

Carrying disaster lightly:
Assessment of resilience in two populations with psychopathic features

by

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Abstract

Psychopathic traits are typically associated with antisocial and offending outcomes. In contrast, resilience (adaptive functioning despite risks) has been found helpful for pursuing positive outcomes (e.g., desistance). To determine the relationship between psychopathy, resilience, and antisocial or offending outcomes, two studies were conducted using two diverse samples: young-adult university students ($N = 488$) and youth offenders ($N = 1,354$). In the student young-adult sample, resilience mediated the relationship between psychopathy and antisocial behaviour. In the criminal youth sample, psychopathy had a stable relationship (i.e., consistent predictive validity) with offending over time; resilience was dynamic, its effect deteriorating over longer periods. Agency-related (internal) resilience was found to be more prevalent in females than males and significantly predicted desistance. This runs counter to relational-cultural theory, given that Social-related (external) resilience did not predict desistance in females. Future research should continue to examine gendered effects of internal and external resilience traits.

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Dedication

This thesis is dedicated to the memory of my dad, Harry. His calm strength has always been a beacon and model for my own resilience.

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Glossary

Baseline: The initial interview segment after having been recruited into a study (e.g., Pathways to Desistance).

Desistance: Successful, sustained deterrence from crime. Consistent with adaptive functioning in the community, rather than simple abstinence from crime due to lack of opportunity. Individual is usually motivated to desist, whether through internal or external factors.

Follow-up: When participants meet with Pathways to Desistance study representatives after baseline, completing interviews and self-report surveys pertaining to relevant information from the most recent recall period. The Pathways data consists of 10 follow-up periods over the study's seven years, T1 to T10. The initial six follow-ups are completed after six-month intervals (three years altogether), with the final four occurring in yearly intervals (four years altogether).

Lost to follow-up (LTF): LTF refers to participants who stop attending interviews and data cannot be collected. The reason for this attrition is unknown; it could be a reason related to the study (e.g., serving a sentence in jail) or unrelated to the study (e.g., at work, moved, did not wish to continue with the study).

Procedural justice outcome (PROJUS): The individual has been picked up by the police, and/or accused of a crime at least once during the recall period.

Recall period: The period since the last interview (for baseline assessments, assume the variable assesses lifetime prevalence unless otherwise specified; see Appendix E for more details). The recall period is six months between baseline and each of the first seven follow-up interviews (i.e., T0, 0 months, to T7, 48 months), with yearly intervals between the final four follow-ups (i.e., T7, 48 months, to T10, 84 months).

Self-report of aggressive/violent offending (SROAGG): The individual has reported having committed an aggressive or violent (e.g., “Been in a fight?”) during the recall period.

Self-report of offending (SRO): The individual has reported committing a crime of any type (e.g., “Broke into a car to steal?”) during the recall period.

Study period: Refers to the entirety of the Pathways to Desistance study, from baseline through to final follow-up (all seven years).

Carrying disaster lightly:

Assessment of resilience in two populations with psychopathic features

Youth and young adulthood are periods of considerable change, as individuals navigating these periods experience cognitive and emotional growth. However, some of these changes are negative, such as social, interpersonal, or mental health problems (Campbell-Sills, Cohan, & Stein, 2006). One such condition, partly borne out of early adverse conditions, is psychopathic personality disturbance (Farrington & Bergström, 2018). Psychopathy comprises a constellation of discrete yet co-occurring factors (callous affect, manipulative interpersonal, reckless lifestyle). Some researchers contend that criminal or deviant behaviour is the fourth psychopathic factor (Hare, 2016), yet others consider it to be a consequence of the others (Cooke & Michie, 2001). Some early adverse conditions significantly increase the odds of both psychopathy and criminal behaviour. A longitudinal study encompassing 40 years of delinquent development was performed on a cohort of boys ($N = 304$) between the ages of 8 and 48 years old (Farrington, 2003). Individuals in this cohort scoring in the top 10% on the Psychopathy Checklist- Screening Version (PCL-SV; Hart, Cox, & Hare, 1995) with childhood risk factors of poor supervision, neglect, convicted family members, and low family income were at increased odds of psychopathy by age 48; in addition, roughly half of these individuals were chronic offenders, with a mean of nine lifetime convictions (Farrington, 2006). Regardless of whether psychopathy is thought to comprise antisocial behaviour, the construct has strong associations with criminal outcomes through the lifespan.

The common conception of the term was popularized by psychiatrist Hervey Cleckley, who described the psychopath as charming and brilliant, yet “carries disaster lightly in each hand” (Cleckley, 1941, p. 33). Psychopathy at its core is conceived as relatively stable over time,

even if individual traits fluctuate (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Salihovic, Ozdemir, & Kerr, 2014). Consequently, there is concern that youths affixed with the psychopathy label will be denied access to mental health treatment, compounded by a prominent belief that those with psychopathy are fundamentally untreatable (Steinberg, 2002). Indeed, in experiments manipulating evidence of psychopathy in a juvenile offender, both laypersons (students) and professionals (judges, psychologists, probation officers) granted harsher punishments and had negative outlooks on treatment effectiveness for juveniles with a psychopathy label (Chauhan, Repucci, & Burnette, 2007; Vidal & Skeem, 2007). The conceptualisation of “psychopathic” youths as essentially untreatable may be an overgeneralization, ignoring adaptive traits that may mitigate criminogenic risks of youths and young adults with psychopathic features.

One potential mitigating factor to overcome criminogenic risks of youth and young adulthood is the concept of *resilience*. Resilience is generally defined as maintaining healthy, successful functioning despite serious threats to development or exposure to adversity (Glowacz & Born, 2015; Masten, 2001). Resilience, in a broad, holistic sense, is characterised by positive adaptation (such as behavioural skills or meeting age-appropriate developmental stages; Luthar & Cicchetti, 2000), despite criminogenic risks such as childhood trauma, poverty, and antisocial peers (Gardner, Dishion, & Connell, 2008; Masten, 2004). Unfortunately, what constitutes adaptive resilience traits has been under-examined in the extant research, particularly concerning youth populations with offending as a potential outcome. In addition, terminology representing resilience-related traits (e.g., strength, protective, promotive) are not clearly defined in these studies.

The overall research objective for both studies in this thesis is to identify resilience traits in communities of young adults or juveniles with psychopathic features, and determine how those traits might help to decrease antisocial or criminal behaviour. Therefore, the primary goals of the current proposed research are to: (1) define resilience traits and test the degree to which resilience traits are associated with positive outcomes (i.e., lack of antisocial behaviour) in a young adult, community population with psychopathic traits in Study 1, in order to detect a relationship with antisocial behaviour; and then (2) review resilience traits from the literature – finding applicable proxies in a large archival dataset – and test their applicability to a juvenile sample with psychopathic traits, to determine if resilience helps to predict desistance or avoidance of criminal outcomes.

The two samples to be examined in this study are, admittedly, quite different. The sample used for Study 1 is Canadian, majority Caucasian, majority female, young adult university students. The sample involved in Study 2 is American, with roughly even proportions of Black, Latino, and Caucasian participants, majority male, from a juvenile offending population. However, both samples are of similar age: the mean age in Study 1 is 19, whereas Study 2 participants have a mean age of 16 at baseline and 23 after a seven-year follow-up, making them roughly on average the same age as Study 1 participants.

Considering both studies together will reveal similarities and dissimilarities in how some members of the two populations may “carry disaster lightly” (i.e., manage their psychopathic features in a resilient or adaptive fashion), yet others develop psychopathologies or adjustment issues. Specifically, the rationale for using two different studies relates to the effects of primary versus secondary resilience. Primary resilience refers to maintenance of successful functioning despite the presence of one or more risk factors; secondary resilience refers to returning to

adaptive functioning after a period of offending (Cyrulnik, 2008; Masten & Obradovic, 2006). Using these definitions, primary resilience (where it exists) relates to those traits exhibited by a university (community) sample, whereas secondary resilience related to traits exhibited by a juvenile (criminal) sample in a return to successful functioning. Therefore, in measuring similar resilience traits across studies in different populations (or appropriate proxies, where the archival data allows), I have attempted to determine which resilience traits are effective for primary or secondary resilience, and whether there is any overlap (i.e., traits that are associated with both primary and secondary resilience). Further, I gauged whether resilience traits had an interactive effect with psychopathic features, for better or worse.

Due to the enormous and often-conflicting literature on psychopathic personality, the following review will first address extending the construct to youth, females, and community populations. Next, the merits and drawbacks of extending the concept of psychopathy downwards to youth are discussed. Third, an outline of offending trajectories for youths and young adults is reviewed, along with several theories regarding desistance, or the cessation of criminal behaviour. The introduction will close with an examination of definitions and conceptual issues pertaining to resilience and related constructs.

Extensions of Psychopathy

Forensic vs. non-forensic populations. Psychopathy is commonly conceived as a personality disorder comprising four facets, which relate to interpersonal, affective, lifestyle, and antisocial domains (Hare, 2003). Clinical-level psychopathy is an intersection of extreme personality traits, and it is reasonable to assume that these traits still exist at some level without meeting clinical criteria (Unrau & Morry, 2017). Consequently, an inherent problem with having cutoff scores on measures that predict violent offending is considering not only those above, but

also those just below threshold. Given that people scoring high on clinical measures show a certain degree of variance in symptoms, they may present quite differently, especially when using psychopathy measures that include assessment of antisocial behaviour.

In its early conception, Karpman (1941) believed psychopathy to be a heterogeneous construct. Persistent contention regarding psychopathy presentation – for example, the theorised existence of “primary” (interpersonal and affective facets, thought to have strong hereditary influence) and “secondary” (erratic lifestyle and antisocial facets, thought to result from environmental factor such as childhood trauma) psychopathic traits (Poythress, Skeem, & Lilienfeld, 2006; Vaughn, Edens, Howard, & Smith, 2009), or whether antisocial behaviour is a symptom or a consequence of psychopathy (Cooke & Michie, 2001; Vitacco, Rogers, Neumann, Harrison, & Vincent, 2005) – may be interpreted as an indication that the “psychopathic heterogeneity assumption” still exists today. On the basis of this assumption, researchers have begun studying psychopathic traits in subclinical populations, principally student populations (Forth, Brown, Hart, & Hare, 1996; Hughes, Moore, Morris, & Corr, 2012). The concept of psychopathy and its constituent traits are moving away from existing exclusively in a violent- and chronic-offending, clinically diagnostic, forensic population, and more emphasis is being placed on non-forensic populations (e.g., community youth or adult cohorts) that might exhibit some of these traits (Edens, Skeem, Cruise, & Cauffman, 2001). Extending from the notion of subclinical populations, there are several different groups that can be considered to exhibit elements of psychopathy.

The recent tendency for researchers to study psychopathic traits in university students serves to target unconventional psychopathy demographics, including community populations, females, and adolescents. Some researchers criticise exploration of psychopathic traits in these

samples due to their being unrepresentative of psychopathy's typical clinical presentation (for an overview, see Salekin, Trobst, & Krioukova, 2001); indeed, some studies even use university samples as controls to contrast with clinically psychopathic populations (Decety, Skelly, & Kiehl, 2013; Hoppenbrouwers et al., 2013). A criticism of studying psychopathy in students is that they do not exhibit the extreme levels of personality traits found in forensic samples; other differences include being well-educated and consisting primarily of females in samples of psychology or criminology undergraduates.

A counterpoint to this critique is, if psychopathy can be evaluated on a continuum in adults (Edens, Marcus, Lilienfeld, & Poythress, 2006) and youth (Edens, Marcus, & Vaughn, 2011) and detected at subclinical levels, then some of these traits can be evaluated by finer distinctions, even if they do not manifest in the same way (Balsis, Busch, Wilfong, Newman, & Edens, 2017). Despite concerns with assessing psychopathy in students, some researcher argue that psychopathic traits are distributed normally across the population (Edens et al., 2006). Benefits include the ability to screen individuals for traits so that intervention programs may be developed. The main attraction of assessing psychopathic traits in students is that this population is quite easily accessible to researchers within academia; also, students often do not require payment and can be motivated by course credit (Marcus, Church, O'Connell, & Lilienfeld, 2018), making them a convenient sample for study.

With the advent of study of the theorised “successful psychopath” – high-powered individuals who use callous and manipulative traits to thrive in business (Mathieu, Neumann, Babiak, & Hare, 2015) – the concept of those with psychopathic traits being ambitious and resourceful students driven to succeed is plausible. If these subclinical individuals have traits of restricted emotion and interpersonal charm, these traits may well serve to be adaptive. A number

of studies have found those with psychopathy and related traits (e.g., narcissism) to be associated with life-success measures, including wealth, status, and speed of promotion (Furnham, Crump, & Ritchie, 2013; Furnham, Hyde, & Trickey, 2014; Ullrich, Farrington, & Coid, 2007). In Study 1 of the current research, a university sample was used to measure resilience in individuals with non-clinical levels of psychopathy, investigating a potential connection from resilience and psychopathy to antisocial behaviour. University students are but one example of non-traditional psychopathic populations, including others for whom specific measures have been designed, such as youth populations.

Psychopathic features in youth and young adults. The latent trait of psychopathy is typically operationalised in adults using the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 2003), which was initially developed on male forensic samples. The PCL-R uses the common iteration of psychopathy's structure, with two factors each comprising two facets: Factor 1 (conceived above as "primary psychopathy") is made up of Facet 1 (callous-unemotional traits) and Facet 2 (deceitful-manipulative traits); Facet 3 (impulsive-irresponsible) and Facet 4 (antisocial-behavioural traits) constitute Factor 2 (conceived above as "secondary psychopathy"). Facets here refer to lower-level groups of traits related to psychopathy; for example, the callous/unemotional affective facet (Facet 1) and the manipulative/deceitful interpersonal facet (Facet 2) are encompassed by the higher-order Factor 1 (Storey, Hart, Cooke, & Michie, 2016).

Aside from the PCL-R, several other measures were created for use with different populations. Some of these other measures are self-reports, such as the Self-Report Psychopathy, currently in its 4th edition (SRP-4; Paulhus, Neumann, & Hare, 2016). This self-report measure is derived from the PCL-R and has a 29-item Short Form (SRP-SF), which was used in the current study. Previous studies have suggested an equivalent four-facet model fit with both versions,

exhibiting construct validity in a nomological network of psychopathic elements (Williams, Paulhus, & Hare, 2007) and using a heterogeneous sample (Gordts, Uzieblo, Neumann, Van den Bussche, & Rossi, 2017). This measure is designed for adults, but there have been alternatives developed for younger populations. For example, the Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) is another self-report scale for use with individuals roughly aged 12 to 18 years. Another alternative for youths is the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003), which uses a semi-structured interview with clinician rating and file review to judge youth psychopathic traits, similar to the original PCL-R. The SRP-SF was used to assess psychopathic traits in young adults in Study 1, and the PCL:YV was used to assess these traits in youth at baseline in Study 2.

Possibly the most common extension of psychopathy is a “downward extension” to youths, in order to identify early precursors of future psychopathy so that appropriate interventions can be administered (Corrado, Vincent, Hart, & Cohen, 2004). O’Brien and Frick (1996) moved to extend psychopathy downward into childhood, in order to identify early traits or markers and facilitate prevention during a stage of peak neural plasticity (Steinberg, 2017). Attempting to identify psychopathic traits in childhood is a difficult task, being an extension of a much-studied but often contentious construct.

Regardless of its promise for detecting early psychopathic traits and creating interventions, there is an ethical issue with using the term “psychopath” to refer to children (Seagrave & Grisso, 2002). This is because certain psychopathic features (e.g., callous-unemotional affective traits) are transient in children and youth, and may be only temporarily evident across stages of development (Kimonis et al., 2019). Although some researchers contend that early psychopathic assessment allows clinicians to develop early intervention strategies with

at-risk youths (Lynam, 1996; Frick, 1998), this may lead to pathologising what could be normative behaviour in these youth (Reidy et al., 2015). Considering this, it is crucial to contextualise psychopathic elements in children as merely features related to the disorder, rather than the fully formed construct; even then, these elements should be measured in terms of severity magnitudes (Murrie et al., 2007).

Such cautions aside, rationale for assessing psychopathic features in children and youth is justifiable on several levels. First, callous unemotional (CU) traits – considered relatively stable and strong genetic markers of early psychopathic features – are thought to be relatively stable across childhood and adolescence, despite these being stages of psychosocial development where personality is not fully evolved and often fluctuates (Dandreaux & Frick, 2009). Second, growing evidence supports the notion that these traits are present in a large subset of aggressive and offending youth (for a meta-analysis reviewing this, see Frick & Dickens, 2006). In addition, the nature of this violence tends to be more severe, as well as typically more calculated (preplanned) and instrumental in nature (Blais, Solodukhin, & Forth, 2014). Even though psychopathic personality can be fully assessed in adulthood, male and female children and youth can be screened only for fundamental traits of the construct, using measures like the PCL:YV.

Psychopathic features in females. By far the majority of psychopathy research has focused on males, and most definitions and scale constructions were exclusively based upon offending male samples (Cale & Lilienfeld, 2002; Nicholls & Petrila, 2005; Verona & Vitale, 2006). However, there is a growing body of extant literature focused on recognising the latent trait of psychopathy in females and adolescent girls. Some researchers argue that females exhibit psychopathic traits less strongly than males, that “absolute rates of symptoms and severity of symptoms are lower” (Salekin, Rogers, & Sewell, 1997, p. 584). An assessment of psychopathy

in undergraduates using the SRP found that males scored higher than females in each of the four facets (Demetriooff, Porter, & Baker, 2017). Assuming psychopathy exists to some extent in females, putative gender differences in manifestation of the construct mean that results achieved using the same criteria to measure psychopathy in females as males should be interpreted with caution (Forouzan & Cooke, 2005; Nicholls & Petrila, 2005). Thus far, there is insufficient evidence to conclude that psychopathy does not exist in female adults and youth, although it likely manifests in a different manner and to a lesser degree than in males.

Past research has found both genetic and environmental contributions to gender differences in psychopathic presentation. Regarding genetic contributions, testosterone level is positively related to psychopathy, with cortisol (stress hormone) moderating this relationship between testosterone and psychopathy (Welker, Lozoya, Campbell, Neumann, & Carré, 2014). This suggests that variance in non-clinical (i.e., community-based) levels of psychopathy might be forecasted by levels of cortisol and testosterone. Regarding environmental contributions, developmental pathways allow distinct psychopathic etiologies to have similar phenotypic manifestations (Hicks et al., 2010). For females, sexual abuse has been found to be more commonly experienced by women with psychopathic traits than those without (Weizmann-Henelius et al., 2010). For males, higher psychopathy scores have been evidenced for physically abused boys than non-physically abused boys (Krischer & Sevecke, 2008); what's more, physical abuse shows to be a stronger contributing factor to psychopathy in juvenile males than females (Krischer, Sevecke, & Lehmkuhl, 2007). Although exhibited traits of the disorder tend to differ between males and females, there is evidence of psychopathy manifesting through different types of victimisation by gender.

Different psychopathic trait expression in female youth and women might be observable at facet-level, and even item-level. Recent work by Tsang and colleagues (2014) used a multidimensional item-response theory (MIRT) model to assess differential item functioning (DIF) of the PCL:YV across a large sample of over 1,354 justice-involved youth from the Pathways to Desistance dataset (this dataset was used in Study 2 of the current research). The ‘Impulsive’ and ‘Irresponsible’ items were found to be rated highest of all PCL:YV items among youth. DIF was found on four items, with ‘Failure to accept responsibility’ and ‘Impulsivity’ more often describing adolescent girls at similar PCL:YV scores, and ‘Grandiose sense of self-worth’ and ‘Lacks goals’ more often describing boys. This result for girls was corroborated by a recent study wherein impulsivity was key to violent offending and recidivism in women (Weizmann-Henelius, Virkkunen, Gammelgard, Eronen, & Putkonen, 2015); both facets of Factor 2 (impulsive/irresponsible lifestyle and antisocial behaviour) were found to have far greater predictive validity of violent recidivism in women than did Factor 1 items (callous/unemotional affect and interpersonal manipulation). Despite differences, though, several psychopathy measures seem to have equivalent validity across genders: Andershed and colleagues (Andershed, Hodgins, & Tengström, 2007) found moderate correlations between factors of the PCL:YV and YPI measures, which applied to boys as well as girls. Gender differences were examined in Study 2 with the PCL:YV, as well as with the SRP-SF in Study 1.

In regard to gender differences found with the SRP, a global study by Neumann and colleagues (Neumann, Schmitt, Carter, Embley, & Hare, 2012) found that racial and cultural differences across gender were found in scoring across regions worldwide. However, males still consistently obtained higher mean item scores than females. Interestingly, the “profile” of psychopathic traits (i.e., individuals in specific regions scored higher on one or two psychopathic

facets) was generally the same across gender. For example, males and females from North America and Eastern Europe scored highest on the Lifestyle facet, whereas both genders in Africa and East Asia scored highest on the Interpersonal facet (Neumann et al., 2012). Relegated to the North American context, then, it can be reasonably expected that gendered differences between males and females in psychopathic profiles will be culturally specific. Gendered psychopathic profiles may be important in assessing distinct motivations for antisocial behaviour between male and female adolescents and young adults.

Factor structure and validity of the SRP and the PCL:YV. The factor structure of psychopathy measures have long been under debate. It is typically conceived as having two factors (Neumann, Kosson, & Salekin, 2017), though there are examples of theoretical structures and measurement scales for psychopathy that define it in terms of one (Patrick, Hicks, Nichol, & Krueger, 2007), three (Patrick & Drislane, 2015), four (Few, Miller, & Lynam, 2013), five (Lynam & Miller, 2015), six (Sellbom, Cooke, & Hart, 2015), and even seven (Berghuis, Kamphuis, & Verheul, 2012) factors. One of the most heated debates is around defining psychopathy as having three or four core features, specially targeting antisocial behaviour as a potential factor: Neumann, Hare, and Newman (2007) among others argue that antisocial behaviour is a core trait, whereas Cooke and Michie (2001) and their constituent camp believe that it is not. For example, the SRP-SF (Paulhus et al., 2016) and the PCL:YV (Forth et al., 2003) break down into a four-facet model, combining callous affective and manipulative interpersonal facets in Factor 1, with reckless lifestyle and antisocial behavioural components in Factor 2.

In the current research, Study 1 examined psychopathic traits in a university sample with a four-facet model (SRP-SF), and Study 2 assessed psychopathic traits in youth using a two-factor (PCL:YV) models. I had wished to report four-factor models in both studies, in order to

more easily infer comparisons and contrasts between psychopathy scores in the two populations.

Unfortunately, due to the four facet scores not being reported in the Study 2 Pathways to

Desistance dataset, I can only report the PCL:YV Factor 1 and 2 collapsed scores available.

These measures are classified by their application in Study 1 or 2 methodology, depicted in

Table 1 below.

