The Adolescent Empathy Paradox and Juvenile Offending

Why sex differences in empathic ability can help explain the gender gap in juvenile offending behavior

Katherine Krushinski O'Neill

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Committee:

Ross Matsueda

Julie Brines

Callie Burt

Program Authorized to Offer Degree:

Sociology

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ABSTRACT

Katherine Krushinski O'Neill

Chair of the Supervisory Committee:
Dr. Ross Matsueda
Sociology

I propose the persistent gender gap in juvenile offending is linked to adolescent orientation to a gendered generalized other and empathic development. Empathic ability is inversely associated with juvenile offending and mediates the effect of gender on offending. Empathic expression, however, threatens boys' membership claims to the gendered generalized other and supports girls' membership claims to the gendered generalized other. I present a symbolic interactionist framework and use the longitudinal Denver Youth Survey to analyze the age-varying relationships between and among gender, empathic development, and juvenile offending. I find support for the hypothesis that males exhibit, on average, lower levels of empathy across the life course than do females and that empathy mediates the effect of being male on offending. I also find empathic ability is inversely related to offending, and significantly decreases fraud and theft offending, but not victimless or violent offending.

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1.0 INTRODUCTION

Gender has long been considered a "substantiated and powerful correlates of criminal offending" by social scientists (Zimmerman and Messner 2010, 958). Males constitute an estimated 93% of America's incarcerated population (National Research Council 2014, 64) and 74% of arrests (Federal Bureau of Investigation 2013). Analyses of self-report data on delinquent and criminal offending corroborate the existence of a gender gap in offending behaviors, net of other factors (Kruttschnitt 2013; Piquero, Schubert, and Brame 2014). This amounts to a clear and conspicuous relationship between gender and offending, yet many relevant mechanisms behind this persistent gender gap remain understudied.

Historically, criminological research and data collection efforts neglected to include female offenders, denying researchers opportunity to address the empirical question of what it is about *being male* that leads to a dramatic increase in risk of offending (Steffensmeier and Allan 1996). While the past 20 years of criminological research has seen increased attention paid to female experiences and the "why" of the gender gap, this research largely focus on structural and antisocial predictors of offending rather than gender differences in prosocial emotional abilities like empathy (Kruttschnitt 2013). Longitudinal studies within a life-course framework, in which differential adolescent socialization, criminal careers, and emotional characteristics of females are compared to those of their male counterparts also remain somewhat rare (Block et al. 2010; Chesney-Lind and Pasko 2013; Kruttschnitt 2013). The absence of longitudinal data is particularly problematic because social psychological theory has long suggested that becoming a competent emotional being is a cradle-to-grave developmental process (Kohlberg and Hersh 1977). Furthermore, studies that address how gender – especially that of males – and offending interact often explore how gender performance and identity are affected by offending or criminal

justice involvement rather than how these performances and identities lead to criminal involvement in the first place (Durfee 2011; Rios 2009; Sabo, Kupers, and London 2001). Finally, where research has attempted to decompose the gender effect, it has concentrated on "considerable gender variation in emotional responses to negative life events, [with] virtually all of this research [focusing] on negative emotions (anger, depression, anxiety) as a catalyst for offending," rather than how "development of positive emotions such as empathy and caring can inhibit offending" (Kruttschnitt 2013, 303).

This paper seeks to contribute to the criminological literature on gender, prosocial emotions, and crime across the life-course using the Denver Youth Survey (DYS) – a rich longitudinal dataset that sampled both males and females – to investigate a time-varying mechanism through which masculinity increases risk of offending. Specifically, I argue gender- and age-dependent differences in empathic ability, socialization, and expression help explain the consistent positive association between masculinity and juvenile offending. The age range in which risk of offending begins to increase dramatically before plateauing and decreasing – referred to by criminologists as the "age-crime curve" (D'Unger, Land, and McCall 2002; Steffensmeier et al. 1989) – corresponds closely to the age range in which youth experience increased pressure to adhere to gender norms governing emotional expression (Kohlberg and Gilligan 1971; Pascoe 2011). Psychologists use the terms "gender-intensification" and "adolescent-intensification" to describe this acute and explicit orientation to gender norms, which forms the basis for the gender intensification hypothesis (Hill and Lynch 1983; Steensma et al. 2013). With respect to delinquency, I hypothesize that intense pressure to conform to traditional gender norms is directly associated with the steep increase in offending behaviors at the onset of adolescence, particularly among males. This paper tests this association by selecting a gendered emotional

ability – empathy – and tracking its differential developmental trajectory across the life course for males and females. I interpret my results using a process-oriented symbolic interactionist framework and evaluate empathy's association with offending behaviors.

2.0 EMPATHY, OFFENDING, AND GENDER

Previous research on empathy and offending has either ignored gender or failed to treat empathy as a time-varying process. Jolliffe and Farrington's 2004 meta-analysis of 42 non-overlapping studies on empathy and offending identifies empathy as an individual protective factor against criminal offending, reasonably "well-entrenched" in criminological thought but inconsistently studied across contemporary research efforts. Because so few studies reported gender-specific results, Joliffe and Farrington were unable to include gender in their meta-analysis (2004: 461). Furthermore, they found no longitudinal studies in which causal ordering of the empathy-offending relationship could be established. A 2014 extension of this meta-analysis found approximately 10 studies in which females were included, and found smaller, albeit non-significant effects sizes of empathy on offending when compared to male-only analyses (van Langen et al. 2014, 187). While van Langen et al. discuss age and differential cognitive maturation of males and females as a potential predictor of both empathy and offending across the life course; they make no mention of corresponding empirical research testing maturation using longitudinal, panel, or life-course studies. While both meta-analyses – and other studies[1] – confirm a strong inverse association between empathy and offending, they also clearly demonstrate that a lack of longitudinal research and data has prevented researchers from treating empathy as a time-varying, age-dependent characteristic rather than a stable trait.

[1] See Miller and Eisenberg 1988; Stams et al. 2006; Van Vugt et al. 2011

This is a glaring omission given that psychological and social psychological theory conceptualizes empathy as a developmental process and psychological studies provides empirical evidence in support of this conceptualization (Chase-Lansdale, Wakschlag, and Brooks-Gunn 1995; Ellis 1982; Eysenck et al. 1985). In sum, current criminological research on empathy and offending has not emphasized gender, has not addressed the issue of reverse causality, and has not capitalized on social psychological theory and empirical results. Longitudinal, gender-conscious research is needed to address this issue and deepen academic understanding of empathy and delinquency (Jolliffe and Farrington 2007).

While longitudinal studies on gender, empathy, and offending are few, there do exist a few notable, cross-sectional exceptions. Broidy et al. focus on explaining sex differences in juvenile offending via sex differences in empathy, arguing such differences are "partly a function of gendered socialization patterns that instill in women, more than men, an acute sensitivity to the needs of others and dependency on the approval and affection of others" (2003:506). They frame their finding that empathy differs between genders and between offenders and non-offenders as an "initial test" of well-worn conceits regarding empathy, juvenile offending, and gender. The scope of these conclusions, however, is limited by their sample characteristics: A cross-sectional data structure prevented them from aligning the causal ordering of their concepts with their theoretical framework. In addition, they collected elf-reports on empathy from non-offending teenagers and serious non-violent offenders who were currently incarcerated, and acknowledge their results regarding empathy's inverse association with offending could be the result of an "incapacitation effect" in that the experience of incarceration may have decreased empathic ability among their juvenile offending population rather than the other way around (p. 512). Likewise, Goldstein and Higgins-D'Alessandro's (2001: 49) study on empathy and attachment

among (male and female) jail inmates note incarceration may have "disrupted" respondents' lives in such a way that their empathic ability differs significantly from that of non-institutionalized persons – thus obfuscating the relationship between and among offending, gender, and empathy.

It is therefore necessary to develop and apply a process-oriented theoretical framework that accounts for an age-varying emotional development, causal mechanisms behind emotional developmental trajectories, and the relationship between causal mechanisms and offending. I therefore propose a symbolic interactionist framework, which accounts for age-dependent cognitive and empathic abilities and gender's location in the process of both empathic development and offending.

3.0 SYMBOLIC INTERACTIONIST FRAMEWORK

Taking "the role of another" and/or behaving per the "organized community or social group, which gives the individual his unity of self… [i.e.] 'the generalized other'" (Mead 1930, 1934:154) are concepts central to symbolic interactionism, and of great utility to scholars of psychological development, gender, and crime. The interactionist role-taking model states individuals look to others in the social world they perceive to embody desirable characteristics consistent with their personal conceptions of themselves and model behaviors accordingly until these behaviors are understood as central to their character. Social actors also This behavioral modeling (who and what is being emulated) is an age-dependent process, and has been presented in criminological literature as a key predictor of crime and desistance (Massoglia and Uggen 2010). Early-in-the-life-course modeled behaviors are based on specific significant others present in the interaction, whereas later-in-life socialization involves taking the role of a perceived group or 'generalized other'" (Mead 1934). In addition, symbolic interactionist

research on gender often frames it as an enormously impactful social group with regards to individual identity formation and – subsequently – a social role of fundamental importance in social interaction and behavior (Goffman 1977; West and Zimmerman 1987). This framing obviously – and perhaps purposefully – overlaps with the traditional symbolic interactionist concept of generalized other (i.e. the process of recognizing and internalizing an the attitudes or norms and role expectations of an organized group). It therefore follows that one type of 'generalized other' is a gendered generalized other: i.e. the *masculine man*, the *feminine woman*, and the organized attitudes and behaviors associated with these social identities.

I argue a symbolic interactionist framework which seeks to explain the gender gap in criminal and juvenile offending must take into account age-dependent cognitive and emotional processes and abilities central to role-taking, the status of gender as a fundamental social group of behavioral reference, and the effect of gender on offending behaviors and proclivities.

3.1 EMPATHY AND ROLE TAKING: CHILDHOOD THROUGH ADOLESCENCE

The process of *empathizing* is the process of transporting oneself into the thinking, feeling and acting of another person or persons (Dymond 1950; Hobart and Fahlberg 1965) – in other words, taking the role of another. An *empathic* person is emotionally responsive to the suffering and/or needs of others, is capable of interpreting the dispositions of others, and considers the desideratum of others prior to acting. *Empathy* is understood here as a cognitive skill or capacity in that one's empathic aptitude can increase and/or change as they age and cognitive abilities develop (Eysenck et al. 1985; Chase-Lansdale, Wakschlag, and Brooks-Gunn 1995; Ellis 1982).

Social and child psychologists have long argued empathy is key to the development of an awareness of right and wrong – i.e. a moral conscience. Kohlberg's stages of moral reasoning supplement Piaget's child development process and explicitly address the role of empathy in the

development of a moral conscience. Kohlberg argues young children (approximately aged 7 to 10) experience a period of relative egocentrism. At this stage, children believe a behavior is justified if it satisfies their own needs and that "reciprocity is a matter of 'you scratch my back and I'll scratch yours,' not of loyalty, gratitude, or justice" (Kohlberg and Hersh 1977, 55). In other words, attention to the well being of others is expressed and acted upon only where immediate, instrumental benefits are perceived to follow said action. Adolescence marks the beginning of a conventional stage of development. The adolescent is oriented to social norms or the "good-boy-nice-girl" orientation with "much conformity to stereotypical images of what is majority or 'natural' behavior" (Kohlberg and Gilligan 1971, 1067). During this stage Kohlberg argues the adolescent becomes increasingly oriented towards a social order, resulting in a "law-and-order orientation." Finally as people enter adulthood they develop a post-conventional moral conscience wherein determinations of right and wrong are based on the rights of others and personal conscience, and are more contextually driven. Kohlberg and Hersh explicitly state these stages of moral reasoning "may be seen as representing increasingly adequate conceptions of justice and as reflecting an expanding capacity for empathy, for taking the role of the other" (Kohlberg and Hersh 1977, 56).

The developmental trajectory of empathy and moral conscience situates itself well within a process-oriented symbolic interactionist framework: Early-in-life behaviors are imitations of significant (physically and/or immediately present) specific others while later-in-life behaviors incorporate emulation of a generalized (abstract or normative) other. This generalized other is initially rooted in simplistic stereotypes – for example the puerile notion that 'real men' enjoy sports – but gradually morphs into a multidimensional entity as social experiences become more varied, and allow for contextual variation in socially acceptable behaviors as well as increased

empathic ability regarding non-significant others. In other words, as the generalized other becomes more complex, an individual's ability to take the role of a person about whom they do not have a wealth of personal information increases, thus increasing empathic aptitude. Kohlberg and his colleagues supplement elementary conceptualizations of the role-taking process by accounting for cognitive and moral development across the life course and asserting empathy's central place in the development of a moral conscience. In addition, their arguments regarding an adolescent law-and-order orientation towards enforcement of conventional norms provides a strong segue into literature on gender and gender identity across the life course.

