES), negative attitudes towards authority (ATT), immediate/short-term gratification (IMM), and insensitivity to impact of crime (INS). Example items include: “I feel like what happens in my life is mostly determined by powerful people” (EXT); “I deserve more than other people” (RES); “Most police officers/guards abuse their power” (ATT); “The future is unpredictable and there is no point planning for it” (IMM); and “Victims of crime usually get over it with time” (INS). The response options for each item range from 1 (*Strongly Disagree*) to 4 (*Strongly Agree*). In the present thesis, the overall mean of the entire scale was used as the measure of criminogenic cognitions. The internal consistency of the scale was good in the current sample (Cronbach’s $\alpha = .82$).

Illegal Behaviors

The Illegal Behaviors Checklist Measure (IBM; McCoy et al., 2006) consists of 22 yes/no items for four types of criminal behaviors (violent crimes, drug crimes, property crimes, and status offenses). Example behaviors for each of the four crime types include sold marijuana (drug), attacked someone with the intention of seriously hurting him or her (violent), shoplifted something worth \$25 or more (property), and lied about your age to buy cigarettes or alcohol (status offenses). In the current thesis, the proportion of trials that participants selected yes for the 22 items was used as an index of illegal behaviors. The internal consistency of the scale was good in the current sample (Cronbach’s $\alpha = .84$).

Control Measures

The following two control measures were included in the current thesis for the exploratory analyses.

Psychopathy. The Short Dark Triad-Psychopathy Scale (SD3-Psychopathy; Jones & Paulhus, 2013) consists of 9 items rated on a 1 (Disagree strongly) to 5 (Agree strongly) response scale. Example items include “People often say I’m out of control,” “I like to get revenge on authorities,” and “It’s true that I can be mean to others.” The overall mean of the 9-item scale was used as the measure of psychopathy. The internal consistency of the scale was acceptable in the current sample (Cronbach’s $\alpha = .73$).

Substance Dependency. The UNCOPE Substance Dependence Screening tool (Hoffmann et al., 2003) consists of 15 items answered on a Yes or No response scale. Example items include “Has anyone objected to your use of alcohol or drugs?”; “Have you frequently found yourself thinking about a drink or getting high?”; and “Have you ever missed work or school because of your alcohol or drug use?”. In the current thesis, the proportion of trials that participants selected yes for the 15 items was used as an index of substance dependency. The internal consistency of the scale was excellent in the current sample (Cronbach’s $\alpha = .92$).

Data Analysis Plan

Bivariate relationships (Pearson correlations) were performed between all future time orientation and criminal thinking style measures, as well as the illegal behavior measure (Hypotheses 1a, 1b, 1c). Multiple regression analyses were then performed to assess the unique relationship between the future time orientation measures and criminal thinking styles and illegal behaviors, respectively (Research Questions 1a, 1b, 1c). Data were inspected and relevant assumptions were checked. No problematic multicollinearity was observed for the regression models, with all variance inflation factors (VIFs) less than three. Residuals for all regression models were inspected for non-normality and heteroscedasticity. No issues were observed for the two criminal thinking style dependent variables, but some positive skewness and

heteroscedasticity was observed in the residuals for the illegal behaviors dependent variable (likely stemming from positive skewness in the IBM itself). The Discussion section includes a description of potential remedies for this issue in future research.

Exploratory analyses were also included in the OSF preregistration (<https://osf.io/7zhs6>). The first set of exploratory analyses involved performing the three above multiple regression models with the two control variables (psychopathy, substance dependency) added as predictors. The second set of exploratory analyses involved indirect effect analyses that depended on the previous results. Specifically, indirect effects were assessed between future time orientation to illegal behaviors through criminal thinking styles. The PROCESS v4.0 macro for SPSS was used to perform these indirect effect analyses. Significance of indirect effects was determined by 95% bootstrapped confidence intervals based on 5,000 resamples. An alpha level of .05 was used to determine statistical significance. All tests were two-tailed tests.

Results

Bivariate Correlations (Hypotheses 1a, 1b, 1c)

Descriptive statistics for all study variables are included in Table 1. All bivariate correlations among the study variables are included in Table 2.