Table 1

Properties of Psychopathy Measures in Studies 1 and 2

	SRP-SF	PCL:YV
Items	29	20
Method	self-report	clinical ratings
Study	1	2
Population of interest	young adult, community	youth, forensic
Time points	single (cross-sectional)	single (baseline)
Facets	4	4
1 – Affective	✓	✓
2 – Interpersonal	✓	✓
3 – Irresponsible	✓	✓
4 – Antisocial	✓	✓

Note. SRP-SF = Self-Report Psychopathy- Short Form (Paulhus et al., 2016). PCL:YV = Psychopathy Checklist: Youth Version (Forth et al., 2003).

Recent taxometric analyses have assessed clusters of psychopathic traits within large samples of juvenile offenders. Several of these conclude (based upon early evidence) that there is no broad, unifying taxon of psychopathy in offending youth (Edens et al., 2011; Vasey, Kotov, Frick, & Loney, 2005). That is to say, rather than identifying a group of people who evidence one cohesive latent trait, these individuals tend to express degrees of a variety of related traits. The implication is that for youth (offending or not), there is a continuous or dimensional – rather than categorical or dichotomous – set of features related to psychopathy, which interact to form different presentations and may fluctuate over time.

In this thesis, although Study 1 used a cross-sectional design, Study 2 assessed individuals across multiple follow-up periods, which evaluated the predictive utility of this study's youth psychopathy screening instrument, the PCL:YV. Further to their use in this research, the concurrent (SRP-SF), predictive (PCL:YV), and convergent validity of the involved measures are reviewed. The PCL:YV has a strong evidence base of support for its prediction of general and violent recidivism. Based upon receiver-operator characteristic (ROC) curve analyses, studies estimate the measure shows moderate predictive validity ($AUC > .70$) in assigning higher scores to reoffending versus non-offending juveniles (Catchpole & Gretton, 2003; Hilterman, Nicholls, & van Nieuwenhuizen, 2013; Stockdale, Olver, & Wong, 2010). Convergent validity regarding the PCL:YV and another youth psychopathy measure, the Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002), has received somewhat mixed support in past research. Low-to-moderate overlap was found in youth offenders, at times showing a stronger overlap on Factor 1 items (Skeem & Cauffman, 2003), other times showing a stronger relationship on lifestyle and behavioural (Factor 2) items (Dolan & Rennie, 2006). Moderately significant convergence was found by Andershed and colleagues (2007), with other studies finding significant correlations with male youth (Cauffman, Kimonis, Dmitrieva, & Monahan, 2009) and female youth (Chauhan et al., 2014) offending cohorts on the PCL:YV and YPI. Although the ability to predict offending behaviour is a primary goal of psychopathy assessments in studies of youth recidivism, administrators must be mindful of potential stigma that may result from a high score on these measures in an applied context.

Psychopathy's stigma in decision-making. The extension of psychopathy to youth is conditional in that the construct must be considered in terms of trait screening only, and not true diagnoses. Diagnosing psychopathy in youths is considered highly unethical, as (a) personality is

not yet consolidated in youth, so symptoms may be only temporary; and (b) the term carries with it considerable long-lasting stigma (Edens et al., 2001; White, Olver, & Lilienfeld, 2016). These considerations are crucial when estimating the weight afforded to juvenile psychopathy ratings in legal and forensic decision-making paradigms, in attempts to forecast an offender's potential harm to the community. The measures involved in the current study often make use of a set (albeit arbitrary) cutoff score. For example, raters of the PCL:YV sometimes use a cutoff of 25 or 30 (Brazil & Forth, 2016) to distinguish these offenders as 'psychopaths', as compared to those with subclinical scores. This distinction is useful for a variety of settings in which the PCL:YV may help to inform crucial decision-making processes for youth (such as offender release decisions for juveniles and youth psychiatric inpatients), although a set cutoff might serve to increase stigma towards those above the cutoff. There is a corresponding implication that this person is likely to pursue or continue a high-level chronic and violent course of offending (Kiehl & Hoffman, 2011). This contributes to the belief that psychopathy is static and runs an unalterable chronic course, contributing to stigma around traits of psychopathic personality in youth.

As mentioned above, the diagnosis or assessment of scoring above the clinical cutoff for psychopathy evokes a good deal of stigma towards the score recipient. In legal settings, when the guilt of youth defendant becomes clear, the onus is on the juvenile to present an explanation for committing an offence (e.g., some unavoidable extenuating circumstances; Steinberg & Cauffman, 2001). Elucidating upon some mitigating circumstance, such as some pathology like mania or substance use disorder, may help to lessen the accountability of the offender. Psychopathy, if evidenced, is the rare pathology that becomes an aggravating (rather than mitigating) factor, with emphases on callousness and violence in its legal conception (Edens,

2001). Edens, Guy, and Fernandez (2003) found that, in a case where a juvenile faced the death penalty, an experimental manipulation merely mentioning psychopathic features served to heighten jury-role participants' recommendations of the death penalty, and disincline them to propose rehabilitation. In brief, this label can attach a permanent personality fixture to a still-maturing juvenile, as well as potentially severe judicial consequences.

The diagnosis of psychopathy in youth (rather than mere screening of traits) is found to be so stigmatising in the eyes of courts and laypersons that the authors of the PCL:YV measure (Forth et al., 2003) unequivocally discourage this labelling. The “damning label” (Edens et al., 2001, p. 76) of a diagnosis for youth in a legal context was found to have three degrees of influence on laypersons (Murrie, Cornell, & McCoy, 2005). The first, called ‘general labeling effects’, refers to the influence of any mental disorder on laypersons’ judgements, whether it be psychosis, psychopathy, or some other pathology. The second is ‘specific labeling effects’, being influence or stigma around a specific disorder such as psychopathy. The third, coined ‘criterion effects’, points to the influence of individual disorder symptoms (e.g., callous-unemotional or CU traits).

The researchers (Murrie et al., 2005) found that – although psychopathy-specific criterion effects (such as CU traits) had no influence on professional recommendations of juvenile probation officers (JPOs) – general antisocial traits were deemed by JPOs to be more predictive of recidivism. Also, they found diagnostic labels of psychopathy for juveniles to have positive effects of JPOs in that they were more likely to recommend treatment programs. Notably, diagnostic labels had more negative stigma for laypersons than individual criteria. In other words, laypersons believe individuals showing symptoms below the clinical cutoff for a psychopathy diagnosis to be less problematic than those above the cutoff; the full diagnosis was

viewed as a consolidation of a serious disorder (Murrie et al., 2005). It appears, then, that stigma affects laypersons and professionals differently. Whereas laypersons consider individual psychopathic traits to be less detrimental than a diagnosis, professionals find that it is not psychopathy-specific affective or interpersonal traits that are predictive of crime, but the broader symptom of previous antisocial behaviour.

It is clear from the literature that past delinquency is predictive of future antisocial behaviour (Walters & DeLisi, 2013). Although it is easier for the legal system to work with a dichotomous ‘present’ or ‘absent’ psychopathy finding, this distinction is not as beneficial to clinicians, who might seek an appropriate treatment to match the presenting symptoms. Also, though it is unethical to diagnose psychopathy in children and youth, assessments with a continuous score may elucidate problematic areas and guide prevention of further gestation of these traits. To this end, the current thesis evaluated individual factors and facets of psychopathy whenever possible, rather than relying on overall scores. Results from Study 1 contain individual SRP-SF scores, from which scores could be calculated for each of the four facets; results from Study 2 gave only Factor 1 and Factor 2 scores. Regardless, I assessed the psychopathy profile of youth offenders in Study 2 to determine which factor was more predictive of future crime and which is more amenable to change and intervention.

It has been noted that, despite being a considerable risk factor for violence and recidivism (at least regarding irresponsible lifestyle and antisocial facets), psychopathy is rarely directly targeted in primary prevention strategies (Reidy et al., 2015). A proactive approach utilising prevention paradigms may be key, especially treatments engendering reward for prosocial behaviours in children with psychopathic features (Reidy et al., 2015). Some previous studies have shown reduction in psychopathic traits in children and youth for up to 3 years (Kolko et al.,

2009; McDonald, Dodson, Rosenfeld, & Jouriles, 2011). The combination of arbitrary cutoff scores, underrepresentation of female and youth samples, stigma regarding treatability, and lack of dynamic assessment using longitudinal designs, restricts the growth of knowledge around the construct of psychopathy, being limited in its current conception. Intervention and long-term treatment goals can help buffer against antisocial and criminal behaviours.

Crime and Antisocial Behaviours

Young offenders. Incarceration is notoriously detrimental to the treatability of juveniles and young adults. In a policy brief by Steinberg and Haskins (2008), serving sentences were hypothesised to increase potential for young offenders to recidivate by acclimatising them to harsh prison environments, whereas most of them would otherwise age out of offending. Prevention and evidence-based treatment programs are shown to significantly diminish future criminality, and Steinberg and Haskins (2008) posit that harsh sanctions for younger offenders should be avoided for all but violent repeat offenders. Their study shows that arrests for violent crimes perpetrated by individuals aged 15-20 has doubled between 1985 and 1995. However, Justice Center (2014) data has found that juvenile arrest rates plummeted by around 50% between the years 1997-2011; this includes violent crime, and is the lowest rate of arrests for juveniles in over 30 years. Many U.S. states followed recommendations by Steinberg and Haskins to divert youth and young adult offenders from incarceration, as well as assure supervision and other modes of service delivery that improve outcomes (Justice Center, 2014). The metrics for following young offender outcomes has greatly improved over the past 20 years. And yet, this brief still concludes that most states do not generate recidivism analyses, which properly follow those who have been involved in the legal system in order to ensure good

outcomes. This is especially relevant for young offenders who perpetrate violent offences and have mental disorders thought to incline them to violently offend, such as psychopathy.

In terms of serious mental disorders, psychopathic features are believed to have a profound impact on young offender trajectories. However, as noted above, it is often Factor 2 elements (lifestyle and antisocial facets) that predict general and violent recidivism, rather than Factor 1 elements (interpersonal and affective facets) (Edens, Kelley, Lilienfeld, Skeem, & Douglas, 2014; Olver & Wong, 2015). Generally, psychopathy has been connected to a variety of poor outcomes in the literature, including criminality as well as substance abuse, self-harm, and other serious psychiatric disorders (Douglas, Vincent, & Edens, 2006; Hicks, Vaidyanathan, & Patrick, 2010; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Again, many of these outcomes are linked predominantly to Facets 3 and 4, contrasted with (at best) weak associations with Facet 1 and 2 traits. Further, previous research has found the interpersonal elements of Facet 2 to be related to adaptive functioning, after controlling for antisocial behaviour (Hunt, Bornovalova, & Patrick, 2015; Isen, Baker, Kern, Raine, & Bezdjian, 2018). This suggests potential for Facet 1 and 2 traits to be associated with decreases in several different negative outcomes.

Recent research by Burt and colleagues (Burt, Olver, & Wong, 2016) studied a recidivating versus non-recidivating cross-sectional adult sample with psychopathy. The non-recidivating group had significantly lower PCL-R Facet 3 and 4 scores (lifestyle and antisocial), but (unexpectedly) *higher* PCL-R Facet 1 and 2 scores (affective/interpersonal scores), than those who re-offended. This should come with a disclaimer that due to Facet 1 and 2 scores being more reliant upon interview behaviour, they are easier for offenders or participants to manipulate. These results indicate a potential strength against negative outcomes inherent in

some elements of Facets 1 and 2. This possibility will be investigated further in Study 1 of the current thesis by inquiring whether young adults higher on Facet 1 and 2 traits will have fewer antisocial behaviours and more resilience traits than those higher on Facet 3 traits.

To assess criminal trajectories for individuals with psychopathic traits, Corrado and colleagues (Corrado, McCuish, Hart, & DeLisi, 2015) examined lifetime offending data. They found that, for chronic offending trajectories from age 12 to 28, affective and interpersonal facets on the PCL:YV were unrelated to chronic offending. For predicting long-term serious, violent behaviours for juveniles, Cooke and Michie (2001) recommend using a three-factor model that excludes the antisocial element, to avoid using past criminal behaviour to predict future criminal behaviour. Despite this, in Corrado et al. (2015), significance was detected only for the antisocial facet (in predicting long-term violent offences versus non-violent), as well as the four-facet model as a whole. This implies that the individual effects of the antisocial facet, as well as the combined effect of the four facets as a whole, serve to predict serious, violent offences (although the three-factor model predicted higher violence, but not chronic offending). The sample was about 80% male, yet when using the unofficial (yet somewhat common) cutoff of 25 for the PCL:YV, 30% of males and 34% of females scored above this cutoff, and total scores did not significantly differ across sex. Although very impactful, psychopathy is not the only construct with strong influence on youth and young adult offending trajectories. Other offender characteristics may interact with offending outcome, making them important covariates to consider when trying to predict offending outcomes.

Gendered offending etiology. Biological sex and/or socially determined gender roles have likely contributed to the etiology of offending in women and girls. Due to the fact that males and females vary in their socialisation, they are believed to have corresponding differences

in juvenile and adult crime prevalence rates (Hagan, Simpson, & Gillis, 1987). Specifically, the proportion of adult women inmates is on the rise in Canada, with the number having increased by over 60% since 2000 (Walmsley, 2017). However, they still make up just 11% of the total prison population in Canada, and less than 9% in the U.S.. As for juvenile girls, there is a recent surge in the proportion of juvenile offenders who are girls (Snyder, 2008). From 2003 to 2013, there was a nearly 50% increase in the proportion of girls within juvenile arrests (up to nearly 30% overall; Puzzanchera, 2014). Additionally, the rate of girls arrested for assault also increased by 20%, so this spike in arrested juvenile girls cannot be fully accounted for by misdemeanours or non-violent offences (Puzzanchera, 2010). This requires consultation of gender-specific offending pathways to understand how antisocial patterns develop.

One viewpoint regarding gendered offending trajectories depicts violent females with psychopathic traits as survivors of trauma and abuse, who often co-offend with male perpetrators (Bauer, Whitman, & Kosson, 2011; Bell-Holleran & Vandiver, 2016). The survival-based theories of female offending are considered *feminist* or *gendered pathways* to crime, associated with risk factors such as childhood trauma, low SES, and psychiatric disorders (Jones, Brown, Wanamaker, & Greiner, 2014). This causes a disconnection from others, a type of forced independence, especially when such events cannot be shared with others and are concealed for self-protection (Jordan, 2008). Common theories of adolescent development posit that independence can be healthy, representing normative progression of autonomy. However, proponents of *relational-cultural theory* (RCT) maintain that women and girls (and men and boys, for that matter) do not benefit from increasing independence, they flourish through substantial connections with others, fostering a sense of well-being and safety (Miller, 1976). The RCT framework states that, when chronic disconnection occurs due to self-protection, the

individual withdraws from relationships, becoming socially marginalised and losing self-worth (Jordan, 2008).

RCT represents a valid argument for potential offending pathways of women and girls, although the same could be argued for many males as well. By the same token, many females may ascribe to gender-neutral *antisocial pathways*, and whose criminal patterns are associated with antisocial peers, impulsiveness, and violent behaviour (Jones et al., 2014). It should be noted that the pathways to crime discussed here are not mutually exclusive, and frameworks may be synthesised to tailor a criminal pathway unique to an offender in order to gauge criminogenic needs and, hence, determine the best management strategy. While RCT was not directly assessed in this thesis, it did inform predictions regarding specific research questions, such as how males and females are individually associated with social network support, as well as criminal deterrence.

Desistance. Criminal deterrence, also known as desistance, is defined as successful and sustained reintegration into the community, presumably with regular service delivery and maintained follow-ups of individual's treatment goals and motivations (Menon & Cheung, 2018). These motivations may be intrinsic (internally motivated, pursuing an ideal self or self-actualisation) or extrinsic (motivated by external individuals who are important to the youth, opportunities, and other environmental factors). Regardless of motivation, it appears that a consistent group of adult psychopathic offenders (about 20-30%) do not violently or generally reoffend, even after prolonged follow-up periods (Hare, 1996; Quinsey, Rice, & Harris, 1995; Serin & Amos, 1995). Despite a solid foundation of psychopathy literature on the construct itself, there is scant available data revealing features of those (amongst a notoriously recalcitrant population) who do not recidivate (Burt et al., 2016). Desistance is hard to assess in youths

longitudinally because it does not have a visible end-state (like reoffending), it is rather an ongoing process. As with individuals enduring mental disorders or chronic addictions, offenders can become entrenched in offending habits and lifestyles which are hard to disentangle from and remain disentangled from. Desistance can be effectively maintained by the legal system through supervision and efficient treatment programs, also benefitting from external supports such as community engagement and family or social networks.

Juvenile justice systems are required to determine proportional sentences to crime severity. They are also expected to recognise the individual's best interests as well, and understand each youth's potential for change, growth, and maturity (Mulvey et al., 2004). These models generally include reactive sentencing procedures that afford short-term rehabilitation programs without follow-up, and given sequentially longer and/or more intensive programs if they return. Some hope is placed on the "aging out" effect, although this is an ineffective algorithm for maintaining successful youth outcomes (Mulvey et al., 2004). One very broad theory of aging out is the age-crime curve, wherein criminal behaviour for offending youth tends to decline and phase out upon transition into adulthood (Piquero, Farrington, & Blumstein, 2003). Some other theories of positive change into adulthood include: transition into adult roles and increased responsibility (the "idle hands" factor); the refinement of cognitive, emotional and intellectual processes (the "maturation" factor); and pursuance of normative career opportunities and personal relationships (the "social investment" factor) (Mulvey et al., 2004). Each theory posits a different perspective of independent but possibly co-occurring motivators of desistance.

In regards to gendered offending, considering offending to be gender-neutral is an attractive concept. Some researchers posit that observing gender differences in research contexts increases discrimination against men in sentencing (Starr, 2014). Gender neutrality encourages

use of the same risk assessment instruments for both genders, with some youth research claiming that some of these instruments (e.g., YASI) are equally predictive across gender (Schwalbe, 2008). However, using supposedly gender neutral risk assessments can ignore female-salient risk factors (e.g., personal misfortune, financial issues) that increase reoffending risk for some women (Rettinger & Andrews, 2010). Using a sample of 14,310 US federal offenders, Skeem and colleagues (Skeem, Monahan, & Lowenkamp, 2016) tested “fairness” of a gender-neutral risk instrument – the post-conviction risk assessment (PCRA; Johnson, Lowenkamp & VanBenschoten, 2011) – which is well-validated and fairly representative, containing many major risk factors also captured by other assessment instruments. Using ROC analyses, the lack of “fairness” (predictive bias) is evident in this instrument (and likely others omitting gender-salient factors) in that it over-estimated women’s likelihood of recidivating (Skeem et al., 2016). Finally, the pattern of gendered offending rates (i.e., lower base rates of offending for females than males) applies to aggressive or violent offences as well (Cauffman, Fine, Thomas, & Monahan, 2017), with gender differentials in violent offending increasing across age (Elliott, 1994). This pattern appears to hold true for juveniles (Cauffman, Monahan, & Thomas, 2015) as well as adults (Ministry of Justice 2012, 2013).

Encouraging juvenile desistance is in the best interests of the individual as well as the surrounding community. There are a range of potential outcomes that can qualify as “successful reintegration” depending upon the offender’s criminal profile and mental health status (being among the strongest predictors of juvenile recidivism; Aalsma et al., 2015). In a meta-analysis by Menon and Cheung (2018) of twelve studies analysing methods of successful reintegration by former juvenile offenders, they found that success predominantly included professional mentorship, community-based supervision, risk-and-need responsivity, gender-specific

programs, and factors of socialisation. The same study also identified services that assisted these youths in their desistance; these services included social competencies and skill-building, external support (i.e., from a core social and professional treatment network), commitment to learning, positive values, personal goals, constructive time-planning, and empowerment and personal agency. This latter finding of relevant services, when speaking to the development of intrinsic and extrinsic motivations of the offender to desist, can also be referred to as traits of resilience.

Resilience

Understanding risk and risk prevention is a necessary step when considering an individual's offending potential. Factors such as negative hereditary (e.g., inherited propensity towards mental illness) or environmental factors (e.g., childhood trauma) during a child's formative years may propel them to future adverse outcomes, including substance abuse, mental disorders, and general and violent recidivism (Fox, Perez, Cass, Baglivio, & Epps, 2015). However, only examining risk factors when prognosticating youth and young-adult future offending potential is a poor representation of how individuals may respond to stressful or adverse conditions (Diehl & Hay, 2010).

Resilience is an important characteristic of those constituting juvenile offender populations, who often come from neglectful, traumatic, or otherwise underprivileged environments (McBride & Ireland, 2016). This attribute helps these individuals deal with adverse circumstances, including having traits of a serious personality disorder such as psychopathy or involvement with the justice system. Resilience is how I have conceived of perseverance in those with psychopathic traits in desisting – avoiding future antisocial or criminal outcomes – and so is the central focus of this thesis. A number of things may be considered as a “good outcome” of

resilience (e.g., good mental health, or minimizing psychiatric disorder). However, for the purpose of this thesis, the outcome is operationalised as avoidance of antisocial behaviour (due to primary resilience, for Study 1) and desistance from criminal behaviour (due to secondary resilience, for Study 2).

Resilience traits, when detected, are empirically shown to reduce offending risk (Rutter, 2000) as well as predict decreases in criminal involvement (Farrington, 2007). In studies of violent youth offenders, resilience-related traits both buffer against risk factors and predict desistance from reoffending in children and adolescents (Stouthamer-Loeber, Wei, Loeber, & Masten, 2004). They have also shown significant increase in amount of variance explained by risk factors alone; resilience traits, in addition to significantly reducing recurrence of violent recidivism in medium- and high-risk groups, help individuals respond to stress and employ adaptive coping mechanisms (Lazarus, 1999; Lodewijks, de Ruiter, & Doreleijers, 2010; Smeth, 2013). Other extant literature has shown value in considering risks and strengths in tandem, both in facilitating clinical rapport-building and increasing predictive validity across violent outcomes (Gray et al., 2011; Nonstad et al., 2010). Further, resilience and related traits have demonstrated a “buffering” effect on criminal outcomes, wherein high-risk and high-resilience individuals have criminal outcomes similar to their moderate-risk counterparts (Jones, Brown, Robinson, & Frey, 2015, 2016). Despite these benefits of considering resilience, there is a relative paucity of data related to the concept, although it has recently begun to flourish.

From the limited literature on resilience traits, there is poor agreement regarding terms like “resilience”, “protective”, and “strength” items (Rutter, 1987; Desmarais, Nicholls, Wilson, & Brink, 2012; Lösel & Farrington, 2012; Polaschek, 2017). They are also called “directly protective” (i.e., independently beneficial in absence of other factors; Losel & Farrington, 2012)

or promotive (Loeber, Pardini, Stouthamer-Loeber, & Raine, 2007). Many articles featuring these concepts do not even outline meaning and utility of resilience definitions; several helpful articles elaborate upon these discrepancies (for a review of resilience-related interpretations, see Wanamaker, Jones, & Brown, 2018). However, what can be agreed upon is that studying these has tremendous value.