3.2 THE GENDERED GENERALIZED OTHER

Orientation towards the 'naturalness' and reinforcement of distinctly male or distinctly female behavior and attributes (i.e. "gender policing") has been found by gender scholars to exist across the life course and well before adolescence (Thorne 1993; Martin 1998; Maccoby 1999; Maccoby 1990). The law-and-order orientation as conceptualized by Kohlberg, however, is unique to adolescents. That is to say that while gender-specific controls and pressures exist from birth onwards, adolescence is characterized – in part – by a steep and sudden increase in gender-specific controls and pressures. Indeed, Hill and Lynch argue there is much support for a *gender-intensification hypothesis*, stating "during early adolescence gender-appropriate standards for achievements (as traditionally defined) become more stringently applied" (1983, 210). They suggest this intensification is partially due to development of secondary sex characteristics, which results in shifting expectations of the self and others – the timing of which situates itself neatly at the start of Kohlberg's conventional stage of development. There is undoubtedly some direct biological causation at play with regards to changing behaviors in adolescents, but the

collective beliefs, attitudes, and practices organize and give meaning to these bodily changes are social in nature and should be studied accordingly (Thorne 1993).

Symbolic interactionism seems a clear fit for the study of gender identity and roles given its emphasis on the role taking process. Symbolic interactionist literature recognizes two possible *roles of the other* which individuals may respond to and take on. The first, the *specific significant other*, is understood as an actual, singular person of contextual import with whom the focal actor interacts. For small children this would mostly include parents and siblings, followed by peers. To empathize, individuals must be capable of taking the role of a specific significant other. The second role of the other is the *generalized other*, a social group which possesses a particular set of characteristics in which its group identity is based and group membership is established. The generalized other provides "unity of self" (Mead 1934): individuals feel as though they truly belong in a particular social group and derive socially conditioned impulses from the group. The generalized other is an object against which one may measure his or her own behaviors (Massoglia and Uggen 2010, 9); it serves as a behavioral guide to group members by passing down membership expectations through interaction and presenting acceptable alternative behaviors. Most importantly the generalized other enables individuals to exert self control and is a locus of social control (Chang 2004; Heimer and Matsueda 1994): group members are expected to comply to group norms and to encourage compliance. Subsequent to these three components of the generalized other I propose the existence of a gendered generalized other – a subtle reframing of what gender literature has traditionally termed gender identity or sex/gender roles.

Previous studies have found that challenges to one's gender identity decreases subjective well being (Chang 2011) and increases antisocial proclivities (Willer et al. 2013), thereby contributing to a disunity of self. Furthermore individual, gendered mimicry of an abstract

gender role or identity is well established in current sociology and gender studies (Maccoby 1990; Oakley 2015), thus we can clearly see gender identities and roles as social objects against which one measures and derives his or her own behaviors. Finally, gender's salience in social interactions is so omnipresent we not only create circumstances in which we can 'do gender' (West and Zimmerman 1987), we are punished for exhibiting resistance to these preferences and behaviors (Connell 1987; Connell and Messerschmidt 2005). Thus, gender identity and/or roles meet the third qualification of being a type of generalized other: they provide both motivation and opportunity to exercise self and social control, and are themselves forms of self and social control.

The gendered generalized other is "at the base of a fundamental code" of social interaction; a code which establishes "the conceptions individuals have concerning their fundamental human nature," and in which the "social roles of men and women are markedly differentiated" (Goffman 1977, 301, 306). In adolescence, when individuals are orienting themselves towards social norms and are falling back on cliché understandings of conventional or acceptable behavior, the gendered generalized other is characterized by polarization. What is female cannot be male. Masculinity is defined by its difference from femininity (Cohen 1955, 164). The behavioral expectations inferred from the gendered generalized others are largely dependent on stereotypical and exaggerated understandings of what it means to be a man or a woman:

> Females are inherently nurturant [*sic*] and thus suited to mothering, whereas males are competitive and suited for work in the paid labor market; females are passive and dependent, whereas males are assertive and independent; females are weak, whereas males are strong; females are emotional, whereas males are more rational (Heimer 1996, 42).

Recognition and imitation of the gendered generalized other is a lifelong process and pressure to conform to this gendered generalized other is at its most intense during adolescence (Crouter, Manke, and McHale 1995; Hill and Lynch 1983) and it is around this time in the life

course – i.e. Kohlberg's conventional stage – that opposite-sex socialization become both ritualized and constricted and conformity to stereotypical conceptualizations of the good-boy or nice-girl come to be understood as indicative of natural behaviors for men and women. Individuals are increasingly subject to policing of their behavioral intentions as adolescents become oriented to a law-and-order purview, and individuals who behave contrary to the gendered generalized other find themselves in the unfortunate circumstance of being "especially unpopular with peers" (Maccoby 1999, 70). In this way, the gendered generalized other functions to orient adolescents towards a social order in which men and women are subject to distinctly different sets of expectations. The masculine man is "unemotional, independent, non nurturing, aggressive, and dispassionate" (Connell and Messerschmidt 2005, 840). In contrast the feminine woman is characterized by an inclination towards emotional labors such as nurturance, caregiving, and empathizing (Conlon et al. 2014; Maccoby 1999; Pfeffer 2010).

It is through competing mechanisms of moral consciousness and gender-orientation that male empathic expression situates itself is paradoxically situated: The development of a moral conscience requires the development of empathy. To empathize one must be emotionally responsive to others. To express emotional responsiveness to others one must make clear the desire to give care. To give care is to be feminine. To be feminine is to be emasculated. This results in the male empathy paradox: empathy is both necessary in the development of a moral conscience and understood as falling within the dominion of femininity – thus rendering its expression a threat to the masculine man. At no point in the life course are these competing forces felt more intensely than adolescence. The combination of a one-note understanding of the gendered generalized other, along with a law-and-order orientation in which individuals see it as their duty to penalize even the most benign contra-indicative behavior creates a toxic

environment in which the masculine man must disavow the very behaviors key to his development of a moral consciousness. The inevitable result – I argue – is a gender-gap in antisocial behaviors in general, and juvenile offending in particular.

3.3 MASCULINE MEN, FEMININE WOMEN, AND JUVENILE OFFENDING

Two findings consistent with current criminological literature converge in support of the theoretical framework proposed in this paper:

1) Empathic ability is associated with a decrease in delinquent, and criminal behaviors (Broidy et al. 2003; Jolliffe and Farrington 2004; D. Jolliffe and Farrington 2007).
2) Being male is associated with an increase in delinquent, and criminal behaviors (Kruttschnitt 2013; Zimmerman and Messner 2010).

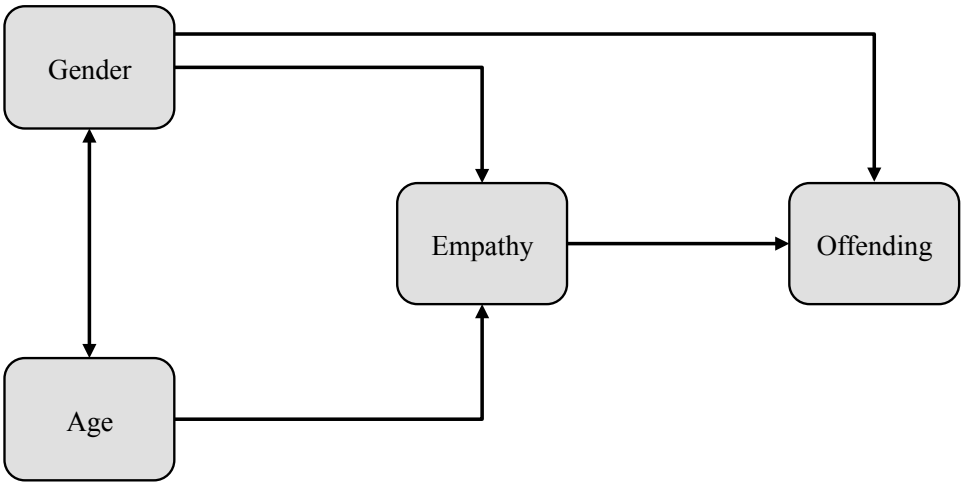
While some may argue "good behavior is that which pleases or helps others and is approved by them" (Kohlberg and Gilligan 1971, 1067) this does not take in to account that that which pleases or helps others is not necessarily that which pleases the audience for whom individual actors perform. For teenage boys "maintaining masculinity… demands the interactional repudiation of [emotional] empathy" in the presence of male peers (Pascoe 2011, 114). One such way to interactionally repudiate empathic care for others is to make clear a willingness to engage in risk-taking behaviors without displaying deference for the emotional costs to others. Indeed, a number of scholars have argued crime is an avenue boys and men "turn to in developing, demonstrating, and communicating their manhood" (Rios 2009, 151). In other words, crime is a means to claim or accomplish one's status as masculine man (Connell and Messerschmidt 2005; Messerschmidt 1993) – or a member of the gendered generalized other social group. The male offender wishes to be "fearless and indomitable" (Schrock and Schwalbe 2009, 286) and to pursue power and control in all things (Grasmick et al. 1996). Conversely, while the motivations

of female offenders are diverse (Giordano, Cernkovich, and Rudolph 2002) female criminality is often discussed in terms of resistance to sexual and/or bodily threats rather than a desire to express physical or relational dominance (Belknap 2014; Chesney-Lind and Shelden 2014; Schwartz and Steffensmeier 2007). Therefore, empathic ability's importance in the decision-making process preceding juvenile offending may vary per the extent to which individuals fall back on the gendered generalized other for behavioral guidance.

4.0 MODELS AND HYPOTHESES

From this theoretical framework, the process I analyze can be understood as follows: Empathic abilities increase as individuals age, as does awareness of the gendered generalized other. Pressure to emulate stereotypical versions of gender normative behaviors is at its most intense during adolescence, when adolescents become increasingly aware of 'natural' behavior and their role in maintaining social order. Therefore, abilities on which boys and girls increasingly differ as they transition through adolescence and into adulthood can be understood as abilities which individuals recognize as either a necessary part of their own gendered selves, or as injurious to their personal gender identities. The status of these emotional abilities as

Figure 1.0. Hypotheses Path Diagram



uniquely feminine or masculine is reaffirmed via interactions, behaviors, and social structures and what was previously a characteristic of the gendered generalized other is adopted and reified as a central, inborn component of one's self. Assuming empathy is a gendered emotional ability, it follows that males will possess significantly less empathic ability than females and that these differences will be most pronounced in adolescence. In addition, empathy is protective in that it guards against antisocial behaviors such as juvenile offending. Empathy and offending are inversely associated. Finally, empathy should mediate the effect of gender on juvenile offending behaviors – thus implicating it as a causal factor of the gender gap in offending. These assumptions lend themselves to four testable hypotheses, the first of which I introduce and elaborate on as follows:

H_1: Males exhibit, on average, lower levels of empathy over the life course than females

Previous research has established empathy is associated with females and traditional femininity (Burris, Schrage, and Rempel 2015; Conlon et al. 2014; Pfeffer 2010). Therefore, maintenance of the masculine man demands repudiation of empathy (Pascoe 2011, 114). It follows that males will exhibit, on average, lower levels of empathy over the life course than females. However, while gender-specific socialization is a constant throughout the life course, intensity of the pressure to conform to one's gendered generalized other varies by age and social context. Therefore, I propose a second hypothesis:

H_2: As individuals age the gender gap in empathy will increase

Children gravitate towards same-sex peers as early as preschool; demonstrate increased preference for sex-segregated social association up through age 11; and structure opposite-sex interactions around a strict set of rules and rituals during adolescence. Children and adolescents who violate gender boundaries are often punished for doing so, reinforcing reification of the

gendered generalized other (Maccoby 1999). These determinations are supported in social psychological research which finds pressures to conform to the gendered generalized other is not as intense for young children as it is for adolescents and adults (Crouter, Manke, and McHale 1995; Hill and Lynch 1983). I therefore hypothesize young children will exhibit similar levels of empathy regardless of gender, with male and female subjects splitting at the onset of adolescence into high- and low-empathy groups. This hypothesis further predicts that the gender gap in empathic capacity will persist and increase up through age 18.

