The Role of Developmental Science in Informing Legal Aspects of Youth Blameworthiness

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Abstract

Evidence from developmental sciences points to the role of psychological and cognitive factors in youth crime. Deficits in decision-making are hallmarks of adolescence suggesting that young individuals are less blameworthy than adults. Politicians in both the United States and Canada, however, are currently seeking to enact legislation stressing a more punitive approach to juvenile crime. Such harsh measures, moreover, may hinder the psychological health of adolescents and have been argued to be largely ineffective in reducing criminal recidivism. The present thesis comprises two manuscripts. One presents a conceptual framework in which we explore the blameworthiness and rehabilitation of youth. The second manuscript consists of results from a pilot survey in which we have assessed opinions of legal and clinical experts regarding the influence of developmental factors on legal desiderata concerning juvenile delinquents. Our findings suggest that while the legal community is moderately sensitive to developmental issues associated with youth culpability, the gap between developmental science and the legal system persists. We suggest that a closer interaction between clinical and legal experts is crucial to create an evidence-based developmental law.

Résumé

Des preuves issues des sciences du développement révèlent l'influence des facteurs psychologiques et cognitifs sur la criminalité juvénile. Des déficits de prise de décision jalonnent l'adolescence, ce qui suggère que les jeunes individus sont moins coupables que les adultes. Cependant, les hommes politiques tant aux États-Unis qu'au Canada sont en train de chercher à mettre en vigueur des législations insistant sur une approche punitive envers les crimes juvéniles. De plus, de telles mesures, peuvent heurter la santé psychologique des adolescents et ont été accusées d'être largement inefficaces à la réduction de la récidive criminelle. La thèse ci-présente comporte deux manuscrits: l'un contient un cadre conceptuel dans lequel nous étudions la culpabilité et la réhabilitation de la jeunesse. L'autre manuscrit comprend des résultats d'un sondage pilote dans lequel nous avions évalué les opinions légales et cliniques des experts en se basant sur l'influence des facteurs du développement sur des désidérata légaux concernant les jeunes délinquants. Nos découvertes suggèrent que pendant que la communauté légale est modérément sensible aux problèmes de développement associés avec la culpabilité juvénile, le fossé entre la science du développement et le système légal persiste. Nous suggérons qu'une interaction plus rapprochée entre la loi et la science du développement est nécessaire afin de créer une loi fondée sur la recherche.

Preface

My Master's research spanned a number of topics including the role of developmental factors in determining youth blameworthiness, the psychological processes involved in perception of magical effects, as well as the role of behavioural factors in the pathogenesis of chronic hives. One of my empirical manuscripts on magic resulted in a publication: Demacheva, I., Ladouceur, M., Steinberg, E., Pogossova, G., Raz, A. (2012). The Applied Cognitive Psychology of Attention: A Step Closer to Understanding Magic Tricks. *Applied Cognitive Psychology*. For the purpose of brevity, however, as well as to cover only projects that are thematically related, here I am presenting but the work that I have been doing on adolescent blameworthiness.

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Contributions of Authors

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Irina Demacheva (primary author): Paper conception; writing of the manuscript

Amir Raz (corresponding author): Commenting on the manuscript; guidance

Manuscript Title: *The Role of Developmental Factors in Determining Youth Blameworthiness and Legal Competence: Opinions of Legal and Clinical Experts*

Irina Demacheva (primary author): Study conception and design; analysis and interpretation of data; writing of the manuscript

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Paving the Road to an Evidence-Based Developmental Law

Abstract: In response to the public concern about the leniency of the juvenile justice system, politicians in both the United States and Canada have enacted legislation stressing a more adult-like approach to juvenile offenders. Evidence from developmental sciences, however, suggests that brain immaturity, including deficits in decision-making, makes adolescents less blameworthy than adults. Here we argue that developmental immaturity is a mitigating factor in youth sentencing. Because of wide inter-individual differences in development, we further recommend an individualized sentencing of juveniles. We take inspiration from the insanity defense to model such an approach. Whereas punitive sanctions can hinder the psychological health of adolescents and thereby increase the chances of reoffending, rehabilitation programs show promise. We therefore contend that punishment is largely ineffective in reducing youth crime. We submit that rather than enhancing the punitiveness of the juvenile justice system, politicians should emphasize rehabilitation of young delinquents.

Findings from public opinion surveys suggest that the majority of people in most Western nations believe that the juvenile justice system is too lenient (Flanagan & Longmire, 1996; Hough & Roberts, 2004; Roberts, 1992; Roberts &

Stalans, 1997; Tufts & Roberts, 2002). Whereas the accuracy and reliability of such public polls is questionable (Steinberg & Piquero, 2010), politicians in both the United States and Canada responded to the apparent public concern about the youth criminal justice system by enacting legislation stressing a more punitive approach to young delinquents. In the United States, for example, the state of California enacted Proposition 21 to facilitate the transfer of youth to adult court as well as to reduce the discretion of judges to refer youth to probation as opposed to incarceration; moreover, most states have adopted similar statutes (Pfaff, 2006). Likewise, in Canada, Bill C-10 seeks to enable a number of "get-tough" measures, including increasing the opportunity for the court to impose custodial sentences on youth by expanding the definition of a violent offense. Hence, American and Canadian politicians seem to endorse a punitive approach to youth crime.

Drawing from developmental science, we argue that implementing harsher measures is unwarranted as it disregards the relative immaturity of adolescents and is ineffective in reducing reoffending. Instead, we propose that adolescents should be subject to reduced blameworthiness. Building an argument inspired by the insanity defense, we provide a model for an individualized approach to sentencing young delinquents. Finally, we submit that increasing the focus on

rehabilitation programs, as opposed to punishment, would be crucial to reducing crime rates and thereby promoting public safety.

Linking Developmental Immaturity to Criminal Behaviour

Developmental immaturity places adolescents at an increased risk for criminal activity (Agnew, 2003; Kambam & Thompson, 2009; E. S. Scott & Steinberg, 2008) – i.e., violation of a law with possible penalties such as incarceration or fine. Ongoing maturational changes involve increased risk-taking behaviours (Spear, 2000) and may account for a high percentage of adolescents engaging in acts that could be the basis of an arrest, such as school fighting, stealing, and illegal drug use (Dowd, 2011). Such behaviours often draw on the frontal lobes – key brain areas involved in executive functions such as planning, attention, and control (Blakemore & Choudhury, 2006; Giancola, 2000; Hawkins & Trobst, 2000). Whereas the visual and auditory brain systems appear adult-like by the end of the preschool period (Shonkoff & Phillips, 2000), the frontal lobes may come to complete maturation only in early adulthood (Giedd et al., 1999; Sowell, Thompson, Holmes, Jernigan, & Toga, 1999; Yurgelun-Todd, 2007). In light of this evidence, 11 prominent developmental neuroscientists endorsed a draft of a white paper stating that the adolescent brain, compared to the adult brain, is immature in functions that contribute to executive control of behaviour (Luna et al., 2009). Indeed, leading specialists concur that

neurodevelopmental immaturity undermines the decision-making abilities of adolescents and thereby contributes to the propensity of youth to engage in delinquent behaviour. Accordingly, findings show that arrest rates peak between 15 and 18 years of age, with a disproportionally high number of male offenders (Gottfredson & Hirschi, 1990). While gender differences in criminality are beyond the scope of this paper, we explore the general characteristics of adolescence associated with delinquency to make a case for the diminished criminal accountability of youth.

Many questions concerning adolescent culpability may be rephrased as questions about decision-making (Cauffman & Steinberg, 2000b) – the process of selecting a particular action from a set of alternatives (Barraclough, Conroy, & Lee, 2004). Indeed, one can argue that if the decision-making skills of adolescents and adults are comparable, then juvenile offenders should be subject to the same standards of culpability as adults. Alternatively, if we can demonstrate that the decision-making skills of adolescents are inferior to those of adults, then we can argue that youth are less responsible for their actions than adults. Evidence suggests that the latter is the case – adolescents, relative to adults, show marked impairment in decision-making skills (Cauffman & Steinberg, 2000b; Kambam & Thompson, 2009). Development in both cognitive and psychosocial competences, moreover, leads to the ability of making

responsible decisions and correlates inversely with criminal behaviour (E. S. Scott & Steinberg, 2008). As such, youthfulness contributes to poor judgment and thereby should lead to diminished criminal responsibility.

Psychosocial immaturity may be particularly relevant to the concept of youth blameworthiness. Although cognitive functions (e.g., the ability to understand and engage in logical reasoning) are adult-like by 15-16 years of age, decision-making skills may remain suboptimal due to psychosocial immaturity (Keating, 2004; E. S. Scott & Steinberg, 2008). Following a slower timeline than cognitive development, psychosocial maturity encompasses abilities such as functioning independently and adequately interacting with others (Greenberger & Sørensen, 1974). Psychosocial factors including attitude toward and perception of risk, difficulties with self-control, and peer pressure may affect values and preferences of adolescents such that the reward, as opposed to the cost, of an action becomes more salient to them (Steinberg & Scott, 2003). In fact, juveniles tend to use a risk-reward calculation that places less weight on risk in relation to reward (Steinberg & Scott, 2003), which predisposes them toward risky decisions (Gardner & Steinberg, 2005; Magar et al., 2008). Inter-individual differences in development, moreover, are common in adolescence and psychosocial maturity is a better predictor of antisocial behaviour than age (Cauffman & Steinberg,

2000a). Thus, understanding how psychosocial maturity affects delinquency is important to appreciate the reduced culpability of youth.

Impulsive Decision-Making and Adolescence

Decision-making favouring short-term over long-term consequences (i.e., impulsive) may often be suboptimal (Green, Myerson, & Ostaszewski, 1999; Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). Impulsivity peaks in adolescence (Chambers & Potenza, 2003) and is associated with risky behaviours such as unsafe sex, drug use and cigarette smoking, as well as with delinquency (Babinski, Hartsough, & Lambert, 1999; Cooper, Wood, Orcutt, & Albino, 2003; Donohew et al., 2000; Robbins & Bryan, 2004). Impulsivity likely involves interactions between brain chemicals such as dopamine – linked to "adventurous" behaviours such as novelty-seeking (Casey, Getz, & Galvan, 2008) – and serotonin –associated with impulse attenuation, suppression, and inhibition (Chamberlain & Sahakian, 2007). During adolescence, the release of dopamine occurs at a higher rate than the release of serotonin, creating a chemical imbalance which contributes to the difficulty of suppressing impulsive behaviours (Takeuchi et al., 2000). In addition, adolescents, compared to adults, have fewer brain resources available for behavioural inhibition (Bunge, Dudukovic, Thomason, Vaidya, & Gabrieli, 2002; Luna et al., 2001; Rubia et al., 2001), which further enhances their difficulties with impulse control (Bunge &

Wright, 2007; E. S. Scott & Steinberg, 2008). Hence, neurodevelopmental factors may at least in part account for adolescent impulsiveness (Chambers & Potenza, 2003) and, subsequently, for their poor decision-making.

Lack of social and educational experiences contributes to the impulsive decision-making of youth. Due to a yet relatively short life, adolescents have difficulties with taking future-time perspective (A. L. Greene, 1986). Such difficulties may impede the ability of youth to consider the consequences of their behaviours and, thereby, increase the salience of benefits relative to the costs of an action. Both, inhibitory control and future planning improve as adolescents approach adulthood, leading to a decrease in impulsive decisions (Douvan & Adelson, 1966; Nurmi, 1991; E. S. Scott & Steinberg, 2008). Thus, maturity likely contributes to desistance from delinquency.

The Role of Emotions in Adolescent Decision-Making

Intense emotions may interfere with effective decision-making (Damasio, 1994) by biasing individuals toward approach- or avoidance-related behaviours (Chen & Bargh, 1999; Neumann, Förster, & Strack, 2003; Winkielman, Berridge, & Wilbarger, 2005). Accordingly, the ability to regulate one's emotions is an essential component to responsible behaviour across situations (Dahl, 2001). The capacity of emotional self-regulation is suboptimal in youth (Carstensen & Charles, 1998) because the brain areas associated with such skills are

undergoing prominent reorganization during adolescence (Crews, He, & Hodge, 2007). Consequently, compared to adults, adolescents have more rapid and extreme mood swings, which may result in poor judgment and contribute to impulsivity (Larson, Csikszentmihalyi, & Graef, 1980; Steinberg & Cauffman, 1996; Verma & Larson, 1999).