I have adopted a slightly modified interpretation, for the sake of defining terms as closely as possible to their original definitions. Protective factors have been defined as variables that facilitate desistance in individuals with prior offending histories (de Vries Robbé, Mann, Maruna, & Thornton, 2015), akin to the concept of secondary resilience as defined above (i.e., adaptive functioning exhibited by those with offending histories). Although still under the umbrella of ‘resilience traits’, protective (or secondary resilience) factors pertain to the sample of Study 2 as they relate to beneficial factors in those with offending histories. For instance, previous work by Schubert, Mulvey, and Pitzer (2016), with the same dataset as that used in Study 2, discovered that prosocial attitudes, psychosocial development, and having legal employment are associated with non-criminal outcome. The current study differs from Schubert et al. (2016) in three key ways: 1) resilience traits are operationalised differently, as the past study uses five resilience domains, but mostly cognitive- and social-oriented items; 2) gender is accounted for, as Schubert et al. (2016) only analyse male participants; and 3) psychopathy is accounted for, along with its relationship with resilience in forecasting criminal activity.

There is a gap in extant literature on types of effective resilience in a community population (i.e., primary resilience traits) high on psychopathic traits. For the sake of simplicity, I have combined promotive, protective, strength, and other like factors under the umbrella of resilience traits: characteristics that, whether proximally or distally, are associated with

successful functioning despite the presence of risk factors. There are three main reasons to consider resilience as a counterpoint to risk assessment, per de Vries Robbé and colleagues (2015). First, it has been shown to improve predictive validity of assessment tools: during study of violent and sexual offender follow-up after release, a significant increase to predictive validity for violent reoffending was observed when complementing risks with strength or protective assessment. Next, de Vries Robbé et al. contend that fixation on the risk aspect tends to a) over-predict risk, b) under-evaluate management planning, and c) lead to severe restriction of individuals and overly costly treatment strategies. Lastly, focusing solely on risk elements further stigmatizes individuals under assessment, particularly for an often-vilified group as psychopaths.

Resilience traits and psychopathy. Regardless of whether resilience and related traits are directly associated (i.e., interact) with levels of psychopathy, they have shown associations with avoiding negative outcomes (such as offending and incarceration). For example, DeMatteo and colleagues (DeMatteo, Heilbrun, & Marczyk, 2005) examined adult community participants with and without prior criminal history, and with some past violent behaviour. Each individuals' protective traits were not directly related to participants' PCL-R scores. In spite of this, participants with no prior criminal record were significantly higher on protective traits (e.g., positive social support network, realistic long-term goals, dutiful/responsible, etc.). The protective traits themselves may differ depending upon the level of psychopathic features; the most common protective trait for those high on the PCL-R was "steady employment", whereas the most common protective trait for low PCL-R scorers was "strong family relations" (DeMatteo et al., 2005). This result is plausible, considering that one scoring high in psychopathy might find more protective benefit in an achievement or reward-based factor, than one that is relations-based.

Several resilience traits are facet-specific, in that they appear to target symptoms of individual psychopathy facets. SES was found to moderate youths' psychopathic traits (high SES = lower psychopathic traits in these facets, and vice versa) for affective and lifestyle components (i.e., Facets 2 and 3), whereas level of peer delinquency moderated interpersonal and antisocial traits (Facets 1 and 4) (Lynam, Loeber, & Stouthamer-Loeber, 2008). Facet 1 and 2 psychopathic traits have been found to protect against other mental health disorders, such as borderline personality disorder (BPD), whereas Facets 3 and 4 are promotive (increase likelihood of BPD; Hunt et al., 2015). This seems to support a dimensional view of psychopathy, as a range of traits that are often contiguous but not mutually inclusive (see Salekin, Leistico, Trobst, Schrum, & Lochman, 2005), as well as a continuum of risk and resilience. Factors of social support in particular is a hallmark in maintaining one's own well-being, in community (DeMatteo et al., 2005) as well as forensic (de Ruiter & Nicholls, 2011) samples with psychopathic traits. Although, a distinction may lie in the quality (rather than quantity or size) of the support network. A large network of mentally ill, substance-using, or criminogenic peers is counterproductive to the goal of resilience and positive outcomes (being avoidance of crime or psychopathology).

Predictive validity of resilience traits. Dynamic changes to risk and resilience have been shown to improve predictions of outcomes. In consideration of options available in resilience-related assessment for at-risk youth and young adults, a recent article by Wanamaker and colleagues (2018) reviewed the utility of 10 commonly used measures of risk factors and offending that contain assessment of resilience-related factors to some degree (called either 'protective' or 'strength'). None of these is considered the 'gold standard' in assessment of resilience-related traits, as each has its drawbacks. Six of these measures are detailed for the

purpose of the current research. The Structured Assessment of Risk and Treatability (START; Webster, Martin, Brink, Nicholls, & Desmarais, 2006) has shown strong reliable change indices and concurrent validity with assessments using the Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2006); at the same time, the START's 'strengths' section has not been found to predict adverse outcomes (Quinn, Miles, & Kinane, 2013). Using a dynamic assessment of protective factors – the Structured Assessment of Protective Factors for Violence Risk (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009) – yields significantly higher predictive validity over risk assessment alone. However, much of the literature on the SAPROF's predictive validity uses adult forensic psychiatric samples (de Vogel, de Vries Robbé, de Ruiter, & Bouman, 2011; de Vries Robbé, de Vogel, & de Spa, 2011; de Vries Robbé, de Vogel, Wever, Douglas, & Nijman, 2016).

Smeth (2013) found that the Dynamic Risk Assessment of Offender Re-entry (DRAOR; Serin, 2007) also showed unique variance in offender violations above that demonstrated by risk assessment alone. However, there is mixed evidence for the incremental predictive validity of its “protective” scale (Wanamaker et al., 2018). Examining the Inventory of Offender Risk, Needs, and Strengths (IORNS; Miller, 2006), the measure's author found unique ability of the resilience-relate items to predict desistance, though more work is needed to expand upon the type of high-risk individuals (Miller examined only sex offenders) to broaden this finding. Lastly, the Youth Assessment and Service Instrument (YASI; Orbis Partners, 2000) assesses a wide variety of resilience-related items. The inclusion of such items in this instrument improved predictive accuracy beyond the consideration of risk factors alone. All of these strengths-based measures have demonstrated some success in predicting desistance in high-risk adults and youth.

Of the measures omitted from review, the Level of Service/Case Management Inventory (LS/CMI, Andrews, Bonta, & Wormith, 2004) and its more recent derivative, the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2011) have shown poor ability of the strengths domain to predict desistance in past studies (Hilterman et al., 2013; Thompson & Pope, 2005). Further, there were no studies found by the reviewers that specifically analyzed predictive validity of the CMI measures or the Risk and Resiliency Checkup (RRC; Turner & Fain, 2006). Finally, the Service Planning Instrument (SPIn; Orbis Partners, 2003) was omitted because it is the adult version of the YASI. In order to best predict desistance of at-risk youths in Study 2 of the current research, resilience-related traits were culled from the six desistance measures detailed above; this process is further described in the Methods for Study 2. Further, this review helps to guide the current research in examining the unique and complementary abilities of protective and strength traits to predict desistance (see Table 2).

Table 2

Six Commonly-Used Young Adult and Youth Measures Related to Resilience and/or Desistance Described by Wanamaker et al. (2018)

Measure	Usage
SAPROF	used as a strengths-only complement to assessment of risk for future violence
DRAOR	used to assess recidivism potential with a tandem of risk and protective items
START	used to advise management options for at-risk individuals to avoid adverse outcomes (recidivism, violence, victimisation, suicide)
SAVRY	used to assess violence risk potential, including assessment of several protective factors, in at-risk youth
IORNS	used to assess strength factors related to criminal desistance
YASI	used to assess risks, with some “strengths”-based items in juvenile populations to measure recidivism potential

Note. SAPROF = Structured Assessment of Protective Factors (de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009); DRAOR = Dynamic Risk Assessment of Offender Re-entry (Serin, 2007); START = Structured Assessment of Risk and Treatability (Webster, Martin, Brink, Nicholls, & Desmarais, 2006); SAVRY = Structured Assessment of Violence Risk in Youth (Borum, Bartel, & Forth, 2006); IORNS = Inventory of Offender Risk, Needs, and Strengths (Miller, 2006); YASI = Youth Assessment and Service Instrument (Orbis Partners, 2000)

Gendered resilience. To date, a key omission in the literature is a series of systematic analyses of resilience-related traits, in order to validate their prevalence across gender. Previous theory has dictated that males and females, who adhere to dissimilar social norms, should be studied separately regarding resilience traits to reflect their disparate rates of offending (Hartman, Turner, Daigle, Exum, & Cullen, 2009). There may be, therefore, potential traits that prove to be gender-specific or gender-salient, which are largely ignored by supposed gender-neutral assessment instruments (Rettinger & Andrews, 2010). Gender-*specific* traits are those which are associated with offending in only one gender; gender-*salient* traits are those which are associated with offending in both genders, but the statistical relationship is stronger for one gender than another (Brown & Motiuk, 2008).

There has been a recent trend of research into resilience-related traits and motivations (Fagan, Van Horn, Hawkins, & Arthur, 2007), specifically regarding gender specificity and saliency of these traits. Some pioneering work has been conducted in this regard by Hart and others (Hart, O'Toole, Price-Sharps, & Shaffer, 2007) where ($n = 132$, 46.8% female) adolescent offenders were predicted to show a negative relationship between several measured resilience-related traits and delinquent outcome. These traits included caring adults and mentors, prosocial peers, academic ability, and extracurricular activities, with no prediction regarding differing trait scores by gender. They found that for females, presence of a caring adult at school was an important predictor; for males, it was grade-point average (GPA). This suggests that females may benefit more from social support, whereas males show more benefit from school achievement, possibly due to females thriving more from nurturing interpersonal relationships, as posited by relational-cultural theory (Comstock et al., 2008). This work is consistent with literature denoting the importance of quality social supports and community activities for

females (Chesney-Lind & Sheldon, 2003) and personal agency or goal-setting for males (Maccoby & Jacklin, 1974), reflecting gendered resilience qualities that are external and internal (respectively) in nature.

It might be expected that cumulative effects of resilience traits, just like risk factors, could have additive utility in buffering risks and poor outcomes such as recidivism. To this point, Turner and others (Turner, Hartman, Exum, & Cullen, 2007) discovered that compounded effects of resilience traits significantly improved the prospect of desistance outcomes. Hartman and colleagues (2009) furthered this line of inquiry by examining rates of desistance in high-risk individuals by gender, with a focus on resilience traits. The particular resilience traits included self-esteem, academic ability, positive school environment, cognitive stimulation, emotional support, and religiousness/spirituality. Similar to the Hart et al. (2007) study, academic ability for males and positive school environment for females were found to be significant predictors of desistance (Hartman et al., 2009). Interestingly, religiousness or spirituality was also a significant predictor for girls. Both genders had a significant complementary effect of multiple resilience traits in predicting desistance. It is important to note that, although some traits had significant effects across genders, the differences *between* genders were not significant (Hartman et al., 2009). That is to say, the effects of resilience traits were largely general and not gender-specific, with minor differences in specific traits helping to achieve significance.

The current study built upon the research in the gendered assessment of resilience detailed above. One limitation of many previous studies is that they constitute cross-sectional research; no conclusions can be made regarding direction of causality. Arguably, more might be gleaned from a longitudinal study of youths to assess etiological effects. The identification of resilience traits may help to guide both future research and service delivery for youths and young

adults with evidence of psychopathic traits. The current study shall therefore contribute to the growing resilience literature by classifying potential types of resilience traits in youth and young adults, as well as attempt to identify how these traits might predict desistance in a longitudinal study of offending youth with psychopathic traits.

The Current Research

The current project was broken down into two constituent parts. The first section, Study 1 (the ‘community population’), examined resilience traits in young adults with psychopathic features and selected the ones with the highest negative correlations with antisocial behaviours. The second section, Study 2 (the ‘forensic population’), examined resilience traits within a second archival dataset based upon traits found in the literature, using a multi-wave study of desistance in a youth offending population with psychopathic features.

Study 1: Purpose

There have been many recent reviews into the nature and effect of resilience traits; these have been conceptualized in many different ways (DeMatteo et al., 2005; Maruna & LeBel, 2003; Salekin et al., 2005; Serin, Chadwick, & Lloyd, 2016). They are shown to be dynamic and sensitive to context (Viljoen, Viljoen, Nicholls, & de Vries Robbé, 2017) and have been found to increase predictive validity in tandem with risk factors (de Vries Robbé et al., 2015; Nonstad et al., 2010). This has important implications for preventative measures with populations who exhibit psychopathic elements. Currently, there is insufficient research in resilience assessment with community young adults who have these psychopathic elements, and determining if resilience might be associated with fewer antisocial behaviours.

The main goal of Study 1 is to determine the prevalence of psychopathy and resilience traits in a community population, assessing gender-saliency or -specificity of these variables, and

their associations with antisocial behaviour. Study 1 analyzed these traits in a community sample of young adult males and females with psychopathic traits.

Research Question 1: Are there significant gender differences across psychopathic personality traits, antisocial behaviours, and resilience traits? Due to contention regarding the applicability of the psychopathy construct to females, it is plausible to expect some notable contrasts in how strongly psychopathic traits are featured across gender. As indicated in the extant literature, the way in which women and men express these traits is appreciably different (Viljoen et al., 2015). The exact nature of the difference is unclear, perhaps because there is no well-validated measure of psychopathy designed specifically for women from the ground-up.

Some researchers have found that psychopathy-related symptoms and behaviours overall are quite different for women (Salekin et al., 1997), though others argue that females express the same psychopathology as a different personality disorder (Viljoen et al., 2015). As per results found by Demetriooff and colleagues (2017), I expected that males would score significantly higher than females on all four facets of the SRP-SF, as well as on total scores. I also expected that males would engage in more antisocial behaviours as compared to females, due to lower rates of offending and antisocial behaviours among females (Loeber, Jennings, Ahonen, Piquero, & Farrington, 2017; Schaeffer et al., 2006). Due to sparse and inconsistent findings of *overall* resilience as expressed by males versus females, the total of summed resilience traits by gender is difficult to predict. Analyses involving resilience traits across genders were exploratory.

Research Question 2: Which resilience traits are most commonly associated with positive outcome (lower antisocial behaviour)? Motivation to succeed has been shown to be an important strength trait in a variety of previous reports (Maruna & LeBel, 2003; Pitzer & Skinner, 2017; de Vries Robbé et al., 2014). Quality (rather than quantity) of social support, such

as a close, supportive network of family and/or friends, has shown significant benefit to minimising antisocial outcomes (DeMatteo et al., 2005; Ullrich & Coid, 2011). Given the promise shown by quality of social support and motivation to succeed, I predicted that these two items – operationalised in the current study as *'I have many warm and meaningful relationships with friends and family members (includes a relationship with a significant other)'* and *'I take great pride in my work goals and am committed to a high level of achievement'* significantly predicted lower antisocial behaviours compared to the other items on the scale used (the Protective Factors Questionnaire or PFQ; Forth & Armstrong, 2007). Although assessments of resilience may prioritise variables differently depending on outcome (e.g., recidivism, mental health), the current study's outcome is defined exclusively as antisocial behaviours.

Research Question 3: Do resilience traits serve to mediate the relationship between psychopathy and antisocial outcomes? Previous literature has found resilience and related traits (strength, protective) to increase predictive accuracy of assessments when paired with risk predictors (Braithwaite, Charette, Crocker, & Reyes, 2010; de Vries Robbé et al., 2015; Nonstad et al., 2010). This type of assessment is most accurate if analyzed using a dynamic method; that is, measuring resilience at multiple follow-up periods, in order to track the fluid nature of resilience traits and their saliency over time (de Vogel et al., 2009; Hanby, 2013; Serin et al., 2016). This effect can be found in clinical environments, wherein assessing resilience-related traits has displayed benefits in clinical rapport-building (Gray et al., 2011). Be that as it may, the archival Study 1 data is cross-sectional, so these effects were assessed in a mediation, illustrated by Figure 1 below. In this mediation, the direct relationship indicated by the c '-path (between psychopathic traits and antisocial behaviour) will factor in the indirect relationship indicated by the ab -path (between psychopathic traits and resilience traits, a , and between resilience traits and

antisocial behaviour, *b*). This will yield an indirect relationship indicated by the *c*-path (i.e., the relationship between psychopathic traits and antisocial behaviour, through resilience traits).

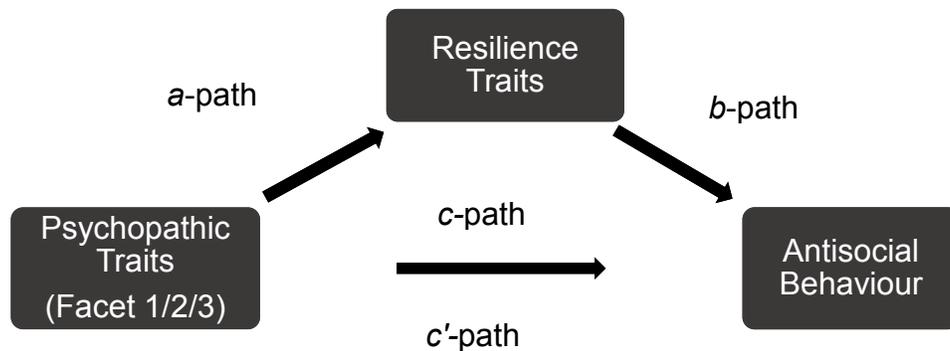


Figure 1. Proposed influence of resilience in mitigating psychopathy’s effect on antisocial behaviours.

Recent work has found that resilience (referred to as “psychological hardiness”) mediates the relationship between overall psychopathy and negative outcomes (operationalised as anxiety; Sandvik, Hansen, Hystad, Johnsen, & Bartone, 2015). The expectation in the current study was that those high on Facet 1 and 2 traits (callous, low empathy, deceitful, manipulative), and with an aggregated score on resilience traits, would have lower antisocial outcomes (threats, aggression, theft, etc.) than those high on Facet 3 with traits of resilience. This may be because Facet 3, rather than Facets 1 and 2, is linked to risky decision-making in non-forensic young adults, with stronger links to antisocial deviance (Dean et al., 2013). Facet 4 (antisocial behaviour) was not considered in this mediation, due to circular logic involved with expecting the antisocial facet (Facet 4) to predict antisocial behaviours. Due to Hare’s PCL measures being based upon adult offending samples, many psychopathy researchers believe they overemphasise antisocial and behavioural traits that should be considered as consequences, rather than symptoms of the personality disorder (Cooke, Michie, & Skeem, 2007; Dawson, McCuish, Hart, & Corrado, 2012; Skeem & Cooke, 2010). Therefore, only psychopathy facets 1, 2, and 3 are considered here as predictors.

Study 1: Method

Participants

An archival data of 557 undergraduate students (male $n = 123$, 22.1%) from Carleton University was used, having been recruited online through SONA by Adelle Forth and Katherine Blackburn. Participation was restricted to those registered in first- and second-year psychology courses and they were rewarded with 0.5% course credit for participation. The dataset contained 488 eligible participants, whose demographics are detailed below in Table 3.

Table 3

Demographic Statistics of the Student Sample by Gender

	Men ($n = 114$, 23.4%)	Women ($n = 374$, 76.6%)
Age		
<i>M</i> (<i>SD</i>)	20.0 (3.2)	20.4 (4.4)
Range	17-37	17-53
Ethnicity		
White	77 (67.5%)	282 (75.4%)
Black	5 (4.4%)	22 (5.9%)
Indigenous	1 (0.9%)	5 (1.3%)
Indian	1 (0.9%)	8 (2.1%)
Asian	15 (13.2%)	31 (8.3%)
Other	15 (13.2%)	26 (7.0%)
Employment		
Part-time	32 (28.1%)	162 (43.3%)
Full-time	4 (3.5%)	16 (4.3%)

Note. Total $N = 488$.

Measures

Demographic Questionnaire. This measure included descriptions of age, gender, and ethnicity.

Self-Report Psychopathy – Short Form (SRP-SF; Paulhus et al., 2016). The SRP-4 is a well-validated self-report measure of psychopathy. The shortened version of this tool, the SRP-SF, has shown promise as a concise 29-item assessment compared to the full 64-item version.

The short-form version has previously shown similar psychometric properties, in terms of factor structure and internal consistency, to the SRP-4 (Gordts et al., 2017; Williams et al., 2007). The SRP-SF has shown acceptable Cronbach's α across facets, save the antisocial behaviour (or "criminal tendencies") facet, $\alpha = .69$. Cronbach's alpha for total SRP-SF scores are strong ($\alpha = .90$; Gordts et al., 2017), indicative of excellent internal consistency (Nunnally & Bernstein, 1994). Participants were asked to rate their level of agreement on a 5-point Likert scale, where 1 was indicative of "*strongly disagreeing*" and 5 was indicative of "*strongly agreeing*". The SRP-SF has a similar factor structure as the SRP-4 (Paulhus et al., 2016) and produces four facets, each derived from the sum of 7-items: interpersonal manipulation (Facet 1), callous affect (Facet 2), erratic lifestyle (Facet 3) and antisocial behaviour (Facet 4). This study focused primarily on analyses involving items related to Facets 1, 2 and 3 (which will not be included in the appendices due to copyright restrictions).

Protective Factors Questionnaire (PFQ; Forth & Armstrong, 2007). The Protective Factors Questionnaire consists of 21 items and covers a range of resilience-based statements, as depicted in the Appendix A. These items run the gamut of personal responsibility, traits of leadership, internal motivation, and social support, among other traits. Responses to items are spread along a 6-point Likert scale and relate to participants' relatability to each item, to which 1 represents '*Strongly Disagree*' and 6 represents '*Strongly Agree*'. Thus, total scores may range from 21 to 126, with higher scores indicating higher levels of resilience. The questionnaire was developed for this archival study, and so has no established psychometric properties.

Antisocial Behaviours. The Antisocial Behaviours Scale (ASB; Forth & Brown, 1993) is assessed in lifetime and past-year segments, with the present study focusing on past-year behaviour only to ensure that this behaviour is as close in time to the current levels of resilience

and psychopathy as possible (i.e., to make it as close as possible to an “outcome”, albeit while still using cross-sectional data). The ASB is composed of 51 questions regarding activities that can generally be considered to be antisocial, ranging from minor misdeeds (e.g., lying to a co-worker, faking an illness to a friend, paying for pornography) to decidedly criminal behaviours (e.g., assault, threats, car theft, arson, robbery); all 51 items were summed for the total antisocial behaviour score. Responses are spread across a 4-point Likert scale, where 1 represents ‘*Never in my entire past*’ and 4 represents ‘*All the time in my entire past*’. This measure has been previously used in a validation study of the PCL:SV (Forth et al., 1996). See Appendix B for the ASB scale.