If tests of H_1 and H_2 indicate males possess significantly less empathic ability than do females, the next step is to examine whether or not empathy is inversely associated with offending and to what extent empathy mediates the effect of gender on offending. I would interpret affirmative findings as an indication that empathy protects against offending and that the gender gap in offending is partially driven by differential levels of empathic socialization between males and females. Therefore, I present hypotheses three and four.

H_3: Empathic ability is inversely associated with delinquent and criminal behavior

Literature on empathy notes its negative correlation with antisocial action and vice versa (Johnson and Ferraro 2000; Staats et al. 2006; Walker 2000). I therefore hypothesize, as levels of empathy decrease offending will increase. The mechanisms behind this relationship are linked to the gendered generalized other and the resultant gendered meanings assigned to offending behaviors. One such mechanism of meaning is empathy. If an individual understands his or her actions as harmful to a specific, significant other and is motivated to engage in non-harmful behaviors, it follows that their propensity to engage in antisocial behaviors will decrease. Conversely, individuals who possess limited ability to empathize will instead call upon the simple, adolescent version of the gendered generalized other to predict the interactional

consequences of their offending behaviors. In doing so, male adolescents will value maintenance of their masculine man persona over empathizing with others; while female adolescents will call upon empathic behavior to reaffirm their status as feminine women. In this way empathy mediates the effect of gender on offending, thus suggesting a fourth and final hypothesis:

H_4: Empathy partially mediates the effect of gender on offending

The gender gap in offending is one of the most – if not the most – consistent finding in criminology (Rennison 2009; Schwartz and Steffensmeier 2007). I argue a gender gap in empathic capacity is partially at fault. I therefore anticipate the magnitude of effect of gender – specifically *male* – on offending will decrease in models where *empathy* is included.

This model assumes research subjects (aged 11-18) undergo a life transition (adolescence) wherein the pressure to be masculine or feminine is enormously influential in their decision making processes. Specifically, personal expressions and behaviors that contradict gendered expectations will take place only in contexts in which the risk of *not* doing so is high; such as when deciding whether or not to engage in offending behaviors that could result in arrest or serious injury. In these contexts, I anticipate higher levels of empathy will decrease the desire to engage in offending behaviors. Furthermore, I anticipate the effect of empathy on offending will be weaker for types of offending in which there is no 'harmful' or interpersonal component (i.e. victimless offenses). This weak effect is hypothesized to reflect the non-empathic nature of victimless crime offending. In addition, given the high cost of counter-masculine behavior for males and a limited decision-making time frame in which one may engage in the empathic process I anticipate empathy's effect on violent crimes will be weaker.

5.0 DATA AND METHODS

5.1 SAMPLE

In order to test these hypotheses, I use data collected from the Denver Youth Survey (DYS). The primary goal of the DYS is to, "… identify those social conditions, personal characteristics, social interactions, and developmental processes which are causally linked to the initiation, maintenance, and termination of delinquent behavior, drug use, and other problem behavior" (Denver Youth Survey et al. 1991, 88). The DYS is a ten wave longitudinal study initiated in 1988 on delinquency in high-risk (high-crime) Denver, Colorado neighborhoods, with research-relevant questions on demographic characteristics, empathic ability, deviance, delinquency, and crime present in the first five waves. Investigators used vacancy and completion rates, ultimately selecting 20,300 of 48,000 enumerated households, and drawing a stratified probability sample of households proportional to population size (Matsueda, Kreager, and Huizinga 2006). They then used a screening questionnaire to identify appropriately aged respondents. Interviewer-conducted surveys were administered annually. The survey attrition rate is less than 10% for Waves 1-5, and overall the DYS affords the opportunity to analyze the relationships of interest

Table 1.0. DYS Frequencies by Cohort and Gender

Wave 1 Cohort Frequencies				**Wave 5 Cohort Frequencies**			
	Males	*Females*	*Total*		*Males*	*Females*	*Total*
Cohort I: Age 7-8	185	160	345	Cohort I: Age 11-12	167	152	319
Cohort II: Age 9-10	158	148	306	Cohort II: Age 13-14	146	138	284
Cohort III: Age 11-12	167	138	305	Cohort III: Age 14-17	152	128	280
Cohort IV: Age 13-14	161	141	302	Cohort IV: Age 15-18	144	130	274
Cohort V: Age 15-16	135	132	267	Cohort V: Age 18-22	117	124	241
Total	806	719	1,525	*Total*	726	672	1,398

for 1,525 individuals ranging in age from 7 to 22 (or 7,625 person-years) .[2] In other words, the survey begins with individuals who are leaving early childhood and beginning to experience an increase in gender-specific socialization (Crouter, Manke, and McHale 1995; Hill and Lynch 1983). This age range also includes individuals at the peak of the age-crime curve for reported delinquency. Finally, the longitudinal nature of the DYS dataset allows me to establish not only an association between empathy, gender, and offending as others have attempted before, but to establish and analyze the causal ordering of these associations.

5.2 MEASURES OF KEY CONCEPTS

The DYS includes a series of 13 'yes or no' questions drawn predominantly from the *Eysenck Personality Questionnaire* (M. Eysenck 1985; S. B. G. Eysenck and Eysenck 1978; S. B. G. Eysenck and Eysenck 1980). Of these 13 questions, three were only asked in the child[3] survey; six were only asked in the youth[4] survey; and four were asked across all five waves and both the child and youth surveys.[5] In total, I was left with ten empathy questions posed to all respondents age 11 and up in Waves 1 through 5, four of which were posed to all 1,525 respondents in Waves 1 through Wave 5. In order to construct a measurement of empathy applicable to all available respondents, these ten questions were evaluated using per previous literature and the extent to which they capture empathy as a latent construct using confirmatory factor analysis (CFAs).

Eysenck and Eysenck's psychobiological personality inventory was developed roughly concurrent with the more well-known Davis Interpersonal Reactivity Index (Davis 1983), and

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[2] For more on exploring and managing survey attrition please see Appendices
[3] Cohorts I and II, ages 7-10
[4] Cohorts III; IV; and V, ages 11-22
[5] For additional information on the dispersal and origin of empathy questions across the DYS, see Appendices

has been used with success by social scientists who wish to study latent personality characteristics such as self control (Burt, Sweeten, and Simons 2014) and – relevant to the goals of this paper – empathy (Aluja and Blanch 2007; Mak 1991; Richendoller and Weaver 1994). Eysenck and Eysenck's inventory was designed to measure impulsiveness, venturesomeness (sensation seeking), and empathy with the goal of determining which of three personality types an individual most clearly possessed and to what extent (extraverted; neurotic; or psychotic). Their empathy measure has consistently been found to be negatively correlated with psychoticism (Aluja and Blanch 2007; S. B. G. Eysenck and Eysenck 1980; Richendoller and Weaver 1994), which – given psychoticism's defining characteristics of hostility, cruelty, lack of empathy, and non-conformism (Eysenck, Eysenck, and Barrett 1985) – provides evidence of construct validity.

Following a review of the literature, I conducted confirmatory factor analyses to determine the most quantitatively sound measurement of empathy available. The analyses focused on the ten questions asked of youth across all five waves, the first four of which were also asked in the child survey:

Q1) Does it bother you very much when one of your friends seems upset?
Q2) Do you get very upset when you see someone cry?
Q3) Do you find it hard to understand why some things upset people so much?
Q4) Would you find it hard to break bad news to someone?
Q5) Do you tend to be nervous when others around you seem nervous?
Q6) Would you feel sorry for a lonely stranger in a group?
Q7) Do you ever get deeply involved with the feelings of a character in a film, play, or book?
Q8) Do you worry about how other people feel?
Q9) Can you be in a good mood even if those around you are depressed?
Q10) Do you become more irritated than sympathetic when you see someone cry?

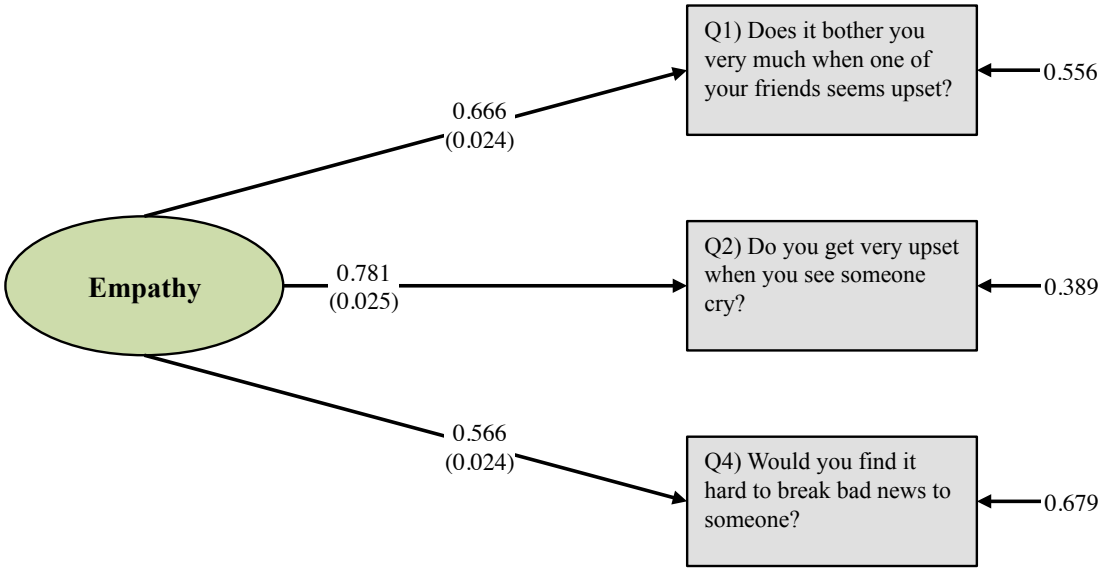
Tetrachoric correlation coefficients and alpha coefficients were calculated for the full, pooled sample (multiple observations for a single individual) and wave-by-wave (one observation per individual) for both the ten- and four-item empathy question sets. Results parallel previous

efforts to use correlation and alpha coefficients as a means of evaluating Eysenck and Eysenck's empathy measurement. Specifically, coefficients are lower in early waves where respondents are younger. (Wave 1 $\alpha = 0.58$) and improve as the population ages (Wave 5 $\alpha = 0.65$). In addition a handful of questions perform marginally better or worse depending on sample gender and alpha values registering slightly higher for males than females. As a final check prior to performing CFAs I performed a principal-component analysis (PCA) as this method was used by Eysenck and Eysenck in their original measurement efforts and is a predecessor to CFAs where the assumptions of exploratory factor analyses do not align well with theory or data structure (Jolliffe 2013). PCAs indicate Q3 ("Do you find it hard to understand why some things upset people so much?"), Q9 ("Can you be in a good mood even if those around you are depressed?"), and Q10 ("Do you become more irritated than sympathetic when you see someone cry?"), are weak indicators of empathy relative to other questions in the set. As such, CFAs (estimated using maximum likelihood) were run both with and without these questions included. Additionally, CFAs were run wave-by-wave to avoid the problem of observation interdependence. Outputs and figures displayed are from Wave 4, as this was the largest, most age-heterogeneous subsample in the survey[6]. Factor loadings for CFAs in which all ten questions were included further supported removal of Q3, Q9, and Q10. The standardized loading coefficients for these variables were lower than for others in their cohort by a magnitude of approximately 0.2. Furthermore, the chi-square value for the 10-question CFA (with no between-question error correlations) was a high 292.22 (degrees of freedom: 35). When these three questions are removed the chi-square improves greatly to 148.18 (degrees of freedom: 14), as does the root mean square error of approximation (RMSEA: 0.094). The allowance of co-variation between error terms of the