We first report on the correlations among the four future time orientation measures. The strongest correlation was among the BIS and BSCS ($r = -.74, p < .001$). FTP had moderate correlations with both the BIS ($r = -.34, p < .001$) and the BSCS ($r = .39, p < .001$). DD had weak or no correlations with the BIS ($r = .19, p = .003$), the BSCS ($r = -.19, p = .003$), and FTP ($r = -.09, p = .14$). These results generally demonstrate significant bivariate relationships among the four future time orientation measures, but they are not strong enough to motivate indexing them together into a single measure of future time orientation.

Table 1*Descriptive Statistics*

	<i>M</i>	<i>SD</i>
FTP	4.76	0.98
BIS	2.30	0.32
BSCS	3.12	0.66
DD	0.60	0.20
CCS	2.15	0.35
TCU CTS	2.31	0.59
IBM	0.10	0.13
Psychopathy	2.09	0.61
UNCOPE	0.16	0.25

Note. FTP = Future Time Perspective Scale. BIS = Barratt Impulsiveness Scale. BSCS = Brief Self-Control Scale. DD = delay discounting. CCS = Criminogenic Cognitions Scale. TCU CTS = Texas Christian University Criminal Thinking Scale. IBM = Illegal Behaviors Checklist Measure. UNCOPE = UNCOPE Substance Dependence Screening tool.

Table 2
Correlations for All Study Variables

		FTP	BIS	BSCS	DD	CCS	TCU_CTS	IBM	Psychopathy	UNCOPE
FTP	Pearson Correlation	--								
	N	248								
BIS	Pearson Correlation	-.342***	--							
	Sig. (2-tailed)	<.001								
	N	248	248							
BSCS	Pearson Correlation	.387***	-.735***	--						
	Sig. (2-tailed)	<.001	<.001							
	N	248	248	248						
DD	Pearson Correlation	-.094	.185***	-.189***	--					
	Sig. (2-tailed)	.139	.003	.003						
	N	248	248	248	248					
CCS	Pearson Correlation	-.274***	.446***	-.449***	.107	--				
	Sig. (2-tailed)	<.001	<.001	<.001	.094					
	N	247	247	247	247	247				
TCU_CTS	Pearson Correlation	-.271***	.421***	-.475***	.105	.705***	--			
	Sig. (2-tailed)	<.001	<.001	<.001	.100	<.001				
	N	248	248	248	248	247	248			
IBM	Pearson Correlation	-.060	.232***	-.309***	.068	.273***	.169***	--		
	Sig. (2-tailed)	.345	<.001	<.001	.288	<.001	.008			
	N	248	248	248	248	247	248	248		
Psychopathy	Pearson Correlation	-.243***	.398***	-.452***	.100	.657***	.700***	.286***	--	
	Sig. (2-tailed)	<.001	<.001	<.001	.117	<.001	<.001	<.001		
	N	246	246	246	246	246	246	246	246	
UNCOPE	Pearson Correlation	-.132**	.259***	-.371***	.032	.254***	.141**	.765***	.273***	--
	Sig. (2-tailed)	.037	<.001	<.001	.616	<.001	.027	<.001	<.001	
	N	248	248	248	248	247	248	248	246	248

Note. FTP = Future Time Perspective Scale. BIS = Barratt Impulsiveness Scale. BSCS = Brief Self-Control Scale. DD = delay discounting. CCS = Criminogenic Cognitions Scale. TCU CTS = Texas Christian University Criminal Thinking Scale. IBM = Illegal Behaviors Checklist Measure. UNCOPE = UNCOPE Substance Dependence Screening tool.

Scores on the TCU CTS were significantly related to impulsivity ($r = .42, p < .001$), self-control ($r = -.48, p < .001$), and future time perspective ($r = -.27, p < .001$). The TCU CTS was positively correlated with delay discounting, but this relationship failed to reach statistical significance ($r = .11, p = .10$). These correlations generally supported Hypothesis 1a. Specifically, higher future time orientation (as indexed by lower impulsivity, higher self-control, and a higher future time perspective) was associated with a lower overall criminal thinking style. Though the relationship with delay discounting was in the hypothesized direction as well, this

was the only measure of future time orientation that failed to reach conventional levels of statistical significance.