Procedure

Given that the current study uses data that has been previously collected and approved by the Carleton University Research Ethics Board-B, recruitment and data-gathering portions of the study have already been completed. No deception was involved in the recruitment phase of the study, with participants being fully aware of the assessment of psychopathic traits. Participants completed the study online through Qualtrics and were compensated with 0.5% course credit.

Participants began the study first by accepting the informed consent, which contained a reminder of the study’s assessment of psychopathic personality traits, and then completing the demographics questionnaire. Participants were then administered the SRP-SF (Paulhus et al., 2016), followed by the ASB-Past Year, and the Protective Factors Questionnaire. Upon completion, participants were asked to provide relevant information for course credit. The debriefing form explained the researchers’ goals of determining levels of psychopathic traits and their consequent impairment of moral decision-making. Contact for victimisation services were provided on the chance that participants felt any trauma from participation in the study. In total,

the study took about 45 minutes to complete. The Statistical Software Package for the Social Sciences (SPSS) version 25 (IBM Corp, 2017) was used for all analyses.

Study 1: Results

Data Preparation

Missing data. The data was reviewed for missing cells. Of the original 556 participants, 68 had missing values for over 15% of items (Enders, 2003), and were eliminated through listwise deletion, narrowing the sample to 488. On the PFQ, no more than 5 values (of the $N = 488$, or 1.0%) were missing for each of the 21 items, except for item 3, “*I often volunteer in the community*”, which was missing 10 items (2.0%). On the SRP-SF, no item was missing more than 8 (1.6%) values. For past-year ASB, no more than 3 values were missing (0.6%) for each of the 51 items. Gender was accounted for in all 488 eligible cases.

Considering raw scores summed for each of the three measures (PFQ, SRP-SF, ASB), no more than two individual item values were missing for each participant. Next, variables were tested to detect randomness of the missing data. Specifically, for each item missing 5 or more values, a t -test was conducted to determine if age of participants with missing values differed significantly ($p < .05$) from age of participants without missing values. These tests yielded no significant differences between ages of participants with missing data and complete data for any tested variables, and so the missing data was determined to be missing at random (Hermann & Nunes, 2011). The extent of missing data was not considered to be substantial enough to warrant imputational techniques (e.g., Expectation-Maximisation). Further, such techniques do not account for error when generating values for missing data (Graham, Cumsille, & Elek-Fisk, 2003).

Sample demographics by gender. I wanted to determine gender differences across young adults in terms of key variables, namely psychopathy, resilience, and recent (past-year) antisocial behaviour (ASB). Psychopathy and resilience variables are normally distributed. However, past-year antisocial behaviour has a positive skewness (skewness = 3.77, $SE = 0.11$) and is strongly leptokurtic (kurtosis = 15.51, $SE = 0.22$). No transformations were performed to maintain integrity of the data (Feng et al., 2014).

Demographics by gender were analysed to detect any demographic confounds influencing gender effects on key variables. Although women made up the majority of the total sample (over 75%), they were quite similar to men in terms of age ($M = 20$ years old) and ethnic representation (roughly 70% White). Men had consistently higher scores in every facet of psychopathy, with a total average SRP-SF score about nine points higher than that of women (see Table 6 below).

Correlations of total and facet SRP-SF scores, PFQ, and past-year ASB were also analysed by gender. Factor structures for the PFQ and ASB questionnaires do not appear to exist (as is the SRP-SF), so they are treated as unidimensional. Despite men having higher psychopathy total and facet scores, these variables were more highly correlated amongst women. However, the antisocial facet of the SRP-SF is more highly correlated with other facet and total scores for men than for women. For both men and women, the PFQ shows small, negative correlations with SRP-SF total and facet scores as well as past-year ASB. Past-year ASB shows small-to-moderate correlations with SRP-SF total and facet scores, yet a small negative relationship with the PFQ, in both men and women. These correlations are depicted in Table 4 for men and Table 5 for women.

Table 4

Bivariate Correlations Between SRP-SF Total and Facet Scores and the PFQ and past-year ASB for Men

Measures	1	2	3	4	5	6	7
1. SRP-SF Total	1						
2. SRP-SF Interpersonal	.76	1					
3. SRP-SF Affective	.69	.77	1				
4. SRP-SF Lifestyle	.61	.68	.59	1			
5. SRP-SF Antisocial	.90	.92	.88	.80	1		
6. PFQ	-.25	-.30	-.26	-.28	-.31	1	
7. Past-Year ASB	.32	.37	.36	.46	.42	-.31	1

Note. SRP-SF = Self-Report Psychopathy Scale – Short Form (Paulhus et al., 2016); PFQ = Protective Factors Questionnaire (Forth & Armstrong, 2007); ASB = Antisocial Behaviour Scale (Forth & Brown, 1993). All correlations are significant at $p < .01$.

Table 5

Bivariate Correlations Between SRP-SF Total and Facet Scores and the PFQ and past-year ASB for Women

Measures	1	2	3	4	5	6	7
1. SRP-SF Total	1						
2. SRP-SF Interpersonal	.90	1					
3. SRP-SF Affective	.91	.78	1				
4. SRP-SF Lifestyle	.85	.67	.69	1			
5. SRP-SF Antisocial	.81	.63	.67	.57	1		
6. PFQ	-.31	-.29	-.28	-.22	-.27	1	
7. Past-Year ASB	.47	.39	.40	.40	.48	-.24	1

Note. SRP-SF = Self-Report Psychopathy Scale – Short Form (Paulhus et al., 2016); PFQ = Protective Factors Questionnaire (Forth & Armstrong, 2007); ASB = Antisocial Behaviour Scale (Forth & Brown, 1993). All correlations are significant at $p < .01$.

1. Key Variable Differences by Gender

In order to assess prevalence by gender across the variables of interest, a series of t -tests and corresponding effect sizes (using Cohen's d s) were conducted for significant differences. Bonferroni corrections were employed for use with multiple tests to minimize family-wise error rate ($.05/7 = .007$). Similar to past research (Gordts et al., 2017), Cronbach's α yielded acceptable-to-strong internal consistency by facet ($\alpha = .76-.87$), with excellent results for total

scores ($\alpha = .93$). In keeping with predictions for this research question, men reported significantly higher psychopathy total and facet scores. However, against prediction, gender differences for past-year ASB were non-significant; likewise, resilience traits (PFQ) differences across gender were also non-significant. See Table 6 for analyses comparing men and women.

Table 6

Significance t-tests for Differences Between Gender on SRP-SF Total and Facet Scores, Past-Year ASB, and PFQ

Measures	Men		Women		α	t	d
	M	SD	M	SD			
SRP:SF Interpersonal	15.3	5.7	13.1	5.4	.87	3.89**	0.40
SRP:SF Affective	15.9	4.6	12.7	4.6	.78	6.50**	0.70
SRP:SF Lifestyle	16.9	5.0	14.6	4.6	.79	4.67**	0.48
SRP:SF Antisocial	10.5	4.1	9.3	3.8	.76	2.70*	0.30
Total SRP:SF	58.6	17.0	49.7	15.9	.93	5.14**	0.54
PFQ	89.1	15.8	88.2	13.9	.88	0.64	0.06
Past-year ASB	61.7	18.1	58.5	14.1	.97	2.00	0.20

Note. SRP-SF = Self-Report Psychopathy Scale – Short Form (Paulhus et al., 2016); PFQ = Protective Factors Questionnaire (Forth & Armstrong, 2007); ASB = Antisocial Behaviour Scale (Forth & Brown, 1993). Levene’s test for homogeneity of variance approached significance for the antisocial factor ($p = .053$). For Cohen’s d effect sizes, small effects = 0.2, medium effects = 0.5, and large effects = 0.8 (Cohen, 1988).

* $p < .007$. ** $p < .001$.

2. Resilience Traits Associated with Antisocial Outcomes

Using the 21 items from the PFQ in a linear regression model, with recent (past-year) ASB as the outcome, two of the items showed significance. As predicted, item 12 (*‘I take great pride in my work goals and am committed to a high level of achievement’*) had a significant negative association ($B = -2.06$, $p = .044$, 95%CI [-4.07, -0.06]) with recent ASB, implying that students with strong commitment to goals are more likely to avoid antisocial activities. Contrary to predictions, the social item, *‘I have many warm and meaningful relationships with friends and family members (includes a relationship with a significant other)’* was not associated with

antisocial outcome. Additionally, item 5 (*'I often engage in highly stimulating activities (high-stakes gambling, rock climbing, sky diving, etc.)'*) was *positively* associated ($B = 1.91, p < .001, 95\%CI [0.82, 3.00]$) with recent ASB.

3. Resilience Mediating Effects of Psychopathy on Antisocial Behaviour

Given that I wanted to determine the unique effects of three psychopathy facets (interpersonal, affective, and lifestyle) on recent antisocial behaviours, three simple mediation models were interpreted to assess the effect of resilience traits (i.e., total PFQ score) as a mediator. Kelley's kappa-squared (k^2) has been used to calculate mediation effect size, but has recently fallen out of favour (Wen & Fan, 2015); therefore, only the indirect effects and bootstrapped 95% confidence intervals (CIs) are reported. Past research has found that for joint significance testing of mediation models, a sample size of 403 is required to achieve power of .8 (Fritz & MacKinnon, 2007). The current study uses a final sample of $N = 488$, higher than the required sample size for optimal power, and uses bootstrapped confidence intervals using the PROCESS tool (Hayes, 2017), which serves to further increase power. Unfortunately, gender analyses could not be performed in mediations; sample sizes would be insufficient for adequate power after separating males and females for analyses. Beta coefficients and standard errors of each pathway are provided, with the total model effect (c) in brackets inside each figure. Bolded coefficients in each figure signify contribution to a partial mediation effect; asterisks (*) indicate the relationship is significant. See Figures 2-4 for mediation results.

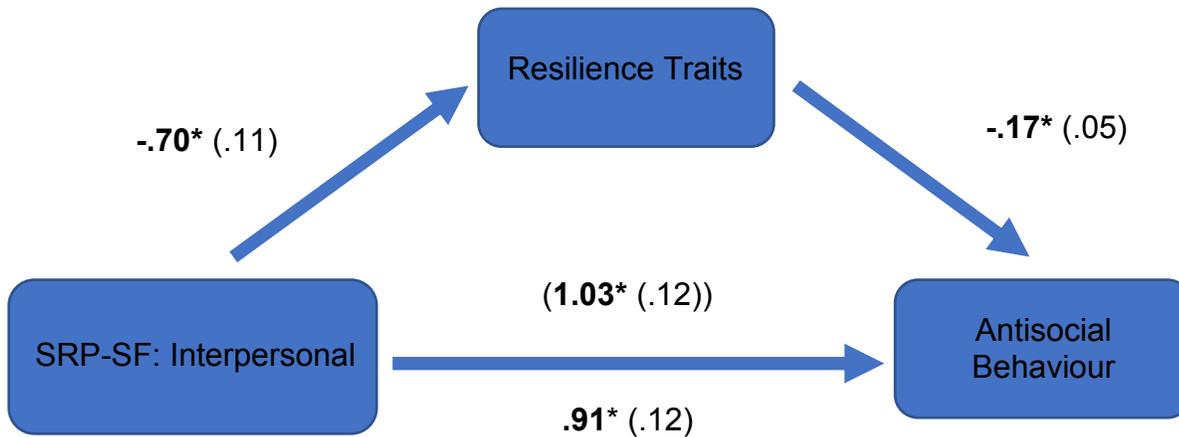


Figure 2. Mediation model demonstrating the effects of the interpersonal psychopathy facet on antisocial behaviour, mediated by resilience traits. All model coefficients significant at $p < .001$.

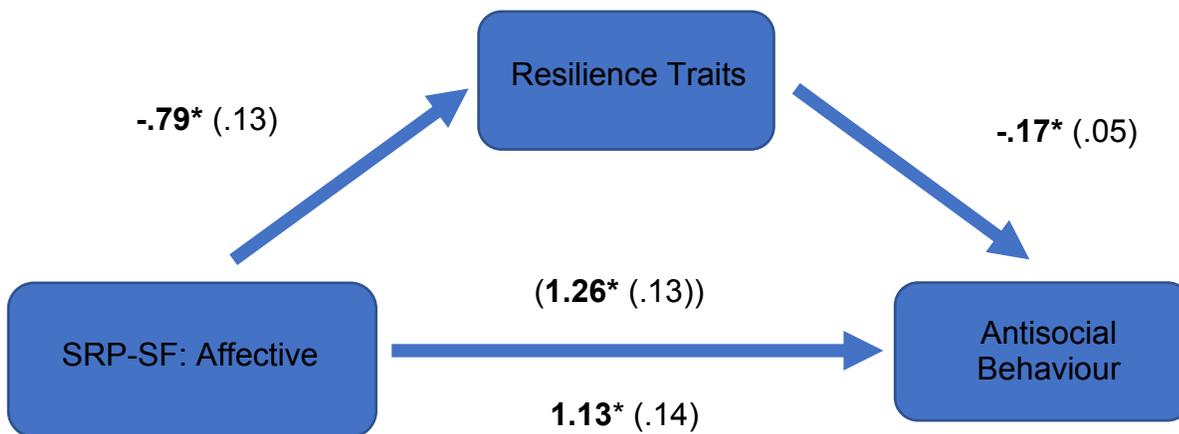


Figure 3. Mediation model demonstrating the effects of the affective psychopathy facet on antisocial behaviour, mediated by resilience traits. All model coefficients significant at $p < .001$.

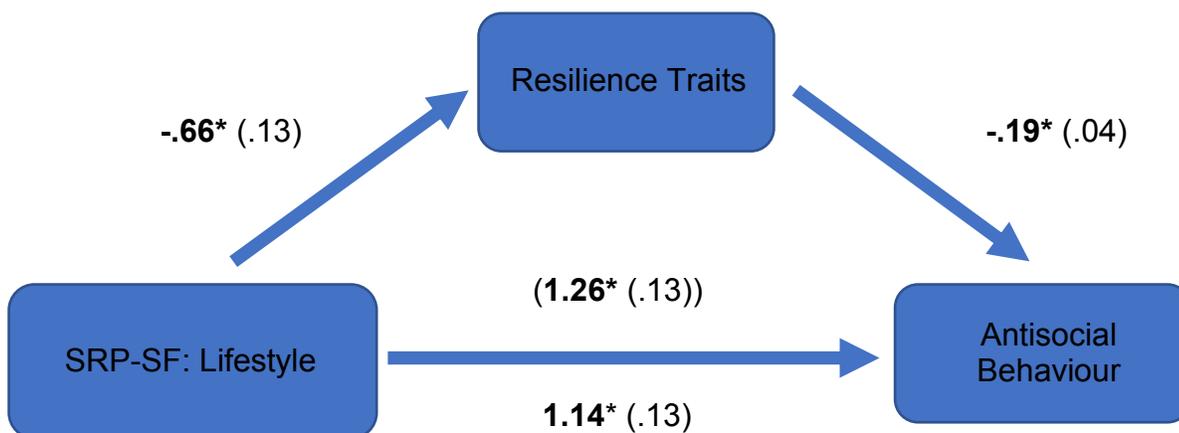


Figure 4. Mediation model demonstrating the effects of the lifestyle psychopathy facet on antisocial behaviour, mediated by resilience traits. All model coefficients significant at $p < .001$.

All three mediation models showed partial mediation effects (p -values of ab and c' in each model $< .001$). The indirect effect of the interpersonal facet was .122 (BootLLCI [95% CI] = .049, BootULCI [95% CI] = .211). The indirect effect of the affective facet was .134 (BootLLCI [95% CI] = .052, BootULCI [95% CI] = .238). Lastly, the indirect effect of the lifestyle facet was .122 (BootLLCI [95% CI] = .048, BootULCI [95% CI] = .217). This is somewhat consistent with predictions, although the psychopathy lifestyle facet predictor was not expected to influence mediation.

Study 1: Discussion

The goals of Study 1 were to determine if: a) resilience-related traits in a young adult community population were related to positive outcome (lower recent antisocial behaviour), b) any identified resilience traits showing gendered prevalence, and c) they mediated effects of psychopathic traits on this outcome. Results from Study 1 indicate that antisocial behaviour, although likely rarer in students relative to forensic populations, still exist to some degree. However, primary resilience can help deter students from antisocial behaviour.

Psychopathic traits in students have been evidenced in a number of studies. A distinct sub-category of psychopathy researchers maintain that psychopathy is primarily a personality disorder and therefore exists on a continuum; despite this, some psychopathy instruments are essentially treated as risk assessments rather than personality assessments (Cooke et al., 2007; Dawson et al., 2012; Skeem & Cooke, 2010). Men consistently had significantly higher psychopathy total and facet scores, particularly regarding callous affect ($d = 0.70$). This result was expected, given existing research revealing that, in community populations, a) men are consistently scored higher in psychopathy assessments (Demetriooff et al., 2017; Forth et al., 1996; Neumann et al., 2012; Salekin et al., 1997); b) there are issues with using the same criteria

to measure psychopathy across genders, despite known differences in symptom manifestation (Forouzan & Cooke, 2005; Nicholls & Petrila, 2005); and c) they outwardly present as more emotionally restricted than women (Wong, Pituch, & Rochlen, 2006).

Two resilience items showed significant associations with antisocial behaviour as an outcome. Specifically, item 12, '*I take great pride in my work goals and am committed to a high level of achievement*', was found to be a strong primary resilience trait, in that it maintains prosocial behaviour in those with potential for antisocial outcomes. This finding is in agreement with past work on variables related to a motivation to succeed (Maruna & LeBel, 2003; Pitzer & Skinner, 2017; de Vries Robbé et al., 2014). By contrast, individuals who frequently engage in high-stimulation activities (item 5) are at significantly higher risk for antisocial behaviour. This implies that, although prosocial high-stimulation activities (such as those listed in item 5) may be a deterrent against antisocial activities, they may also be indicative of individuals with low impulse controls who are prone to risk-taking behaviours, whether prosocial or antisocial.

Rather than acting as a deterrent for antisocial activities, "prosocial" high-stimulation activities (gambling, sky-diving) may function as a stand-in for, or gateway to, less socially acceptable pursuits. Considering past researchers have reported a strong link between the psychopathic trait of sensation-seeking and antisocial behaviour (Chabrol, Van Leeuwen, Rodgers, & Séjourné, 2009; Portnoy et al., 2014), this is not a particularly surprising finding. Taken together, these results indicate that young adults who set goals for themselves are less likely to jeopardise those goals with risky behaviour.

Resilience traits had a mediating effect on antisocial outcome with each of the three psychopathy facets as predictors (interpersonal manipulation, callous affect, and erratic lifestyle). The result conforms to Sandvik et al.'s (2015) work on psychological hardiness mediating the

relationship between psychopathy and negative outcome (i.e., anxiety). In Study 1, the affective facet showed the strongest effect with resilience as a mediator, suggesting that these two variables may have a symbiotic relationship when attempting to avoid antisocial outcomes. It is possible that affective psychopathic traits (e.g., being “tough-minded”, restricted affect) might promote elements of resilience or “psychological hardiness” in the face of stressors or adverse events. At this stage, it is unclear how this effect might differ across gender, considering that affective facet scores were significantly higher (to moderate effect) in men than women in this study. Future research could inquire further into the potential interaction between resilience and the affective facet of psychopathy in predicting positive outcomes for community populations.

Several limitations became apparent during the course of Study 1 analyses. In particular, there were no attention checks in the online study, which serve to parse out participants who were making no effort in their responses. It is possible, then, that Study 1 may be prone to response bias, as the degree of attention and care that participants put into responding cannot be determined. Study 1 uses a cross-sectional design, so no assertions can be made regarding causality. Be that as it may, the strength of the mediation findings indicate that resilience indeed plays an important role in mediating individuals’ psychopathic traits and their potential antisocial behaviour. More work is needed to expand upon this important finding.

Study 1 uses archival data, so the nature of the resilience traits themselves could not be selected and worded to match those used in Study 2. It is possible that traits measured by the PFQ are more appropriate for a non-offending student population (e.g., more goal-oriented, no questions regarding delinquent peers). However, some identical items would have been beneficial for assessment of these traits’ degree of overlap across populations.

Note that relationships with friends, family, and significant others are collapsed in this item, though each item might uniquely predict desistance. The wording of variables in Study 1 is another limitation here. For example, “long-term goals” is not worded as specifically prosocial in nature (e.g., the goal could be to rob a bank), which would be required to ensure a protective effect. This is a drawback of the archival dataset, and is somewhat corrected with appropriate proxies culled from a wealth of available data in Study 2.

The focus shifts to a youth offending sample for Study 2, in which a multi-wave dataset is used to establish relationships between key variables (psychopathy, resilience) and outcome, in this case being general and violent criminal offending.

Study 2: Purpose

The primary goals for Study 2 were to identify the most effective resilience traits from extant research, and to discover the ones that best predict criminal desistance among youth with psychopathic traits. To the knowledge of the author, this is the first research to define and analyse the prevalence of resilience traits across two diverse populations. The research questions for Study 2 consist of the following:

Research Question 1: Are male or female youth more likely to desist? Which resilience traits are gender-sensitive? I predicted that females are more likely to desist, due to relatively low rates of reoffending for girls and women (Loeber et al., 2017). Per the second question, past studies have found academic ability for males (related to agency of the individual) and positive school environment for females (related to social support traits) to be significant predictors of desistance (Hart et al., 2007; Hartman et al., 2009). I expected that the Agency domain would be stronger for males and the Social domain would be stronger for females. Each domain is outlined in more detail in the Method section on resilience traits assessed.

Research Question 2: Which resilience traits at final follow-up were most strongly associated with desistance outcome? As mentioned above in the Measures section, desistance here is conceived as committing no reoffences across the entire seven-year follow-up period. Past research using this data has found that variables of psychosocial maturity (part of the Cognition domain) and legal employment (here called ‘Previous employment’, part of the Environment domain) are associated with a lack of reoffending (Schubert et al., 2016). In addition, close attachments (related to the Social domain) and traits relating to motivation (related to the Agency domain) have been routinely included in a number of “risk” assessment protocols that include resilience-related factors (Serin et al., 2016). Therefore, I predicted that individual traits of ‘Psychosocial maturity’ and ‘Previous employment’ should be significantly associated with desistance. I further predicted that participants who more strongly evidence Agency- and Social-based resilience traits (i.e., have higher scores on measures pertaining to items in those domains) would show significantly higher rates of desistance. Resilience traits measured at the most recent follow-up (T10) were used to answer this question.