Volatile moods predispose youth toward engagement in risky behaviours and are the major cause of a 200% increase in morbidity and mortality rates during adolescence (Dahl, 2004). In addition, the pubertal increase in sex hormones such as testosterone and estrogen (Spear, 2000) contributes to enhanced aggression among juveniles (Kulin et al., 2000). Accordingly, findings suggest that in situations involving interpersonal tension, youth exhibit more intense anger responses than adults (Birditt & Fingerman, 2003). Collectively, these findings intimate that the propensity to experience extreme moods may contribute to juvenile involvement in criminal behaviours. Individuals learn to control their emotions as they reach adulthood (Larson, Moneta, Richards, & Wilson, 2002), which results in more efficient and responsible decisions (Huizenga, Crone, & Jansen, 2007).

The Effect of Peers on Adolescent Decision-Making

Close relationships with peers become especially important during adolescence. Peer approval and acceptance, for example, constitute the primary

concerns of youth (Cotterell, 1996; La Greca & Lopez, 1998; Laursen, 1996; Vasey, Crnic, & Carter, 1994). Becoming a member of a peer group is a developmental task of adolescence that allows youth to gain autonomy and independence from their parents as well as to explore individual interests and uncertainties (Steinberg & Silverberg, 1986). Accordingly, juveniles are increasingly vulnerable to peer pressure (Maxwell, 2002; E. S. Scott & Steinberg, 2008; Shook, Vaughn, Litschge, Kolivoski, & Schelbe, 2009; Steinberg & Scott, 2003). Whereas the positive influence of friends on youth behaviour is well documented, some peers can exert a negative effect (Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003; Shook et al., 2009). In particular, some peers may provide models for deviant behaviours (Dishion, Andrews, & Crosby, 1995; Patterson, Reid, & Dishion, 1992).

Peer pressure is a strong predictor of risky behaviours among juveniles (Santor, Messervey, & Kusumakar, 2000; Wickman, Anderson, & Smith Greenberg, 2008). Accordingly, most youth crime tends to occur in groups (Doob & Cesaroni, 2004). Susceptibility to peer pressure may undermine decision-making skills of adolescents by influencing their values and preferences (Steinberg & Scott, 2003). In particular, adolescents are more likely than either children or adults to change their decisions and behaviours when confronted with peer pressure (E. S. Scott & Steinberg, 2008). The desire for peer approval, for

example, may outweigh the possibility of apprehension by the police (E. S. Scott, 2000). Factors such as fear of isolation, inadequacy, and being ridiculed, furthermore, may increase adolescent conformity with peer pressure (Lashbrook, 2000; Wickman et al., 2008). Given the effects of peer pressure on adolescent decision-making, involvement with delinquent groups significantly increases the likelihood that a juvenile will engage in criminal activity (Dishion, Patterson, & Griesler, 1994; Haynie, 2002; Howell, 1999; Lacourse et al., 2003; Shook et al., 2009; Warr & Stafford, 1991). Accordingly, juveniles of low social economic status, who tend to have more interactions with delinquent peers (Bala & Anand, 2009; Fraser, 1996), are more likely to violate the law (Steinberg, 1999). Instead of intrinsic choices and preferences, therefore, adolescent delinquency often reflects conformity with peers. Age distribution of crime, in turn, may reflect a change in peer relations (Warr, 2002). Resistance to peer pressure increases linearly between ages of 14 and 18 years (Steinberg & Monahan, 2007). As adolescents develop a stable sense of identity and learn to assert their independence, peer effects on behaviours lessen (Bokhorst, Steinberg, Westenberg, & Sumter, 2009).

Plea for Reduced Blameworthiness of Juveniles

The argument for reduced blameworthiness of youth mirrors the argument for the insanity defense. Most western countries uphold specific provisions that a

person, who was unable to appreciate the wrongfulness of their acts due to a mental illness, should not be held criminally responsible (Zapf, Zottoli, & Pirelli, 2009). Moreover, in some jurisdictions, including some American states, the insanity standard includes a volitional component – i.e., whether or not the defendant had the ability to refrain from his or her actions (C. Scott, 2009). Juveniles do not necessarily have the cognitive skills to either fully appreciate the wrongfulness of their actions at the time they engage in criminal activity or to readily refrain from such activity in the face of peer pressure or short-term incentives and rewards. The *nature* of developmental deficits is comparable to psychopathological deficits that the law recognizes as mitigating factors, although the impact of developmental immaturity on decision-making relative to a serious mental illness is arguably smaller (Steinberg & Scott, 2003). Hence, while we acknowledge the importance of holding youth accountable for their acts, we also highlight the need for recognizing the effect of developmental deficits and external pressures on adolescent decision-making. We thereby suggest that developmental immaturity reduces the blameworthiness of youth.

The criminal law recognizes mitigation when, under given circumstances, an ordinary person may have acted similarly to the defendant. The idea of a separate justice system for juveniles further acknowledges that the decisions and behaviours of an ordinary adolescent differ from those of an ordinary adult.

Accordingly, a juvenile defendant should receive mitigation when an ordinary adolescent may have responded in the same way to a similar situation. The evidence from developmental science outlined above suggests that immaturity puts adolescents at high risk for antisocial and risky behaviours. Factors such as enhanced impulsivity, lack of emotional self-regulation, and susceptibility to peer pressure largely contribute to the criminal choices of youth (E. S. Scott & Steinberg, 2008). Consequently, adolescents, as a group, may have reduced capacity to refrain from criminal activity in situations involving high external pressure. Behavioural differences between a delinquent and a nondelinquent adolescent, moreover, are likely smaller than behavioural differences between a criminal and a noncriminal adult. Arguably, therefore, developmental immaturity entails that adolescents are less blameworthy than adults.

A Model for Determining Adolescent Blameworthiness

Making general rules for trying juveniles may be problematic due to large inter-individual differences in development (E. S. Scott & Steinberg, 2008). For example, whereas the maturity of one specific 16-year-old may be comparable to that of an 18-year-old, another 16-year-old may have the level of maturity of a 13-year-old. In addition, psychopathologies, which are prevalent among juvenile delinquents (Soler, 2002), may contribute to inter-individual differences in

functionality. As such, two juveniles of the same age who have committed the same offense may differ in the extent to which they should be held accountable for their actions. Hence, developing individualized approaches to processing young offenders would be crucial to determining the degree of accountability in a particular case.

Consideration of personal characteristics when processing juveniles in the legal system implies that judges need to have some degree of autonomy allowing for personal judgment and assessment to affect decisions (i.e. discretion). The difficulty of assessing the blameworthiness of a particular juvenile, however, may cause significant disparities in sentencing decisions. As a result, most American states have introduced sentencing grids which allow judges to have only limited, if any, discretion (Bishop, 2009; Pfaff, 2006). Canada, on the other hand, introduced detailed provisions in the Youth Criminal Justice Act to give judges discretion while minimizing variations in sentencing outcomes (Roberts & Bala, 2003). Nonetheless, significant variations across Canada in sentencing decisions, as indicated by the rates of custodial sanctions, persist (Bala, Carrington, & Roberts, 2009). Developing a structured approach to assess the blameworthiness of juveniles, therefore, is essential for facilitating both discretion and structure within the justice system. Developmental science may aid the introduction of structure to the assessment of youth blameworthiness.

The insanity defense may provide a model for employing developmental science to structure the assessment of youth blameworthiness. Similarly to juveniles, individuals with psychopathologies show wide differences in degrees of functionality. The insanity defense seeks to establish the extent to which psychopathological deficits of the defendant may have contributed to the criminal offense, and whether these deficits are severe enough to warrant the removal of legal responsibility. Accordingly, the insanity defense involves multiple evaluations including, social, educational, and family psychiatric history as well as expert testimony regarding the sanity of the defendant (see Knoll IV & Resnick, 2008). In this vein, sentencing of adolescents should perhaps include, by default, evaluations of individual level of maturity, peer group associations, as well as psychological health. Unlike the insanity defense, however, which has but two possible outcomes (i.e., the defendant is considered either sane and criminally responsible, or insane and not criminally responsible), an individualized approach to juvenile delinquents would require a gradational system involving different degrees of reduction of culpability depending on maturational and psychological parameters of the defendant. Evaluations of such parameters may help judges to assess individual risk factors for crime and impose sentencing decisions that hold youth accountable for their actions while simultaneously acknowledging their level of developmental maturity.

Psychologists have developed a variety of assessment tools targeting different aspects of maturity such as impulsivity, intelligence quotient, ability to resist peer pressure, risk perception, and future orientation. Accordingly, clinicians using appropriate methods should be able to describe individual level of development on most dimensions of maturity (Grisso, 2010). Nonetheless, translating these descriptions into conclusions about individual blameworthiness may be less obvious. In particular, maturity is a multifaceted construct (e.g., a juvenile may be mature intellectually, but not socially) and the relevance of specific developmental factors to blameworthiness may differ by situation. The level of intellectual maturity, for example, may be less important than the ability to resist peer pressure in situations involving high level of social coercion. Specific aspects of maturity that are relevant to a particular offense, therefore, may be more reflective of individual culpability than an overall score on all measures of maturity. Further research will still need to develop diagnostic tools that would allow translating measures of maturity into indices of blameworthiness. Development of such evaluations, moreover, may require cooperation between psychologists and legal experts, who could aid the integration of developmental findings with legal principles. In addition, the juvenile justice officials (e.g., judges) may help tailoring such tools to common difficulties that rise in court with the dilemma of determining individual blameworthiness. We therefore submit

that a closer interaction between developmental scientists and legal experts is essential to forge individualized approaches to adolescent delinquents and improve the efficiency and fairness of the youth criminal justice system.

Educating legal professionals about the implications of developmental research for youth blameworthiness is important to ensure fair sentencing. The lack of sensitivity to psychopathological deficits on the part of legal experts, for example, has been one of the causes preventing mentally-ill adult defendants from receiving the mitigation they should. Individuals suffering from psychopathologies that lack obvious physical manifestations or intellectual deficits, moreover, are particularly likely to get no recognition for their cognitive deficits (Chartrand & Forbes-Chilibeck, 2003). Individuals with Fetal Alcohol Syndrome Disorder (FASD) exhibit signs of impairment such as learning disabilities, heightened impulsivity and poor judgment (Fast & Conry, 2004). Accordingly, FASD may undermine the ability of individuals to either appreciate the wrongfulness of their conduct or refrain from criminal activity. Nonetheless, offenders with FASD rarely receive mitigation because legal experts are unable to recognize the manifestations of this condition (Burd, Selfridge, Klug, & Bakko, 2004; Burd, Selfridge, Klug, & Juelson, 2003; Conry & Fast, 2000). Similarly, the lack of consideration by legal professionals of cognitive developmental deficits may contribute to young delinquents receiving fewer concessions than they

deserve. Thus, increasing the sensitivity of legal experts to developmental issues, as well as providing them with guidelines regarding how to factor such parameters into blameworthiness, is prerequisite to enhancing efficient individualization in youth sentencing.

In the Pursuit of Reducing Youth Crime

Retribution – the idea that in the absence of mitigating circumstances, a person who transgressed the law *deserves* punishment – is central to the punitive approach of the legal system. Accordingly, proportionality – the principle stating that the severity of penalties need to be proportionate to the gravity of the crime – constitutes one of the basic requirements of fairness (Von Hirsch, 1992). When favouring punitive measures, moreover, lay people tend to rely on such "just desert" philosophy (Aharoni & Fridlund, 2011; Carlsmith, 2006). In fact, people tend to perceive punitive resolutions to offenders as fairer than the ones that do not include punishment (Okimoto, Wenzel, & Feather, 2009). Whether retribution serves prosocial goals, however, remains a topic of continued debate (e.g., Andrews & Bonta, 2010; Flanders, 2010; J. Greene & Cohen, 2004; Lipsey & Cullen, 2007). Whereas proportional punishment may be important for enabling offenders to assume consequences of their actions, legal decisions should also reflect pragmatic notions such as what works in reducing crime.

The primary goal of the criminal justice system is to protect the public by minimizing criminal behaviour. Developing effective interventions for juvenile delinquents holds particular importance in this pursuit because there is greater potential for changing maladaptive behavioural patterns in adolescence than later in life (Dahl, 2004). The adolescent brain is malleable (Greenberg, Riggs, & Blair, 2007), which implies that sentencing decisions may significantly impact the life trajectories of adolescents. Accordingly, some interventions can contribute to desistance from criminality, whereas others may exacerbate the propensity of a juvenile to engage in criminal behaviours. Hence, understanding the potential influence of different justice policies on juvenile delinquency is important to cope efficiently with youth crime.

