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Risk and protective factors of adolescent convicts: The dynamics and prediction of delinquent behaviour

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Teistų paauglių delinkvencinio elgesio rizikos ir apsauginių veiksnių kaita bei prognostinės galimybės

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1. INTRODUCTION

1.1. The delinquent behaviour of adolescent convicts

1.1.1. The concept of delinquent behaviour

Representatives of various scientific fields have different definitions for the law-breaking and socially unacceptable behaviours of adolescents. For instance, the term "conduct disorders" is used in the context of developmental psychopathology, which suggests that the behaviour is reoccurring, incessant and opposes the rules and norms that are relevant to a specific age range (Lahey & Waldman, 2003). However, the behaviour has to persist for at least 12 months for a diagnosis to be made (ICD-11: Mortality and Morbidity Statistics, 2018); therefore, the term is not fitting to describe behaviours that reoccur for a shorter time. The conduct disorder term is also inappropriate if the previously mentioned behaviour manifests in episodes or in a relatively mild manner, in other words, it does not include hospitalisation or treatment (Kazdin, 1995). Incidentally, the usage of clinical diagnoses should be avoided while working with children and adolescents (Kinderman, 2015).

Another term relevant in psychological literature is antisocial behaviour, which Burt and Donnellan (2009) define as actions that cause harm to others, defy social norms, threatening personal rights or material belongings of others. Antisocial behaviours are divided into overt and covert behaviours (Burt & Donnellan, 2010), however despite the fact that they are precise and potentially harmful, their nature and scale does not necessarily assume legal consequences (Willoughby, Kupersmidt, & Bryant, 2001).

Criminologists and law psychologists suggest using the term "criminal behaviour", which *...places the actor at risk of becoming a focus of the attention of criminal justice professionals…* (Bonta & Andrews, 2016, p.7), or the term "delinquent behaviour", which is

used to characterize specifically the antisocial acts of adolescents – individuals under the age of 18 (Gottfredson, Sealock, & Koper, 1996). Besides the actions that lead to sanctions for adults, delinquent behaviour also includes *status offences,* i.e. actions that are illegal only for minors, such as substance abuse, running away from home and school termination (Murray & Farrington, 2010; Smith & Stern, 1997). To conclude, the delinquency term refers to adolescent behaviours that defy legal and social norms, (Justickaja et al., 2015).

Although the literature also uses terms such as "problematic behaviour" (Dishion & Patterson, 2006), "risk-taking behaviour" (Carroll, Houghton, Durkin, & Hattie, 2009) or "deviant behaviour" (Kaplan, 2006), this study will take into account that all of these definitions are used synonymously (Marte, 2008). Further into the study we will use delinquent behaviour as a key term, as we will be analyzing behaviour that causes certain legal consequences for Lithuanian adolescents, such as probation supervision or confinement. According to Viljoen, Nicholls, Cruise, Desmarais and Webster (2018), delinquent behaviour can be categorized into four sections: 1) violence; 2) non-violent offences; 3) substance abuse; 4) unauthorized absence.

The extent of delinquent behaviour in different populations depends on the age limits for criminal liability, when a person is already considered of legal age (Campistol & Aebi, 2018). For example, in Lithuania, as in many other European countries, the age of criminal responsibility is 14, and the age of majority is reached on the 18th birthday. The official statistics on the delinquent behaviour of convicted adolescents also depend on the criteria by which the delinquent behaviour is recorded. This may be a new arrest or conviction; a new offence, violation of probation conditions or internal prison rules (Mallett, 2013).

The level of delinquency undoubtedly depends on the chosen assessment period: as the time span lengthens, the likelihood of recording certain violations of law and social norms increases (Wild,

2011). In research on the delinquent behaviours of convicted adolescents, usually a period of one year is the preferred option, as that is when the likelihood of such behaviour is the greatest (Sakalauskas & Jarutienė, 2015). However, there is an opinion that this time period should be shorter, i.e. 90 days (Viljoen et al., 2018; Viljoen, Beneteau, et al., 2012; Viljoen, Cruise, Nicholls, Desmarais, & Webster, 2012), assuming that this is the optimal time for assessing the changes in the psychosocial functioning that influences adolescent behaviour (Dembo et al., 2013).