Similar to the scores on the TCU CTS, scores on the CCS were significantly related to impulsivity ($r = .45, p < .001$), self-control ($r = -.45, p < .001$), and future time perspective ($r = -.27, p < .001$). The CCS was positively correlated with delay discounting, but this relationship again failed to reach statistical significance ($r = .107, p = .094$). These correlations also generally support Hypothesis 1b, and demonstrate that lower impulsivity, higher self-control, and higher future time perspective were associated with a lower criminological cognitions score.

Scores on the IBM were significantly related to impulsivity ($r = .23, p < .001$) and self-control ($r = -.309, p < .001$). The IBM was positively correlated with delay discounting, but this relationship failed to reach statistical significance ($r = .07, p = .29$). Similarly, future time perspective was found to have a non-significant negative correlation with the IBM ($r = -.06, p = .35$). These correlations partially supported Hypothesis 1c. Specifically, a higher future time orientation (as indexed by lower impulsivity and higher self-control) was associated with lower illegal behaviors. The bivariate relationships between the IBM and delay discounting and future time perspective were in their hypothesized directions, respectively, but both failed to reach statistical significance.

Multiple Regression Analyses (Research Question 1a, 1b, 1c)

Three multiple regression analyses were performed to investigate the extent to which the four measures of future time orientation incrementally related to the TCU CTS (Research Question 1a), CCS (Research Question 1b), and IBM (Research Question 1c).

The first multiple regression analysis had the TCU CTS as the outcome variable and the four future time orientation measures as the predictor variables. The overall model was

statistically significant $F(4, 243) = 19.65, p < .001$. The R^2 of the model was .24, which indicates that the four future time orientation measures accounted for 24% of the variance in TCU CTS scores. Only the BSCS ($\beta = -0.33, p < .001$) was a significant unique predictor of TCU CTS (see Table 3). This result evidenced that lower self-control was significantly associated with greater overall criminal thinking styles. Future time perspective, impulsivity, and delay discounting were not significant unique predictors of TCU CTS score.

Table 3

Multiple Regression Analysis with the Texas Christian University Criminal Thinking Scale as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	β		
(Constant)	2.893	.562		5.153	< .001
FTP	-.056	.037	-.093	-1.526	.128
BIS	.267	.153	.145	1.747	.082
BSCS	-.296	.075	-.332	-3.927	< .001
DD	.019	.167	.007	.116	.908

Note. Dependent Variable: = Texas Christian University Criminal Thinking Scale. FTP = Future Time Perspective Scale. BIS = Barratt Impulsiveness Scale. BSCS = Brief Self-Control Scale. DD = delay discounting.

The second multiple regression analysis used the Criminogenic Cognitions Scale (CCS) as the outcome variable and the four future time orientation measures as the predictor variables. The overall model was statistically significant, $F(4, 242) = 19.04, p < .001$. The R^2 of the model was .24, indicating that the four future time orientation measures accounted for approximately 24% of the variance in CCS scores. As can be seen in Table 4, both the BIS ($\beta = 0.24, p = .005$)

and the BSCS ($\beta = -0.23, p = .007$) were significant incremental predictors of CCS scores. These results demonstrated that higher impulsivity and lower self-control were significantly associated with greater criminogenic cognitions, adjusting for the other future time orientation predictors. Future time perspective and delay discounting were not significant unique predictors of CCS scores.

Table 4

Multiple Regression Analysis with the Criminogenic Cognitions Scale as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	β		
(Constant)	2.118	.334		6.341	< .001
FTP	-.036	.022	-.101	-1.658	.099
BIS	.260	.091	.238	2.858	.005
BSCS	-.123	.045	-.233	-2.740	.007
DD	.016	.099	.009	.165	.869

Note. Dependent Variable = Criminogenic Cognitions Scale. FTP = Future Time Perspective Scale. BIS = Barratt Impulsiveness Scale. BSCS = Brief Self-Control Scale. DD = delay discounting.