Politicians in both the United States and Canada are seeking to increase the punitiveness of the juvenile justice system as a means of reducing crime rates (Andrews & Bonta, 2010; Cauffman, Woolard, & Reppucci, 1999; Redding & Frost, 2002; Snyder & Sickmund, 1999; Tufts & Roberts, 2002; Woolard, Fondacaro, & Slobogin, 2001). In the United States, for example, most states have enacted legislation facilitating the transfer of youth to adult court (Bishop, 2009; Pfaff, 2006), with up to 22 states having at least one provision for which the minimum age of transfer is not specified (OJJDP, 2011). Consequently, although many young delinquents show cognitive deficits (Baerger, Griffin,

Lyons, & Simmons, 2003), adult courts in the United States try adolescents at an increasingly high rate (Patapis, 2006; Stahl, 1999; Steiner, Hemmens, & Bell, 2006). Youth standing trial in the American adult court, in turn, often do not receive consideration for their youthfulness in terms of reduced sentences (Carmichael, 2010). As a result of the get-tough laws that bring more minors into the juvenile justice system and hold them there for longer periods, many state correction facilities are in a crisis of overload (Howell, 2003). In Canada, the current law disallows transfers of juveniles to adult court before they are found guilty (Doob & Cesaroni, 2004) and requires judges to take the age and the potential for rehabilitation into consideration even when applying adult sentences (Bala & Anand, 2009). This state of affairs is changing, however, with the Canadian government having just implemented minimum sentences for young offenders, while extending the definition of violent offense, and thereby reduce judicial discretion (see "Safe Streets and Communities Act," 2011). Hence, politicians in both the United States and Canada seem to endorse a punitive approach as a way to combat youth crime.

The punitive approach to crime is based on the assumption that the perceived certainty of arrest and severity of punishment leads individuals to make rational and prosocial decisions, and thereby contributes to lower crime rates (Grasmick & Bryjak, 1980). Given adolescent difficulties in assessing

consequences of their actions, however, this assumption is likely to be incorrect for youth. Evidence, moreover, suggests that implementation of harsher measures (e.g., increasing incarceration rates) hardly reduces criminal recidivism. Comparison of juvenile justice system policies in the states of Texas and California in the years 1995-2006 provides but one illustration of the false promise of punishment (Stahlkopf, Males, & Macallair, 2010). During this period, Texas increased the number of incarcerated minors by 70%, whereas California decreased the number of incarcerated youth by 69%. Remarkably, these two drastically different policies yielded similar results – the level of youth crime fell by 51% in both states. These findings suggest that the harsher measures that Texas implemented were unnecessary. The reduced crime rates in Texas, moreover, may have resulted from incapacitation of young delinquents, which naturally occurs when individuals are physically removed from society, rather than from the effectiveness of incarceration in changing behavioural patterns.

Some evidence suggests that harsher measures may actually increase recidivism rates. When inappropriately applied, punishment can produce unwanted emotional reactions, aggression, withdrawal, or increases in the punished behaviour (Gendreau, 1996). In fact, punishment hinders normative functioning of youth, and many juveniles exit the justice system ill-equipped to manage adult responsibilities; such detrimental effects likely contribute to

criminality (Arredondo, 2003; Bonham, 2006; Fagan, 2008). In addition, contact with the justice system involves labeling the young offender as "delinquent." Such labeling may cause stigmatization of the juvenile and lead him to develop a self-image of an offender; consequently, the juvenile may start acting in ways that confirm the delinquent label (Matsueda, 1992). A punitive approach of the juvenile justice system may therefore exacerbate the crime problem and contribute to the creation of stable criminals (Hagan & Palloni, 1990; Mead, 1918). As such, contrary to the beliefs of politicians, a punitive approach is largely ineffective in either reducing reoffending or protecting the public. Both the ineffectiveness of punitive sanctions and their harmful effect on the psychological health of youth call for a reconsideration of criminal justice policies.

Emphasizing rehabilitation of juvenile offenders constitutes a promising approach to dealing with youth crime. In fact, converging evidence suggests that rehabilitation programs are effective in preventing criminal recidivism (Andrews & Bonta, 2010; Baerger et al., 2003; Day, Howells, & Rickwood, 2004; Forrest, Tambor, Riley, Ensminger, & Starfield, 2000; Greenberg et al., 2007; Myers & Farrell, 2008; Vieira, Skilling, & Peterson-Badali, 2009). A systematic review of meta-analyses assessing the effects of different kinds of interventions, moreover, suggests that generally any type of rehabilitation leads to higher reductions of recidivism rates than any type of punishment (Lipsey & Cullen, 2007). Recent

reforms of the juvenile justice system in Texas exemplify the potential success of a rehabilitative approach as opposed to punishment (Levin, 2011). From 2007 to 2011, the juvenile justice system in Texas went through significant transformations, including decreasing the number of incarcerations in favour of diverting young offenders to community-based treatment and vocational programs. Such policies resulted in reduction of crime: 9.1% fewer criminal cases were pending against youth in August 2011 as compared to August 2007, and juvenile arrest rates have fallen considerably from 2007 to 2011. In addition, a more rehabilitative approach allowed Texas to close three youth prisons, which resulted in a significant budget savings. Although Texas is only making early steps toward developing a rehabilitative juvenile justice system, these first efforts seem to be successful and suggest that a rehabilitative juvenile justice is both more effective at promoting public safety and less expensive than a punitive system.

In Canada, the current law requires consideration of amenability to rehabilitation when imposing a sentence on a young offender (Bala & Anand, 2009). With youth crime rates in Canada generally declining since 2001 (Dauvergne & Turner, 2010), the political motive for increasing the punitiveness of the system is unclear. Despite the fact the Canadian federal government has the executive legislative jurisdiction over criminal law (Caulfield, 2001), the

administration of youth justice falls within provincial jurisdiction. As such, policies concerning young offenders vary among provinces, and the administration of youth justice in Quebec differs considerably from the rest of Canada. Traditionally, Quebec primarily focused on rehabilitation of juvenile delinquents, and diversion of youth from court is particularly common in this province (Bala & Roberts, 2006; Trépanier, 2004). Notably, over the past decade, compared to other provinces, Quebec has consistently reported the lowest rates of youth crime, including fewer incidences of violent offenses (e.g., Dauvergne & Turner, 2010; Gannon, 2006; Sauvé, 2005; Savoie, 2002; Silver, 2007). This fact suggests that punishment is ineffective relative to rehabilitation – the province with lowest incarceration rates and greatest number of diverted juveniles is most efficient at minimizing youth crime.

Rehabilitation of young delinquents may carry significant importance in light of the high rate of psychopathologies among young offenders. Research suggests that the rates of mental disturbances among juvenile offenders are three times as high as in the general population (Grisso, 2004; for comparison of prevalence of psychiatric disorders in the USA and Canada see Odgers, Burnette, Chauhan, Moretti, & Reppucci, 2005). Up to 60% of youth in the juvenile justice system, moreover, have behavioural, mental, or emotional problems in need of treatment (Soler, 2002). In line with this reality, and the high

suicide rates in juvenile correctional facilities, the American Academy of Child and Adolescent Psychiatry recommends screening all youth entering juvenile facilities for psychiatric disorders and suicide risk, as well as having clinicians monitor youth throughout their stay at the facilities (Penn & Thomas, 2005). Nonetheless, mental health services are often lacking within the American juvenile justice system, and most adolescents do not receive appropriate treatment (Bonham, 2006). Thus, increasing access of mental health treatment for juvenile delinquents is important to promote a healthy development of our society.

Given the causal relation between psychopathologies and crime, targeting mental disorders through treatment may reduce the likelihood of criminal recidivism (Cuellar, McReynolds, & Wasserman, 2006). Legislative changes in Canada, which came with the introduction of the Youth Criminal Justice Act, acknowledge the importance of "intense rehabilitation" for serious violent offenders and encourage diversion of remaining offenders to placements and treatment settings. Following the implementation of the Youth Criminal Justice Act, incarceration rates have significantly decreased in Canada without increasing crime rates (Bala et al., 2009). Nonetheless, as in the United States, the legal system in Canada remains ill-equipped for properly meeting the mental health needs of young offenders, and many incarcerated juveniles do not receive

the treatment that they need (Kutcher & McDougall, 2009; Sapers, 2011). Increasing the availability and quality of mental health services for young offenders is likely a more efficient way to reduce crime rates than increasing the punitiveness of the juvenile justice system. In particular, treating psychological disorders of juvenile delinquents has the potential to enhance healthy development and adaptive behaviours of youth. Punishment, on the other hand, carries the risk to exacerbate existing psychological problems and increase criminality.

Although most rehabilitation programs contribute to reductions in recidivism, the size of the effect varies significantly by type of program. Understanding what kinds of interventions work best is therefore of primary importance to design a maximally effective rehabilitative system. Programs that target risk factors while individualizing treatment according to the learning style and abilities of the offender seem to work better than other types of programs, reducing recidivism rates by up to 35% (Andrews & Bonta, 2010). Correctional facilities, however, tend to use rehabilitative measures that are less, if not least, effective (e.g., educational and vocational programs) (Lipsey & Cullen, 2007). Thus, we suggest that political and legislative actions need to mandate an evidence-based practice.

The course of rehabilitation may sometimes extend over a longer period of time than the maximum penalty associated with an offense, and thereby violate the proportionality principle. Whereas some may argue that tailoring the length of an intervention to the needs of the young person supersedes proportionality, others claim that imposing rehabilitation terms that bear no relation to the offense is unconstitutional (Sanjeev Anand, personal communication, January 27, 2012). In Canada, for example, many criticized the Juvenile Delinquents Act (in force from 1908 till 1984) for allowing judges to impose indeterminate sentences until the young offender is successfully rehabilitated (Anand, 1998; Casavant & Valiquet, 2010; Hylton, 1994). The disproportionate length of such sentences constitutes the main reason why lawyers avoid raising the insanity defense (Manson, 2006) – a defendant pleading not guilty by reason of insanity may face an indeterminate sentence if the court considers one to be dangerous (Kinscherff, 2010; Stevens, 2008). As a consequence, many mentally-ill offenders seldom receive the mitigation they deserve. Subjecting youth to interventions that increase the length of their sentence may therefore promote an unfair system wherein juveniles might not get consideration for their youthfulness due to avoidance of longer detention. We argue that the determination of the length of youth sentences should remain proportional and derive from a consideration of the offense and the developmental characteristics of the

juvenile. We further propose that upon completion of the sentence, rehabilitative services should remain available, albeit not mandatory, to juvenile offenders. Such an approach would allow youth to have access to full rehabilitation without compromising their rights of freedom.

Conclusion

Here we argue that developmental factors largely account for the peak in crime during adolescence. Although not all adolescents engage in criminal activity, juvenile delinquency may be part of normative development whereby deficits in decision-making largely account for youth crime. In particular, factors such as heightened impulsivity, difficulties with emotional regulation, and vulnerability to peer pressure often alter the values and preferences of adolescents such that the immediate reward of an act becomes more salient than its risk. Consequently, juvenile delinquency, as opposed to adult crime, often results from poor judgment rather than from bad character. Accordingly, youth should receive mitigation for their developmental immaturity.

The wide inter-individual differences in maturation and psychological health of juvenile delinquents highlight the importance of assessing the blameworthiness of youth on an individual basis. Discretion within the system, therefore, is essential to promote fair treatment of juvenile offenders. In order to structure the process of determining individual blameworthiness, we suggest that

young defendants should, by default, undergo evaluations of maturity (e.g., impulsivity, intelligence quotient, susceptibility to peer pressure, and risk perception) and psychopathology. Such assessments would allow judges to make sentencing decisions that hold youth accountable for their acts while taking into account their level of developmental maturity. Although we recognize that the currently available psychosocial and developmental evaluations remain limited in how accurately they translate into levels of individual blameworthiness, closer interaction between developmental scientists and legal experts would facilitate relating individual maturity to blameworthiness.

Given that 95% of adolescent delinquents mature out of antisocial behaviour (Moffitt, 1993), the juvenile justice system should perhaps focus on transitioning youth from callow individuals to productive adult citizens. Increasing the punitiveness of the juvenile justice system is antithetical to this goal and may actually exacerbate the problem of youth crime. The get-tough approach that many politicians in the United States and Canada currently endorse is largely ineffective. Rehabilitation programs, on the other hand, have the potential to change maladaptive behaviours of juvenile delinquents and to reduce recidivism rates. We therefore recommend shifting the focus from punishment to rehabilitation as a means to effectively deal with youth crime and enhance public safety.

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The Need for Informed Policies

Public opinion has played an important role in the enactment of legislations aiming to get tough on youth crime (Steinberg & Piquero, 2010a; Strauss, 2001; Tufts & Roberts, 2002b). Politicians often use public desire of punishing young delinquents as campaign tools (Hamilton & Harvey, 2003). In both the United States and Canada, for example, politicians have been including to their election platforms plans to ease the imposition of adult-like sentences on youth more and more frequently (Cesaroni & Bala, 2008; Feld, 1999). Public knowledge about the juvenile justice system and youth crime, however, is minimal (Roberts, 2003). Prioritising public opinion over other considerations is therefore misguided and unlikely to lead to effective crime-reducing policies. Evidence from developmental science, on the other hand, provides useful insights into issues concerning youth blameworthiness and prevention of youth crime. Thus, integrating evidence from developmental research and law is overdue.