[6] Outputs for Waves 1, 2, 3 and 5 did not significantly differ

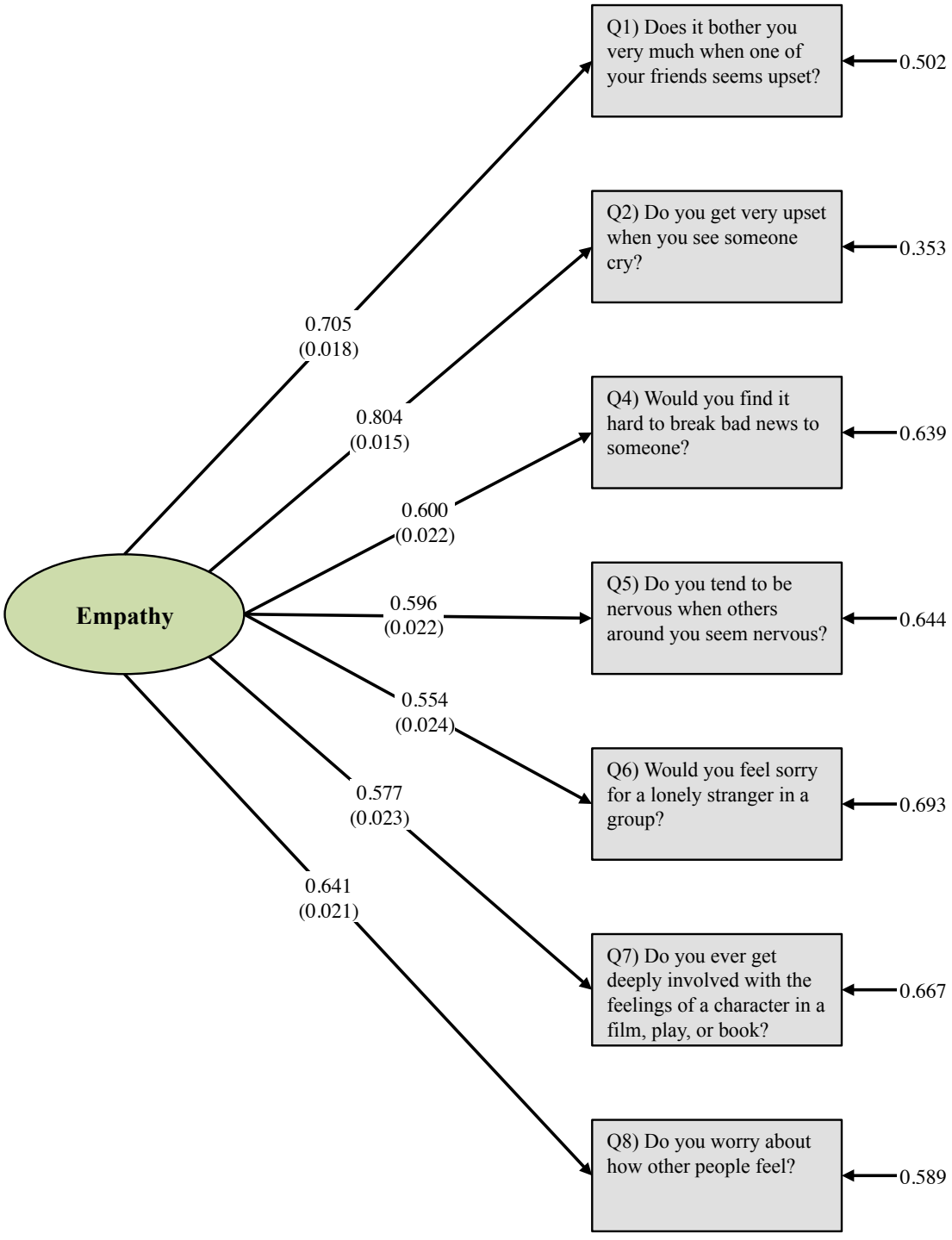
empathy variables further increased the fit of the model, decreasing the chi-square and the RMSEA– however, since these alterations mean little substantively regarding how the empathy measure is constructed, the Figure 2.0 path diagram and its coefficients reflect a model in which errors are uncorrelated. The second set of CFAs on the reduced question set asked of both children and youth (hereafter referred to as the simplified empathy questions set or measurement) produced results in line with expectations. Standardized factor loadings for Q3 were significantly lower than for other questions in the set, and dropping it improved the model. In sum, tetrachoric correlations, alpha coefficients, PCAs, and CFAs all support the exclusion of Q3, Q9, and Q10, and the assertion that these question sets capture empathy as a latent construct. These analyses led me to create two separate scales using the available data. The Youth-Only Empathy Scale ranges from 0 (exceptionally limited empathy) to 7 (exceptionally high empathy). This score was determined by a count of affirmative responses to seven empathy-oriented

Figure 2.0. Empathy CFA Path Diagram with Standardized Coefficients



*OIM Standard Errors displayed in parentheses
Chi-Square: 0.00 degrees of freedom: 0 p-value: -- RMSEA: 0.000

Figure 2.1: Empathy CFA Path Diagram with Standardized Coefficients



*OIM Standard Errors displayed in parentheses
Chi-Square: 148.8 degrees of freedom: 14 p-value: 0.000 RMSEA: 0.094

Table 2.0: Empathy Score Frequencies (Total Observations)

Youth & Child Empathy Scale Frequencies				Youth-Only Empathy Scale Frequencies			
Empathy Score	*Males*	*Females*	*Total*	*Empathy Score*	*Males*	*Females*	*Total*
0	342	105	447	0	59	7	66
1	848	389	1,237	1	130	29	159
2	1,247	928	2,175	2	250	70	320
3	1,277	1,956	3,233	3	446	167	613
4	-	-	-	4	568	308	876
5	-	-	-	5	589	535	1,124
6	-	-	-	6	560	821	1,381
7	-	-	-	7	283	683	966
Total	3,715	3,378	7,092	*Total*	2,885	2,620	5,505

questions. For the Youth and Child Empathy Scale, each respondent was assigned an empathy score ranging from 0 (exceptionally limited empathy) to 3 (high empathy). This score was determined by a count of affirmative responses to three empathy-oriented questions. Sample distributions for both the Youth and Child Empathy Scale and the Youth-Only Empathy Scale are displayed in Table 2.0. The two scales are correlated at 0.84 – indicating they capture the same or similar latent constructs.

Efforts to measure offending behaviors were less complicated given the DYS' central focus on deviant, delinquent, and criminal behaviors. Questions were asked of respondents across all five waves regarding whether or not they had engaged in 22 separate delinquent or criminal behaviors in the past year, and how many times they had engaged in that behavior. The variables were then used to create five count indices (four behavioral indices and one "all offending" index). Offending counts were capped at 1,095 per year[7] – a maximum of three offending behaviors per day.

[7] In total, six respondents reported engaging in 1,095 or more offenses in a given year.

Table 2.1. Delinquent and Criminal Behaviors Captured in the DYS

Index	Behavior
Victimless Crime	Causing a public disturbance
	Begging in public
	Being drunk in public
	Selling drugs
Fraud	Using a stolen or forged check
	Using a stolen credit card
	Selling items under false pretenses
	Selling stolen items (fencing)
Theft	Stealing items worth $5.00 or less
	Stealing items worth $5.00 to $10.00
	Stealing items worth $50.00 to $100.00
	Stealing items worth $100.00 or more
	Shoplifting
	Pickpocketing
	Stealing items from an automobile
	Stealing an automobile to go joyriding
	Stealing an automobile (grand theft auto)
Violent Crime	Attacking someone with a weapon (aggravated assault)
	Attacking someone without a weapon (simple assault)
	Throwing an object at someone with intent to injure
	Using a weapon or force to steal (robbery)
	Breaking and entering (burglary)

Previous research has found both socioeconomic status and school performance reduce or eliminate the effect of gender on empathic ability (D. Jolliffe and Farrington 2004) and are inversely associated with offending behaviors (Elliott and Ageton 1980; Hirschi 1977). Therefore, I use income and single-mother households as proxies for socioeconomic status, and GPA as a direct measure of school performance. These variables were collected time-concurrent with empathy measurements and lagged as needed to ensure models run were consistent with the temporal order suggested by theoretical framework. Specifically, GPA was lagged (t-1) to ensure it preceded "current" empathy levels in H_1 and H_2 tests and double lagged (t-2) for H_3 and H_4 tests to ensure it preceded both empathy and delinquent, and criminal behaviors. As a result, lagged GPA could not be included in OLS regressions for seven-year-olds. The previous year's offending count was also included as a control. This was measured via an absolute count of how

many times individuals reported engaging in 22 separate delinquent, or criminal behaviors in the year leading up to survey administration. As respondents were not asked about all these behaviors in the Child Survey, this variable was not included in OLS regressions for child respondents. However, the child survey was mined for roughly equivalent behaviors and a child offending scale was created and included in regressions.[8] In H_3 and H_4 tests, previous offending for the focal offending behavior was included. For example, if empathy was regressed on *victimless crime*, the previous offending variable included was the previous year's victimless crime offending count.

A unique characteristic of this data is the majority-minority racial and ethnic composition of the sample: 8.26% of those surveyed are White (non-Hispanic), a plurality identifies as Hispanic or Latino/a at 49.44%, and 31.87% of respondents identify as Black. The remainder of the sample is divided into Native American; Asian; Multiracial; and "Other[9]". Coding information for variables is listed below:

- *Income*: mean annual income in dollars reported per respondent guardians or respondent across all available waves.
- *Single mother household*: Coded '1' to indicate the respondent was the member of a single-mother household and '0' to indicate other household structures. This variable was lagged at *t*-1 for H_2 analyses.
- *GPA*: ranging from 1 to 5; or 'mostly F's' to 'mostly A's'. Variable lagged at *t*-1 for H_1 and H_2 analyses, and *t*-2 for H_3 and H_4 analyses.
- *Previous Offending*: A count of previous offending behaviors (i.e. the "all offending" index). This variable was lagged at *t*-1 for all analyses. For child survey respondents, a unique index was used.
- *Race/ethnicity*: dummy variables were included for available races and ethnicities, with White used as the reference category.

[8] See Appendices for additional information
[9] Presented in tables as "Other Race/Ethnicity"

In addition to these variables, I included controls for missing *income* and *GPA* values via dummies (0=non-missing value; 1=missing value).[10]

5.3 MODELS AND METHODS

Ordinary-least squares (OLS) regression analyses were performed to evaluate H_1 and H_2: *Males exhibit, on average, lower levels of empathy over the life course than do females* and *as individuals age the gender gap in empathy will increase.* These hypotheses were tested using both age-stratified analyses (separate regressions for each age group) and pooled analyses with polynomial age terms included. Age stratified analyses were performed exclusively with the Youth and Child Empathy Measure, while pooled analyses with polynomial age terms were performed with both the Youth and Child- and Youth-Only Empathy Measures. Where Youth-Only Empathy Measures were used, child respondents were dropped from the sample.

$$empathy = \beta(male) + \varepsilon \quad (1.1)$$

$$empathy = \beta(male) + \beta(age) + \beta(age^{2)} + \beta(age^{3}) + \varepsilon \quad (1.2)$$

Interviewers attempted to survey respondents at exact one-year intervals where possible, however there are a handful of subjects who were interviewed less than 12 months after the previous wave's interview who therefore had two entries at the same age. As such, I employed robust standard errors to account for sample clustering. Sensitivity checks were conducted to ensure survey attrition and/or missingness did not impact the generalizability of results.[11] In addition to bivariate OLS regressions, controls were added to check for the robustness of results. Tests of this hypothesis initially assume the relationship between empathy and age to be linear (albeit, differing in magnitude by gender); and that the distribution of empathy across the life

[10] Coefficients not displayed in tables
[11] See Appendices for additional information

course can roughly be understood as normal. Therefore, I will begin with age-stratified, binary ordinary least squares (OLS) regressions to test the relationship between empathy and gender across the life course, and relax assumptions of the models and/or add covariates per previous literature and analytical outputs.

Testing of H_3 and H_4: *Empathic ability is inversely associated with delinquent, and criminal behaviors* and *empathy partially mediates the effect of gender on offending*, required address of skewness in offending indices as a plurality of respondents reported engaging in zero delinquent or criminal behaviors. The distribution of offending across the life course was more similar to a Poisson than a normal curve. Therefore, negative binomial regression is most appropriate. These models are preferred to the standard Poisson models because they allow for a common characteristic of crime data – overdispersion[12] – by adding a gamma parameter to the Poisson model, allowing the variance in offending to exceed the mean (Long 1997). The negative binomial models counts of offending as a Poisson distribution, and models overdispersion as a continuous gamma (λ_i) distribution. Respondents in these analyses consist of approximately 47% females and 53% males, and range in age from 11 to 18. All models were run with robust standard errors to account for dependence of multiple observations from the same individual. I use the Youth-Only Empathy Measurement to test H_3 and H_4. This empathy measurement was lagged to so the temporal order of the variables corresponds to the hypothesized causal order. Additional control variables were added to the models to ensure robustness and consistency of results and test for mechanisms through which empathy may operate.