Research Question 3: What influence do psychopathy and resilience have on offending outcomes? Performing a median split in scores on both psychopathy and resilience variables allowed for the formation of four separate “profiles” for the Kaplan-Meier method, which were used to determine which group of participants has the highest rate of desistance: those with high psychopathy and high resilience, high psychopathy and low resilience, low psychopathy and high resilience, or low psychopathy and low resilience. As found by Jones and colleagues (2016), I expected that those youth with more resilience traits would yield higher rates of desistance. Further, due to psychopathy being predictive of more high-risk behaviour (Dean et al., 2013), I expected that higher psychopathic traits would be predictive of recidivism.

Although the Kaplan-Meier is a purely descriptive statistical method, I expected that the high resilience/low psychopathy profile group would have the highest proportion of desisters throughout the study period of all four groups, in each of the three outcomes (self-reported offending, measured by the SRO variable; self-reported aggressive/violent offending, measured by the SROAGG variable; and police pick-ups or accusations, measured by the PROJUS variable¹; refer to Appendix E for further information). By contrast, the low resilience/high psychopathy profile was expected to have the lowest proportion of desisters. Regrettably, I could not perform gendered survival analyses to assess predictive ability of resilience traits by gender, as the female group is too small to achieve adequate power.

Concerning the inferential Cox regression method, I predicted that psychopathy score would significantly predict probability of reoffending, wherein *higher* psychopathy scores correlated with *increased* likelihood of reoffence. I also predicted that resilience would significantly predict probability of reoffending, wherein *higher* resilience scores correlated to *decreased* likelihood of reoffence.

Study 2: Method

Participants

For this study, I used a sample of 1,354 juvenile offenders from archival data in the Pathways to Desistance dataset, conceived and organised by principal investigators Edward Mulvey and Carol Schubert at the University of Pittsburgh (Mulvey et al., 2004). This was a large-scale, multi-wave study of youth offenders designed to track rates of desistance across a period of 7 years. The cohort's data has been previously involved in publication and includes 184 (13.6%) females; the study is also composed of youth offenders of primarily African-American

¹ Note that the PROJUS variable – unlike the SRO – *does not* indicate which offence type the participant is picked-up for/accused of.

ethnicity (Cauffman et al., 2009). All participants were previous offenders convicted of felonies in the Phoenix or Philadelphia regions, with the largest proportion of offenses being assault, robbery, or drug felonies (Schubert et al., 2016). Study 2 mimics the outcome of Schubert and colleagues (2016), wherein outcome is dichotomised into those who have desisted throughout the entire follow-up (i.e., have committed no offences across the study's seven years), and those who have recidivated (i.e., have committed at least one re-offence). Offenders were eligible to participate if aged 14-17 at time of index offence. Data collection began after initial participant recruitment, which occurred between November, 2000, and January, 2003.

Measures

Psychopathy Checklist: Youth Version (PCL:YV; Forth et al., 2003). The PCL:YV was used in this Pathways project as a baseline measure for all participants. The PCL:YV is a semi-structured interview consisting of a 20-item assessment on a 3-point Likert scale of traits related to psychopathic personality (wherein 0 = *Does not apply*, 1 = *Somewhat applies*, 2 = *Applies*), with total possible score of 40.

Psychometric properties of the PCL:YV are generally good. Confirmatory factor analysis for the PCL:YV with juvenile offenders generally shows acceptable-to-good relative fit indices across samples from North America and the United Kingdom (Neumann, Kosson, Forth, & Hare, 2006). Total PCL:YV scores tend to show high inter-rater reliability in laboratory research contexts, with intra-class correlation coefficients (ICCs) between .90-.97 (Forth et al., 2003; Shepherd & Strand, 2016). Internal consistency is also generally quite strong (Cronbach's $\alpha = .85-.94$; Forth et al., 2003). Interrater reliability for the PCL:YV was assessed with this sample using two-way mixed-effects intraclass correlation coefficients (ICCs). However, it should be noted that these ICCs should be interpreted with caution because a) the number of raters used to

score participants is not noted, and b) only four videotaped participants were used to assess reliability. Brazil and Forth (2016) proposed that more field work is needed to assess the PCL:YV's psychometric properties outside research settings (e.g., juvenile youth in detention centres).

The PCL:YV interview is substantiated by file review of the individual's record, along with information from other sources such as family, friends, or the police. This interview spans topics of family background, interpersonal relationships and attitudes, behaviours, and future goals; the interviewer rates interpersonal style, level of functioning, and credibility of the interviewee based upon observed behaviours (Forth et al., 2003). The distribution of scores on the PCL:YV was assessed continuously rather than dichotomously with the 25-point cutoff, in order to avoid use of the arbitrary cutoff as well as to improve statistical power (Irwin & McClelland, 2003).

The Pathways study authors provide pro-rated scores for Factor 1, Factor 2, and total scores ("Pathways to Desistance", 2004). There are apparently 8 items in Factor 1 and 9 items in Factor 2, although it is unclear which items are used for which factor. It is assumed that the authors mirrored the PCL-R factor structure, which uses 8 and 9 items for Factors 1 and 2, respectively. The factor structure for the PCL:YV items is detailed below in Appendix C, based on this assumption.

Resilience traits. A group of resilience traits were selected for use in the current study. For this selection process, the six desistance-related measures detailed above (from Wanamaker et al., 2018) were reviewed for resilience-related items that recurred across measures. These six instruments include some adult measures; many of the offenders in this study were adults for the majority of the study's active follow-up period. The measures were reviewed for items that

showed the greatest overlap (e.g., Employment, which appeared on all measures), and also ‘outlier’ items that appeared on just a few measures, but showed efficacy in reviews of those measures (e.g., Sobriety; Serin et al., 2016). Of these items, the list was narrowed down to those that had a proxy within the Pathways to Desistance measures. Resilience traits were measured twice for purpose of Study 2, at baseline (T0) and at final follow-up (T10).

As the datasets in Study 1 and Study 2 were already collected, the resilience traits as they are operationalised in each study cannot be controlled. The best way to mitigate this issue is by finding the most analogous items, both in wording and how they might be construed. Therefore, considering that Study 2 uses archival data, it was my goal to discern – among variables measured in the Pathways to Desistance dataset (Mulvey, 2011) – those which could be considered related to resilience. In addition, I examined to what extent these variables overlapped on the six instruments reviewed above (DRAOR, IORNS, SAPROF, SAVRY, START, and YASI), as well as the PFQ from Study 1. Note that this required dropping several promising traits, including ‘Treatability or responsiveness to treatment’, which did not have an appropriate proxy.

From among the final 20 resilience variables included in Study 2 for analysis, each item showed inclusion on anywhere from two to all seven of these instruments. However, some special circumstances were made. For example, items related to ‘religiousness’ or ‘spirituality’ only appeared on the PFQ, although spiritual/religious variables showed significant results in past studies (Hart et al, 2007; Hartman et al., 2009), so it was included. Items related to ‘cognitive regulation’, ‘anger control’, or ‘self-control’ had two similar proxies among the archival variables: ‘Emotional control’ and ‘Impulse control’, wherein the former has a stronger emotion-regulating valence and the latter is related to cost/benefit analysis. Fortunately,

approximately half of the final Study 2 items have proxies in Study 1 items on the PFQ, with several PFQ items accounting for multiple Study 2 variables (e.g., PFQ item 11, “*I have many warm and meaningful relationships with friends and family members (includes a relationship with a significant other)*”). This has the benefit of examining whether these traits are specific, or can apply broadly to vastly different populations.

Like traits were collapsed together (‘Parental Monitoring’, ‘Caring Adult’) to yield items that could be broadly applied (items such as ‘Father Figure’ cannot be applied to children in non-traditional families). Also, some items are subsumed within others; for example, cost/benefit analysis could be a facet of impulse control. For symmetry, the remaining traits were organised into four domains of five traits each, to reflect unifying characteristics of each domain (Table 7).

Table 7

Outline of Resilience Domains and Constituent Traits

Agency	Cognition	Environment	Social
Medication adherence	Impulse control	Good neighbourhood	Social integration
Motivation to succeed	Psychosocial maturity	Access to healthcare/services	Resistance to peer influence
Planful	Positive attitude to authority	Education	Prosocial friends
Importance of spirituality	Emotional control	Previous employment	Parental/role model support
Sobriety	Intelligence	Community involvement	Quality of romantic relationship

Note. All resilience variables were assessed (or have applicable proxies) at every timepoint, except for ‘Medication adherence’, assessed at baseline only.

The grouping of these traits into the domains shown in the table above was informed by work by Lebel and colleagues (Lebel, Burnett, Maruna, & Bushway, 2008), who claimed that moving from consistent offending to desistance is linked to an interaction between

subjective/agency-oriented factors and environmental/social-oriented factors. Accordingly, I have operationalised my resilience domains similarly in an attempt to capture this interaction.

First, there are Agency items, relating to traits of intrinsic motivation or planfulness. Serin and colleagues (2016) posited that resilience-related factors are considered “protective” only when offenders actively use the factor as a diversion from offending, implying personal agency. Next, items related to Cognition indicate cognitive ability and attitudes. These two domains reflect intrinsic resilience traits; similar to Lebel and colleagues’ agency-subjective factors (which I have conceptualised as Agency and Cognition), they have *direct* effects on an individual’s desistance and recidivism (Lebel et al., 2008). Environment traits are those attributable to the surrounding environment or community. Social traits relate to engagement with others, such as family, peers, and romantic relationships. These last two domains reflect extrinsic or external resilience, relating to those people and environments outside of the self; they are believed have *indirect* influence on an individual’s recidivism or desistance outcomes (Lebel et al., 2008). Together, these items identify traits of resilience in Agency, Cognition, Environment, and Social domains. See Appendix E for the operationalisation of each resilience variable included in Study 2.

These traits showed a great deal of overlap with items and domains identified in previous research related to resilience. In relation to Garmezy’s (1985) work, individual items are essentially collapsing Agency and Cognitive items here. Social traits here are related to Garmezy’s social items, but broaden social network scope beyond family members to include other modes of support, particularly for those without a typical family structure. External items from Garmezy (1985) are similar to Environment items. The study by Schubert and colleagues

(2016) using the same dataset showed considerable overlap with items included in this thesis, with 11 items showing complete or partial overlap.

Resilience traits are assessed at two timepoints for Study 2 – at baseline (T0) and final follow-up (T10). Baseline traits are measured in order to assess predictive validity of baseline assessments across the study period. Traits are measured again at final follow-up in order to assess which traits were strongest among individuals who successfully desisted.

Desistance. Desistance is the outcome variable of interest in this study, being a positive outcome for those with secondary resilience traits (i.e., adaptive functioning despite having offending histories). Desistance is often defined as a gradual process (rather than a distinct event; Laub & Sampson, 2003). This is analogous to a car slowing down before coming to a stop, representing a decline in offending before stopping altogether (Lussier, McCuish, & Corrado, 2015). Due to the nature of the archival dataset, however, this process was difficult to detect for two reasons. First, if a participant committed multiple offences between two interview timepoints, is impossible to know how much time passed between offences because the exact date or time of offence is unknown. Second, many participants missed one or several interviews over the course of the study, and it is unclear whether this missed data is due to a study-related variable (e.g., serving a sentence for an offence), or an unrelated variable (e.g., at a family gathering, forgotten meeting time).

Therefore, desistance was defined as a lack of offending for any misdemeanour or felony across the entire follow-up. This was measured in three ways: by 1) participants self-reporting *any* offending (or SRO for short); 2) participants self-reporting *aggressive or violent* crimes (or SROAGG); and 3) participants who have been picked up or accused of a crime by police (i.e., time between last and current follow-up; the procedural justice outcome, or PROJUS) across the

seven-year study period. As measured by the Self-Report Offending (SRO; Huizinga, Esbensen, & Weiher, 1991) questionnaire, I was able to gauge whether individuals have committed offences for which they have not necessarily been arrested (i.e., have offended but not been caught). The SRO comprises 24 items, detailing the presence or absence of different offence types over the recall period, and the frequency of each committed over the recall period. These SRO items covered a range of offences, from property (“*Shoplifted*”), and drug (“*Sold marijuana*”, “*Sold other drugs*”) crimes to sexual (“*Forced someone to have sex*”) and violent (“*Beat someone as part of a gang*”) offences. Some of these latter offences comprise aggressive self-reported offences (SROAGG), which make up 11 of the 24 SRO items. Other examples of SROAGG offences include (“*Took by force without a weapon*”) and (“*Shot at someone, bullet hit*”). The SRO scale and SROAGG items can be found in Appendix D.

The use of two kinds of offence reports (self-reported offending, or SRO, and procedural justice, or PROJUS) provided a balanced view of participants’ offending patterns. Self-report surveys are useful for understanding perhaps a “true” offending prevalence, including those offences for which the individual was never caught. In this sense, using only official data – consisting of charges and convictions – tends to increase rates of “false desisters” (Farrington, Ttofi, Crago, & Coid, 2014). At the same time, official charges showed an accurate estimate of more serious offences; these can be purposely under-reported in self-report indices (Stouthamer-Loeber, Loeber, Stallings, & Lacourse, 2008), and individuals with psychopathic traits are likely to be involved in these offences (McCuish, 2016). Therefore, making use of both self-reported and official reports of offending helped to present a more balanced view of participants’ offending patterns. Unfortunately, there is no access to official reports of offending, as the PROJUS outcome is also self-reported; the only official criminal records used in the study are

those verifying participant eligibility at baseline, given that they are required to have previously offended to participate. Nevertheless, the self-report of police pick-ups/accusations appears to be the most appropriate proxy for official offending records in the dataset.

Procedure

After providing informed consent, each participant completed a baseline assessment (including the PCL:YV). Following this, they returned for follow-up interviews, first at 6-month intervals for the first 3 years, then at yearly subsequent intervals for the next 4 years. The total number of assessments for participants who completed every assessment is 11 interviews spanning 7 years (T1-T10 plus T0, or baseline). Each resilience trait was regularly across the dataset (or had a relevant proxy), with the exception of ‘Medication adherence’, which was assessed only at baseline. Retention rates were high for this sample, with a mean of approximately 90% of participants having been assessed at each time point. At baseline, 42.8% of participants were interviewed in the participant’s home, with the remainder interviewed in-custody (51.6%) or in other community locations (5.7%; e.g., at work, coffee shops). Participants were paid for each appointment, and assured of confidentiality in their responses by the U.S. Department of Justice (Schubert et al., 2016). Assessment of psychopathic traits across the follow-up period are illustrated in Figure 5 below. As with Study 1, the Statistical Software Package for the Social Sciences (SPSS) version 25 (IBM Corp, 2017) was used for all analyses.

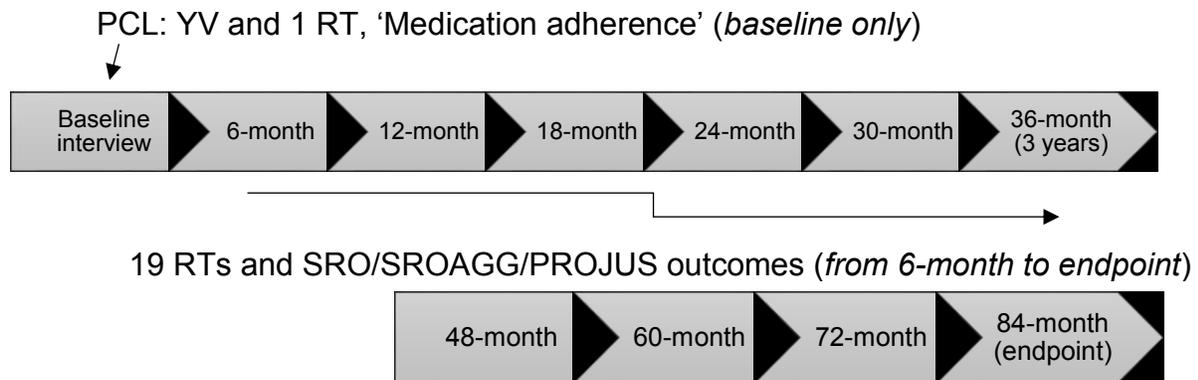


Figure 5. Timeline of assessments for the Pathways to Desistance dataset.

Study 2: Results

All available data from the Pathways to Desistance dataset was retrieved from available sources online and downloaded in the appropriate format. The dataset is comprised of 1,354 individuals, many with missing data due to skipping over interview sections (e.g., PCL:YV interview), or missing follow-up interviews altogether. Due to the longitudinal nature of the data, individuals with missing data could not be summarily deleted, and so were evaluated on a case-by-case basis, depending upon the planned analyses. For this purpose, numbers of participants with sufficient data to be eligible for analyses were noted in response to each research question. Participants missing data within interviews were deleted pairwise; participants missing interviews altogether were deleted listwise. For survival analyses – per recommendations by Allison (2010) – lost-to-follow-up (LTF) cases were excluded from analyses, given that conventional imputation methods are inappropriate for event-time censoring.

Descriptive statistics exploring assumptions of normality were examined for the Study 2 variables of interest. Out of the 20 resilience variables and their domain and total scores, as well as factor and total PCL:YV scores, only 'Medication adherence' was skewed, showing a strong positive skew (5.05) and was highly leptokurtic (49.58). The Cognition domain (kurtosis = 7.31) and the total resilience score (kurtosis = 6.22) were also somewhat leptokurtic. Mahalanobis

distance was used to detect participants who could be considered multivariate outliers. Using the recommended $p < .001$ (Tabachnick & Fidell, 2007) and referring to critical values of the chi-square distribution, 5 participants out of 1,354 were found to be multivariate outliers. Upon further examination, these individuals appeared to be part of a true non-normal distribution, in that they were above average on all resilience traits as well as psychopathy factor and total scores (Hermann & Nunes, unpublished). Due to these participants not being outliers due to data entry errors, undefined missing values, or unintended sampling, they were left in the dataset.

Sample Demographics

Of the 1,354 juvenile offenders included in this study at baseline, the vast majority were boys (86.4%). At baseline, participants had a mean age of 16 (ranging from ages 14 to 19) and tended to be Black (41.4%), although Hispanic and White ethnicities were also well-represented (see Table 8 below). Participants were fairly evenly split across sites (Philadelphia and Phoenix), as well as across in-custody (e.g., juvenile facility, detention centre) and community (e.g., participant's home) interview locations. Across gender at baseline, scores consistently differed in baseline psychopathy using the PCL:YV (Table 9). Past research using this dataset found that absolute agreement was determined between raters on the PCL:YV using a two-way mixed-effects intraclass correlation coefficients (ICCs); these ICCs were quite good for total (ICC = .92) and Factor 2 (ICC = .93) PCL:YV scores with this sample, indicating excellent reliability (Hawes, Mulvey, Schubert, & Pardini, 2014). Factor 1 reliability was in the acceptable range (ICC = .79). As mentioned in the Measures section, these ICCs should be interpreted with caution. The individual PCL:YV items were not provided in the dataset, so Cronbach's alpha for internal consistency could not be performed.

Table 8

Demographics of Sample at Baseline (0 Months, T0)

Participant demographics (<i>N</i> = 1,354)	Proportion
Interview location	
In-custody (<i>n</i> = 699)	51.6%
Juvenile facility	31.2%
Prison / jail	26.1%
Residential treatment centre	22.1%
Detention centre	19.6%
Other	1.0%
Participant's home	42.8%
Other	5.7%
Study site	
Philadelphia	51.7%
Phoenix	48.3%
Age at baseline	
Range	14-19
<i>M</i> (<i>SD</i>)	16.0 (1.1)
Ethnicity	
Black	41.4%
Hispanic	33.5%
White	20.2%
Other	4.8%
Gender	
Boys	86.4%
Girls	13.6%

Note. Percentages may not equal 100.0% due to rounding error.

Table 9

Psychopathy Scores Across Gender at Baseline

Psychopathy	Boys		Girls	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PCL:YV Factor 1	5.08	3.51	4.77	3.32
PCL:YV Factor 2	8.44	3.88	7.63	3.73
PCL:YV Total Score	16.13	7.78	14.51	7.36

Note. PCL:YV = Psychopathy Checklist: Youth Version (Forth et al., 2003).

Table 10

Demographics of Sample at Final Follow-Up (84 Months, T10)

Demographic type (<i>N</i> = 1, 134)	Proportion
Interview location	
In-custody (<i>n</i> = 343)	30.2%
Prison / jail	93.6%
Residential treatment centre	1.2%
Detention centre	5.3%
Participant's home	39.2%
Other	30.5%
Study site	
Philadelphia	51.2%
Phoenix	48.8%
Age at final follow-up	
Range	20-26
<i>M</i> (<i>SD</i>)	23.0 (1.1)
Ethnicity	
Black	38.8%
Hispanic	34.7%
White	21.6%
Other	4.9%
Gender	
Male	84.8%
Female	15.2%

Note. Percentages may not equal 100.0% due to rounding error. Final follow-up shows a 16.2% attrition rate from baseline.

By the final follow-up period 7 years later, there was a 16.2% rate of attrition. By this period, the proportion of male (84.8%), ethnic (38.8% Black), and study site representation remained fairly consistent, although other variables showed variance over time. Specifically, the total in-custody sample dropped nearly 20% from baseline to final interview (see Tables 8 and 10 for comparison). By the endpoint, nearly all of the in-custody participants were detained in prisons or jails rather than juvenile facilities, due to the increase in participant age (mean of 23 years old, ranging from 20 to 26). The participant demographics for the final interviews after 84 months of study follow-up are detailed below in Table 10. Correlations between resilience domains are shown in Table 11.

Table 11

Correlations Between Resilience Domains at Baseline

Domains	Agency	Cognition	Environment	Social
Agency	1			
Cognition	.25**	1		
Environment	.27**	.07*	1	
Social	.35**	.21**	.21**	1

Note. * $p < .05$. ** $p < .01$.

1. Desistance Rates and Resilience Trait Prevalence by Gender

Among the 1,354 participants at baseline, 1,299 (95.9%) had sufficient data for gender analyses. Overall, 93% of males self-reported any offending (SRO) during the follow-up compared to 79% of females; a higher proportion of males also reported aggressive or violent crimes (SROAGG) than females (86% vs. 68%). These results held true for procedural justice outcomes (PROJUS), as 81% of males were picked up/accused of crime by police, compared to 52% of females.

I had predicted that females were more likely to desist (no offending across the seven-year follow-up) than males, due to lower base rates of general and violent offending for females

(Cauffman, Fine, Thomas, & Monahan, 2017; Cauffman, Monahan, & Thomas, 2015; Loeber et al., 2017; Ministry of Justice 2012, 2013). Chi-square tests were used to assess differing likelihood by gender of experiencing each of the three outcomes (SRO, SROAGG, PROJUS; see Table 12). For each outcome, as predicted, females were far less likely of experiencing the criminal outcome than males. Specifically, females were 71% less likely to self-report any offending, 65% less likely to self-report aggressive or violent offending (SROAGG), and 74% less likely to report having been picked-up or accused of crime by police over the study period.