A successful integration of developmental science and youth law requires close collaboration between legal and clinical experts. In particular, legal specialists may complement the clinicians' knowledge of developmental science and treatment of maladaptive behaviours, with their professional experience of dealing with young delinquents in legal settings. The potential of such

collaboration, moreover, is contingent on how legal actors position themselves relative to developmental science. The following section presents our findings from a survey probing the opinions of legal and clinical experts on the role that developmental factors play in affecting issues such as youth blameworthiness and ability to stand trial.

The Role of Developmental Factors in Determining Youth Blameworthiness and Legal Competence: A Pilot Survey Probing the Opinions of Legal and Clinical Experts

Abstract: Recent reports from cognitive developmental sciences provide considerable information regarding the culpability of adolescents. Incorporating these findings into the legal milieu, however, remains largely theoretical. Using an online survey, we assessed the opinions, beliefs, and attitudes of legal and clinical specialists concerning the impact that developmental factors may entail for the blameworthiness of youth. Our findings suggest that the legal community is moderately sensitive to the emerging developmental science research on youth blameworthiness. Nonetheless, the gap between theory and practice persists. In particular, compared to clinical experts, police officers seem to assign significantly less importance to developmental factors in relation to adolescent blameworthiness and ability to stand trial. We highlight the need for closer dialogue between legal and clinical experts to promote the building of a consensus on how to try young offenders.

Keywords: brain development, adolescence, blameworthiness, adjudicative competence, Youth Criminal Justice System

Topical research on brain development provides insights on legal issues concerning youth blameworthiness (i.e., moral responsibility) (Maroney, 2009b). Such findings dovetail with recent decisions from the Supreme Courts of both the United States (Graham v. Florida, 2010; Roper v. Simmons, 2005) and Canada (R. v. D.B., 2008). The overarching tenor of these collective findings and court decisions calls for a re-evaluation of youth culpability (E. S. Scott & Steinberg, 2008). Integrating the developmental research to bear on legal matters, however, has been largely unsuccessful (Maroney, 2009b). Here we probe the knowledge, beliefs, and attitudes relevant professionals harbour regarding this issue and outline how a closer dialogue between legal and clinical experts could pave the road to informing policymakers on a better approach to deal with young delinquents.

Adolescents are at increased risk for criminal activity (Agnew, 2003a; Kambam & Thompson, 2009). In fact, a high percentage of adolescents engage in acts that could be the basis of an arrest; national statistics of the United States, for example, suggest that one in eight school students has been in a school fight, one in three has had property stolen or damaged in school, and over half of high school seniors report that they have used illegal drugs (Dowd, 2011). Accordingly, findings show that, across all age groups, arrest rates peak between

15-18 years with a disproportionate number of offenders being male (Gottfredson & Hirschi, 1990).

Risk-taking behaviours often rise while maturational changes are ongoing (Spear, 2000). Whereas the visual and auditory brain systems appear adult-like by the end of preschool period (Shonkoff & Phillips, 2000), frontal lobes – key brain areas involved in executive functions such as planning, attention, and control – may come to complete maturation only in early adulthood (Blakemore & Choudhury, 2006; Giedd et al., 1999; Sowell et al., 1999; Yurgelun-Todd, 2007). Accordingly, 11 prominent developmental neuroscientists endorsed a sketch of a white paper stating that the adolescent brain, compared to the adult brain, is immature in functions that contribute to executive control of behaviour (Luna, Bunge, Schlaggar, Casey, Klingberg, Vaidya, Blakemore, Stevens, Luciana, Nelson III, et al., 2009). Indeed, leading specialists concur that neurodevelopmental immaturity undermines the decision-making abilities of adolescents and thereby contributes to the propensity of youth to engage in delinquent behaviour.

Decision-making – the ability to correctly evaluate both positive and negative consequences of an action (Kambam & Thompson, 2009) – is impaired in adolescents, presenting a rationale for their reduced blameworthiness (Cauffman & Steinberg, 2000b). In particular, adolescents use a risk-reward

calculation that places less weight on risk in relation to reward (Steinberg & Scott, 2003), which results in an increased likelihood of engagement in risky behaviours (Gardner & Steinberg, 2005; Magar et al., 2008). Cognitive development spans two important components of decision-making: *understanding,* the ability to comprehend information relevant to a decision, and *reasoning*, the ability to use this information logically to make a choice (E. S. Scott & Steinberg, 2008). Whereas the ability to understand and engage in logical reasoning is adult-like around mid-adolescence (15-16 years of age) (Keating, 2004), decision-making skills may remain poor due to incomplete psychosocial maturity (E. S. Scott & Steinberg, 2008). Impaired psychosocial maturation, including the inability to function independently and to adequately interact with others (Greenberger & Sørensen, 1974) is characteristic of mid-adolescence. Juveniles, for example, are particularly vulnerable to peer pressure (Maxwell, 2002; E. S. Scott & Steinberg, 2008; Shook et al., 2009; Steinberg & Scott, 2003) – a strong predictor of risky behaviours (Gardner & Steinberg, 2005; Santor et al., 2000). Psychosocial immaturity, furthermore, is a better predictor of antisocial behaviour than age (Cauffman & Steinberg, 2000a). Thus, both cognitive and psychosocial immaturity may account for poor decision-making skills and criminal behaviour of youth, rendering adolescents less blameworthy than adults (E. S. Scott & Steinberg, 2008; Steinberg, 2009).

From a legal standpoint, blameworthiness and adjudicative competence (i.e., ability to stand trial) are discernible (Steinberg, 2009). The legal standard for evaluating competence to stand trial is similar in the United States and Canada stating that the defendant must understand legal proceedings and be able to consult with a counsel (Jackson, 2008). Unlike reduced blameworthiness, inability to stand trial bares no implications on sentence severity; rather, incompetence leads to either postponement of trial until the defendant becomes competent or to a dismissal of charges (Roesch, Zapf, Golding, & Skeem, 1999). Importantly, many adolescents lack cognitive skills necessary to adequately understand and participate in legal processes (Viljoen & Roesch, 2005) even in a juvenile court (Viljoen & Grisso, 2007).

Whether youth appear before juvenile or adult courts depends on adjudicative competence (Brink, 2004; E. S. Scott & Grisso, 2004). Youth lacking competence to understand adult proceedings, for example, should stand trial in the juvenile court irrespective of the offense committed (Cox, Goldstein, Dolores, Zelechoski, & Messenheimer, 2012). Youth standing on trial in the adult court, however, should receive mitigation for their youthfulness (Kurlychek & Johnson, 2004). Accordingly, the Youth Criminal Justice Act of Canada, which came into effect in 2003, disallowed transfers of juveniles to adult court before they are found guilty (Doob & Cesaroni, 2004). In addition, even when applying

adult sentencing, in Canada, judges are still required to take into consideration the age and the potential for rehabilitation of the juvenile (Bala & Anand, 2009). Unlike Canada, where the criminal law is under exclusive legislative jurisdiction of the federal government (Caulfield, 2001b), the United States does not have a unified criminal law because each state has the power to enact jurisdictional requirements in youth justice processing (Friedman, 2005; Hughes, 1996). Accordingly, the transfer laws differ from one American state to another. Nonetheless, the overall current tendency in the United States is to ease the transfer of youth to adult court, with up to 22 states having at least one provision for which the minimum age of transfer is not specified (OJJDP, 2011). Transfers of adolescents to adult courts therefore remain frequent in the United States (Caldwell, 2012; Patapis, 2006; Redding, 2003). Youth standing trial in the American criminal court, in turn, often do not receive consideration for their youthfulness in terms of reduced sentences (Carmichael, 2010). These findings suggest that the American legislators tend to overlook developmental traits in youth sentencing (Fagan, 2010; Freeman & Goodenough, 2009).

Actors of the criminal justice system may have some degree of autonomy within which their decisions reflect a matter of personal judgment and assessment (i.e. discretion) (Galligan, 1990). Forst and Bushway (2010) outline how discretion of different criminal justice officials may affect sentencing

outcomes. Police discretion influences arrest rates; the quality of police arrests and the discretion of prosecutors have an impact on conviction rates; finally, the discretion of prosecutors to recommend, and of judges to impose terms affects the rate and term of incarceration. The extent to which criminal justice officials can influence the outcome of sentencing decisions, however, may vary between countries. On the one hand, many American states offer only limited, if any, discretion to judges (Pfaff, 2006a). Canada, on the other hand, grants judicial discretion (Bala, Carrington, & Roberts, 2009b). Although the newly enacted Canadian legislation aims to increase the ease of imposing adult-like sentences on youth while reducing judicial discretion (see Parliament of Canada, 2012), at present, attitudes of the criminal justice officials towards developmental research may have a high impact on youth sentencing in Canada.

The aim of the current investigation was to probe the knowledge, attitudes, opinions, and beliefs of legal and clinical specialists regarding developmental science and youth justice. We hypothesized that legal experts, compared to clinical specialists, attribute less importance to developmental deficits of adolescents. Leading by example, we aim to foster an important dialogue between law professionals and developmental scientists, which would facilitate a sorely overdue legal practice that fashions itself more closely after evidence-based science.

Method

Survey

Using the open source LimeSurvey® web-based application tool, we probed the interface between knowledge of developmental science and potential implications for youth blameworthiness and adjudication. Pilot testing as well as consultation with field experts allowed us to ensure that the questions of the survey were unambiguously formulated. The survey comprised of four demographic and 14 additional questions. Most questions followed a multiple-choice (closed) format while some had the option of providing brief text responses (open format). A few questions comprised of a 5-point Likert scale. Most items included an "I cannot answer" option. The survey is available online at http://tinyurl.com/teenlaw and in the Appendix 1.

Statistical Analysis

We performed all statistical analyses with Stata Statistical Software release 10 (StataCorp. 2007. College Station, TX: StataCorp LP). We explored and analyzed the data using descriptive statistics and appropriate model comparison. We performed simple and logistic regressions to assess how experts differed in their opinions on questions such as how developmental factors affect youth blameworthiness and ability to stand trial. We treated the "I cannot answer" responses as missing data – individuals who express an opinion

are likely to shape the field more than those who do not – and applied White's (1980) correction to adjust for heteroskedasticity.

In all our analyses, we treated the 1-5 Likert ratings (1= Not at all/ 5= Extremely) as continuous variables because such model gives the advantage of not losing any information. Given that Likert-scale data do not underperform in analyses intended for continuous data, with some researchers recommending treating Likert-scale data with four or more categories as continuous (Bentler & Chou, 1987; Rasmussen, 1989), we judged such conception to be appropriate. Nonetheless, some may argue that each Likert-type item provides only a discrete approximation of the continuous variable (Clason & Dormody, 1993). We therefore have also computed trichotomous models in which we transformed the 5-point Likert ratings into indices of Low (1, 2), Moderate (3), and High (4,5) impact of the factors in question (see Appendix 2). Such grouping allowed us to compare specialists who assigned relatively little importance to those who assigned relatively high importance to developmental traits in relation to legal issues relating to young offenders. This latter model, moreover, provided us with more conservative results. Models involving a continuous conception and a trichotomous conception of the Likert scale yielded results pointing to the same direction.

We introduced age, knowledge of the Youth Criminal Justice System (YCJS), country, and sex as additional factors that could influence the way individuals think about the processing of juvenile delinquents. Because the debate concerning the treatment of young offenders with respect to their developmental stage is relatively recent (Jennings, 2010; Maroney, 2009a), older specialists may be less familiar with developmental research than younger specialists. Knowledge of the YCJS, moreover, may be associated with increased awareness of the issues surrounding this topic[1]. In addition, the way experts construe legal matters may vary by geographical location because countries differ with respect to how they handle public policy decisions (Luciana, 2011). Finally, because women tend to be more empathetic than men, women may be more likely to intimate that developmental factors affect youth blameworthiness and ability to stand trial (Burleson, 2003; Klauer & Winkeler, 2002) .