The third multiple regression analysis used the IBM as the outcome variable and the four future time orientation measures as the predictor variables. The overall model was statistically significant, $F(4, 243) = 6.76, p < .001$. The R^2 of the model was .10, indicating that the four future time orientation measures accounted for approximately 10% of the variance in the IBM. As seen in Table 5, the BSCS ($\beta = -.32, p < .001$) was the only significant incremental predictor of IBM scores. This result demonstrated that lower self-control was significantly associated with more illegal behaviors, adjusting for the other future time orientation predictors. Future time

perspective, impulsivity, and delay discounting were not significant unique predictors of IBM scores.

Table 5

Multiple Regression Analysis with Illegal Behaviors as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	β		
(Constant)	.222	.130		1.714	.088
FTP	.009	.008	.072	1.079	.282
BIS	.007	.035	.017	.191	.849
BSCS	-.061	.017	-.322	-3.498	<.001
DD	.006	.039	.010	.167	.867

Note. Dependent Variable = illegal behaviors measure. FTP = Future Time Perspective Scale. BIS = Barratt Impulsiveness Scale. BSCS = Brief Self-Control Scale. DD = delay discounting.

Exploratory Analyses

Multiple Regressions with Control Variables Included

Exploratory regression analyses were performed that were the same as the three regression analyses described above, but with the two control variables added as predictors (psychopathy and substance dependency). With TCU CTS as the outcome variable, the overall model was statistically significant $F(6, 239) = 46.16, p < .001$, and the R^2 was .54. The BSCS ($\beta = -.17, p = .02$) remained a significant incremental predictor of TCU CTS scores. Psychopathy also incrementally predicted overall criminal thinking styles ($\beta = .61, p < .001$).

With CCS as the outcome variable, the overall model was statistically significant $F(6, 239) = 36.82, p < .001$, and the R^2 was .48. The BIS ($\beta = .17, p = .01$) remained a significant unique predictor of CCS. Psychopathy was once again a significant incremental predictor of

criminogenic cognitions ($\beta = .55, p < .001$), whereas the BSCS was no longer a significant incremental predictor of CCS scores once the control variables were added to the model.

With IBM as the outcome variable, the overall model was statistically significant $F(6, 239) = 58.35, p < .001$, and the R^2 was .59. The only significant incremental predictor of IBM scores was UNCOPE scores ($\beta = .74, p < .001$). The BSCS was no longer a significant incremental predictor of IBM scores once the control variables were added to the model.

Indirect Effect Analyses

The two unique relationships between the future time orientation measures and the criminal thinking style measures that remained significant after adjusting for the control measures were between self-control and TCU CTS scores and between impulsivity and CCS scores. As a result, two indirect effect analyses were performed using Model 4 in PROCESS v.4.0. In the first model, the BSCS was the independent variable (X), the TCU CTS was the mediator (M), and the illegal behaviors measure was the dependent variable (Y). In the second model, the BIS was the X, the CCS was the M, and the illegal behaviors measure was the Y.

In both indirect effect models, 5,000 bootstrapped resamples were implemented and 95% confidence intervals (CI) were used to examine statistical significance for the respective indirect effects. In the first model, a significant indirect effect between self-control \rightarrow overall criminal thinking styles \rightarrow illegal behaviors was not found (indirect effect = .0025, bootstrapped CI = $-.0144$ to $.0081$). This non-significant indirect effect was attributable to overall criminal thinking styles (as measured by the TCU CTS) no longer being significantly related to illegal behaviors after adjusting for self-control ($B = .006, SE = .015, p = .683$). Self-control remained significantly related to illegal behaviors after adjusting for TCU CTS ($B = -.06, SE = .01, p < .001$).

In the second indirect effect model, a significant indirect effect was observed between impulsivity → criminogenic cognitions → illegal behaviors (indirect effect = .037, bootstrapped CI = .011 to .066). The relationship between impulsivity and illegal behaviors was reduced in magnitude but remained statistically significant after adjusting for CCS scores ($B = .05$, $SE = .03$, $p = .0495$). The relationship between CCS and illegal behaviors scores remained statistically significant after adjusting for impulsivity ($B = .08$, $SE = .02$, $p = .002$).