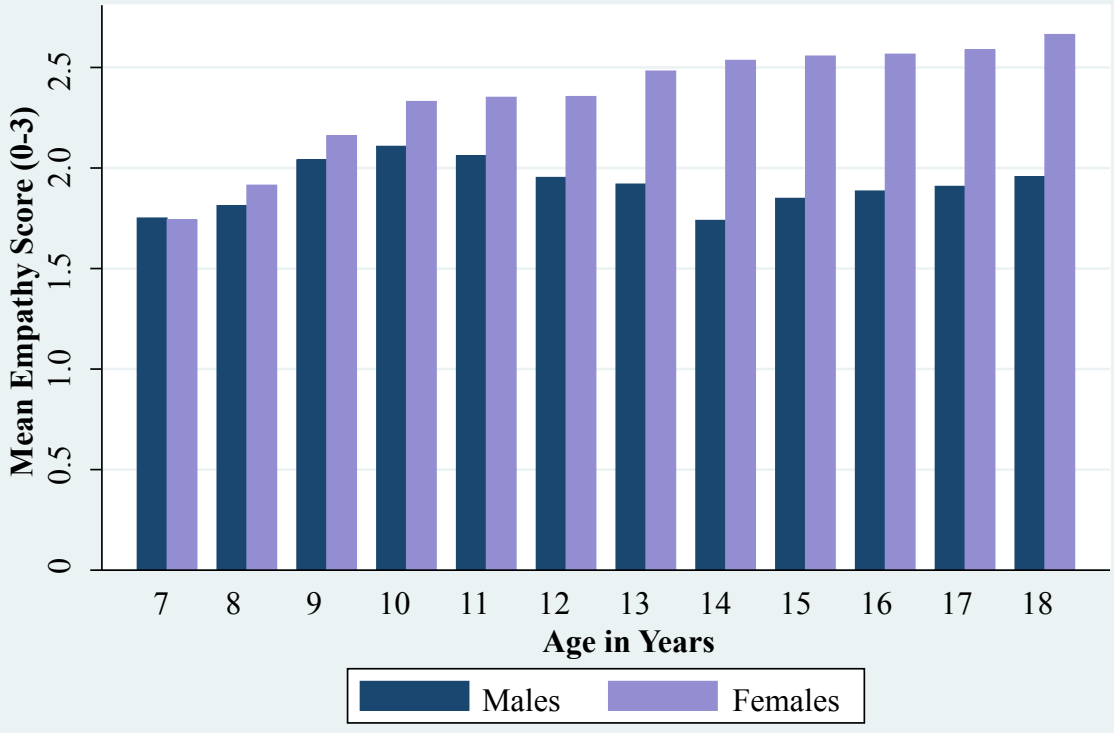
[12] The variance of overall offending indices is 3910.22 while the mean is 8.84, variance to mean ratios are similarly skewed for all offending indices, confirming overdispersion of the data

6.0 RESULTS

6.1 H_1 AND H_2: GENDER AND EMPATHY ACROSS THE LIFE COURSE

As shown in Figure 3.0, mean empathy scores differ for males and females from age 7 to 18.[13] Subsequent age-stratified OLS regressions using the Youth and Child Empathy Measure support a non-linear empathy development process. Statistically significant differences in empathic ability between genders emerges at age 10 – just prior to the onset of puberty and/or the appearance of secondary sex characteristics (Euling et al. 2008). Furthermore, the magnitude of the effect of *male* on *empathy* varies with age. The coefficient for *male* is negative after age 8 and increases in magnitude up to age 14, stabilizing at roughly -0.69 for ages 15-18. By age 13,

Figure 3.0 Mean Youth & Child Empathy Score by Age



[13] Observations for age 7 respondents were omitted in OLS analyses to facilitate lagging of variables

Table 3.0. OLS: Model Set 1

	Youth & Child✚ (Range: 0-3)	Youth Only✣ (Range: 0-7)
Observations	6543	5230
Individual Respondents	1518	1491
Variables		
Intercept	-3.10**	7.81***
	(1.09)	(0.93)
Male	-0.49***	-1.10***
	(0.03)	(0.07)
Age	1.29***	-0.36**
	(0.26)	(0.13)
Age^2	-0.10***	0.01**
	(0.02)	(0.004)
Age^3	0.002***	-
	(0.0005)	
R-Squared	0.0760	0.1116

*p≤0.05; **p≤0.01; ***p≤0.001
Robust standard errors appear in parentheses.
✚Youth and Child empathy scores available for respondents age 8 through 18
✣Youth-Only empathy scores available for respondents age 10 to 18

the average empathy score of males is more than half-a-point lower than those of females.[14] Average empathy scores for the female sample increases precipitously from ages 8 to 10, eventually settling into a gentle linear pattern. Males, however, exhibit a more complicated, age-varying pattern of empathic socialization. Up to age 10 they follow roughly the same pattern as females, with an almost linear increase in empathy. After age 10, however, male empathy scores dip – bottoming out at age 14 (male coefficient at 14 = -0.79) and increasing only slightly up through age 18. These findings are semi-supportive of H_2; as the sample ages, differences in empathy increase up through age 14. After age 14, however, the gender gap in empathy scores decreases slightly. The changing rates at which empathy scores vary in this sample suggest standard linear models will not capture this relationship across time. Therefore I include polynomial age terms to allow the rate of empathic change to vary nonlinearly[15]. Three terms were used in Youth and Child analyses in order to capture the increase in empathy prior to adolescence, while two terms were used in Youth-Only analyses, adjusting for the loss of younger survey respondents. Table 3.0 presents the results of these analyses, and – as with the age-stratified analyses – support H_1 and H_2. The *male* coefficient is statistically

[14] See Appendices for further information
[15] See Appendices for further information

Table 3.1. OLS: Model Set 2

	Youth & Child✦ (Range: 0-3)	Youth Only✣ (Range: 0-7)
Observations	5169	4254
Individual Respondents	1462	1434
Variables		
Intercept	-2.74*	7.14***
	(1.26)	(1.07)
Male	-0.51***	-1.12***
	(0.03)	(0.07)
Age	1.10***	-0.33*
	(0.30)	(0.15)
Age^2	-0.08***	0.01*
	(0.02)	(0.005)
Age^3	0.002***	-
	(0.0006)	
Income	2.37e-06*	6.33e-06**
	(1.09e-06)	(2.08e-06)
Black	-0.19**	-0.44***
	(0.06	(0.13)
Hispanic/Latino	0.04	-0.07
	(0.06)	(0.12)
Asian	-0.28	-0.30
	(0.16)	(0.27)
Multiracial	-0.10	-0.30
	(0.09)	(0.20)
Other Race	0.07	0.07
	(0.12)	(0.31)
Lagged Variables (*t*-1)		
Single-Mother	-0.03	-0.06
Household	(0.03)	(0.06)
GPA	0.06***	0.12***
	(0.02)	(0.03)
R-Squared	0.1025	0.1371

*p≤0.05; **p≤0.01; ***p≤0.001
Robust standard errors appear in parentheses.
✦Youth and Child empathy scores available for respondents age 8 through 18
✣Youth-Only empathy scores available for respondents age 10 to 18

significant and mean empathy score for males is lower in both Youth and Children, and Youth-Only analyses. The difference in empathy scores is proportionately similar across both scales – Male scores are about 15% lower than female scores. Furthermore, age terms are all statistically significant and R^2 values for both models approach regressions run with age dummies – indicating the age polynomials capture the relationship between empathy and gender across the life course nearly as well as the non-parametric alternative. I therefore proceed with the addition of controls to evaluate the strength of this relationship.

Table 3.1 presents the effects of control variables (previous offending, socioeconomic status, school achievement, and race/ethnicity) and confirms they do not dramatically alter the strong, age-varying relationship between gender and empathy. The *male* coefficient remains statistically significant while the magnitude of effect increases slightly: from -0.49 to -0.51 for the Youth and Child Empathy Measure and from -1.10 to -1.12 for the Youth-Only Measure. The effect of age and

age polynomials changes little as well – the terms maintain statistical significance and magnitude and direction of effect generally remain consistent. On the whole, control variables have a limited effect on the relationship between empathy and gender across the life course. There are, however, several statistically significant results.

Socioeconomic status's effect on empathy is small in terms of magnitude, but it is significant in both Youth and Child and Youth-Only analyses. Academic achievement is another significant predictor of empathy in both analyses. For every one-unit increase in *GPA*, Youth and Child Empathy scores are expected to increase by 0.06 points, while Youth-Only empathy scores are expected to increase by 0.12 points. Results of gender-stratified analyses (not shown[16]) indicate some gender-specific differences in how respondents' empathy scores are affected by added control variables. Income is positively and significantly associated with empathy for females (coefficient: 3.28e-06) but is not significant for males. Gender-stratified analyses also indicate differential effects of educational achievement/attachment for the male sample versus the female sample. Specifically, a higher GPA was significantly and positively associated with empathic ability for males but insignificantly and positively associated with empathic ability for females: The GPA coefficient for males was 0.13 – nearly twenty times that of the female GPA coefficient of 0.007.

Finally, Black-identifying respondents scored lower on empathy measures in comparison to their white counterparts and this difference was statistically significant. It is, however, worth noting the effect of racial and ethnic identities is sporadic across the life course in age-stratified analyses – likely a result of uneven racial/ethnic compositions across age-stratified subsamples. Furthermore, there are a number of structural disadvantages specific to the Black experience (and

[16] See Appendices

likely associated with empathy) that are not and cannot be captured in these analyses (Wilson 2009). Therefore, I do not interpret these results to mean racial or ethnic identification alone decreases empathic ability. It is clear that intersections of race, ethnicity, class, and gender play a part in the socialization of empathy, and future researchers are encouraged to explore these relationships further. For the purposes of this paper, however, I present these results without much comment and move on to testing the relationship between empathy and offending.

6.2 H_3 AND H_4: EMPATHY AND OFFENDING

Table 4.0. Bivariate Negative Binomial Models: Model Set 1

	Victimless Crime	Fraud	Theft	Violent Crime
Observations	3038	2997	3174	3142
Individual Respondents	1399	1394	1401	1402
Variables				
Intercept	2.57***	2.17***	2.26***	2.92***
	(0.46)	(0.63)	(0.47)	(0.60)
Lagged Variables (*t*-1)				
Empathy	-0.25**	-0.53***	-0.30***	-0.35***
	(0.09)	(0.11)	(0.08)	(0.10)
Wald X^2 (1)	6.77	24.96	13.03	11.24
Log-Pseudo-Likelihood	-3618.504	-1734.942	-3694.003	-4125.238

*p≤0.05; **p≤0.01; ***p≤0.001
Robust standard errors appear in parentheses. Respondents are age 10 to 18.

As with H_1 and H_2, I initiate hypothesis tests by confirming the existence of a significant relationship between empathy (using the Youth Only Empathy Scale) and offending via simple bivariate analyses. Table 4.0 presents the results of pooled, offending-stratified bivariate negative binomial regressions and supports H_3 in that as levels of empathy decrease, offending counts increase. Also consistent with H_3, the effects of empathy are smallest for victimless crimes, though a one-unit increase on the Youth-Only Empathy Scale is associated with a significant 22.11% decrease in victimless offending behaviors[17]. Empathy is most protective against fraud-oriented offending types, and for every one-unit increase in empathy we

[17] The coefficients in negative binomial models are in logits, so for ease of interpretation I convert these coefficients into percent increases or decreases in offending behaviors:
$(\exp^{\text{coefficient}} - 1)\times 100 = \text{percent change in offending behaviors}$

see a 41.14% decrease in counts of fraudulent offending. Theft and violent offending are reduced by 25.92% and 23.66%, respectively.

Building on these bivariate results, I executed numerous analyses per each offending index to estimate the covariate effects and determine whether empathy mediates the effect of gender on offending – consistent with H_4. Uncontrolled models show the bivariate total effect of *male* on offending remains significant, but is dramatically smaller than the effect of *male* on offending where *empathy* is included. For example, in models with no other covariates fraudulent offending counts increase by 1013.40%, for males, but *empathy* reduces this effect to 487.08%. The effect of *empathy* also reduces when *male* is included, though not as dramatically as the effect of *male*. Keeping with the fraud example, each one-unit increase in empathy decreases fraudulent offending by 41.14% in the bivariate analysis, but this reduces to 28.11% when *male* is included. Both *empathy* and *male* maintain their significance across offending behaviors, with the exception of violent offending: *empathy* is no longer significant in models where *male* is included. Nonetheless, results indicate empathy partially mediates the effect of *male* on offending for victimless crime offending, fraudulent offending, and theft – in support of H_4. These results also support H_3 for all but violent offending in that empathy is statistically significant across offending behaviors.