Participants

To recruit participants, we contacted multiple professional associations of legal and clinical experts and asked them to circulate our survey among their

[1] The opinions of experts may vary depending on their familiarity with the YCJS. We therefore ran models, which included interactions between expertise and knowledge of the YCJS as additional controls. None of the interaction terms showed statistical significance, which may be due to our small sample size. The inclusion versus exclusion of these interaction terms did not alter the statistical significance of the results despite multicollinearity. Thus, we decided to exclude the interaction terms from this report.

members. We focused primarily, although not exclusively, on expert associations based in the United States and Canada. Organizations that agreed to circulate our survey include the Canadian Bar Association, Department of Justice Canada, American Judges Association, International Association of Crime Analysts, Hartford Juvenile Court, American Academy of Child and Adolescent Psychiatry, Royal Australian and New Zealand College of Psychiatrists, and Child and Youth Health Research Network. Participation in this survey was anonymous and voluntary with participants receiving no monetary compensation.

Two hundred and ninety five individuals completed the survey (see Table 1 for distribution of respondents per expertise). Forty six percent of respondents were from Canada, 41% from the United States, and 12% from other countries (e.g., Australia, New Zealand); all legal experts were either from Canada or the United States[2]. Age of respondents spanned 20-78 years (M=47.2; SD=12.1) with a comparable number of males (48%) and females (52%).

*** INSERT TABLE 1 ABOUT HERE***

[2] Although legal standards differ between the United States and Canada, both countries follow a similar putative trend whereby politicians largely advocate for getting tough on juvenile delinquents.

Results

Youth Blameworthiness

We explored how experts differed in their opinions regarding the extent to which developmental factors affect the blameworthiness of youth (see Table 2 for percent distribution of responses per expertise). We performed multiple regressions to assess the link between Expertise and the Impact of Developmental Factors (1,2,3,4,5), systematically using each specialization as a reference category (see Table 5). Police officers (μ=2.9) attributed significantly lower importance to developmental factors relative to youth blameworthiness than lawyers (μ=3.8), psychiatrists (μ=3.7), psychologists (μ=4.0) and social workers (μ=3.6). Crime analysts (μ=3.2), moreover, assigned significantly less importance to developmental traits than either lawyers or psychologists. Finally, judges (μ=3.5) were significantly more likely than psychologists to assign lower ratings to the importance of developmental traits as mitigating factors for youth blameworthiness.

INSERT TABLE 2 AND TABLE 5 ABOUT HERE

Competence of Youth to Stand Trial

We explored how experts differed in their opinions regarding the extent to which developmental factors affect the competence of youth to stand trial (see Table 3 for percent distribution of responses per expertise). We performed

multiple regressions to assess the link between Expertise and Impact of Developmental Factors (1,2,3,4,5), systematically using each specialization as a reference category (See Table 6). Police officers (μ=2.9), as compared to psychiatrists (μ=4.0), psychologists (μ=3.7), and social workers (μ=4.1), assigned significantly less importance to the developmental factors in relation to competence of youth to stand trial. Crime analysts (μ=2.9) attributed significantly less importance to such factors than psychiatrists, psychologists, social workers, pediatricians (μ=3.4), and lawyers (μ=3.4). Judges (μ=3.5), moreover, assigned a lower significance to developmental traits in affecting competence of youth to stand trial than either psychiatrists or social worker. Lawyers attributed less importance to developmental factors than psychiatrists, social workers, and crime analysts. In addition, experts who had more knowledge of the YCJS tended to assign greater importance to developmental factors in relation to youth adjudicative competence. Finally, compared to American professionals (μ=3.7), Canadian specialists (μ=3.4) reported lower ratings of the importance of developmental factors.

*** INSERT TABLE 3 AND TABLE 6 ABOUT HERE ***

Determining the Reduction of Culpability

We explored how experts differed in their opinions regarding the extent to which determining the degree of reduction of culpability is possible in a particular

case (see Table 4 for percent distribution of responses per expertise). We performed multiple regressions to assess the relationship between Expertise and the Possibility of Determining the Degree of Reduction (1,2,3,4,5), systematically using each specialization as a reference category (see Table 7, Model 1). Police officers (μ=2.4) were the only expert group that significantly differed from others. Specifically, police officers assigned significantly lower ratings than either psychologists (μ=3.0) or social workers (μ=3.2) as to how possible it is to determine the degree of reduction of culpability in a particular youth case. Figure 1 shows the assessments that psychologists, psychiatrists, and social workers suggested as helpful in determining the culpability of a particular youth.

*** INSERT TABLE 4, TABLE 7 AND FIGURE 1 ABOUT HERE***

Imposition of Punitive Sanctions

We explored how experts differed in their opinions regarding whether punitive sanctions exert an adverse effect on the psychological development of youth (see Figure 2 for percent distribution of responses per expertise). We performed multiple logistic regressions to assess the link between Expertise and Adverse Effect of Punitive Sanctions (Yes, No), systematically using each specialization as a reference category. The only expert group that significantly differed from the others consisted of crime analysts. Model 2 in Table 7 shows

the standard regression table for this question with crime analysts as the reference category.

*** INSERT FIGURE 2 ABOUT HERE***

Discussion

Our collective findings suggest that the legal community is moderately sensitive to the developmental research and its potential implications for youth court processes. The majority of both legal and clinical experts, for example, reported that developmental factors have at least a moderate effect on youth blameworthiness (Table 2) and ability to stand trial (Table 3). Nonetheless, some police officers seem to overlook the importance of developmental parameters – up to 38% of police officers assigned either little or no importance to such factors in relation to blameworthiness and legal competence of youth (see Table 2 and Table 3). In fact, police officers were more likely than clinical experts to indicate that developmental traits have little effect on adolescent blameworthiness (Table 5) and the ability of youth to stand trial (Table 6). These findings suggest that police personnel may be particularly likely to overlook the youthfulness of adolescents. Previous studies, moreover, report that police officers tend to question juvenile suspects in a way similar to adult suspects (Feld, 2006; Meyer & Reppucci, 2007). Such practices may result from the fact that police officers rarely receive training about the potential negative effects of interrogative

techniques, including increased risk of false confessions among juveniles (Drizin & Leo, 2004). Research, in fact, indicates that training may have an impact on the degree of sensitivity of police toward developmental deficits of juveniles (Kostelnik & Reppucci, 2009).

Adolescents may be particularly likely to show hostility when interacting with police due to the increase in aggressive behaviours associated with pubertal changes (Kulin et al., 2000). The negative demeanour of a suspect, in turn, increases the likelihood of arrest (Engel, Sobol, & Worden, 2000). In line with such evidence, findings suggest that police officers are more likely to arrest juveniles than adults for similar offenses (Brown, Novak, & Frank, 2009). The lack of consideration of adolescent youthfulness among police officers, therefore, may result in arrests when informal police responses may be sufficient. Increased number of criminal records, moreover, often results in harsher sentences (Bushway & Piehl, 2007; Roberts, 1997). Structuring police discretion may be one way to reduce the number of referrals to youth court. In this vain, the Youth Criminal Justice Act of Canada encourages police officers to impose extrajudicial measures on youth (Carrington & Schulenberg, 2008). We suggest that training police personnel to interact with young offenders, while taking into consideration the developmental deficits associated with adolescence, is crucial

to promote fair treatment of juvenile delinquents as well as to minimize the number of false convictions.

Our findings suggest that most law professionals likely oppose the "get tough" approach that many American and Canadian politicians endorse. Tables 2 & 3 show that the majority of legal experts consider developmental factors as mitigating factors of at least moderate importance. In response to the apparent public concern about the leniency of the YCJS, politicians in both the United States and Canada are currently seeking to enact legislation stressing a more punitive approach to juvenile crime (Bala et al., 2009b; Tufts & Roberts, 2002a). In the United States, for example, the majority of states enacted legislation facilitating the transfer of youth to adult court, while limiting the discretion of judges to influence the sentencing outcomes by introducing sentencing grids (Bishop, 2009; Pfaff, 2006a). Consequently, although many young offenders show cognitive immaturity (Baerger, Griffin, Lyons, & Simmons, 2003b), adult courts in the United States are trying adolescents at an increasingly high rate (Patapis, 2006; Stahl, 1999; Steiner et al., 2006). In contrast, evidence suggests that American judges consider judicial discretion important for making transfer decisions on a case-by-case basis (Brannen et al., 2006). In Canada, especially with the recent passing of Bill C-10, several punitive measures increase the opportunity for the court to impose custodial sentences on youth by expanding

the definition of a violent offense (Parliament of Canada, 2012). That the Criminal Justice Section of the Canadian Bar Association has been opposing such legislation (2011) serves as further evidence that legal specialists in both the United States and Canada consider such measures unfavorable.

Some may argue that acknowledgment of developmental science does not necessarily translate into views of adolescent reduced blameworthiness. From a deterrence point of view (Fabian, 2011), for example, one may argue that because adolescents are increasingly likely to engage in criminal activity, they should also have increased criminal responsibility. Criminal law, however, recognizes mitigation when, under given circumstances, an ordinary person may have acted similarly to the defendant (Steinberg & Scott, 2003). Accordingly, a juvenile defendant should receive mitigation if an ordinary adolescent would have behaved in the same fashion (E. S. Scott & Steinberg, 2002). Evidence from developmental science suggests that adolescents have reduced capacity to refrain from criminal activity in situations involving high external pressure (E. S. Scott & Steinberg, 2008). Hence, in line with criminal law dogmas, findings from developmental research imply that juveniles are less blameworthy than adults.

Although discretion of judges may lead to disparities in sentencing (Doob & Cesaroni, 2004), consideration of personal characteristics is particularly important when processing juveniles due to wide inter-individual differences in

cognitive maturity (Mayzera, Bradleyb, Rusinkob, & Erteltb, 2009) and the prevalence of mental disorders among young offenders (Soler, 2002). In order to individualize youth cases while simultaneously minimizing variation of sentencing outcomes, the Canadian Youth Criminal Justice Act allows judges to have discretion, but introduces detailed provisions on the purpose and principle of sentencing (Roberts & Bala, 2003b). Nonetheless, a significant variation across Canada in the use of youth custody persists (Bala et al., 2009b). The difficulty in assessing the blameworthiness of a particular juvenile may contribute to the disparities in sentencing decisions when the system has discretion. Our findings, for example, suggest that up to 40% of judges think that determining individual degrees of culpability is either impossible or close to impossible (Table 4). Professionals who have discretion and thereby face the dilemma of determining individual level of blameworthiness, moreover, may be particularly sensitive to this problem. In fact, Canadian as opposed to American experts, were less likely to think that determining the degree of individual culpability is possible (Table 6). Developing a structured approach to assessing the blameworthiness of juveniles, therefore, is crucial for having both discretion and structure within the legal system. Developmental science may help introduce at least some structure to the determination of youth blameworthiness. Responses from clinical experts, for example, suggest that assessments of psychological health, impulsivity,

intelligence quotient, and psychosocial maturity may be particularly helpful in determining the degree of culpability reduction in a particular case (Figure 1). We acknowledge, however, that translating these evaluations into conclusions about individual blameworthiness may remain difficult. Collaboration between developmental scientists and youth justice experts could lead to improvement of such diagnostic tools. In particular, developmental scientists will have a greater potential to provide relevant assessment tools if they understand the difficulties which juvenile justice officials face.

Ensuring that legal experts are sensitive to and have guidance for systematically assessing developmental parameters in youth is important to provide juvenile delinquents with appropriate sentencing. The lack of sensitivity to psychopathological deficits on the part of legal experts on the part of legal experts has been one of the causes preventing mentally ill adult defendants from receiving the mitigation they should. For example, whereas individuals with Fetal Alcohol Syndrome Disorders show impairments in the ability to either appreciate the wrongfulness of or withdraw from their acts, they rarely receive mitigation because legal experts are largely unable to recognize the manifestations of this condition (Chartrand & Forbes-Chilibeck, 2003; Conry & Fast, 2000; Fast & Conry, 2004). Similarly, the lack of consideration by legal professionals of cognitive developmental deficits, rather than restrictions of the justice system,

may result in young delinquents receiving less than they deserve. Further interactions between developmental science and law may increase the sensitivity of legal experts to such issues and thereby enhance individualising youth court processes.

Our findings suggest that up to 40% of judges think that punitive sanctions, as opposed to rehabilitation programs, do not exert an adverse effect on the mental health of youth (Figure 2). Such attitudes, if accompanied by the belief in the effectiveness of punishment, may result in tendencies to impose more punitive sanctions when judges have discretion. Evidence, however, suggests that punishment can interfere with the normative functioning of adolescents (Arredondo, 2003; Bonham, 2006a; Fagan, 2008). With psychopathologies being a strong predictor of criminal behavior, moreover, harsh measures may increase crime rates. Punishment therefore seems to be both detrimental to adolescent mental health and ineffective in reducing crime. On the other hand, the potential for changing maladaptive behavioural patterns is particularly high in adolescence (Dahl, 2004) since the brain is still malleable (Greenberg et al., 2007). Accordingly, while research evidence sheds doubt on the effectiveness of punishment, rehabilitation programs seem to be potent in preventing youth re-offending (Andrews & Bonta, 2010; Baerger et al., 2003b; Day et al., 2004; Forrest, Tambor, Riley, Ensminger, & Starfield, 2000b;

Greenberg et al., 2007; Myers & Farrell, 2008; Vieira, Skilling, & Peterson-Badali, 2009b). By decreasing the number of incarcerations in favour of diverting young offenders to community-based treatment and vocational programs, the State of Texas, for example, had substantially reduced crime rates in the time period of 2007-2011 (Levin, 2011). Hence, contrary to the beliefs of politicians, a rehabilitative system is more effective than a retributive system in reducing youth crime and promoting public safety.