Importantly, these indirect effect analyses were performed for future theory building. Especially due to the cross-sectional nature of the data, no causal interpretation of the effects was undertaken. Additionally, alternative theoretical models could be considered such as criminogenic cognitions leading to future time orientation (e.g., impulsivity) and not vice versa.

Discussion

Summary of Results

The main objective of this thesis was to investigate four components and measures of future time orientation (impulsivity, self-control, delay discounting, and future time perspective) and their bivariate and incremental predictive relationships with criminal thinking styles and illegal behaviors. Correlational results generally supported the study hypotheses. Specifically, higher future time orientation (as reflected by lower impulsivity, higher self-control, and a higher future time perspective) was significantly associated with lower criminal thinking. Though in the hypothesized direction, the only measure of future time orientation that did not significantly relate to the two criminal thinking measures was delay discounting. It was also found that higher future time orientation (as reflected by lower impulsivity and higher self-control) was significantly associated with fewer illegal behaviors. The bivariate relationships between both

delay discounting and future time perspective with illegal behaviors were in the hypothesized directions but both failed to reach statistical significance.

These bivariate results lend support to prior theories of crime that posit a relationship between immediate gratification tendencies (e.g., low self-control) and criminal thinking or behavior (e.g., the General Theory of Crime; Gottfredson & Hirshi, 1990). Moreover, prior studies have often found significant bivariate relationships between these measures of future time orientation and criminality-related outcomes (e.g., Huddy et al., 2017; Zhi et al., 2021). The exception in the current study was delay discounting, which is noteworthy due to delay discounting being a behavioral measure of future time orientation that has been often used in prior studies. Such studies have generally found higher delay discounting to be positively associated with criminal offending and behaviors (e.g., Arantes et al., 2013; Hanoch et al., 2013).

Statistical power appears to not be an explanation for the discrepant results with the delay discounting measure, as the current sample was generally much larger than those in prior studies. The makeup of the current sample relative to the prior samples could serve as a potential explanation. Previous studies used adult samples or samples of justice-involved individuals. As it relates to the age difference, it has been found that delay discounting in juvenile delinquents and non-juvenile delinquents did not significantly differ (Wilson and Daly, 2006). Because the current sample could be considered late adolescents (i.e., approximately 19 years old on average), previously observed effects in samples of adults may not extend to young adults. While Åkerlund et al. (2016) found a significant positive relationship between delay discounting measured at 13 years old and subsequent criminal behavior, they followed participants up to 31 years old. Once again, the relationship between delay discounting and criminal behavior may not fully develop until individuals age past adolescence and young adulthood. It is also important to

note that delay discounting was the only measure of future time orientation that contained a noticeably different response format than the criminal thinking style measures. All the other measures contained self-report Likert-type response options. In contrast, delay discounting was measured by a decision-making task in which participants made a series of binary choices between two rewards. Due to issues with common method variance, relationships between delay discounting and criminal thinking style self-report measures may be less consistently observed than the other measures of future time orientation used in the current thesis (BIS, BSCS, FTP).

A benefit of the present thesis is that four different components and measures of future time orientation were administered to a single sample. Previous research has usually included only a single measure which prevents generalizability across the different operationalization of future time orientation. Furthermore, including multiple measures in a single study afforded the ability to perform multiple regression analyses that adjusted for the different operationalizations within single omnibus model, toward a clearer picture of the aspects of future time orientation with incremental relationships with criminal thinking and criminal behaviors. Self-control (as measured by the BSCS) was a consistent incremental significant predictor across both criminal thinking style measures (TCU CTS and CCS) and the illegal behaviors measure (IBM). In addition, impulsivity (as measured by the BIS) was a significant incremental predictor of CCS and a marginally significant unique predictor of TCU CTS. These results suggest that the items captured in the BSCS (e.g., resisting temptation, having self-discipline) may best measure the aspects of future time orientation that overlap with criminal thinking and illegal behaviors.