Table 12

Chi-Square Tests Exploring Difference in Likelihood of Genders of Experiencing Each Outcome

Outcome	Gender difference				
	<i>Wald</i>	<i>p</i>	<i>exp(B)</i>	<i>ULCI</i>	<i>LLCI</i>
SRO (<i>N</i> = 1,133)	31.11	< .001	0.29	0.19	0.45
SROAGG (<i>N</i> = 1,049)	34.51	< .001	0.35	0.24	0.49
PROJUS (<i>N</i> = 941)	62.67	< .001	0.26	0.18	0.36

Note. SRO = self-report of any offending during the study period. SROAGG = self-report of aggressive/violent offending during the study period. PROJUS = picked up/accused by police of crime during the study period. For SRO outcomes, *n* = 111 cases had missing values for covariates and were deleted pairwise. For SROAGG outcomes, *n* = 110 cases had missing values for covariates and were deleted pairwise. For PROJUS outcomes, *n* = 145 cases had missing values for covariates and were deleted pairwise.

Next, independent *t*-tests were conducted to determine difference in prevalence of baseline resilience traits across gender (Table 13). Levene's test for homogeneity of variance was significant across gender for 'Sobriety', 'Psychosocial maturity', 'Emotional control', 'Good neighbourhood', 'Previous employment', 'Social integration', 'Prosocial friends', and 'Quality of romantic relationship', so these variables were tested under the assumption of having unequal variances.

Table 13

Descriptive Statistics and t-Tests of Resilience Traits and Domains Across Gender

Resilience traits	Gender		<i>t</i>	<i>p</i>	<i>d</i>
	Boys (<i>n</i> = 1,123) M (<i>SD</i>)	Girls (<i>n</i> = 176) M (<i>SD</i>)			
Agency					
Medication adherence	0.27 (0.67)	0.34 (0.68)	-1.36	.175	0.10
Motivation to succeed	3.24 (0.65)	3.31 (0.65)	-1.36	.175	0.11
Planful	2.33 (0.55)	2.36 (0.55)	-0.81	.419	0.05
Importance of spirituality	3.28 (1.22)	3.26 (1.19)	0.16	.871	0.01
Sobriety	10.41 (2.05)	9.81 (2.47)	3.12	< .001	0.26
Cognition					
Impulse control	2.96 (0.95)	2.98 (0.98)	-0.29	.770	0.02
Psychosocial maturity	3.02 (0.45)	3.04 (0.49)	-0.59	.554	0.04
Positive attitude to authority	2.86 (0.45)	2.96 (0.45)	-2.80	.005	0.22
Emotional control	2.66 (0.49)	3.01 (0.60)	-7.53	< .001	0.64
Intelligence	84.48 (12.84)	84.78 (14.19)	-0.28	.779	0.02
Environment					
Good neighbourhood	4.22 (0.64)	4.24 (0.71)	0.01	.989	0.03
Access to healthcare/services	0.61 (0.78)	0.92 (0.85)	-4.85	< .001	0.38
Academic commitment	3.50 (0.79)	3.69 (0.78)	-2.88	.004	0.24
Previous employment	0.27 (0.45)	0.20 (0.40)	2.16	.032	0.16
Community involvement	0.46 (0.66)	0.37 (0.59)	1.84	.066	0.14
Social					
Social integration	2.17 (0.55)	2.06 (0.60)	2.53	.018	0.19
Resistance to peer influence	2.97 (0.57)	3.12 (0.58)	-3.49	< .001	0.26
Prosocial friends	3.37 (0.45)	3.53 (0.41)	-4.91	< .001	0.37
Parental figure/role model	4.90 (1.28)	5.10 (1.28)	-1.98	.047	0.16
Quality of romantic relationship	0.60 (0.49)	0.67 (0.47)	-1.17	.245	0.15
Combined domains					
Agency	2.03 (0.35)	2.26 (0.34)	-8.35	< .001	0.67
Cognition	3.14 (0.27)	3.24 (0.30)	-4.67	< .001	0.35
Environment	1.40 (0.35)	1.44 (0.39)	-1.70	.090	0.11
Social	3.43 (0.43)	3.53 (0.45)	-2.91	.004	0.23
Total Resilience	9.99 (0.92)	10.47 (1.01)	-6.55	< .001	0.50

Note. Significance tests are conducted with Bonferroni corrections ($p = .05/5 = .01$). See Appendix E for further information on resilience trait method of assessment. Scales vary by trait; for example, ‘Previous employment’ is rated on a scale from 0 (*No*) – 1 (*Yes*). ‘Intelligence’ ranges on a sliding scale, with means for both genders representing the “low average” range. For Cohen’s *d*, small effects = 0.2, medium effects = 0.5, and large effects = 0.8 (Cohen, 1988).

Bold = effect is significant.

Scores of the traits in each domain were averaged to yield total domain scores, with ‘Intelligence’ divided by 20 to accord it similar weight as other traits, changing the average score to about 4.2 (as most other item scores are averaged from Likert scales with total possible scores of about 4 to 9; see Appendix E for further information on item scoring). These four domains were then summed to yield a total resilience score for each gender.

Due to the number of tests conducted, Bonferroni corrections were performed within domains to minimise family-wise error rate, reducing significant p -value from .05 to .01 (five items per domain, plus four summed domain and total resilience scores). Even with the Bonferroni-reduced significance value, the Social domain contained the most traits with significant differences in trait prevalence between genders (two out of five), with both of these four being more prevalent in girls. In fact, out of the five traits found to show significance across gender, only ‘Sobriety’ was more prevalent in boys. Each of the four domains was represented by at least one trait showing gender differences. The cumulative Agency ($p < .001$, $d = 0.67$), Cognition ($p < .001$, $d = 0.35$), and Social ($p < .004$, $d = 0.23$) domains were significantly more prevalent in girls than boys, as was total resilience ($p < .001$, $d = 0.50$).

2. Significance of Each Resilience Trait and Factor in Predicting a Desistance Outcome

The purpose of this question is similar to RQ2 of Study 1; however this outcome was measured in three separate ways: a) self-reported offending (SRO), b) self-reported aggressive/violent offending (SROAGG), and c) police pick-ups/accusations of an offence (PROJUS) across the seven-year recall (follow-up) period. Since resilience shows the most predictive validity when assessed in a dynamic fashion (i.e., measured repeatedly to “inform a contextualized and idiographic approach” to management; Desmarais et al., 2012, p.695), resilience traits measured at the most recent follow-up (T10) were used to answer this question.

As mentioned above, one of the 20 resilience traits, ‘Medication adherence’, had no applicable proxy among the T10 variables and was removed from analysis. In addition, ‘Intelligence’ has no follow-up assessments and was adapted from baseline. Considering that IQ is fairly stable through adolescence and increases in stability beyond this age (Sternberg, Grigorenko, & Bundy, 2001), participant IQ likely remained relatively static across timepoints. ‘Previous employment’ changed from the baseline wording of “*any previous employment (yes/no)*” to the follow-up wording of “*number of weeks worked in the facility, community, or under-the-table*”. ‘Academic commitment’ was extended to include college commitment, due to the older age of the participants.

Outcomes were operationalised in the same way as with research question 1, with potential outcomes dichotomised between 0 = “*no self-reported offending across all interview periods*” and 1 = “*at least one self-reported offence across all interview periods*”. Using self-reported offending as an outcome (SRO), out of the 19 resilience traits measured at the final follow-up, no resilience traits measured at T10 were significantly associated with offending.

Using self-reported aggressive or violent offending (SROAGG) as an outcome, again, no resilience traits measured at final follow-up were significantly associated with offending.

Using police charges and accusations of crime as an outcome (PROJUS), out of the 19 resilience traits measured at the final follow-up, only ‘Previous employment’ uniquely predicted desistance, albeit to small effect ($B = -.003$, $p = .02$, 95%CI [-0.01, 0.00]).

I had predicted that Agency and Social domains at final follow-up would be significantly associated with desistance. Note that ‘Medication adherence’ is not measured at T10, so the Agency domain is down to four items. When collapsing traits into domains, as predicted, the Agency domain was significantly associated with desisting outcomes across all offending

outcomes, SRO ($B = -0.02, p < .001, 95\%CI [-0.03, -0.01]$), SROAGG ($B = -0.03, p < .001, 95\%CI [-0.04, -0.02]$), and PROJUS ($B = -0.02, p < .001, 95\%CI [-0.02, -0.01]$); however, the domain appeared to have an insubstantial effect overall. The model R-squared ($R^2 = 0.24 - 0.35$) indicated a small effect for models using each outcome type. Contrary to my prediction, the Social domain was not associated with offending outcomes.

3. Survival Analysis of Juvenile Offenders

Over the seven-year follow-up period, a number of participants self-reported new offences, although the frequency of these self-reported offences often differed from the number of new charges (received when accused by police of committing a crime). Baseline assessments of resilience and psychopathy were used to determine offending outcomes at each follow-up. Therefore, I performed a series of survival analyses showing the earliest timepoint of reoffending for each participant based on a) self-reported offending (SRO), b) self-reported aggressive/violent offending (SROAGG), and c) police accusations/charges (procedural justice or PROJUS). These analyses were conducted in terms of the degree to which psychopathy (assessed at baseline with the PCL:YV) and resilience (baseline assessments) predicted an offending or desistance outcome.

In the current archival dataset, scores for the PCL:YV were provided as two factors, rather than four factors (Factor 1, accounting for interpersonal and affective components; and Factor 2, accounting for lifestyle and antisocial components). Descriptive statistics of psychopathy and resilience at baseline are detailed below in Table 14.

Table 14

Descriptive Statistics of Psychopathy and Resilience for Juveniles at Baseline (T0)

Variable	Number of items	<i>M</i> (<i>SD</i>)	Range
Psychopathy			
Factor 1	8	5.0 (3.5)	0-16
Factor 2	9	8.3 (3.9)	0-18
Total	20	15.9 (7.7)	0-39
Resilience traits			
Agency	5	2.1 (0.4)	1.1-4.1
Cognition	5	3.2 (0.3)	2.2-4.0
Environment	5	1.4 (0.4)	0.3-2.8
Social	5	3.4 (0.4)	1.9-4.8
Total	20	10.1 (0.9)	7.3-13.5

Note. Psychopathy is measured by the Psychopathy Checklist: Youth Version (PCL:YV; Forth et al., 2003). A total of 54 (4.0%) of participants are missing PCL:YV assessment for unknown reasons (“Pathways to Desistance”, 2004). PCL:YV total and factor scores are pro-rated to account for missing data. Number of participants with individual items missing is unavailable. Ranges for resilience trait domains do not contain whole numbers; each resilience item is averaged from questionnaire scores from the dataset. Each individual resilience item has between 0 and 12 (0.9%) participants missing responses, with the exceptions of ‘Community involvement’ ($n = 121$, 8.9%), ‘Prosocial friends’ ($n = 50$, 3.7%), and ‘Quality of romantic relationship’ ($n = 599$, 44.2%, likely mostly due to this item not applying to participants not in relationships).

This research question targeted the predictive validity of psychopathy and identified resilience traits by measuring these variables at baseline, and assessing SRO, SROAGG, and PROJUS outcomes at each follow-up. Results for this research question include both Kaplan-Meier curves (allowing a visual, but losing data as I categorise participants into groups), and a Cox regression (wherein I can treat psychopathy and resilience variables as continuous and not lose any data). Using both methods allows the opportunity of both descriptive (Kaplan-Meier) and inferential (Cox) analytical techniques. I considered assessing resilience and psychopathy dynamically (at each follow-up) to enhance predictive accuracy and use a time-dependent series in the Cox model, as covariates can change values over time. However, this model loses some

key predictive properties of the fixed-covariate model, and cannot be used to forecast a survival curve over time (Fisher & Lin, 1999). The time-series model cannot establish predictive validity of traits, as it only establishes associations at the same time point (Thurneau, Crowson, & Atkinson, 2019). Therefore, only a single measurement of key variables at baseline (i.e., total and two-factor PCL:YV scores, and 20 resilience variables) are used for this research question.

Kaplan-Meier results for self-reported offending and charges. I conducted two Kaplan-Meier analyses to show the re-offending rate of participants based upon their psychopathy and resilience scores. Participants were split into four groups – depending upon where their scores fell in a median split of baseline PCL:YV and resilience scores – in order to determine the extent to which these variables predicted recidivism outcomes (i.e., self-reported any offending, self-reported as well as police accusations). The four groups were relatively equal in size, with the median psychopathy score being 15.0, and the median resilience score being 10.1. Group 1 ($n = 307$, 23.6%) consisted of participants who were at or below the median in both psychopathy and resilience scores. Group 2 ($n = 350$, 26.9%) consisted of participants at or below the median in psychopathy, and above the median in resilience. Group 3 ($n = 367$, 28.3%) consisted of participants above the median in psychopathy, and at or below the median in resilience. Finally, Group 4 ($n = 275$, 21.2%) consisted of participants above the median in both psychopathy and resilience ($N = 1,299$). The remainder of participants were excluded through pairwise deletion due to missing predictor variable (psychopathy and resilience) data ($n = 55$).

First, I analysed Kaplan-Meier results across the four groups using the self-reported any offending (SRO) outcome. Participants were categorised as recidivating at the earliest follow-up timepoint they self-reported any offence (1-10). If they self-reported no offending across the follow-up, they were categorised as “0” (desisting). Participants were censored (left out of data

analyses) if they were LTF for more than one consecutive year of follow-up (i.e., more than two consecutive follow-ups from T0-T6, with interviews at six-month intervals, or more than one consecutive follow-up from T6-T10, with interviews at yearly intervals, *unless* they had recidivated before being LTF. This restrictive approach is necessary to avoid treating participants as desisters if, for example, they attend the first few interviews and become LTF for an unknown reason (perhaps serving a sentence for an offence). Consistent with expectations, Group 2 (the low-psychopathy/high-resilience group) had the highest proportion of desisters in each outcome, while Group 3 (high-psychopathy/low-resilience) had the lowest proportion (Table 15).

Table 15

Percent Recidivism of Each Group by Reoffending Outcome Type

Group	Reoffending outcome type		
	SRO (<i>N</i> = 1,243)	SROAGG (<i>N</i> = 1,243)	PROJUS (<i>N</i> = 1,209)
Group 1	89%	79%	74%
Group 2	84%	77%	68%
Group 3	97%	92%	85%
Group 4	94%	89%	85%
Overall	91%	84%	78%

Note. SRO = self-report of any offending during the study period. SROAGG = self-report of aggressive/violent offending during the study period. PROJUS = picked up/accused by police of crime during the study period. Group 1 = low psychopathy, low resilience. Group 2 = low psychopathy, high resilience. Group 3 = high psychopathy, low resilience. Group 4 = high psychopathy, high resilience.

Considering the entire seven-year follow-up period, there was no overall effect of resilience on self-reported offending. The two groups containing participants low in psychopathy (groups 1 and 2) recidivated later than did offenders high in psychopathy (groups 3 and 4; shown in Table 16). All four group averages for time point of first re-offence was less than 3 (i.e., less than 18 months into the study). Figure 6 below depicts the survival functions containing the four Kaplan-Meier curves.

As shown in the top left corner of the Kaplan-Meier graph, the ineligible participants in each group who were lost due to attrition (i.e., lost to follow-up, or LTF) were censored at baseline. This was done to avoid confounding survival (i.e., desistance) rates of the remaining cohort.

Results show that the group with the highest rate of desistance was Group 2 (low psychopathy, high resilience). There is a notable gap between desistance rates of those in groups 1 and 2 (low psychopathy) and those in groups 3 and 4 (high psychopathy). The main influence of resilience on self-reported offending is shown at T1: 42% of Group 2 participants reported recidivism after six months, 10% less than Group 1 (52%, low psychopathy, low resilience) and close to 30% less than Groups 3 (70%) and 4 (69%). After T2, the degree to which resilience traits helped mitigate reoffending was slight; there is no perceptible difference in reoffence rates between groups with high psychopathy, regardless of whether they were also high in resilience. More participants reoffended at the beginning of the study when they were younger (baseline mean age = 16) than at final follow-up when they had reached early adulthood (T10 mean age = 23).

Table 16

Average Follow-Up Period of Earliest Any Self-Reported Offence by Group

Group	Average follow-up period of recidivism		95% Confidence interval	
	<i>M</i>	<i>SE</i>	Lower bound	Upper bound
Group 1	2.39	0.14	2.12	2.65
Group 2	2.57	0.14	2.30	2.83
Group 3	1.70	0.08	1.54	1.85
Group 4	1.70	0.09	1.52	1.87
Overall	2.07	0.06	1.96	2.18

Note. Results are shown in terms of the average earliest reoffending follow-up period by group, where Group 1 = low psychopathy, low resilience; Group 2 = low psychopathy, high resilience; Group 3 = high psychopathy, low resilience; and Group 4 = high psychopathy, high resilience. *M* represents the mean follow-up period (e.g., T1, T2, T3) to first re-offence.

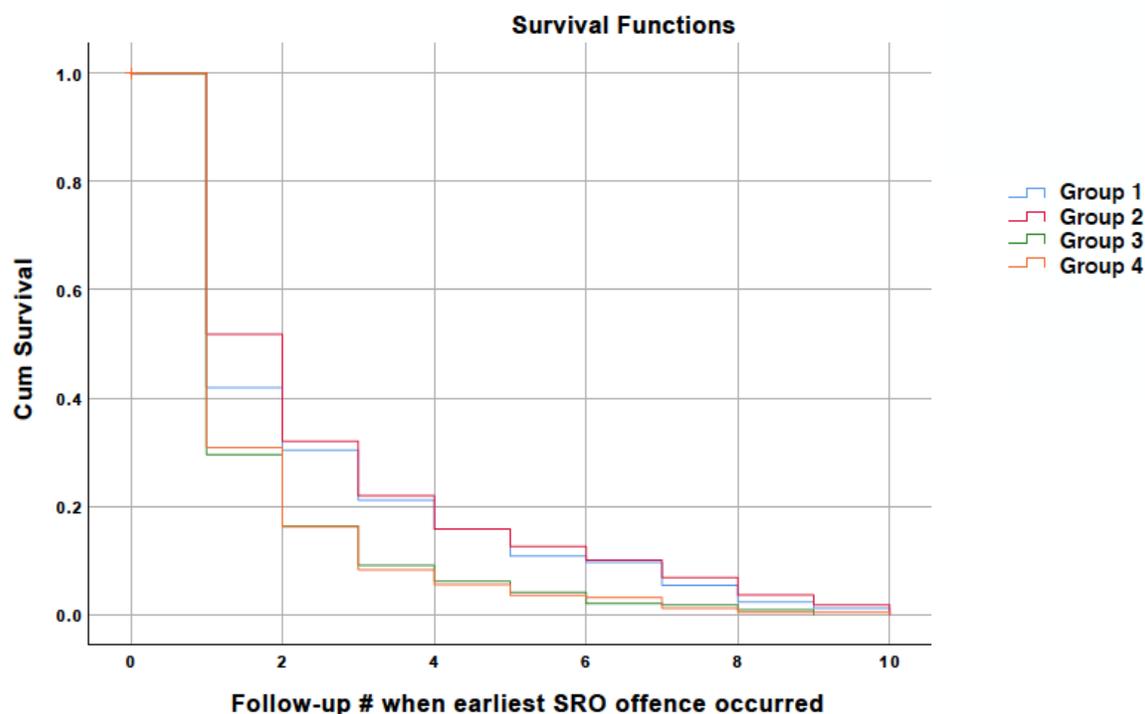


Figure 6. Survival functions of participants based upon group membership, using a self-reported offending (SRO) outcome.

Note. Of the 1,299 participants with sufficient predictor (psychopathy, resilience) variable data for study, 4.3% ($n = 56$) of the cohort was censored due to being categorised as lost to follow-up (LTF).

Second, I analysed Kaplan-Meier curves across all four groups using the self-reported violent/aggressive offending (SROAGG) outcome. Similar to any self-reported offences, all four group averages for period of first reoffence was before T3 (i.e., less than 18 months). Average follow-up of first aggressive or violent reoffence is detailed below in Table 17; see Figure 7 for Kaplan-Meier curves using this outcome.

As with general offending, group 2 (low psychopathy, high resilience) showed the highest rate of desistance. Only 37% of participants in Group 2 self-reported violent recidivism by the first follow-up, 7% fewer than Group 2 (44% violent recidivism) and close to 20% fewer than Groups 3 (63%) and 4 (63%). This difference is most apparent at T1, when resilience traits are still most relevant (i.e., have not much changed over time). Resilience is again shown to have a stronger effect when psychopathy is low, which strongly moderates the effect of resilience. As evidenced by the high psychopathy groups (Groups 3 and 4), there is practically no difference among high psychopathy groups whether resilience is high or low.

Table 17

Average Follow-Up Period of Earliest Self-Reported Aggressive/Violent Offence by Group

Group	Average follow-up period of recidivism		95% Confidence Interval	
	<i>M</i>	<i>SE</i>	Lower Bound	Upper Bound
Group 1	2.42	0.15	2.14	2.71
Group 2	2.63	0.14	2.35	2.91
Group 3	1.89	0.10	1.70	2.08
Group 4	1.86	0.11	1.64	2.08
Overall	2.18	0.06	2.06	2.30

Note. Results are shown in terms of the average earliest reoffending follow-up period by group, where Group 1 = low psychopathy, low resilience; Group 2 = low psychopathy, high resilience; Group 3 = high psychopathy, low resilience; and Group 4 = high psychopathy, high resilience.