Working Towards Rehabilitative Juvenile Justice

Educating legal specialists about social readjustment of young offenders is key to successful rehabilitation. The type of relationship that different specialists have with juvenile delinquents may account for variations in considering developmental factors as mitigating factors. In particular, whereas clinical experts (e.g., psychologist, psychiatrist, social worker) assume the role of a helper, law officials (e.g., police officer, judge) assume the role of a justice reinforcer. Accordingly, compared to clinical experts who are more likely to focus on individual deficits of youth, legal specialists are likely to be more attuned to the negative consequences of the offense committed and thereby endorse a more punitive approach. We suggest, therefore, that implementation of a rehabilitative youth justice may require educating legal experts about their role in helping youth transition from callow individuals to mature productive citizens.

We propose that a closer dialogue between developmental scientists and legal experts is necessary to create an evidence-based developmental law. In particular, such interactions may allow the consolidation of law and developmental science into a document that would inform policymakers on how to refine youth justice policies in a way that allows for both reducing crime rates and promoting the healthy development of juveniles. Presently, adolescence as a specific stage of life is poorly defined within the legal system with the definition of adulthood differing depending on the policy context; for example, adolescents gradually acquire legal responsibility with different ages being associated with specific privileges such as voting, driving, and consuming alcohol (E. S. Scott, 2000b). The ages associated with particular legal responsibilities, furthermore, differ between countries (Luciana, 2011). Such ambiguous differentiation between adolescence and adulthood may contribute to the difficulty of establishing the age range of youth jurisdiction. Greater interaction between developmental science and the legal system may help to set reasonable age ranges that classify youth with respect to their criminal responsibility in accordance with their developmental stages.

Limitations and Caveats

Questionnaire

Given that psychological research is gaining influence in legal decisions involving juveniles (Graham v. Florida, 2010; R. v. D.B., 2008; Roper v. Simmons, 2005), understanding how legal experts view such research merits attention. Establishing how legal experts generally position themselves in relation to developmental research is crucial to understanding how such findings may play out in the legal system. The general receptiveness of the developmental evidence by the legal community, for example, suggests that a dialogue between legal and clinical experts may be possible. Such collaborations may be important to foster a balance between holding youth accountable while heeding their typical course of development. This paper is the first to compare the opinions of different legal and clinical experts on the relevance of developmental research to legal matters concerning juvenile delinquents. Although some of our clinical respondents may have been only modestly knowledgeable about the juvenile justice system, their views add an important clinical dimension, untainted by legal ideologies, onto blameworthiness and legal competence of juveniles.

We aimed our survey to be a pilot effort to assess the general outlook of experts on the problem of adolescent blameworthiness. We therefore designed

our questions to be broad rather than specific. For example, we omitted designating a specific age range due to controversy surrounding the age of criminal responsibility (Urbas, 2000). In addition, the use of the broad term "youth" allowed us to glean the role that specialists assign to developmental factors without introducing bias into their opinions associated with stereotypical thinking about specific ages. Such a conception may be more informative as developmental characteristics are better descriptors of maturity than age. We acknowledge, however, that the way in which survey questions are worded may produce differential response patterns regarding the preferences associated with youth punishment, with vague questions being particularly difficult to interpret (Steinberg & Piquero, 2010b). Below we address potential issues associated with the wording of questions that may arise when interpreting our results.

The formulation of our questions assumes that adolescents are less blameworthy than adults. Such an assumption is already ingrained within the justice systems of the countries we surveyed as each has a separate system for juveniles, which is more lenient than the system for adults. As such, the value judgment of whether or not juveniles are less blameworthy than adults was beyond the scope of our questionnaire. Rather, we aimed to assess the importance that different experts place on developmental factors in computing the reduced blameworthiness of youth. Although it is theoretically possible that

different experts may have interpreted the term “developmental factors” differently, such a possibility is unlikely because we introduced respondents to a list of developmental factors within the first question of the survey. Thus, our findings illustrate some general trends of how legal and clinical experts view the role of developmental science in informing juvenile justice policies.

Experts may differ in how they interpreted the concept “competence to stand trial”. In particular, legal standards of competence have historically focused on mental illness and retardation as possible causes of legal deficits (Grisso, 2005). In addition, there has been little recognition of developmental immaturity as an undermining factor of youth competence (Bonnie & Grisso, 2000; Redding & Frost, 2002). Hence, some specialists may conceive developmental immaturity to be irrelevant to the notion of adjudicative competence, while construing this notion exclusively in relation to mental illness. Legal experts, moreover, may be particularly prone to infer adolescent competency from a comparison of characteristics of a juvenile with a mentally ill individual. Given that the legal standards for trying individuals with psychopathologies are fairly low, such a conception of juvenile competency may explain why legal experts, as opposed to clinical specialists, tended to attribute lower importance to developmental traits in relation to youth competence. We acknowledge that it may be hard to discern whether legal experts, when

compared to clinical experts, have less appreciation of the youthfulness of adolescents or if their views of adolescent competence are constrained by the low standards of the legal system when processing mentally insane individuals. Nonetheless, our findings do show that a significant proportion of legal experts seem to recognize that developmental immaturity is relevant to the competence of youth to stand trial. We therefore submit that our results are important in that they indicate that legal competence of youth may deserve more attention.

In assessing opinions concerning the impact of punitive sanctions compared to rehabilitation programs on the mental health of juveniles, we did not specify which sanctions qualify as punitive as opposed to rehabilitative. Accordingly, some respondents may have been unclear about the meaning of these terms and therefore uncomfortable answering this question. Such a possibility may account for some of the "I cannot answer" responses to this question. Despite this limitation, we suggest that responses of experts who were compelled to answer this question capture, at least to some extent, whether or not experts regard punishment as more detrimental than rehabilitation to the psychological health of adolescents.

Specification of factors such as age of the defendant, the type of offense committed, and the type of sentence imposed may alter the outlooks of experts

on youth blameworthiness and punishment (Steinberg & Piquero, 2010b). We therefore caution against using our findings as a basis for advocating new policies and highlight that the value of our report rather lays in that it opens a window for formulating new research questions. Further investigations will need to formulate more specific questions in order to understand how the views of experts on youth blameworthiness change depending on the age of the offender and the offense committed. In addition, the minimum age of the juvenile court jurisdiction may impact the opinions of legal experts on developmental science relative to issues such as youth blameworthiness and competence to stand trial. While the minimum age of youth accountability in Canada is fixed for all provinces at 12 years old (Doob & Tonry, 2004), in the United States the minimum ages vary widely by state; in some states youth as young as six years old may appear in the juvenile court (Snyder & Sickmund, 1999). Future research would need to assess whether the views of legal experts on the role of developmental factors in youth jurisdiction differ depending on the age range of juveniles that they deal with. Finally, future studies would need to explore the effect of political ideology (e.g., liberal, conservative) on how experts position themselves on the use of developmental science to inform law.

Using a Web Survey

In addressing the relative merits and drawbacks of Internet surveys, we refer the reader to a recent special issue in *Public Opinion Quarterly* (Vol. 72, No. 5, 2008). Response rates of online surveys using email invitations outperform other electronic media, such as mobile short messaging service, without compromising the sample composition of respondents (Bosnjak, Neubarth, Couper, Bandilla, & Kaczmirek, 2008). Response rates for Internet surveys such as the present study differ from mail surveys (Dillman, 2000; Manfreda, Bosnjak, Berzelak, Haas, & Vehovar, 2008; Matz, 1999; Underwood, Kim, & Matier, 2000), with characteristic values falling below 10% (Crawford, Couper, & Lamias, 2001; Smith, 1997; Tse et al., 1995; Witmer, Colman, & Katzman, 1999). As such, although a larger sample size may strengthen our results, this preliminary pilot study serves as a demonstration of feasibility to pave the road to a bigger research effort using this up-and-coming survey technology. Our methodology is congruent with previous recent studies (Sherman & Hickner, 2008) and represents a new wave of web-based surveys (Callegaro & Disogra, 2008; Couper & Miller, 2008; Kreuter, Presser, & Tourangeau, 2008) emphasizing that putative response representativeness carries more weight than response rate (Cook, Heath, & Thompson, 2000). Estimating response rate with the present

survey is difficult, however, given different expert groups and their associated samples.

The advantages of Internet surveys include efficient data collection and timely results (Couper & Miller, 2008); casting a wide net while reducing the cost relative to the sample size (Dillman, 2000); eliminating the need for a full mailing address, and thus providing respondents with a guarantee of anonymity (Eysenbach & Wyatt, 2002). Consequently, respondents benefit from social advantages such as increased willingness to answer charged or controversial questions as well as a reduction, or elimination, of social desirability effects (Couper, Tourangeau, & Steiger, 2001; Kreuter et al., 2008; Pealer, Weiler, Pigg, Miller, & Dorman, 2001). This asset is advantageous for veridical assessment of sensitive and politically-charged issues such as youth blameworthiness.

One of the disadvantages of web-based surveys concerns the exclusion of responses from individuals without Internet access thereby introducing coverage error (Couper, 2000, 2007); however, the majority of our target experts typically have Internet and email access, thereby minimizing the coverage error (Dillman, 2000; Martin, 2003). Whereas Internet surveys are susceptible to multiple survey completions by the same person (i.e., “ballot stuffing”), we implemented specific technological measures, such as the use of cookies and restriction of IP addresses, to avoid such duplicate responses (Couper, 2007). In addition, in any

survey, including a web-based survey, respondents may differ from non-respondents in terms of demographics and attitudes, resulting in non-response bias (Umbach, 2004). Nonetheless, research reports comparing Internet survey methodology with mail surveys suggest that differences between responders and nonresponders are likely small (Sax, Gilmartin, Lee, & Hagedorn, 2008). In addition, the literature on Internet surveys contains no account of response bias based on demographic characteristics.

The present survey sought to assess opinions of legal and clinical experts on issues concerning youth court processes using a self-selected sample. It is theoretically possible that the experts who chose to complete our survey were already those most likely to have a strong opinion. Should that be the case, our results are likely to be biased toward the population of experts who are particularly inclined to think that developmental factors affect the blameworthiness and ability to stand trial of youth. Specifically, because the debate about legal accountability of adolescents is accumulating more attention (Baerger et al., 2003b; Maroney, 2009b), proponents of a juvenile justice reform may be more likely to express their opinions. Although some may argue that our sample may also include a disproportionate representation of experts who have strong feelings against the use of developmental evidence in the juvenile justice, such possibility is unlikely given the nature of our data which does not suggest a

bimodal distribution. In fact, the exploration of our data suggests that among all groups of experts, the distribution of responses to the reported questions was either normal or skewed toward stronger acknowledgement of developmental factors. Thus, in case if our sample is biased, the gap between the legal community and developmental science is likely to be larger than our findings suggest.

Conclusion

Our findings suggest that, while the legal community is moderately sensitive to developmental issues associated with youth blameworthiness, the gap between the legal system and developmental science persists. This lacuna likely stems from the fact that the dialogue between the legal system and developmental science began only as recently as the 21st century (Maroney, 2009b). The Supreme Court of the United States, for example, abolished the juvenile death penalty as late as 2005, following the Ropper v. Simmons case. In Canada, the implementation of the Youth Criminal Justice Act in 2003 lead to a number of conflicting court of appeal decisions questioning the constitutionality of the Act which placed the onus on youth to satisfy the court of why an adult sentence should not be applied (Bala et al., 2009b). Nonetheless, only in 2008, after the R. v. D.B. case, the Supreme Court of Canada had reversed the onus and established that a youth should not lose the benefit of the youth sentencing

provisions unless the Crown justifies the imposition of an adult sentence. It appears that the legal system would stand to benefit from closer interaction with developmental sciences. Individual variation in development further recommends that informed justice officials should have larger discretionary latitude in their decisions. Addressing these two issues would contribute greatly to advancing current issues of contention regarding adolescent culpability and improve youth judicial processes.