Table 4.1 presents the results of the fully controlled model. The direction of effect for empathy remains consistent in that it is inversely associated with all offending behaviors. The magnitude of effect for empathy, however, continues to decrease and empathy coefficients for victimless and violent offending (10.42% and 2.95% reductions in offending, respectively) are not statistically significant. In the end, fraudulent and theft offending are significantly reduced: A

Table 4.1. Negative Binomial: Model Set 2

	Victimless Crime	Fraud	Theft	Violent Crime
Observations	2261	2226	2400	2357
Individual Respondents	1342	1340	1351	1347
Variables				
Intercept	-29.85***	-18.96***	-22.97***	-17.37***
	(5.91)	(5.92)	(4.48)	(5.07)
Male	0.29	1.26***	0.48*	0.83***
	(0.28)	(0.31)	(0.21)	(0.25)
Age	4.14***	2.13**	3.39***	2.59***
	(0.78)	(0.79)	(0.62)	(0.71)
Age^2	-0.13***	-0.06*	-0.11***	-0.09***
	(0.03)	(0.03)	(0.02)	(0.02)
Income	-5.25e-06	-5.22e-06	-6.97e-06	-.00001
	(5.28e-06)	(8.25e-06)	(5.15e-06)	(5.84e-06)
Black	0.55	0.54	-0.30	0.76*
	(0.37)	(0.62)	(0.51)	(0.36)
Hispanic/Latino	-0.42	1.01	0.18	-0.08
	(0.35)	(0.60)	(0.50)	(0.32)
Asian	-3.45***	-35.59***	-0.91	-0.98
	(1.04)	(0.71)	(0.99)	(0.87)
Native American	-0.91	-0.25	0.33	0.99
	(0.58)	(0.84)	(0.63)	(0.71)
Multiracial	-0.17	1.57	0.60	0.62
	(0.53)	(0.82)	(0.63)	(0.72)
Other Race/Ethnicity	2.46**	0.80	-1.74	1.81*
	(0.95)	(0.92)	(1.02)	(0.85)
Lagged Variables (*t*-1)				
Empathy	-0.11	-0.31***	-0.27***	-0.03
	(0.08)	(0.08)	(0.06)	(0.08)
Single Mother Household	-0.25	0.07	0.20	0.35
	(0.25)	(0.29)	(0.19)	(0.21)
Previous Offending	0.03	0.03*	0.04	0.04*
	(0.02)	(0.01)	(0.03)	(0.02)
Lagged Variables (*t*-2)				
GPA	-0.32*	-0.003	-0.25*	-0.37**
	(0.14)	(0.16)	(0.13)	(0.12)
Wald X^2 (15)	244.00	9540.05	138.92	76.57
Log-Pseudo-Likelihood	-2409.972	-1027.476	-2557.338	-2680.012

*p≤0.05; **p≤0.01; ***p≤0.001

Robust standard errors appear in parentheses. Respondents are age 10 to 18.

one-unit increase in empathy is expected to reduce fraudulent offending counts by 26.65% and theft offending counts by 23.66%. These results support H_3 for fraudulent and theft offending, but not for victimless or violent offending.

Male coefficients are significant and in the expected direction (positively associated with offending behavior) with the exception of victimless crime offending. Being male is associated with a non-significant 33.64% increase in victimless crime offending, and a significant 252.54% increase in fraudulent offending; 61.61% increase in theft; and a 129.33% increase in violent offending. When these results are compared to controlled models in which empathy was not included, we

again see evidence that the effect of *male* on offending is partially mediated by *empathy*. As with the uncontrolled models, the effect of male was found to decrease. While not significant in either analysis, the positive effect of male on victimless crime offending reduces from 51.92% to 33.64%. The effect of male on violent crime offending reduces from 134.13% to 129.33%, though empathy is not a statistically significant predictor of violent crime offending. The reduced effect of *male* on fraudulent and theft offending was statistically significant, changing from a 359.09% increase in fraudulent offending counts to a 252.54% in fraudulent offending counts and from a 120.99% increase in theft offending counts to a 61.61% increase in theft offending counts[18].

The effects of socioeconomic status is generally non-significant, though there is some support for the hypothesis that income is inversely associated with offending inasmuch as *income* coefficients are consistently negative – a common finding in criminological and sociological literatures (Defoe, Farrington, and Loeber 2013; Elliott and Ageton 1980). Results also support a relationship between school achievement and offending behaviors – a one-unit increase in GPA reduces victimless offending by 27.38%; theft offending by 22.12%; and violent offending by 30.93%. Finally, results for race and ethnicity variables indicate individuals who identify as Asian are significantly less likely to engage in particular offending behaviors when compared to individuals who identify at White. However, it is important to note there were only 24 observations and 14 respondents who identified as Asian. It is therefore likely that the exceptionally large protective effect of identifying as Asian on fraudulent offending – for example – is exaggerated due to small subsample size.

[18] Analyses were run with an interaction term for male and empathy: results indicate there is no statistically significant difference regarding the difference in magnitude of the empathy effect between males and females.

7.0 DISCUSSION

Results support a strong, age-dependent relationship between gender and empathy, and empathy and offending. Furthermore, the longitudinal data allows me to test social psychological conceptions of empathic development, and specify a temporal order of variables consistent with the causal order suggested by my theoretical framework. Empathic ability develops across the life-course and this development differs between males and females. Specifically, the genders share empathic learning trajectories up through early childhood, and split into high- and low-empathy groups aligned with subject gender at or around adolescence. Empathy then decreases offending behaviors controlling for previous offending histories and mediates the criminogenic effect of being male. These results connote a relationship in which one's orientation to the gendered generalized other affects the development of empathic ability, and empathic ability predicts fraud and theft.

7.1 GENDER AND EMPATHY

Assuming pressure to identify with the gendered generalized other varies across the life course, H_1 results indicate that possession and expression of empathy is gendered, being more prevalent among females. Furthermore, results somewhat support H_2 in that they are consistent with the *gender intensification hypothesis* – which states adolescence increases individual awareness of gendered expectations and coincides with increased social pressure to conform to traditional masculine and feminine roles (Crouter, Manke, and McHale 1995; Hill and Lynch 1983). Males gradually come to understand expressions of empathy as normative for feminine women but threatening to their status as masculine men. This decreases the incentive for adolescent males to develop empathy as the presence of femininity is defined by an absence of masculinity and *vice versa* (Butler 2014; Pascoe 2011; Messerschmidt 1993; Cohen 1955), while

adolescent proclivities towards indiscriminate exercise of enforcement of 'natural' social behaviors mean harsher consequences for non-gender-normative behavior than for some antisocial behaviors, especially for boys (Kohlberg and Gilligan 1971; Kohlberg and Hersh 1977; Maccoby 1990).

While these findings are not wholly consistent with H_2 as the gender gap in empathic ability shows some signs of edging towards closure as adolescent transition into adulthood, they do support the symbolic interactionist precept of awareness and complexity of the generalized other increasing as individuals age (Chang 2004; Mead 1934; Matsueda 1992; Massoglia and Uggen 2010). As individuals move through adolescence they are exposed to new situations and events that force them to reconsider current conceptions of the gendered generalized other as a behavioral reference group and/or personal identity. Relative to younger children, adolescents increasingly find themselves in situations where opposite sex interaction is expected. This opens up opportunities to supplement the gendered generalized other with more nuanced, informed knowledge of how to perform one's gender and claim one's gender identity, as well as opportunities to form attachment to other groups and identities (i.e. 'good student' or 'loyal friend'). This is consistent with Mead's assertion that by focusing reflectively on the self, actors are able to gradually realize new, more complex identities (1964). This new identity "can be considered a broader, more all-encompassing personal construct" which "provides a higher level of organization and coherence to one's cognitions" (Giordano, Cernkovich, and Rudolph 2002, 1001). Phrased in Kohlberg's language of moral development, this higher level of organization and coherence to one's cognitions necessitates an "expanding capacity for empathy, for taking the role of the other" (Kohlberg and Hersh 1977, 56), culminating in a moral consciousness bound by context and the needs of others rather than a crude understanding of conventional

norms. As Figure 1.0 illustrates at the outset of this paper, it is not just that males are behind females in empathic development – if this were the case we would expect the functional forms of empathy for males to be identical to that of females, just lagged behind by a year or so. What we see instead is a consistent increase in empathic capacity for females across the life course indicating the development of a moral consciousness as theorized by Kohlberg. Adolescent males, on the other hand, experience a period of anti-development. They are not just lagging behind females in empathic development, their development stops altogether and actually *reverses* itself for a period of five or so years in early adolescence, during which risk of offending also increases dramatically. I argue this empathic reversal is the inevitable result of the enormous pressure placed on individuals in adolescence to adhere to the gendered generalized other, specifically pressures placed on adolescent boys to "accomplish" a crude masculinity that leaves no room for earnest empathic expression (Messerschmidt 1993; Maccoby 1999; Pascoe 2011).

7.2 EMPATHY, GENDER, AND OFFENDING

While results show the directional effect of empathy as consistent and in the hypothesized direction for all offenses, it is clear that not all offending is equal, nor are all empathic effects. Unsurprisingly, empathy does not significantly to factor in to victimless offending behaviors, nor does it mediate the effect of male on victimless offending. A likely explanation is victimless crime offending, by definition, does not induce individuals to consider the thoughts, feelings, or actions of a specific, significant other prior to offending and therefore do not trigger the empathic process. Furthermore the *male* coefficient is non-significant in victimless offending models with controls. Taken together, this indicates victimless offending behaviors are less likely the result of

adherence to a gendered generalized other, and more likely a result of gender-neutral circumstances not captured in this analysis – such as opportunity or substance abuse history.

As with victimless offending, the hypotheses that empathy decreases violent offending or mediates the effect of male on violent offending are not supported. Unlike victimless offending, violent offending clearly requires interaction with a specific – though perhaps not significant – other. These interactions, however, are often characterized by aggression – real or perceived – on the part of both victim and offender. The male offender is therefore placed in the precarious position of risking their identity as a masculine man by remaining passive in the face of aggression, or achieving ("doing") their masculinity with violence (Anderson 1999; Willer et al. 2013). I therefore speculate that when confronted with a direct assault on their masculinity, the salience of a male's identification with the masculine man prevents the empathic process from being triggered. In other words, when confronted with an aggressive threat the adolescent male calls upon his one-dimensional understanding of the gendered generalized other to gauge the acceptability of certain behaviors and the consequences of inaction. This interpretation is further buoyed by previous research finding men are more likely to respond to anger-inducing stimuli with aggression, that they view anger as "an affirmation of their masculinity" (Broidy and Agnew 1997, 282), and manliness as "made real with violence" (Harris 2000, 781). Adolescent females, however, are comparatively hesitant to engage in violence for the same reason adolescent males are afraid to shy away from it – their rudimentary understanding of what it means to be a feminine woman compels them to remain passive unless their femininity is explicitly threatened (Belknap 2014; Schwartz and Steffensmeier 2007). Furthermore, females are less likely than males to explicitly threaten the femininity of other females because power and control are not central to their identities as women. Males are also less likely to explicitly

threaten the feminine woman because the socially conditioned impulse to control female behavior is couched in terms of 'protecting' girls and women – thus implicating violence against girls and women as unmanly unless inaction against the female is perceived as presenting a greater threat to one's masculinity than action. In sum, it can be argued that empathy does not reduce risk of violent offending in males because aggression and physical dominance are central to their gendered generalized other, or masculine man. Conversely, it does not reduce risk of violent offending in females because passivity and caretaking are central to their gendered generalized other, or feminine woman.

While the protective effect of empathy appears minimal for victimless and violent crime offending, empathic ability is significantly and inversely associated with fraud and theft offenses. Fraudulent crime was most dramatically affected by empathy, perhaps because fraud entails a real victim and often involves face-to-face interactions with other people – thus giving the potential offender exposure to the thoughts, feelings, actions of- and possible consequences for their victim, and providing ample opportunity to trigger the empathic process. For example, an empathic individual may find it more difficult to sell a broken car stereo to someone under false pretenses because they sense and wish to avoid their victim's disappointment in the event the stereo is faulty. Alternatively, empathic individuals may be more sensitive to subtle threatening behavior displayed by their victim. If the victim expresses frustration with previously having been "ripped off," for example, an empathic individual may take this as both an emotion with which they can empathize and a signal that this potential victim may be quick to anger. In addition, juveniles' acquisition of the tools of fraud (stolen checks or credit cards) may involve thievery from a specific, significant other such as lifting a checkbook out of their mother's purse – thus increasing the probability of triggering the empathic process.

Regarding empathy's significant, inverse association with theft – the majority of people have likely experienced what they understand as an unfair or undue loss or denial of personal property, and that this "shared" experience with potential victims triggers the offender's empathic response. For example, an individual who has had their wallet lost or stolen may recall this unfortunate experience prior to following through with an intended pickpocketing and may imagine their victim having to walk through the same process they did when their wallet went missing.