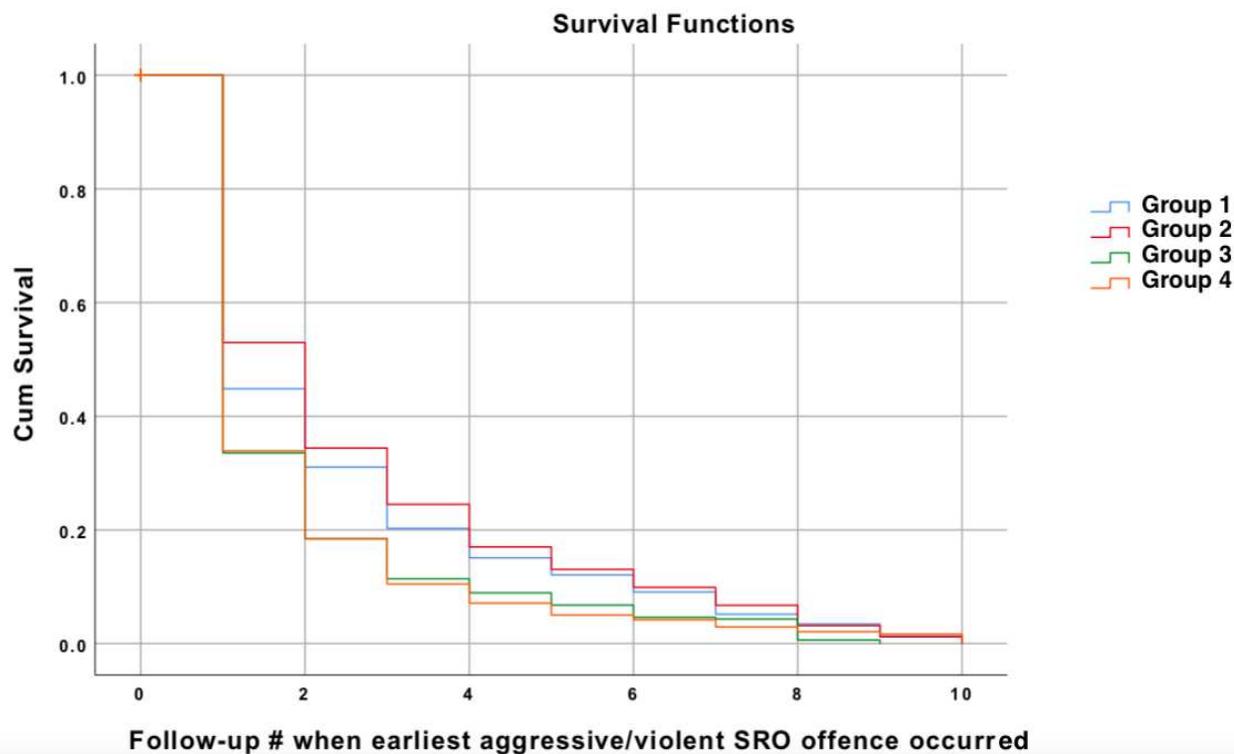


Figure 7. Survival functions of participants based upon group membership, using a self-reported violent/aggressive offending (SROAGG) outcome.

Note. Of the 1,299 participants with sufficient predictor variable (psychopathy, resilience) data for study, 4.3% ($n = 56$) of the cohort was censored due to being categorised as lost to follow-up (LTF).

Third, I analysed Kaplan-Meier results across the four groups using the procedural justice outcome (i.e., new charges/accusations brought by police). The mean average assessment period (e.g., T3) of earliest reported reoffending by group is shown in Table 18 below. Figure 8 depicts the survival functions of each group using the police charges/accusations (or procedural justice, PROJUS) outcome.

Results show that, similar to results using self-report offending as the outcome variable, Group 2 (low psychopathy, high resilience) showed the highest rates of desistance (Figure 8). At T1, this group had only 11% of offenders recidivate after six months, roughly half the recidivism rate of Group 1 (20%), Group 3 (22%), and Group 4 (21%) by this point. Further, Group 2's Kaplan-Meier curve indicates their group avoids reoffending at a substantially greater rate than the other three groups, as least until the later follow-ups. For example, Group 2 is still recidivating at a rate approximately half of the other three groups by T6, three years after baseline.

Surprisingly, the high psychopathy and high resilience group (Group 4) performed the worst of all groups, although not substantially worse than groups 1 and 3.

Table 18

Average Follow-Up Period of Earliest Police Charge/Accusation by Group

Group	Average follow-up period of recidivism			
	<i>M</i>	<i>SE</i>	Lower Bound	Upper Bound
Group 1	3.88	0.18	3.52	4.23
Group 2	4.74	0.19	4.37	5.11
Group 3	3.68	0.15	3.39	3.98
Group 4	3.50	0.16	3.18	3.81
Overall	3.93	0.09	3.76	4.10

Note. Results are shown in terms of the average earliest reoffending follow-up period by group, where Group 1 = low psychopathy, low resilience; Group 2 = low psychopathy, high resilience; Group 3 = high psychopathy, low resilience; and Group 4 = high psychopathy, high resilience.

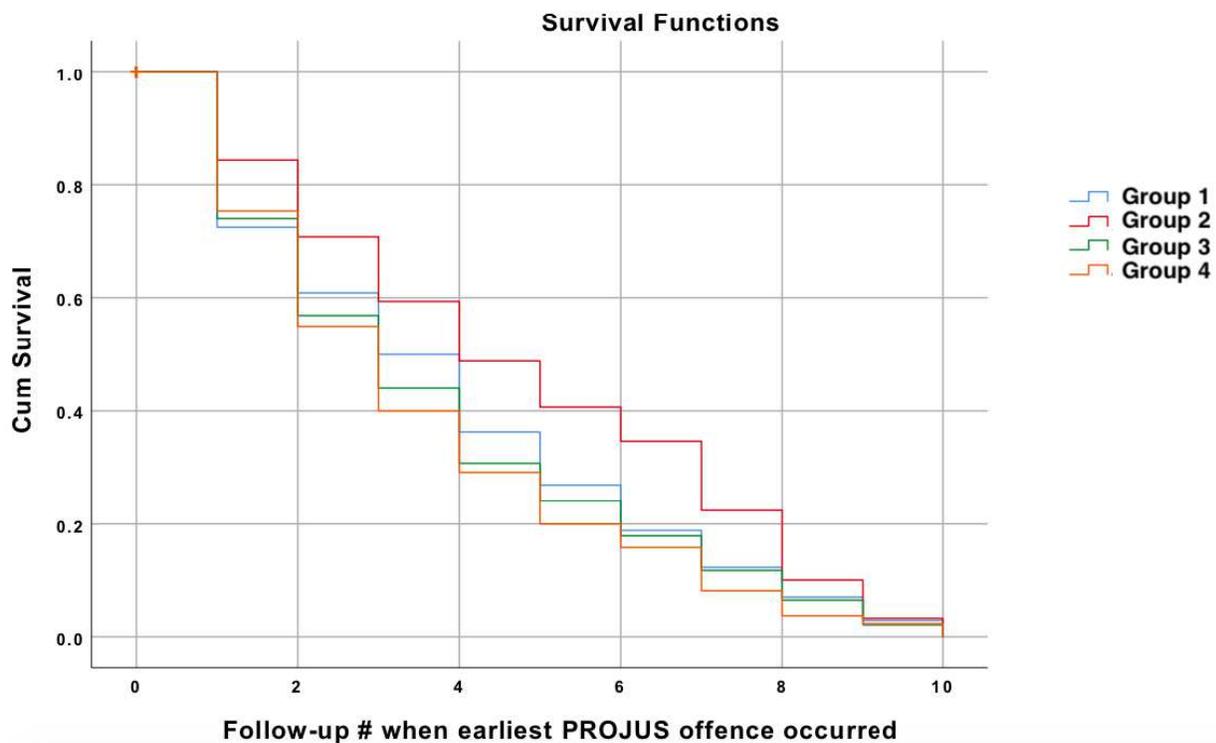


Figure 8. Survival functions of participants based upon group membership, using police pick-ups/accusations (PROJUS) as outcome.

Note. A total of 6.9% ($n = 90$) of cohort was censored due to being categorised as LTF.

Cox regression results for self-reported offending and charges. Survival analyses using Cox regression allows for assessment of covariates that can be measured continuously instead of conforming these variables to groups (such as in the Kaplan-Meier analyses). Cox regressions hold a proportionality of hazards assumption (i.e., it assumes no interaction between variables of interest), which must first be tested. For both the self-reported offending and police charges outcomes, there was no significant interaction term ($ps = .243 - .727$), so psychopathy and resilience are treated as proportional (distinct). Cox regression analyses are detailed in Table 19.

Table 19

Cox Regression Statistics Using Two Covariates for All Outcomes

Outcome	Psychopathy					Resilience				
	<i>Wald</i>	<i>p</i>	<i>exp(B)</i>	<i>ULCI</i>	<i>LLCI</i>	<i>Wald</i>	<i>p</i>	<i>exp(B)</i>	<i>ULCI</i>	<i>LLCI</i>
SRO (<i>N</i> = 1,133)	28.41	< .001	1.022	1.01	1.03	0.33	.57	0.981	0.92	1.05
SROAGG (<i>N</i> = 1,049)	19.57	< .001	1.019	1.01	1.03	0.41	.84	0.993	0.93	1.06
PROJUS (<i>N</i> = 941)	7.55	.006	1.012	1.00	1.02	2.86	.09	0.940	0.88	1.01

Note. SRO = self-report of any offending during the study period. SROAGG = self-report of aggressive/violent offending during the study period. PROJUS = picked up/accused by police of crime during the study period. For SRO outcomes, $n = 111$ cases had missing values for covariates and were deleted pairwise, and $n = 110$ cases were censored (i.e., desisted). For SROAGG outcomes, $n = 110$ cases had missing values for covariates and were deleted pairwise, and $n = 195$ cases were censored (i.e., desisted). For PROJUS outcomes, $n = 145$ cases had missing values for covariates and were deleted pairwise, and $n = 268$ cases were censored (i.e., desisted). Exponentiated B ($\exp(B)$) statistics are given to three decimal places for increased precision.

The model omnibus tests are significant with every outcome (highest $p = .002$), indicating that at least one covariate (resilience or psychopathy) significantly predicted the outcome in each case. Using the self-reported offending outcome, for every 1-point psychopathy score increase, juveniles had a 2.2% increased chance to reoffend ($p < .001$). Resilience had no

effect upon self-reported offending ($p = .57$). Similarly, using the self-reported aggressive/violent offending outcome, every 1-point increase in psychopathy corresponded to a 1.9% increased chance to reoffend ($p < .001$), with no effect of resilience on aggressive/violent offending ($p = .84$). With the procedural justice outcome, for every 1-point increase in psychopathy score, juveniles had a 1.2% increase in likelihood to reoffend ($p = .006$). For every 1-point increase in resilience, juveniles had a 6.0% decrease in likelihood to reoffend, though this effect did not reach significance ($p = .09$). Consistent with predictions, psychopathy showed stable predictive capability across all outcomes, with higher psychopathy corresponding with higher odds of committing any reoffense across the study period. Against predictions, despite higher resilience showing lower odds of recidivism, resilience did not significantly predict reoffending using any outcome.

Study 2: Discussion

Study 2 sought to establish the prevalence of resilience and psychopathic traits in a juvenile offending population, and their ability to predict offending over time. Previous work has found that the prevalence of offending is gender-salient: females have shown lower base rates of general and violent offending (Loeber et al., 2017). Study 2 found significantly lower rates of recidivism for females, being roughly 70% less likely to criminally recidivate across all outcome types (SRO, SROAGG, and PROJUS). This underscores the importance of utilizing gender-salient and -specific assessment tools in order to minimize gender bias (Starr, 2014) and to avoid over-estimating female risk of recidivism (Skeem et al., 2016).

Gender-based prevalence was also investigated in connection with resilience traits. Intercorrelations among resilience domains were generally low, showing trivial-to-low across domain intercorrelations, with the exception of the Social-Agency correlation ($r = .35$), yielding

a moderate correlation per recommendations by Hopkins (1997). This finding of fairly low intercorrelations among resilience-related traits is common in the literature (Rosky, 2010; Vanderbilt-Adriance, 2001; Vanderbilt-Adriance et al., 2015).

I had predicted that the results would find concordance with relational-cultural theory, which posits that women flourish in environments of nurturing and deep social connections more than do men. RCT was not directly assessed in this study, which would require testing gender effects in the influence of resilience traits on offending outcomes. However, females did appear to score higher on Social-domain variables, as two out of five resilience variables in the Social domain showed significantly higher prevalence in females. Out of the seven individual traits with different gender prevalence, only one was more prevalent in males ('Sobriety').

When resilience domains were collapsed, Agency, Cognition, and Social domains were significantly more prevalent in females; moreover, the Agency domain was the only one significantly associated with desistance. In other words, the Agency domain as a whole appeared to be gender-specific to females in the current study. This runs contrary to past work extolling the importance of internal, agency-based items specifically for males (Maccoby & Jacklin, 1974). Regardless, caution should be exercised when applying gender-based expectations of risk and resilience traits. Over-reliance on external variables (such as social supports) to have utility for females may possibly deny them access to intrinsic resiliency, rather than resorting to reliance upon others to work through adverse circumstances. More work may be necessary to parse out individual benefits and detriments that come with social support variables. Because social relationships are complex and their valence (positive or negative) can be context-dependent, the relationship between certain social variables and potential outcomes (e.g., criminal offending) can be difficult to predict. The beneficence of social variables may vary by

individual, and may well be contingent upon a series of other variables (e.g., living in a good neighbourhood, motivation to succeed, etc.) to have a positive effect.

Resilience had no effect on predicting self-reported offending across the seven-year follow-up period. This makes sense when put into context given the behaviours included in the self-reported offences measure. Participants were asked about both relatively minor offences (e.g., drove drunk/high, shoplifted, etc.) and more serious offences (e.g., sold marijuana/other drugs, shot at someone, forced someone to have sex, etc.). Engagement in minor offences was extremely prevalent, and there is likely no combination of resilience traits that can create a profile of individuals who do not commit these types of minor offences. Resilience traits should be more sensitive when used to predict more serious offences, such as those involving police intervention. Indeed, when considering police pick-ups/accusations as the outcome, three domains of resilience (though only a single individual trait, 'Previous employment') significantly predicted desistance.

Similar to mediation analyses performed in Study 1, the purpose of Kaplan-Meier analysis in Study 2 was to determine how resilience and psychopathy might interact toward a desistance outcome. By grouping participants into roughly equal groups of different high and low psychopathy and resilience profiles, the goal was to assess any differences between these profiles, while acknowledging the inherent loss of data that comes with performing median splits (i.e., treating continuous data as categorical). When using self-reported offending as the outcome, psychopathy had a distinct effect in predicting time until first offence; groups low in psychopathy desisted at a substantially greater rate before first offence, compared to groups high in psychopathy. Additionally, in keeping with literature on "early-peaking" offending trajectories (Livingston, Stewart, Allard, & Ogilvie, 2008), more participants reoffended at the beginning of

the study as adolescents ($M = 16$ years old) than at final follow-up in young adulthood ($M = 23$ years old). This may represent young offenders maturing through development and “aging-out” of offending.

When procedural justice outcomes (i.e., police charges and accusations) were considered, the low psychopathy, high resilience group took noticeably longer to commit a first offence than did all three other groups (including the low psychopathy, low resilience group). For all outcomes, there was little-to-no difference in rate of desistance between low and high resilience in those high in psychopathy. Fortunately, high resilience was more effective in predicting desistance in those with low psychopathy, especially with the (potentially more serious) procedural justice outcome. The finding of resilience-related traits mitigating low (but not high) psychopathy is consistent with work by Lynam and colleagues (2008). It may be that resilience traits are less effective in those high in psychopathy, or these individuals have fewer resilience traits possessed by purported “successful” psychopaths (Mahmut, Homewood, & Stevenson, 2007). It is also plausible that traits of resilience that serve to mitigate symptoms of psychopathy and their associated outcomes have not yet been discovered and operationalised. For instance, past work has suggested that certain traits – such as prosocial peers (Salekin & Lochman, 2008) or academic commitment (Lynam et al., 2008) are imperative for reducing criminal outcomes for those high in psychopathy. At this point, these links are only suggestions and have not been empirically validated. What is certain is that more work is needed to investigate the psychopathy-resilience relationship. As suggested above, these results suggest that resilience has a stronger influence on procedural justice outcomes (PROJUS) – while maintaining greater desistance over a longer period – perhaps due to these outcomes likely involving more serious and/or violent offences.

Results of the Cox regression imply that, particularly for procedural justice outcomes, resilience shows a stronger influence on likelihood of criminal outcome, albeit with lower statistical significance, than psychopathy. In other words, resilience shows more variance in its effect on individuals, yet each additional cumulative point of resilience is associated with a higher likelihood of desistance, compared to the effect of additional psychopathy score on likelihood of reoffending. One possible reason for this is that, considering the average total resilience score is lower than the average total psychopathy score, resilience has a smaller range and therefore each additional resilience point should reasonably be associated with a stronger effect on outcome. Be that as it may, overall resilience scores are quite low among participants, relative to potential total score. The highest resilience score for all participants is 13.5; based on possible resilience score using average scores from Likert scale options (i.e., averaging scores on resilience items out of a possible 9 for a 9-point Likert scale), total resilience is at least 25, not accounting for items with no upper limit (e.g., 'Access to healthcare/services'). By contrast, the highest psychopathy score for all juvenile participants is 39 out of a possible 40. Essentially, it is not necessarily the case that resilience is not effective for these individuals; they just have less of it, on average, than they do features of psychopathy.

The baseline psychopathy assessment seems to have a much more stable influence on reoffending over time than does the baseline resilience assessment. It is possible that key psychopathic traits in these individuals remain fairly static (Lynam et al., 2007), while individual resilience traits may fluctuate in their prevalence and individual utility. Also, resilience traits and domains may more strongly promote desistance in certain individuals than the combined sum of scores. Both Kaplan-Meier and Cox results, taken together, imply that results may be partially influenced by the dynamic nature of resilience, most notably, its declining predictive validity

over time (Desmarais et al., 2012; de Vogel et al., 2009). This may explain why resilience is most effective in the first follow-up after baseline across all outcome types.

Resilience traits might exist in many people, but are only effective in those who take advantage of them, and use them towards positive outcome and buffer against recidivism and other negative outcomes, such as poor mental health or psychiatric disorders. As suggested by Serin and colleagues (2016), these traits are only “protective” against negative outcomes when they are actively engaged with by the individual toward a positive outcome, otherwise they serve no purpose. An advantage is only beneficial if it is used. In addition, these traits are dynamic, some are gender-salient (e.g., Social items have shown utility for women), and cannot be expected to interact with psychopathic traits equally under different circumstances. By comparison, psychopathy can be expected to have a similar effect on a broader range of individuals, since the disorder is more homogeneous (i.e., manifests in a relatively similar presentation across individuals, compared to resilience traits) and so likely has a smaller variance.

Several limitations arose during Study 2 analyses. First, a factor structure for the four resilience domains (Agency, Cognition, Environment, and Social) could not establish goodness-of-fit, since many variables were measured by different metrics. For example, some collapsed several short questionnaires, each comprising seven-item Likert items, yielding an average score; intelligence (measures by the WASI) in particular often averages to 100 in the general population; other resilience variables are either scored as 0 (*No*) or 1 (*Yes*).

Fortunately, standard deviations of resilience traits are of corresponding size (as seen in Study 2 results), allowing for measurable deviations from the mean. However, in order to equally weight resilience items (and calculate goodness-of-fit within domains through factor analysis),

resilience items should be standardized by the same metric (e.g., a five-point Likert scale). To this end, future studies on these and similar resilience traits should investigate possible standardization of items in order to determine potential fit by factor analysis.

Another drawback of the Pathways study is that, although it claims the PCL:YV does not adhere to a two-factor model (rather a three- or four-factor model), only the two-factor and total scores are provided (“Pathways to Desistance”, 2004). Also, three items are removed from factor fit, suggesting that the authors conformed the PCL:YV to the original PCL-R factor structure (Hare, 2003). Providing individual item scores would be beneficial to assessing model fit in this sample, as well as assessing individual item or factor predictive validity and potential item response theory (IRT) analyses. Furthermore, repeated use of the PCL:YV in longitudinal study of youths as they progress into adulthood alongside an adult measure (e.g., the PCL-R or PCL:SV) would help determine the age at which the PCL:YV is no longer appropriate (i.e., does not hold convergent validity with other measures validated for use with adults).

Another limitation to be considered is the censoring method used in survival analyses (participants were censored if LTF for more than one consecutive year of follow-up interviews). This approach is restrictive, in that it captures recidivists before becoming LTF, but it may miss some participants who have not reoffended for the entire follow-up. For example, an offender may have been crime-free for the study’s first five years, then taken up a full-time job the past two years and was unable to attend the final interviews. An unfortunate drawback of using self-report data – rather than official data, such as from Canadian Police Information Centre, or CPIC records – is that the reasons for participant attrition is unknown (i.e., we do not know if participants missed interviews due to serving sentences, or some unrelated reason). Future

research should incorporate official records to substantiate interview reports, in order to assess a) clearer timelines for offences, and b) reliability of participants regarding self-reported offending.

General Discussion

This research was undertaken to examine the influence of key variables (psychopathy and resilience) on the dependent variable (antisocial and criminal behaviour) in two distinct populations. The goals of Study 1 aimed to determine prevalence of psychopathy and resilience in a community student sample and their relationship to antisocial behaviour. Similarly, Study 2 strove to uncover prevalence of psychopathy and resilience in a juvenile offending sample, and the unique ability of these variables to prognosticate criminal outcomes. Both studies assessed gender-saliency of both key variables as well as gender relationships with dependent variables.

Based on findings by Shadd Maruna (2001), those actively engaging in antisocial behaviour and criminal acts tend to view themselves with the same maladaptive thought patterns as depressives. In other words, offenders likely view positive events as strokes of luck, having specific, transient, and externalised origins; at the same time, they view negative events as evidence of their inherent “badness”, being globally stable and internal issues (Maruna, 2005). A key to long-lasting internalised motivation to desist – and confidence in one’s desistance process – lies in the ability to view negative events as having more temporary and specific causes and view positive events as having positive, stable, and internal bases (i.e., seeing oneself as an inherently good person, who sometimes has lapses in judgement or bad things happen to them; Maruna, 2005). This change in one’s self-perception could go a long way towards sustained desistance from crime.

Resilience

As indicated by Lebel and colleagues (2008), a series of internally derived traits with direct influence on outcome (Agency-Cognition) as well as externally derived traits with indirect influence on outcome (Environmental-Social) have shown efficacy in projecting positive outcomes in the populations examined in this thesis.

In the student sample, only item 12 on the PFQ (pride in and commitment to goals) was found to be associated with lower antisocial behaviour, whereas high-stimulation activities were associated with higher antisocial behaviour. Only 'Previous employment' (which was more prevalent in men) predicted desistance among individual resilience traits in the juvenile justice population. This is consistent with past research on offenders with psychopathic traits (DeMatteo et al., 2005), and partially in accordance with past research using this data (Schubert et al., 2016). However, unlike Schubert et al. (2016), 'Psychosocial maturity' did not predict desistance. Even though certain traits were similar across studies and could be considered proxies for one another, there was little overlap in terms of resilience traits proven to significantly associate with good outcomes (lower recent antisocial behaviour, or lower self-reported/police charges of offending). The exception was that item 12 from the PFQ (*'I take great pride in my work goals and am committed to a high level of achievement'*) has a similar valence and might be considered a proxy of the Agency item 'Motivation to succeed'.