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Tables and Figures

Table 1: *Distribution of Respondents per Expertise*

Expertise	N	Percent Frequency
Police officer	30	10 (3.9)
Crime Analyst	27	9 (3.0)
Judge	35	12 (4.2)
Lawyer	78	26 (4.0)
Psychiatrist	38	13 (3.0)
Pediatrician	25	9 (1.8)
Psychologist	24	8 (2.9)
Social Worker	38	13 (3.4)
Total:	295	100

Note: The mean knowledge of the YCJS in parentheses

Table 2: *Percent frequency distribution of responses per expertise*

	Do you think that there are developmental traits that should affect the reduced blameworthiness and culpability of youth? (1=No/5=Absolutely)					
	1	**2**	**3**	**4**	**5**	**I cannot answer**
Police officer	10	27	27	33	0	3
Crime analyst	4	7	52	26	4	7
Judge	11	9	20	17	32	11
Lawyer	5	12	14	24	37	8
Psychiatrist	8	10	16	26	32	8
Pediatrician	0	16	36	28	4	16

Psychologist	4	0	29	13	42	13
Social worker	5	8	18	40	16	13

Table 3: *Percent frequency distribution of responses per expertise*

	Do you think that there are developmental factors that affect the competence of youth to stand trial? (1=No/5=Absolutely)					
	1	**2**	**3**	**4**	**5**	**I cannot answer**
Police officer	13	23	17	27	7	13
Crime analyst	26	7	11	30	11	15
Judge	9	20	11	11	37	11
Lawyer	18	8	19	18	31	6
Psychiatrist	5	5	16	29	40	5
Pediatrician	12	8	20	44	12	4
Psychologist	8	4	29	17	38	4
Social worker	5	0	16	31	45	3

Table 4: *Percent frequency distribution of responses per expertise*

	Is it possible to determine the degree of reduction in a particular youth's criminal culpability? (1= Impossible/ 5= Very possible)					
	1	**2**	**3**	**4**	**5**	**I cannot answer**
Police officer	7	47	17	7	3	20
Crime analyst	7	26	41	7	0	19
Judge	14	26	17	17	11	14
Lawyer	9	23	29	12	5	22
Psychiatrist	0	26	47	5	5	16
Pediatrician	12	24	28	8	0	28
Psychologist	4	13	58	4	8	13
Social worker	3	5	55	23	0	13

Table 5: *Standard Regression Table*

	Beta		
	Model 1	Model 2	Model 3
Police officer	--	-.06	-.09
		(0.35)	(0.36)
Crime analyst	.06	--	-.02
	(0.35)		(0.37)
Judge	.10	.03	--
	(0.36)	(0.37)	
Lawyer	.35 ***	.25*	.22
	(0.24)	(0.30)	(0.32)
Psychiatrist	.27**	.19	.17
	(0.36)	(0.37)	(0.37)
Pediatrician	.07	.01	-.01
	(0.38)	(0.31)	(0.38)
Psychologist	.28 ***	.22**	.12*
	(0.36)	(0.37)	(0.34)
Social worker	.23 **	.15	.20
	(0.28)	(0.31)	(0.42)
Age	.08	.08	.08
	(0.01)	(0.01)	(0.01)
Male	-.04	-.04	-.04
	(0.15)	(0.15)	(0.15)
Knowledge of YCJS	.11	.11	.11
	(0.08)	(0.09)	(0.09)
Canada	-.12	-.12	-.12
	(0.20)	(0.20)	(0.20)
Other country	-.12	-.12	-.12
	(0.28)	(0.28)	(0.28)

Note: **Model 1, Model 2** and **Model 3** shows how police officers, crime analysts, and judges, respectively, differed from other experts in their opinion on the question "Do you think that there are developmental traits that should affect the reduced blameworthiness and culpability of youth? (1=No/5=Absolutely)". * p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.

Table 6: *Standard Regression Table*

	Beta			
	Model 1	Model 2	Model 3	Model 4
Police officer	--	.08	-.07	-.09
		(0.47)	(0.41)	(0.31)
Crime analyst	-.08	--	-.15	-.16*
	(0.47)		(0.45)	(0.40)
Judge	.07	.17	--	-.03
	(0.41)	(0.45)		(0.33)
Lawyer	.14	.27*	.03	--
	(0.31)	(0.40)	(0.33)	
Psychiatrist	.32***	.42***	.24**	.21**
	(0.39)	(0.43)	(0.34)	(0.31)
Pediatrician	.13	.22*	.07	.05
	(0.48)	(0.47)	(0.41)	(0.41)
Psychologist	.21**	.29**	.14	.12
	(0.40)	(0.46)	(0.42)	(0.34)
Social worker	.33***	.43***	.25**	.23***
	(0.31)	(0.40)	(0.34)	(0.24)
Age	-.11	-.11	-.11	-.11
	(0.01)	(0.01)	(0.01)	(0.01)
Male	-.06	-.06	-.06	-.06
	(0.16)	(0.16)	(0.16)	(0.16)
Knowledge of YCJS	.21**	.21**	.21**	.21**
	(0.09)	(0.09)	(0.09)	(0.09)
Canada	-.23**	-.23**	-.23**	-.23**
	(0.21)	(0.21)	(0.21)	(0.21)
Other country	-.14**	-.14**	-.14**	-.14**
	(0.27)	(0.27)	(0.27)	(0.27)

Note: **Model 1**, **Model 2**, **Model 3**, and **Model 4** show how police officers, crime analysts, judges and lawyers, respectively, differed from other experts in their opinions on the question "Do you think that there are developmental factors that affect the competence of youth to stand trial? (1=No/5=Absolutely)". * p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.

Table 7: *Standard Regression Table*

	Model 1	Model 2
	Beta	Odds Ratio
Police officer	--	9.42**
		(7.67)
Crime analyst	.07	--
	(0.30)	
Judge	.14	7.81**
	(0.32)	(6.12)
Lawyer	.12	18.45***
	(0.24)	(13.67)
Psychiatrist	.17	12.56**
	(0.32)	(12.04)
Pediatrician	.08	22.28***
	(0.34)	(21.02)
Psychologist	.20*	23.27***
	(0.28)	(21.97)
Social worker	.26***	31.31
	(0.22)	(25.39)
Age	-.003	.98
	(0.01)	(0.01)
Male	-.08	.55
	(0.14)	(0.18)
Knowledge of YCJS	.13	1.37
	(0.06)	(0.24)
Canada	.02	.59
	(0.18)	(0.27)
Other country	.04	1.44
	(0.26)	(1.15)

Note: **Model 1** shows the results from the simple regression on the question "Is it possible to determine the degree of reduction in a particular youth's criminal culpability? (1= Impossible/ 5= Very possible)" **Model 2** shows the results from the logistic regression assessing how crime analysts differed from other experts in their opinions regarding whether punitive sanctions have an adverse effect on psychological development of youth (Yes =1/ No = 0). * p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.

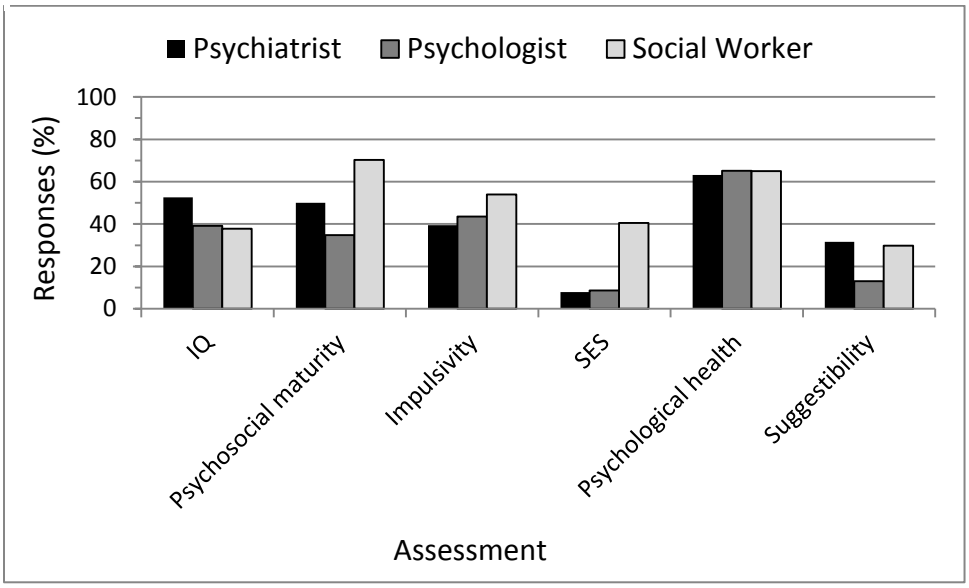

Figure 1: Percent frequency distribution of responses per expertise for the question “Please specify how could the degree of reduction in a particular youth’s criminal culpability be determined?”(N=98).

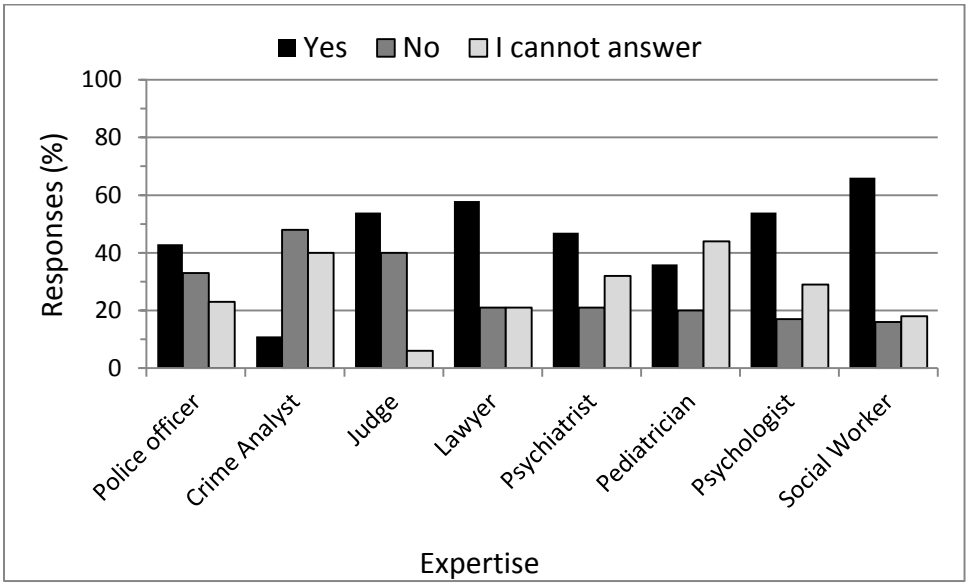

Figure 2: Percent frequency distribution of responses per expertise for the question “Does the imposition of punitive sanctions, compared to rehabilitation, adversely affect the mental and psychological development of youth?” (N=295).

General Conclusions

Developmental research suggests that adolescents are at an increased risk for criminal activity. Developmental immaturity undermines adolescent decision-making skills of adolescents, and predisposes them for engaging in antisocial behaviours. As a result, youth crime often reflects poor judgment of juveniles rather than bad character. Youth crime thereby significantly differs from adult crime. Whereas adult criminal acts likely reflect stable personality and intent, adolescent delinquency is likely to be a manifestation of character exploration and external pressures. Accordingly, maturation usually leads to desistance from crime and only 5% percent of juvenile delinquents become adult criminals.

Criminal law recognises mitigation when the defendant had difficulty in both understanding the wrongfulness of and refraining from his or her actions. Factors such as attitude toward and perception of risk, heightened impulsivity, difficulties with emotional control, and peer pressure undermine the ability of juveniles to fully appreciate the wrongfulness of their actions and to successfully suppress their behaviours. Thus, we suggest that youth should receive mitigation due to their developmental immaturity.

Introducing general rules for processing youth may be problematic, since inter-individual differences in maturity and psychological health are common

among juvenile delinquents. Specifically, the culpability of two adolescents of the same age who have committed the same offence may differ depending on the extent to which developmental and psychological factors have affected the delinquent behaviour. We therefore recommend processing young delinquents on an individual basis. Evaluations of maturity such as assessments of impulsivity, intelligence quotient, psychosocial maturity, and suggestibility, as well as of psychological health may help judges to determine the level of reduced blameworthiness in a particular case. We acknowledge, however, that the currently available diagnostic tools of maturity remain limited in how accurately they can translate into levels of individual blameworthiness. Thus, we highlight the importance of collaboration between developmental scientists and legal experts to develop evaluations of maturity that would guide clinicians in determining individual blameworthiness. Findings from our survey suggest that the legal community tends to welcome developmental research and, therefore, such investigations are likely to be possible.