Regarding the extent of the delinquent behaviour of convicted adolescents, it is also important to note that the gender factor plays a significant role in this context. First of all, delinquent behaviour is generally more characteristic of boys than girls (Baleišienė & Barkauskienė, 2007; Cauffman, 2008; Griffin, 2012). Second, girls have a shorter period of engaging in delinquent behaviour than boys, because their onset of delinquent behaviour is at a later age. In addition, girls more often limit themselves to one-off testing of their boundaries, rather than continuing delinquent behaviour (Bersani & Doherty, 2018). As a result, many criminal risk assessment tools are designed primarily for male groups (Campbell, Schmidt, & Wershler, 2016) and, when applied to a sample of females, reveal gender-related differences in the predictive value of criminal risk factors (Hilterman, Bongers, Nicholls, & van Nieuwenhuizen; 2016). Therefore, the following study focuses on convicted adolescent males only.

1.1.2. Theories explaining delinquent behaviours

Delinquent behaviour is a social problem that has been studied for a long time, and is characterized by an abundance of theories to explain it. However, the general limitation of many theories is in that they analyze only one factor responsible for delinquent behaviour (Noyori-Corbett & Moon, 2010); in addition, the focus is mainly on the onset of antisocial behaviour, without delving into what determines

individuals' subsequent criminal careers (Casey, 2011b; Catalano & Hawkins, 1996).

Developmental and life course theories partly reflect the above-mentioned limitations, because they are based on the assumptions that (i) delinquent adolescents are not a homogeneous group; (ii) different mechanisms result in different trajectories of delinquent behaviour development (Lahey & Waldman, 2003; Murphy, Brecht, Huang, & Herbeck, 2012; Piquero, 2008); therefore, (iii) it is important to analyze how delinquent behaviour changes over time in particular adolescent groups (Nagin, 2005).

One of the best-known theories is the taxonomy of development (Moffitt, 1993, 2006; Moffitt, Caspi, Harrington, & Milne, 2002), which distinguishes two hypothetical prototypes to explain the dynamics of delinquent behaviour: life-course-persistent offenders, and adolescence-limited offenders. Differences in the etiology of delinquent behaviour depending on its onset have been confirmed in longitudinal studies by various authors (Frick & Viding, 2009; Jennings, Rocque, Fox, Piquero, & Farrington, 2016; Siegel & Welsh, 2014).

However, this taxonomy receives criticism for revealing only quantitative, but not qualitative differences between the groups (Roisman, Monahan, Campbell, Steinberg, & Cauffman, 2010) and for the fact that the predictive value of the onset of antisocial behaviour becomes insignificant after introducing other behavioural variables (Burt et al., 2011). Although some authors suggest a continuum as an alternative to the critique of Moffitt's developmental taxonomy (Lahey & Waldman, 2003), or a division of behavioural patterns into more pathways (Day et al., 2012; Dishion & Patterson, 2006; Loeber & Farrington, 2000; Mulvey et al., 2010; Roisman et al., 2010); however, the number of trajectories does not aid in predicting what will be the behavioural development of a particular adolescent who has come into the limelight of law enforcement (Campbell et al., 2016).

The Rehabilitation theories can be used to explain the delinquent behaviour of convicted adolescents by highlighting the significance of risk assessment for the prediction of reoffending (Hart, Douglas, & Guy, 2017). These theories were developed in the 1970s as a counterbalance to the widespread belief that nothing works in the field of corrections (Martinson, 1974). As a response to that belief, Andrews and Bonta (2010) developed a Risk – Need – Responsivity (RNR) model, which identified the following three main principles of effective corrective intervention: who should receive help (the risk principle), what corrective interventions should focus on (the needs principle) and how corrective interventions should be implemented (the responsiveness principle) (Maloić, 2016; Serin, Lloyd, & Hanby, 2010).