Resilience traits not appearing to have a strong cumulative effect in predicting desistance has a variety of possible causes. First, the data itself was not standardised, so each item is weighted differently, despite potentially greater influence of items with lesser weight (Murray & Thomson, 2010). This would influence the cumulative weight of an item like 'Previous employment', which has a total possible score of 1 (Yes/No), and 'Sobriety', which has a total

possible score of 9 (i.e., averaged score of items on a 9-point Likert scale). Second, ‘Sobriety’ and other items may be high in some individuals but have relatively little utility; they have no influence on an individual’s offending cycle. Third, there may be certain educational, cultural, or other static confounding variables that influence the responsivity of individuals to a particular trait (Ungar et al., 2008). Fourth, stability of certain traits differ, so that some traits would maintain predictive validity over longer periods of time than others (Lewis, Olver, & Wong, 2013).

Cumulative resilience appears to have greater utility when either psychopathy is low (seen in Study 2 survival analyses) or when rates of antisocial behaviours are low (seen in Study 1 mediation analyses). It may be that the presence of certain resilience traits promotes others. For example, it may be that past employment is a necessary precursor to pride in and commitment to one’s goals. Qualitative research would be helpful to clarify this distinction. For example, asking participants who exhibit a certain trait, “what other skills or positive elements in your life helped to foster this skill?”, wherein researchers ask open-ended questions for recall, with participants then choosing from a list of potential traits for recognition.

The findings from this thesis confirms past research asserting that resilience-related traits have the most predictive validity when assessed repeatedly (Desmarais et al., 2012; de Vogel et al., 2009; Hanby, 2013; Serin et al., 2016). These traits collectively appeared to have the strongest influence on desistance in the period after assessment, with effects deteriorating over time. Future research may assess different domains or individual resilience traits over time to gauge their unique stability as well as influence on outcome, over repeated assessments throughout the lifespan.

Gendered resilience. These traits have shown varying effects by gender across the two populations studied. In the young-adult student population, there was no difference in *total* resilience score. In the juvenile justice population, females had significantly higher overall resilience (with a moderate effect size). Further, 7 out of 20 traits examined have shown significant differences across resilience domains, with Agency, Cognition, Environment, and Social all contributing to individual trait differences in prevalence among genders. Only ‘Sobriety’ was significantly more prevalent among males, and had a small effect. However, ‘Previous employment’ was the only individual resilience trait to significantly predict desistance. Notably, ‘Emotional control’ showed significantly higher prevalence among females, with moderate effect, while Impulse control showed no difference in prevalence by gender. This suggests a benefit in examining different aspects of self-control separately.

Agency-related items played a notable role among resilience traits in this thesis. In Study 1, item 12 (*‘I take great pride in my work goals and am committed to a high level of achievement’*) was the only item from the PFQ to have a significant association with positive outcome (i.e., lower antisocial behaviour). In Study 2, Agency traits were more prevalent in girls, and the domain was the only one associated with desistance when measured at T10. This prevalence finding alone does not ensure that these traits are proven effective in increasing likelihood of positive outcomes. However, it speaks to the potential of internal (Agency) factors of resilience, which have direct influence on desistance outcomes (Lebel et al., 2008).

It also has important implications for management of female offenders. Traditionally, frameworks such as relational-cultural theory have emphasised the importance of support networks for female outcomes. It is also important to detect and support internal resilience traits that may be crucial in preventing adverse outcomes, in the absence of external social and

environmental supports. Future research should examine the predictive validity of these internally derived traits towards positive outcomes in individuals deficient in external resources.

Psychopathy

Due to transience of psychopathy through adolescence (Kimonis et al., 2019), it is possible that some individuals, while experiencing some psychopathic symptoms (e.g., antisocial behaviour), will not grow to fully develop a disorder diagnostic as psychopathy, but instead some other disorder that shows symptomatic overlap (e.g., borderline personality disorder). Overall, this thesis contributes to past research that psychopathy at its core is relatively stable (Salihovic et al., 2014). Be that as it may, the potential transience of psychopathic symptoms before reaching adulthood should warn intervention teams against affixing youths with this potentially harmful label.

Gendered psychopathy. Gendered differences in psychopathic severity are well-founded in the literature, with men consistently receiving higher total scores, and often higher scores on all four facets in both student (Demetriooff et al., 2017; Forth et al., 1996) and forensic (Salekin et al., 1997) samples. This may relate to the construct validity of measures examining psychopathy in females, particularly in cases where youth psychopathy measures (e.g., the PCL:YV) predict general and violent recidivism more strongly in boys (Stockdale et al., 2010) or only in boys, but not in girls (Vincent, Odgers, McCormick, & Corrado, 2008). However, findings of gendered psychopathy differences are not absolute. Past work by Campbell, Porter, and Santor (2004), showed that male and female youth did not differ in Factor 1, Factor 2, or total scores on the PCL:YV. Unfortunately, as with other studies using samples disaggregating male and female offenders, the female youth subsample in the Campbell et al. (2004) was quite small ($n = 38$, 17%), causing results to be untenable. In support of this finding, though, male and

female youths were found by Stockdale and colleagues (2010) to show quite similar PCL:YV scores.

Both university-student young men and juvenile boys reinforced the notion of males having higher overall psychopathy, garnering significantly higher scores in both populations than females. In terms of individual factor differences, interpersonal, affective, and lifestyle scores were significantly higher among student men than women, with the largest effect coming from affective traits; however, there were no differences in antisocial facet scores across gender. The lack of gender disparity in antisocial behaviour among student genders makes intuitive sense; students have a lower base rate of antisocial behaviour than juveniles with offending histories.

Among juvenile offenders, however, the results stood in stark contrast. While overall scores were still significantly higher among juvenile boys (consistent with the student sample), interpersonal/affective traits (Factor 1) showed no difference across genders. This runs contrary to past research finding significant difference only in interpersonal traits, with higher scores for boys (Stockdale et al., 2010). In addition, lifestyle/antisocial traits (Factor 2) were significantly higher among males, which contrasts the lack of antisocial behaviour facet differences in Study 1.

The lack of disparity in Factor 1 traits across genders for juveniles is an intriguing finding, considering past research positing that males have more restricted affective traits compared to females (Wong et al., 2006) and that psychopathy-related symptoms are generally distinct between genders (Salekin et al., 1997; Viljoen et al., 2015). It is possible that, given the average age of offenders during their baseline assessment with the PCL:YV (16 years old), the psychopathic traits of many individuals have not fully formed.

Implications

Theoretical implications. Taking results of both Study 1 and Study 2 into account, it appears that factors of resilience and psychopathy play quite different and gendered roles depending upon population of interest. Psychopathy is relatively stable over time (Lynam et al., 2007; Sahilovic et al., 2014), and is more unilateral in its effects (i.e., fairly similar in trait manifestation) across individuals in a certain population, whether young-adult students or offending youths. Comparatively, resilience is dynamic and context-sensitive (Viljoen et al., 2017), showing more variance in its effects (i.e., quite different in trait manifestation) across individuals in a population.

The relationship *between* these key variables when considering antisocial and criminal outcomes also differs by population. In students, resilience mediates the relationship between psychopathy facets and antisocial outcomes, which has been previously shown with other negative outcomes (e.g., anxiety; Shahilovic et al., 2014). In juvenile offenders, these variables do not interact directly, although a combination of low psychopathy and high resilience appears to have a particularly positive effect for procedural justice outcomes such as criminal accusations. Resilience-related traits have been established as increasing predictive validity in tandem with risk assessment (de Vries Robbé et al., 2015; Nonstad et al., 2010), a combination for which psychopathy measurements are increasingly used. Past work has acknowledged the issue of using psychopathy, a purported personality disorder, as a risk assessment due to its association with antisocial and criminal behaviour (Cooke et al., 2007; Dawson et al., 2012; Skeem & Cooke, 2010). This relates back to a key argument in the psychopathy literature: whether antisocial behaviour is a symptom (Hare, 2016) or consequence (Cooke & Michie, 2001) of other features of this disorder. Acknowledging the disorder as a continuum – part of the

personality composition of a resilient individual – may help to account for both potentially resilient and detrimental facets of psychopathy, and lower stigma by turning away from pure focus on whether this individual has antisocial potential.

There are important theoretical applications from these studies regarding gender differences. As mentioned above, resilience traits have some variance across individuals, indicating their sensitivity and possible context-dependence. Relational-cultural theory acknowledges that women benefit from strong, positive social bonds in order to prosper (Miller, 1976), this rule may not apply to all women equally. Although this theory was not directly tested, this thesis revealed high prevalence of Agency traits in women; however, whether or not these Agency traits actively promote desistance in women is still at issue. The sensitivity of resilience traits only being effective in certain individuals supports the need for a person-centred approach to risk management and treatment. In this regard, the psychopathic and resilience profiles of each population should be considered when implementing risk management strategies. Further, female expression of psychopathy in each population, as well as gender-salient prevalence of external and internal resilience traits, must both be factored into assessments.

Practical implications. When resilience traits were able to be parsed apart and examined for individual utility in Study 2, they showed two practical revelations: the utility of Agency-related traits in females, and that variance in how individuals use these traits to promote desistance obscures their effectiveness. It may be inferred, then, that resilience traits can be quite effective for those who find utility in these traits (i.e., the extent to which resilience traits are used to pursue positive, non-offending outcomes; Woldgabreal, Day, & Ward, 2014). Unfortunately, much of this is speculation due to the low resilience score in the juvenile offending population.

Future research would benefit in studying longitudinal samples matched between those with low resilience and those with high resilience, preferably grouped by individuals high in certain resilience domains. Furthermore, honing the benefits of traits for individuals would be hugely beneficial in a machine learning process through time series models with big data. In a recent conference talk by Gary Chaimowitz (2019), electronic versions of structured professional judgement tools aggregate massive amounts of big data, towards the goal of individually tailored assessment and treatment. Dynamic assessment and honing of resilience traits would allow a machine algorithm to recommend treatment based on updated risk and resilience profiles.

Conclusion

Resilience traits must be analysed in tandem with risks when predicting desistance. Maruna and colleagues (Maruna, Lebel, Mitchell, & Naples, 2004) stated that desistance, at its simplest, is abstaining from offending. On the other hand, abstinence alone may indicate a lack of opportunity to offend, rather than a lack of will or desire. Without actively engaging in one's own resilience as deterrents from crime, it is hard to discern between lulls between offences and real desistance (Bushway et al., 2001); even a period of five years or longer crime-free is no guarantee that someone will not reoffend (Farrington, 1986). Detection of risks that further criminal activity (e.g., psychopathy) and traits that promote desistance (e.g., resilience) is an important step towards criminal abstinence.

The duality of psychopathy and resilience assessment has positive implications for clinicians and treatment options for different populations with psychopathic traits, for purposes of reducing stigma and the “self-fulfilling prophecy” of damning those with such characteristics. Implementing individually tailored, person-centred management strategies based upon these risk and resilience variables will ultimately curtail offending and maintain “true” desistance.

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Appendix A

Protective Factors Questionnaire

The purpose of this questionnaire is to establish what particular factors have been present in your life that may have influenced how you behave at your current stage in life. Please try to answer as truthfully as possible.

For each question please choose the number that reflects the degree to which the statement describes you.

1	2	3	4	5	6
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

1. I am involved in at least one socially acceptable pursuit outside of work (such as organized sports teams, clubs or groups).
2. I consistently associate with others that are not involved in criminal behavior and who actively engage in socially acceptable activities.
3. I often volunteer in the community.
4. I am heavily involved in an organized religion which I actively practice.
5. I often engage in highly stimulating activities (high stakes gambling, rock climbing, sky diving, etc.)
6. I often engage in moderately stimulating activities (skiing/snowboarding, paintball, low stakes gambling).
7. I am often in a position of power or control (manager at your job; coordinator, captain or group leader of club/team, etc.).
8. I have friends, family members etc. who always provide emotional support and concrete assistance in times of distress and need.
9. Those that I am close with generally discourage violent and/or criminal activities and behavior.
10. There is at least one individual in my life (co-worker, parent, mentor, romantic partner, sibling etc.) who I look to for inspiration as a positive role model.

11. I have many warm and meaningful relationships with friends and family members (includes a relationship with a significant other).
12. I take great pride in my work goals and am committed to a high level of achievement.
13. I have at least one long-term goal that I am highly committed to realizing in the future.
14. I have some other moderate responsibilities (pets, household work, volunteer work etc.) that I am committed to.
15. I consider my intelligence to be significantly above average.
16. I am very good at planning ahead.
17. I have excellent problem-solving abilities.
18. I am very good at holding out for a greater reward in the long-term instead of taking a lesser reward that is available immediately.
19. I adapt well to significant changes in my life (new boss/job, illness in the family, moving, relationship changes etc.).
20. My friends would say that I am very reliable.
21. I am very good at coping with highly stressful events/situations (very important exam or interview, confrontations with the law, performing for a large live audience).

Appendix B

Antisocial Behaviours Scale

For each question, please choose the number that best reflects the number of times you have engaged in that action or behaviour. Please make sure to answer both columns. Your entire past is from your entire childhood to one year ago, and the past year ranges from one year ago all the way to today.

1	2	3	4
Never in my entire past	Rarely in my entire past	Occasionally in my entire past	All the time in my entire past

1. Have you ever cheated or used someone else's work for a project?
2. Have you ever helped someone else cheat on a project (complete a task for them, let them use or duplicate your work)?
3. Have you ever submitted a work project done by someone else?
4. Have you ever lied to a boss or co-worker about the reasons for a certain task not being completed on time?
5. Have you ever copied a few sentences of material from a published source without giving the author credit?
6. Have you ever faked an illness or death of family member or friend to avoid going into work or attending meetings/training?
7. Have you ever pulled a fire alarm (when there was no fire)?
8. Did you ever have a physical altercation with a teacher or a co-worker?
9. Have you ever made sexual comments or advances toward someone you knew were unwanted?
10. Have you ever engaged in vandalism? (E.g. breaking windows, damaging property/cars, etc.)
11. Have you ever put graffiti on walls, toilet doors, etc.?
12. Have you ever avoided paying for things such as movies, bus rides, or food?
13. Did you ever get into physical fights with others?
14. Have you ever paid money to look at pornography (magazines, movies, or on the internet?)

15. Have you ever bullied others?
16. Have you ever beaten someone up?
17. Have you committed minor traffic violations? (E.g. running red lights, stop signs, using old plates, etc.)
18. Have you ever damaged a parked vehicle without notifying the owner or police?
19. Have you ever injured a pedestrian while driving and left without checking to see if he/she was all right?
20. Have you ever driven while impaired?
21. Have you ever made obscene phone calls or sent obscene emails?
22. Have you ever verbally assaulted someone? (E.g. police officers, co-workers, bosses, teachers, security guards etc.)
23. Have you ever seriously threatened to hurt someone?
24. Have you ever committed arson?
25. Have you ever shoplifted items worth less than \$50?
26. Have you ever shoplifted items worth more than \$50?
27. Have you ever committed a break and entry (broken into a home or business)?
28. Have you ever mugged someone without using a weapon?
29. Have you ever mugged someone with using a weapon?
30. Have you ever stolen a bicycle or bicycle parts?
31. Have you ever stolen a car?
32. Have you ever stolen a car stereo, speakers or any other property from a car?
33. Have you ever been in possession of stolen property?
34. Have you ever robbed a store, gas station, bank or any other businesses without using a weapon?
35. Have you ever robbed a store, gas station, bank or any other businesses using a weapon?
36. Have you ever purposely injured an animal? (other than hunting)
37. Have you ever been in possession of a gun or knife (excluding pocketknife) for which you were not licensed to carry?
38. Have you ever threatened someone with a gun, knife or any other weapon?
39. Have you ever injured someone using a weapon? (e.g. knife, gun, rock, baseball bat etc.)

40. Have you ever purposely injured someone badly? (E.g. left bruises, caused visible bleeding or broken bones, etc.)
41. Have you ever consumed alcohol in public places illegally?
42. Have you ever bought alcohol for under-age people?
43. Have you ever tried marijuana and/or hashish?
44. Have you ever tried LSD, psychedelics, cocaine, heroin, or crack?
45. Have you ever sold drugs?
46. Have you ever engaged in prostitution?
47. Have you ever used a stolen credit card?
48. Have you ever forged a cheque?
49. Have you ever conned someone out of money?
50. Have you ever given drugs to someone in order for you to have sex with them (e.g., put drugs in their drink)?
51. Have you ever had sexual relations with someone against their will?

Appendix C

Psychopathy Checklist: Youth Version

	Factor 1	Factor 2
1. Impression management	✓	
2. Grandiose sense of self worth	✓	
3. Stimulation seeking		✓
4. Pathological lying	✓	
5. Manipulation for personal gain	✓	
6. Lack of remorse	✓	
7. Shallow affect	✓	
8. Callous/lack of empathy	✓	
9. Parasitic orientation		✓
10. Poor anger control		✓
11. Impersonal sexual behavior		
12. Early behavior problems		✓
13. Lacks goals		✓
14. Impulsivity		✓
15. Irresponsibility		✓
16. Failure to accept responsibility	✓	
17. Unstable interpersonal relationships		
18. Serious criminal behavior		✓
19. Serious violations of conditional release		✓
20. Criminal versatility		

Note. From Pathways to Desistance coding manual (“Pathways to Desistance”, 2004): three items (11, 17, and 20) do not fit the factor structure and therefore do not appear in the factor scores, but are counted in the total score.

Appendix D

Self-Report of Offending

The SRO was designed to measure involvement in antisocial and illegal activities. This scale consists of 24-items which elicit involvement in different types of crime. Individual is asked whether, in the recall period, they have conducted each of the following actions, answering 'Yes' or 'No'.

Bold = items comprising the self-reported aggressive/violent offending (SROAGG) subscale.

- 1. Destroyed/damaged property**
- 2. Set fire**
3. Broke in to steal
4. Shoplifted
5. Bought/received/sold stolen prop
6. Used check/credit card illegally
7. Stole car or motorcycle
8. Sold marijuana
9. Sold other drugs
10. Carjacked
11. Drove drunk or high
12. Been paid by someone for sex
- 13. Forced someone to have sex**
- 14. Killed someone**
- 15. Shot someone bullet hit**
- 16. Shot at someone no hit**
- 17. Took by force with a weapon**
- 18. Took by force without a weapon**
- 19. Beat up someone serious injury**
- 20. In a fight**
- 21. Beat someone as part of gang**
22. Carried a gun
23. Broke into car to steal
24. Went joyriding

Appendix E

Method of Operationalisation of Key Constructs Assessed in Study 2

Construct	Measure	Authorship	# of items	Likert scale options	Assessment period		Administration	
					T0	T10	Self-report?	Interview?
Psychopathy	PCL:YV	Forth, Kosson, & Hare, 2003	20	3	✓	-	-	✓
Resilience Agency								
Medication adherence *	Services and Medications (<i>lifetime, six-month, and current meds</i>)	-	3	-	✓	-	✓	-
Motivation to succeed	Motivation to Succeed	Eccles et al., 1998	6	5	✓	✓	✓	-
Planful	Future Orientation Inventory (FOI)	Cauffman & Woolard, 1999; unpublished	15	4	✓	✓	✓	-
Importance of spirituality	Importance of Spirituality	Maton, 1989	3	5	✓	✓	✓	-
Sobriety	Substance Abuse (<i>reverse-coded</i>)	Chassin et al., 1991	8	9	✓	✓	✓	-
Cognition								
Impulse control	Weinberger Adjustment Inventory (WAI)	Weinberger & Schwartz, 1990	8	5	✓	✓	✓	-
Psychosocial maturity	Psychosocial Maturity Inventory (PSMI)	Greenberger, Josselson, Knerr, & Knerr, 1974	30	4	✓	✓	✓	-
Positive attitude to authority	Procedural Justice Inventory	Tyler, 1997	7	5	✓	✓	✓	-
Emotional control	Internal Emotionality (EASI)	Buss & Plomin, 1984	9	5	✓	✓	✓	-
Intelligence *	WASI	Wechsler, 1999	77	-	✓	-	✓	-
Environment								
Good neighbourhood	Neighbourhood Conditions	Sampson & Raudenbush, 1999	21	4	✓	✓	✓	-
Access to healthcare/services	Services and Medications (<i>ever received health/community services, # of service types received</i>)	Burns et al., 1992	2	-	✓	✓	✓	-
Academic commitment **	Education	Cernkovich & Giordano, 1992	4	5	✓	✓	✓	-
Previous employment **	Employment (<i>community,</i>	-	3	-	✓	✓	✓	-

	<i>facility, under-the-table weeks of employment)</i>							
Community involvement	Community Involvement	Elliot, 1990	2	5	✓	✓	✓	-
Social								
Social integration	Social Capital Inventory	Nagin & Paternoster, 1994	5	4	✓	✓	✓	-
Resistance to peer influence	Resistance to Peer Influence	Steinberg, 2000	10	4	✓	✓	✓	-
Prosocial friends	Friendship Quality	Pierce et al., 1994	10	4	✓	✓	✓	-
Parent/role model	Domains of Social Support	Nakkula et al., 1990	2	8	✓	✓	✓	-
Quality of romantic relationship	Quality of Romantic Relationships	Pierce, 1994	26	4	✓	✓	✓	-
Criminal behaviour								
Self-reported offending	Self-Reported Offending (SRO)	Huizinga, Esbensen, & Weiher, 1991	24	2	✓	✓	✓	-
Self-reported aggressive offending	Self-Reported Offending (SRO)	Huizinga, Esbensen, & Weiher, 1991	11	2	✓	✓	✓	-
Police accusations	Procedural Justice (PROJUS)***	Tyler, 1997	1	2	✓	✓	✓	-

Note. The PCL:YV total score is calculated using the *sum* of all item scores. Resilience trait scores are calculated using the *mean average* of all item scores (with the exception of ‘Intelligence’). Where noted in italics (i.e., ‘Medication adherence’, ‘Access to healthcare/services’, and ‘Previous employment’), only a subset of items from that construct are used to yield the trait score, as other items pertain to previous time periods or other minutiae that would corrupt the trait score (e.g., “age 1st time stayed overnight in hospital” in ‘Access to healthcare/services’).

The Likert scale column indicates the number of options participants may choose from per item in each variable, which are averaged to generate the overall score for that trait. The mean of each trait within a domain were calculated to yield the average domain score (with ‘Intelligence’ first /20), in order to account for missing data and outliers. These domain mean scores are summed by the author for the total resilience score.

The Likert scale number suggests the total possible score per trait, where applicable. All variables are assessed the same across baseline and follow-up periods, except the following:

* These items (‘Medication adherence’ and ‘Intelligence’) are only assessed at baseline.

** These items are assessed differently at baseline and follow-ups. ‘Previous employment’ is assessed as shown for follow-up interviews only; the baseline interview consists of a yes/no question (*have you ever been employed?*). ‘Academic commitment’ is assessed as shown for baseline only; follow-up interviews add seven additional questions regarding prison and university schooling.

*** The PROJUS outcome, unlike the SRO, is not disaggregated by offence type; participant was asked only if he/she/they had been picked up or accused of crime by police, and was not asked for a particular offence type.