Finally, I propose two explanations applicable to both fraud and theft, the first being the simple fact of timing. The decision-making process that precedes these behaviors is generally lengthier than that which precedes violent offending. That is to say one rarely experiences an event wherein guttural instinct compels them to steal a car. It therefore stands to reason that this lengthier decision-making process allows more time to encounter empathy-triggering stimuli and engage in empathic expressions and/or behaviors. Second, fraud and theft offenders are more likely to be confronted with negative appraisals of peers if and when their offending behaviors are revealed to others. While there are undoubtedly negative appraisals placed made of victimless and violent offenders, I speculate these appraisals are less harmful to one's conception of self and that potential appraisers are less likely to make their opinions known. Peers are, however, more likely to express displeasure – explicit or implied – with fraud and theft behaviors and more likely to ostracize fraudulent or theft-oriented peers as these behaviors imply dishonesty or untrustworthiness. An empathic individual may be more sensitive to this consequence, more capable of recognizing this negative appraisal, and less likely to engage in these offending behaviors.

7.3 LIMITATIONS

While the central tenants of tested hypotheses are well supported by analytical results, this research effort is not without its weaknesses. Most significantly, the DYS does not provide a means of testing "gender identity" as a mechanism unto itself. I instead choose to test the effect of a peripheral mechanism, which I argue as central to the formation and expression of gender identity – empathy. While I trust my interpretation is grounded in previous research efforts and my own analytical results, I also believe future researchers should test the relationship between gender identity and offending across the life-course more directly wherever possible. Second, the Eysenck and Eysenck Empathy Measure used in this research may measure empathy more effectively for some groups than others. Specifically, both my own analyses and those of others have found this measure to be more reliable for adolescents and adults than for young children. Furthermore, the Eysenck and Eysenck Empathy Measure was developed to measure what is now considered "generalized" or "global" empathic expression. Since its inception, subsequent scholars have argued empathy is considerably more multifaceted and complex than Eysenck and Eysenck may have originally understood (Fernandez and Marshall 2003; Marshall et al. 1995; D. Jolliffe and Farrington 2007; van Langen et al. 2014). I therefore encourage other scholars of empathic development to seek out and use a variety of empathy measures, with particular attention paid to those that effectively measure empathy from early childhood onwards.

8.0 SUMMARY AND CONCLUSIONS

A sentiment familiar to scholars of women, gender, and crime is the tired argument that because men commit the overwhelming majority of crime, data collection and research efforts that include women are necessary only where the primary concern is female offending patterns. In other words, the knowledge loss due to female exclusion is negligible because crime is 'a

man's game.' This line of thinking is, at best, deeply flawed. As demonstrated throughout this paper, even in studies where the primary focus is masculinity and male offending inclusion and discussion of female offending and non-offending motivations contributes greatly to our overall understanding of crime in general and crime and masculinity in particular. In addition, use of a longitudinal dataset to measure empathy across the life course as it relates to gender differences in offending has allowed for the inclusion of tested social psychological concepts and understandings in a distinctly sociological effort. Furthermore, this research suggests a pathway (albeit daunting) to proactive juvenile offending reduction: encourage and reward empathic ability building and expression in males and females; identify programs and pursuits that enhance empathic abilities throughout adolescence; and ensure empathic development is a key goal of rehabilitative programs.

Empathic interactions and decision-making processes related to offending are not shown here to differ significantly by gender, and empathy mediates the effect of gender on fraud and theft offending, suggesting male deficits in empathy are driving the gender gap in juvenile offending behaviors. I therefore argue the gender gap in offending can be explained – in part – by significant differences in empathic learning and capacity between and among males and females across the life course, and the pressure placed on individual social actors to orient and conduct themselves per a gendered generalized other. Symbolic interactionist theories on performance and maintenance of gender identity point to an incredible amount of pressure placed on individuals to comport to traditional gender roles (Connell and Messerschmidt 2005; Goffman 1977; West and Zimmerman 1987). As such, these results are interpreted to mean males are socialized "out" of expressing and building empathy as a means of maintaining and supporting their own masculine identities. This anti-empathic socialization puts males at a distinct

disadvantage with regards to accumulation of protective emotional characteristics. Conversely, females are socialized "in" to expressing and building empathy as a means of maintaining and supporting their own feminine identities – thus advantaging them significantly with regards to protection against delinquent and criminal behaviors and maintaining the gender gap in offending. This research shows scholars of the gender gap in criminal and juvenile offending can and should attempt to identify not just criminogenic, antisocial components of traditional masculinity, but protective, prosocial components of traditional femininity. Furthermore, this research demonstrates the incredible potential of all-gender-inclusive, longitudinal data collection efforts to enhance current sociological and criminological understandings of offending motivations and the gender/crime paradigm. Current conceptions of what it means to be a masculine man serve as a developmental hurdle for boys and adolescents. The ability to take the role of a specific, significant other, and orientation to a complex, fully-developed generalized other cannot happen where behaviors are punished and regulated per an impossibly simplistic gendered generalized other. As long as empathic expression and development is discouraged in boys and men, offending will remain 'a man's game.' These results indicate it is not enough to make empathy more masculine, we must acknowledge the paradoxical turmoil that defines male adolescence and address its role in increasing offending behaviors.

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10.0 APPENDICES

APPENDIX A

As with any longitudinal effort, survey attrition (or loss of persons over time) is an issue that requires careful attention. While the total attrition rate in the DYS between Waves 1 and 5 is a low 10% (127 persons); an additional 94 persons left and re-entered the survey. In total, 221 persons – or 14% of persons surveyed in Wave 1 – were missing at some point in the survey period. Three steps were taken to ensure these missing observations do significantly undermine generalizability of results presented in this paper.

Step 1: Identification and coding of all missing observations (1=missing; 0=non-missing)

Attrition Sample

Cohort	*Males*	*Females*	*Total*
Cohort I	33	23	56
Cohort II	17	14	31
Cohort III	23	18	41
Cohort IV	21	17	38
Cohort V	28	27	55
Total	122	99	221

A review of missing frequencies indicates we may have disproportionate numbers of males and Cohort V individuals leaving the survey.

Step 2: Independent Sample t-tests to determine whether or not the missing sample's empathy scores differ significantly from the non-missing

Independent Sample T-Test: Empathy/Missing

		Pooled Observations	*Mean Empathy Score*	*Degrees of Freedom*	*Critical Value*
All	Non-Missing	6,431	2.1600	7,090	1.3099
	Missing	661	2.1104		
Males Only	Non-Missing	3,366	1.9393	3,712	1.5779
	Missing	348	1.8534		
Females Only	Non-Missing	3,065	2.4022	3,376	0.1271
	Missing	313	2.3961		

T-tests indicate there is not a statistically significant difference in empathy scores for our missing versus non-missing samples. It is important to note, however, that when we stratify our samples by gender the critical values indicate more certainty regarding the non-significance of missing females versus missing males.

Step 3: Replication of bivariate regressions, controlling for missingness

Male regressed on Empathy by Age, Controlling for Missingness

Age	*N*	*Constant*	*Male Coefficient*	*Missing Coefficient*
7	268	1.8008	0.0191	-0.3411***
8	321	1.9386	-0.0924	-0.2407
9	522	2.1724	-0.1233	-0.0991
10	627	2.3387	-0.2241***	-0.0827
11	807	2.3645	-0.2884***	-0.1506
12	638	2.3653	-0.3994***	-0.1103
13	797	2.4625	-0.5632***	0.2002**
14	649	2.5278	-0.7953***	0.0646
15	768	2.5581	-0.7073***	-0.0080
16	595	2.5760	-0.6771***	-0.0897
17	498	2.5939	-0.6776***	-0.0607
18	275	2.6640	-0.7067***	0.0019

*p≤0.10 **p≤0.05 ***p≤0.01

As evidenced in the table above, missingness is – for the most part – not a significant predictor of empathy. However, missingness is significant and its effect is fairly large for both seven- and thirteen-year-olds. The precise reasons behind this are unknown, but possibilities include literal movement of families away from Denver immediately prior to enrolling children in middle- or high-schools, and coincidentally disproportionate attrition rates within these two age groups. In sum: missingness does not appear to be enormously impactful in the testing of H_1. However, results for seven-year-olds and thirteen-year-olds may be less generalizable than results for other age groups.

APPENDIX B

Empathy Questions in the DYS									
Question	**Appears in Child Survey**			**Appears in Youth Survey**					**Measurement Origin**
	Wave 1	*Wave 2*	*Wave 3*	*Wave 1*	*Wave 2*	*Wave 3*	*Wave 4*	*Wave 5*	
Does it bother you very much when one of your friends seems upset?	X	X	X	X	X	X	X	X	Eysenck & Eysenck
Do you get very upset when you see someone cry?	X	X	X	X	X	X	X	X	Eysenck & Eysenck
Do you find it hard to understand why some things upset people so much?	X	X	X	X	X	X	X	X	Eysenck & Eysenck
Would you find it hard to break bad news to someone?	X	X	X	X	X	X	X	X	Eysenck & Eysenck
Do you become upset when you see someone being hurt?		X	X						Unknown
Do you always tell the truth?			X						Unknown
Do you ever use bad words?			X						Unknown
Do you tend to be nervous when others around you seem nervous?				X	X	X	X	X	Eysenck & Eysenck
Would you feel sorry for a lonely stranger in a group?				X	X	X	X	X	Eysenck & Eysenck
Do you ever get deeply involved with the feelings of a character in a film, play, or book?				X	X	X	X	X	Eysenck & Eysenck
Do you worry about how other people feel?				X	X	X	X	X	Eysenck & Eysenck/ Davis
Can you be in a good mood even if those around you are depressed?				X	X	X	X	X	Eysenck & Eysenck
Do you become more irritated than sympathetic when you see someone cry?				X	X	X	X	X	Eysenck & Eysenck

APPENDIX C

Delinquent and Criminal Behaviors of Children Captured in the DYS

Index	Behavior
Victimless Crime	Causing a public disturbance
Theft	Stealing money from someone's purse or dresser Shoplifting Pickpocketing Stealing items from an automobile
Violent Crime	Fighting with other children (simple assault)) Hitting a teacher at school (simple assault) Throwing an object at someone with intent to injure Breaking and entering (burglary)

Note: Child offending scales were aggregated, offenses are categorized here for easier comparison between child and youth offending indices

APPENDIX D

The changing rates at which empathy scores vary in this sample indicate standard linear models do not capture this relationship, and that males and females require distinctly different models to better reflect how their empathic ability develops across the life course. Therefore, I revise my models for the functional form of empathy to include quadratic terms, thus allowing the rate of empathic change to vary with age. For females the functional form is:

$$empathy = \beta(age) + \beta(age^2) + \beta(age3\ \ ) + \varepsilon$$

While the model for males requires an additional parameter to account for the dip-and-rise pattern:

$$empathy = \beta(age) + \beta(age^2) + \beta(age^3) + \beta(age^4) + \varepsilon$$

In order to test the fit of these functional forms I ran gender-stratified OLS models using pooled observations, as well as gender-stratified fixed effects models to determine how well these models capture within-individual variance in empathy across the life course. Coefficients produced in regression sets were similar, and predicted values varied little, supporting the validity of functional form models for males and females.