Ample evidence suggests that punitive measures may harm the psychological health of adolescents and enhance their criminality. As such, increasing the punitiveness of the juvenile justice system is unwarranted and may, in fact, be counterproductive as a means to cope with youth crime. Rehabilitation programs, on the other hand, show consistently positive results in

reducing reoffending. We therefore recommend that the juvenile justice system emphasise rehabilitation, as opposed to punishment. Research may further inform policymakers on what kinds of interventions work best, thereby contributing to the formation of an evidence-based practice.

Politicians may be reluctant to make dramatic shifts in justice policies due to fear of public disapproval. The majority of people, however, lack the requisite knowledge of the juvenile justice and have, at best, a simplistic understanding of how juvenile delinquents should be treated. Furthermore, as opposed to the crude polls showing that the public wants harsher measures, surveys that provide information about how the juvenile justice system operates (e.g., list of available alternative measures), tend to yield opinions that are more supportive of rehabilitation than punishment (Steinberg & Piquero, 2010a; Tufts & Roberts, 2002b). Hence, a turn toward a rehabilitative juvenile justice is likely to gain public approval as long as politicians educate people about youth crime and the effectiveness of such a system. As a community, we need to realise that most juvenile delinquents re-enter society and the role of the juvenile justice system is to ensure that these youth represent minimal threat as they rejoin society.

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Appendix 1

Survey

1. Please indicate your sex:

- Female
- Male

2. Please indicate your age in years:_____

3. What country are you based in? _____

4. To which of the following categories do you belong?

- Scientist:
  - Developmental
  - Forensic
  - Cognitive
  - Forensic
  - Social
  - Neuroscience
  - Criminology
  - Other:____

- Physician:
  - General psychiatry
  - Child and adolescent psychiatry
  - Pediatrician
  - Other:_____

- Non-physician practitioner:
  - Social worker
  - Psychologist
  - Other

- Law professional:
  - Legal scholar
  - Lawyer
  - Judge

- Other:_____

- Law enforcement:
  - Police officer
  - Detective
  - Probation officer
  - Other:_____

- Other:_____

5. How knowledgeable are you about the Youth Criminal Justice System? (1=not at all/5=extremely)

6. Please rate how much the following factors affect criminal behaviour in adolescents: (1 = not at all/ 5 = extremely/ I cannot answer)

- Underdeveloped frontal lobes
- High testosterone levels in males
- Low psychosocial maturity
- Low risk-averse sensitivity
- High susceptibility to peer pressure
- Impaired ability to assess the consequences of one's actions
- Reduced inhibitory control
- Impaired self-management skills
- Larger mood swings
- Lack of cognitive and emotional self-regulation
- Increased vulnerability to stress
- Diminished decision-making capacity
- Lack of experience
- Identity formation leading to greater experimentation
- Environmental functions (parenting, Social Economic Status

7. Are there any other developmental factors that affect criminal behaviour in adolescents?

- Yes:
    - Please specify the factor(s) and indicate importance in parentheses:
        (1 = not at all/ 5 = extremely)
- No

8. Do you think that there are developmental traits that should affect the reduced blameworthiness and culpability of youth? (1 = no/ 5= absolutely/ I cannot answer)

8a. Please indicate some developmental traits that you think determine the reduced blameworthiness and culpability of youth:

- Underdeveloped frontal lobes
- High testosterone levels in males
- Low psychosocial maturity
- Low risk-averse sensitivity
- High susceptibility to peer pressure
- Impaired ability to assess the consequences of one's actions
- Reduced inhibitory control
- Impaired self-management skills
- Larger mood swings
- Lack of cognitive and emotional self-regulation
- Increased vulnerability to stress
- Diminished decision-making capacity
- Lack of experience
- Identity formation leading to greater experimentation
- Other:_____

9. Is it possible to determine the degree of reduction in a particular youth's criminal culpability? (1 = impossible/ 5 = very possible/I cannot answer)

9a. Please specify how the degree of reduction in a particular youth's criminal culpability could be determined:

- Based on age
- Based on IQ
- Based on psychosocial maturity
- Based on impulsivity
- Based on Social Economic Status
- Based on psychological an mental health
- Based on suggestibility
- Other:_____

10. Do you think that there are developmental factors that affect the competence of youth to stand trial? (1=no/5=absolutely/I cannot answer)

10a. Please specify what are the developmental factors that affect the competence of youth to stand trial:

- Psychosocial immaturity
- Cognitive immaturity
- Compliance with authority
- Vulnerability to stress
- Other:_____

10b. Please provide concrete suggestions for how the competence of youth should be determined:_____

11. Does the imposition of punitive sanctions, compared to rehabilitation, adversely affect the mental and psychological development of youth?

- Yes
- No
- I cannot answer

11a. How can we find a balance between holding youth accountable and promoting normal course of development and positive behaviours?

- Providing rehabilitation programs within custody
- Providing youth with professional help (e.g., psychologists, social workers) after they leave custody
- Keep parents close to the child
- Provide programs that would help youth to integrate in a healthy environment
- Have age appropriate custodies/rehabilitation programs
- Have separate custodies/rehabilitation programs for males and females
- Other:_____

12. How can developmental science inform successful rehabilitation programs for youth?
    - Involve parents in rehabilitation programs
    - Provide secure environment
    - Teach youth social skills by enabling them to cooperatively work in groups
    - Teach youth how to control their impulses
    - Teach youth how to regulate their emotions
    - Teach youth how to express their emotions in a socially acceptable way
    - Enhance youth's moral development
    - Create activities that would permit youth to develop and practice autonomous decision-making and critical thinking
    - Assist youth in setting personal goals
    - Educate youth about their strength, assets and potential contributions
    - Assess youth's psychological health in order to better suit personal needs
    - Help youth to integrate into society after they get out of custody/rehabilitation program
    - I cannot answer
    - Other:_____

13. Do you think that there should be a minimum age for youth jurisdiction?
    - Yes
    - No
    - I cannot answer

13a. What should be the minimum age for youth court jurisdiction? _____

14. Do you think that there should be a minimum age for adult jurisdiction?
    - Yes
    - No

- I cannot answer

14b. What should be the minimum age for adult court jurisdiction?

Appendix 2

Below are tables with results from multimodal logistic regression models in which we transformed the 5-point Likert ratings into indices of Low (1,2), Moderate (3), and High (4,5).

Table 8: *Standard regression table*

	RRR			
	Model 1		Model 2	
	High Impact	Moderate Impact	High Impact	Moderate Impact
Police officer	--	--	.42	.09*
			(0.39)	(0.09)
Crime analyst	2.40	10.90*	--	--
	(2.24)	(11.22)		
Judge	1.47	2.10	.61	.19
	(1.08)	(1.90)	(0.56)	(0.19)
Lawyer	4.19**	.90	1.75	.08*
	(2.32)	(0.59)	(1.52)	(0.08)
Psychiatrist	2.66	.56	1.11	.05*
	(2.15)	(0.59)	(1.11)	(0.06)
Pediatrician	1.19	3.22	.49	.30
	(1.12)	(3.48)	(0.51)	(0.30)
Psychologist	13.05*	5.61	5.44	.51
	(15.18)	(6.93)	(7.08)	(0.71)
Social worker	4.76*	1.08	1.98	.10*
	(3.28)	(0.86)	(1.88)	(0.11)
Age	1.02	1.03	1.02	1.03
	(0.02)	(0.02)	(0.02)	(0.02)
Male	.86	.60	.86	.60
	(0.31)	(0.25)	(0.31)	(0.25)
Moderate knowledge of YCJS	.87	.97	.87	.97
	(0.49)	(0.59)	(0.49)	(0.59)
High knowledge of YCJS	.91	.36	.91	.36
	(0.50)	(0.22)	(0.50)	(0.22)
Canada	.63	3.52	.63	3.52
	(0.32)	(2.43)	(0.32)	(2.43)
Other country	.74	3.39	.74	3.39
	(0.55)	(3.29)	(0.55)	(3.28)

Note: **Model 1,** and **Model 2** show how police officers and crime analysts respectively, differed from other experts in their opinion on the question “Do you think that there are developmental traits that should affect the reduced blameworthiness and culpability of youth?” Low impact of developmental factors is the

comparison group. As opposed to the linear model, judges did not significantly differ from other experts in this model; this table, therefore, does not include results with judges as reference category.

* p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.

Table 9: *Standard Regression Table*

	RRR							
	Model 1		Model 2		Model 3		Model 4	
	High Impact	Moderate Impact	High Impact	Moderate Impact	High Impact	Moderate Impact	High Impact	Moderate Impact
Police officer	--	--	1.20	1.93	.64	.87	.48	.72
			(0.94)	(2.01)	(0.47)	(0.83)	(0.26)	(0.47)
Crime analyst	.83	.52	--	--	.54	.45	.40	.37
	(0.65)	(0.54)			(0.40)	(0.47)	(0.28)	(0.36)
Judge	1.55	1.14	1.87	2.20	--	--	.75	.82
	(1.13)	(1.09)	(1.38)	(2.28)			(0.48)	(0.71)
Lawyer	2.07	1.39	2.48	2.68	1.33	1.22	--	--
	(1.11)	(0.92)	(1.73)	(2.56)	(0.86)	(1.05)		
Psychiatrist	14.86**	3.17	17.85**	6.11	9.57	2.77	7.18*	2.28
	(14.42)	(3.70)	(18.03)	(2.12)	(8.98)	(3.23)	(6.63)	(2.51)
Pediatrician	3.46	1.10	4.16	2.12	2.23	.96	1.67	.79
	(3.15)	(1.24)	(3.48)	(2.26)	(1.78)	(0.98)	(1.42)	(0.83)
Psychologist	6.60*	3.05	7.93**	5.88	4.25	2.67	3.19	2.19
	(5.61)	(2.96)	(7.06)	(6.50)	(3.72)	(2.87)	(2.48)	(1.90)
Social worker	24.40***	5.78	29.31***	11.13*	15.71	5.05	11.79**	4.15
	(21.80)	(5.91)	(28.49)	(13.35)	(14.99)	(5.83)	(9.59)	(3.81)
Age	.98	1.00	.98	1.00	.98	1.00	.98	1.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Male	.74	.59	.74	.59	.74	.59	.74	.59
	(0.26)	(0.25)	(0.26)	(0.25)	(0.26)	(0.25)	(0.26)	(0.25)
Moderate knowledge of YCJS	.54	.19**	.54	.19**	.54	.19**	.54	.19
	(0.29)	(0.12)	(0.29)	(0.12)	(0.29)	(0.12)	(0.29)	(0.12)
High knowledge of YCJS	1.79	.32	1.79	.32	1.79	.32	1.79	.32
	(1.00)	(0.20)	(1.00)	(0.20)	(1.00)	(0.20)	(1.00)	(0.20)
Canada	.43	1.16	.43	1.16	.43	1.16	.42	1.16
	(0.21)	(0.73)	(0.21)	(0.73)	(0.21)	(0.73)	(0.21)	(0.73)
Other country	.38	.89	.38	.89	.38	.89	.38	.89

	(0.32)	(0.90)	(0.32)	(0.90)	(0.32)	(0.90)	(0.32)	(0.90)

Note: **Model 1**, **Model 2**, **Model 3**, and **Model 4** show how police officers, crime analysts, judges and lawyers, respectively, differed from other experts in their opinions on the question “Do you think that there are developmental factors that affect the competence of youth to stand trial?” Low impact of developmental factors is the comparison group. * p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.

Table 10: *Standard Regression Table*

	RRR	
	High Possibility	Moderate Possibility
Police officer	--	--
Crime analyst	2.74	7.32*
	(3.15)	(6.00)
Judge	6.51*	2.25
	(5.75)	(1.79)
Lawyer	2.70	2.72
	(2.00)	(1.65)
Psychiatrist	3.38	8.63**
	(3.53)	(6.98)
Pediatrician	4.17	5.55
	(5.15)	(4.98)
Psychologist	6.45	14.56***
	(6.82)	(11.79)
Social worker	25.04***	26.87***
	(24.22)	(22.42)
Age	1.00	1.00
	(0.02)	(0.02)
Male	.89	.83
	(0.37)	(0.28)
Moderate knowledge of YCJS	.46	.74
	(0.33)	(0.34)
High knowledge of YCJS	2.53	1.44
	(1.61)	(0.68)
Canada	1.59	1.86
	(0.88)	(0.87)
Other country	2.22	1.54
	(1.86)	(1.02)

Note: Shows how opinions of police officers differed from other groups on the question "Is it possible to determine the degree of reduction in a particular youth's criminal culpability?". Low possibility of determining the degree of reduction of culpability in a particular case is the comparison group. * p≤ .05; ** p≤ .01; *** p≤ .001; standard error in parentheses.