Exploratory regression analyses were performed that included two control variables that have been found to predict criminality-related outcomes—namely, psychopathy and substance dependency. In these analyses, impulsivity remained a significant unique predictor of CCS and

self-control remained a significant unique predictor of TCU CTS, but the strength of the relationships with these two future time orientation measures were reduced dramatically. This may stem from conceptual overlap between the control variables and the dependent variables. For example, the psychopathy measure strongly related to the two criminal thinking measures ($r = .70$ with the TCU CTS and $r = .66$ with the CCS). An inspection of the items included in the psychopathy measure that was used (the SD3-Psychopathy) reveals several items that overlap with criminal thinking and criminal behaviors (e.g., “I have never gotten into trouble with the law,” “I like to get revenge on authorities,” “People who mess with me always regret it”). For the exploratory regression analysis that had illegal behaviors as the dependent variable, the substance dependence screener was the strongest predictor (and the only incrementally significant predictor). This may not be surprising due to 6 of the 22 behaviors included in the illegal behavior measure involving substances (alcohol or drugs). Future research will benefit from exploring the incremental relationships between future time orientation measures and criminality-related outcomes after adjusting for yet another risk factors for crime, including control variables that do not share as much conceptual overlap with the criminality-related dependent variables.

Limitations and Future Directions

A main limitation of the current thesis is the use of a convenience sample of undergraduate college students. This limitation raises questions about the generalizability of the results to the larger population or target populations (e.g., justice-involved individuals). For instance, the sample of college students may have yielded a restricted range of criminal thinking and illegal behaviors. However, floor effects were not observed in the current sample for the two criminal thinking style measures, and the distributions did not significantly deviate from

normality (e.g., Shapiro-Wilks $ps > .15$). Participants did, however, generally yield low endorsement frequencies on the IBM. Future research that includes multiple measures of future time orientation and samples that endorse greater frequencies and variability in illegal behaviors would be worthwhile.

Other limitations included that the study was conducted online and, more notably, relied almost exclusively on self-report measures. While online surveys help to advance privacy and offer easy access to and for participants, they also carry disadvantages. For instance, participants completing measures remotely did not have the benefit of an interviewer to explain or reiterate instructions or questions that they may have found confusing. Also, notwithstanding the greater anonymity of the online format of the study, participants were nevertheless asked many items concerning illegal behavior and substance use, which could have resulted in response bias with respect to providing honest responses (coupled with the nature of the convenience sample). The number of measures administered may also have resulted in fatigue or loss of interest. Finally, the measures of future time orientation were primarily self-report, similar to the criminal thinking measures. The only future time orientation measure that was more behaviorally based was delay discounting, which demonstrated the weakest relationship to criminal thinking and illegal behaviors. There are behavioral measures of impulsivity, self-control, and time perspective too. Future laboratory studies would be helpful that use such behavioral measures of future time orientation to investigate if similar relationships with criminal thinking and illegal behaviors, as observed in the current study, likewise emerge.

Still another notable limitation of the current study was that it was cross-sectional and correlational, such that no statements of causality were felt to be warranted (especially for the exploratory indirect effects). This thesis sought to help clarify incremental relationships among

common measures of future time orientation and both criminal thinking and illegal behaviors, with the hope that the results will inform future theory building. However, the nature of the relationships between these constructs are likely complex and develop over time. For instance, causality could be reversed, where involvement in criminal activity shifts the time orientation of individuals to be more present-focused. Or other constructs may cause both a disposition towards immediate gratification and an orientation towards criminal thinking and behaviors. Future longitudinal research could help better disentangle the temporal precedence of the relationship between future time orientation and criminality-related outcomes. Such results would help to better test various theories of crime that posit a direct link between the future time orientation and criminality-related outcomes. Finally, aggregate scores were used for the criminal thinking style and illegal behaviors measure, although these measures contain important sub-domains. For the current thesis, no hypotheses or research questions were made at the sub-domain level of the criminal-related outcomes measures, but it will be important for future theoretical research to investigate the relationships between measures of future time orientation and specific styles of criminal thinking and illegal behaviors.

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