Functional Form Fitting

	Gender	*N*	*Constant*	*Age*	Age^2	Age^3	Age^4
OLS	Males	3,714	-11.3726	4.1552***	-0.4624***	0.0218***	-0.0003***
	Females	3,377	-1.0463	0.6151***	-0.0353*	0.0006	-
		Groups	*Constant*	*Age*	Age^2	Age^3	Age^4
Fixed Effects	Males	806	-8.0565	3.0868***	-0.3371**	0.0156***	-0.0002**
	Females	719	-1.8146	0.8151***	-0.0501**	0.0010***	-

*p≤0.05 **p≤0.01 ***p≤0.001

Actual vs. Predicted Values

	Males: $empathy=\beta(age)+\beta(age^2)+\beta(age^3)+\beta(age^4)+\varepsilon$			**Females:** $empathy=\beta(age)+\beta(age^2)+\beta(age^3)+\varepsilon$		
Age	**Actual μ**	**OLS $\widehat{\mu}$**	**Fixed Effects $\widehat{\mu}$**	**Actual μ**	**OLS $\widehat{\mu}$**	**Fixed Effects $\widehat{\mu}$**
7	1.7517	1.6607	1.7550	1.7422	1.7636	1.7778
8	1.8136	1.9432	1.9787	1.9150	1.9648	2.0103
9	2.0404	2.0633	2.0761	2.1608	2.1284	2.1907
10	2.1081	2.0763	2.0876	2.3311	2.2585	2.3251
11	2.0615	2.0281	2.0472	2.3519	2.3592	2.4195
12	1.9534	1.9562	1.9829	2.3557	2.4348	2.4800
13	1.9204	1.8887	1.9163	2.4825	2.4892	2.5125
14	1.7398	1.8450	1.8626	2.5355	2.5267	2.5232
15	1.8495	1.8353	1.8311	2.5571	2.5514	2.5181
16	1.8861	1.8612	1.8244	2.5663	2.5674	2.5032
17	1.9091	1.9151	1.8392	2.5878	2.5789	2.4845
18	1.9574	1.9804	1.8657	2.6642	2.5899	2.4681

APPENDIX E

Additional analyses: Tables and figures

Table 3.2. Gender-Stratified OLS Models: Controls regressed on empathy

	Males Only	Females Only
Observations	2214	1957
Individual Respondents	753	685
Variables		
Intercept	1.59***	1.85***
	(0.24)	(0.19)
Age	-0.003[19]	0.04***
	(0.01)	(0.008)
Income	1.15e-06	3.28e-06**
	(1.64e-06)	(1.35e-06)
Black	-0.30	-0.12
	(0.12)	(0.08)
Hispanic/Latino	-0.14	0.13
	(0.12)	(0.07)
Asian	-0.32	0.07
	(0.20)	(0.09)
Native American	-0.41	-0.05
	(0.22)	(0.16)
Multiracial	-0.16	-0.09
	(0.22)	(0.13)
Other Race/Ethnicity	0.11	0.01
	(0.21)	(0.12)
Lagged Variables (*t*-1)		
Single Mother Household	-0.04	-0.01
	(0.05)	(0.04)
GPA	0.13***	0.007
	(0.03)	(0.02)
Previous Offending	-0.0006***	-0.0002
	(0.0001)	(0.0003)
R-Squared	0.0329	0.0428

Note: Robust standard errors appear in parentheses
*p≤0.05; **p≤0.01; ***p≤0.001

[19] Per previous discussion regarding the functional form of empathy, this coefficient is both small and insignificant because there is no *linear* relationship between age and empathy. Age is therefore included here as a control, and nothing more.

Table 3.0. Age-Stratified Bivariate OLS Models: Male regressed on empathy

	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18
Observations	273	330	527	638	818	641	798	652	771	595	498	275
Individual Respondents	273	298	511	579	796	594	765	594	744	544	480	256
Variables												
Intercept	1.74***	1.91***	2.16***	2.33***	2.35***	2.36***	2.48***	2.53***	2.56***	2.56***	2.59***	2.66***
	(0.09)	(0.08)	(0.06)	(0.05)	(0.04)	(0.05)	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)	(0.10)
Male	0.01	-0.10	-0.12	-0.22**	-0.29***	-0.40***	-0.56***	-0.79***	-0.71***	-0.68***	-0.68***	-0.71***
	(0.12)	(0.11)	(0.08)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.08)	(0.05)
R-Squared	0.0000	0.0026	0.0044	0.0157	0.0266	0.0488	0.0935	0.1826	0.1350	0.1342	0.1304	0.1635

Note: Robust standard errors appear in parentheses

*p≤0.05; **p≤0.01; ***p≤0.001

Table 3.1. Age-Stratified OLS Models: Male and controls regressed on empathy

	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18
Observations	88	86	249	190	531	433	525	455	525	458	469	260
Clusters	88	85	244	190	519	411	507	439	509	440	452	242
Variables												
Intercept	2.37***	1.84**	2.12***	2.26***	2.33***	2.13***	2.23***	2.12***	2.05***	2.73***	2.33***	2.59***
	(0.49)	(0.65)	(0.34)	(0.43)	(0.23)	(0.29)	(0.24)	(0.26)	(0.25)	(0.24)	(0.24)	(0.31)
Male	-0.29	-0.30	-0.19	-0.18	-0.26***	-0.42***	-0.56***	-0.82***	-0.70***	-0.67***	-0.66***	-0.69***
	(0.21)	(0.24)	(0.12)	(0.13)	(0.08)	(0.09)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.10)
Income	2.46e-06	.00001	4.66e-06	-1.70e-0	2.14e-06	-1.50e-06	1.70e-06	5.02e-06*	2.85e-06	6.46e-07	5.44e-06	1.05e-06
	(0.00001)	(.00001)	(4.79e-06)	(5.83e-06)	(2.49e-06)	(2.56e-06)	(1.80e-06)	(2.03e-06)	(2.15e-06)	(3.59e-06)	(3.34e-06)	(3.92e-06)
Black	-0.36	-0.12	-0.18	-0.19	-0.36**	-0.14	-0.19	-0.15	-0.04	-0.44**	-0.05	0.06
	(0.34)	(0.34)	(0.18)	(0.25)	(0.13)	(0.18)	(0.14)	(0.16)	(0.16)	(0.16)	(0.15)	(0.16)
Hispanic/Latino	0.02	0.43	-0.01	0.19	-0.13	0.11	0.06	0.06	0.07	-0.25	0.12	0.23
	(0.31)	(0.36)	(0.17)	(0.24)	(0.12)	(0.17)	(0.14)	(0.16)	(0.16)	(0.16)	(0.15)	(0.16)
Asian	0.06	1.15***	-0.40	-2.05***	-0.26	-0.96***	-0.99	-0.35	0.40	-0.36	-0.13	0.57***
	(0.37)	(0.28)	(0.76)	(0.25)	(0.38)	(0.16)	(0.51)	(0.29)	(0.25)	(0.58)	(0.25)	(0.17)
Native American	-	-	0.80***	0.17	-0.45	-0.06	0.26	0.07	-0.57*	-0.56	0.13	-0.51**
			(0.19)	(0.46)	(0.36)	(0.38)	(0.22)	(0.19)	(0.28)	(0.34)	(0.32)	(0.17)
Multiracial	0.32	0.001	-0.17	0.16	-0.27	0.006	0.14	-0.17	-0.22	-0.51	-0.18	0.16
	(0.48)	(0.28)	(0.27)	(0.28)	(0.18)	(0.24)	(0.22)	(0.25)	(0.24)	(0.29)	(0.27)	(0.21)
Other Race/Ethnicity	-0.04	-	-1.18***	0.36	-0.06	0.13	-0.46	0.70***	0.06	0.13	0.32	0.06
	(0.87)		(0.17)	(0.50)	(0.26)	(0.31)	(0.42)	(0.19)	(0.33)	(0.27)	(0.25)	(.26)
Single Mother Household	0.22	-	-	-	-	-	-	-	-	-	-	-
	(0.20)											
GPA	-0.08	-	-	-	-	-	-	-	-	-	-	-
	(0.09)											
Lagged Variables (*t*-1)												
Single Mother Household	-	0.03	-0.10	0.02	0.12	-0.07	-0.12	-0.06	0.02	-0.05	-0.15	0.08
		(0.23)	(0.12)	(0.13)	(0.08)	(0.10)	(0.08)	(0.09)	(0.08)	(0.09)	(0.09)	(0.10)
GPA	-	-0.00004	0.03	-0.01	0.03	0.07	0.07	0.09	0.13**	0.04	0.05	-0.02
		(0.11)	(0.06)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.07)
Previous Offending	0.02*	-0.0006	0.001***	-0.004	-0.004	-0.0005	0.0001	0.0001	-0.0008	-0.0004	-0.001**	-0.005*
	(0.008)	(0.007)	(0.0001)	(0.004)	(0.01)	(0.0002)	(0.0004)	(0.0002)	(0.0004)	(0.0003)	(0.0003)	(0.002)
R-Squared	0.1535	0.1024	0.0502	0.0995	0.0477	0.0940	0.1462	0.2214	0.1752	0.1608	0.1598	0.2160

Note: Robust standard errors appear in parentheses | No Native American identifying respondents age 7 or 8 were available for analyses | No Other Race/Ethnicity identifying respondents age 7 were available for analyses

*p≤0.05; **p≤0.01; ***p≤0.001

Age-Stratified OLS Models: Male and controls regressed on empathy.
Previous Offending (children) and concurrent single mother/GPA variables not included

	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18
Observations	271	260	282	556	531	433	525	455	525	458	469	260
Clusters	271	257	266	530	519	411	507	439	509	440	452	242
Variables												
Intercept	2.24***	1.27***	2.13***	2.33***	2.33***	2.13***	2.23***	2.12***	2.05***	2.73***	2.33***	2.59***
	(0.22)	(0.36)	(0.31)	(0.23)	(0.23)	(0.29)	(0.24)	(0.26)	(0.25)	(0.24)	(0.24)	(0.31)
Male	-0.04	-0.09	-0.11	-0.24***	-0.26***	-0.42***	-0.56***	-0.82***	-0.70***	-0.67***	-0.66***	-0.69***
	(0.12)	(0.13)	(0.11)	(0.07)	(0.08)	(0.09)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.10)
Income	-2.72e-06	6.52e-07	1.53e-06	1.18e-06	2.14e-06	-1.50e-06	1.70e-06	5.02e-06*	2.85e-06	6.46e-07	5.44e-06	1.05e-06
	(4.22e-06)	(4.76e-06)	(4.86e-06)	(2.31e-06)	(2.49e-06)	(2.56e-06)	(1.80e-06)	(2.03e-06)	(2.15e-06)	(3.59e-06)	(3.34e-06)	(3.92e-06)
Black	-0.63**	0 .04	-0.19	-0.46***	-0.36**	-0.14	-0.19	-0.15	-0.04	-0.44**	-0.05	0.06
	(0.21)	(0.23)	(0.18)	(0.14)	(0.13)	(0.18)	(0.14)	(0.16)	(0.16)	(0.16)	(0.15)	(0.16)
Hispanic/Latino	-0.36	0.34	-0.06	-0.05	-0.13	0.11	0.06	0.06	0.07	-0.25	0.12	0.23
	(0.19)	(0.22)	(0.16)	(0.12)	(0.12)	(0.17)	(0.14)	(0.16)	(0.16)	(0.16)	(0.15)	(0.16)
Asian	-1.17**	0.06	-0.38	-0.87***	-0.26	-0.96***	-0.99	-0.35	0.40	-0.36	-0.13	0.57***
	(0.53)	(0.57)	(0.58)	(0.27)	(0.38)	(0.16)	(0.51)	(0.29)	(0.25)	(0.58)	(0.25)	(0.17)
Native American	-1.55***	0.57	0.81***	-0.09	-0.45	-0.06	0.26	0.07	-0.57*	-0.56	0.13	-0.51**
	(0.33)	(0.60)	(0.18)	(0.29)	(0.36)	(0.38)	(0.22)	(0.19)	(0.28)	(0.34)	(0.32)	(0.17)
Multiracial	-0.46	0.20	-0.13	-0.16	-0.27	0.006	0.14	-0.17	-0.22	-0.51	-0.18	0.16
	(0.30)	(0.30)	(0.25)	(0.16)	(0.18)	(0.24)	(0.22)	(0.25)	(0.24)	(0.29)	(0.27)	(0.21)
Other Race/Ethnicity	-0.36	-1.41***	-0.63	0.07	-0.06	0.13	-0.46	0.70***	0.06	0.13	0.32	0.06
	(0.33)	(0.30)	(0.41)	(0.32)	(0.26)	(0.31)	(0.42)	(0.19)	(0.33)	(0.27)	(0.25)	(.26)
Lagged Variables (*t*-1)												
Single Mother Household	-	0.03	-0.10	-0.005	0.12	-0.07	-0.12	-0.06	0.02	-0.05	-0.15	0.08
		(0.13)	(0.12)	(0.07)	(0.08)	(0.10)	(0.08)	(0.09)	(0.08)	(0.09)	(0.09)	(0.10)
GPA	-	0.10	0.02	0.04	0.03	0.07	0.07	0.09	0.13**	0.04	0.05	-0.02
		(0.06)	(0.06)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.07)
Previous Offending	-	-	-	-	-0.004	-0.0005	0.0001	0.0001	-0.0008	-0.0004	-0.001**	-0.005*
					(0.01)	(0.0002)	(0.0004)	(0.0002)	(0.0004)	(0.0003)	(0.0003)	(0.002)
R-Squared	0.0517	0.0490	0.0296	0.0746	0.0477	0.0940	0.1462	0.2214	0.1752	0.1608	0.1598	0.2160

Note: Robust standard errors appear in parentheses
*p≤0.05; **p≤0.01; ***p≤0.001