The RNR model is conceptualized on the basis of the General Personality and Cognitive Social Learning Theory (Bonta & Andrews, 2016), which states that the perception of rewards and punishments regulate our behaviour and depend on certain factors, the so-called criminogenic needs. There are eight main criminogenic needs: history of antisocial behaviour, antisocial personality, antisocial attitudes, antisocial friends, substance use, occupation, leisure and family (Bonta & Andrews, 2016). Although the RNR model has been developed based on empirical research on adult offenders (Andrews, Bonta & Wormith, 2011), different studies confirm the value of criminogenic needs in predicting delinquent behaviour in samples of adolescents (Brogan, Haney-Caron, NeMoyer, & DeMatteo, 2015; Campbell et al., 2016; Fanniff, Schubert, Mulvey, Iselin, & Piquero, 2017; Grieger & Hosser, 2014; Haqanee, Peterson-Badali, & Skilling, 2015; Hoge, 2012; Ortega-Campos, García-García, Gil-Fenoy, & Zaldívar-Basurto, 2016).

1.2. Risk factors of delinquent behaviour

Risk factors are defined as individual and/or environmental characteristics that in time manifest earlier than the behaviour and significantly correlate with the increased likelihood of such behaviour (Klepfisz, Daffern, & Day, 2016). The perspective that there might be several risk factors for delinquent behaviour has broadened the prevailing single-factor discourse on the etiology of delinquent behaviour. In this regard, the work of Glueck and Glueck (1950) has made a significant contribution as it provided the multifactorial model of the causes of delinquent behaviour: "*which is neither exclusively biologic nor exclusively socio-cultural, but which derives from an interplay of somatic, temperamental, intellectual, and socio-cultural forces*" (Glueck & Glueck, 1950, p. 281).

The results of subsequent meta-analyses revealed a large number of predictors of criminal behaviour (Simourd & Andrews, 1994), differences between the factors predicting the start and recurrence of delinquent behaviour (Loeber & Dishion, 1983), the interplay between risk factors in predicting the certain behaviours (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), and the need for their classification (Cottle, Lee, & Heilbrun, 2001). In scientific literature, risk behaviours are usually classified according to two criteria: (1) the ability to change over time and (2) the areas of psychosocial functioning.

1.2.1. Risk factors according to the ability to change over time

Factors that are immutable are called static factors (Andrews & Bonta, 2010). Other authors clarify that these are factors that cannot be influenced by any intervention (Cottle et al., 2001), for example, demographic characteristics (male gender, age) or a previous history of antisocial behaviour.

Dynamic factors are those risk factors that change by themselves or due to the influence of other factors; for example, family conflicts, delinquent peers, substance abuse, poor academic performance, etc. (Cottle et al., 2001). Therefore, static risk factors describe an individual's risk status (i.e. identify individuals at high risk of offending relative to other people), whereas a combination of static and dynamic factors describes an individual's risk state (i.e. the individual's propensity to become involved in reoffending at a given time, based on particular changes in psychosocial functioning) (Douglas & Skeem, 2005).

As the distinctive feature of dynamic risk factors is their ability to change over time, it is worth mentioning that some authors (e.g. Serin, Chadwick, & Lloyd, 2016; Ward & Fortune, 2016) criticize them for a lack of empirical justification. Moreover, cross-sectional studies (van der Put et al., 2011, 2012) of risk factors are inappropriate, because one measurement reflects the static aspect of risk factors (Serin et al., 2016). Thus, at least two measurements are needed for the assessment of changes in dynamic risk factors over time (Brown, Amand, & Zamble, 2009; Vasiljevic, Berglund, Öjehagen, Höglund, & Andersson, 2017; Webster, Nicholls, Martin, Desmarais, & Brink, 2006).

The Reliable Change Index (RCI, Jacobson & Truax, 1991) can be used to measure individual changes in the risk factors. A study of 90 adolescents who were on probation in Canada revealed a decrease of risk factors in 4.7 percent, and an increase in 1.6 percent of cases during the three-month follow-up (Viljoen, Beneteau, et al., 2012). Another study with 59 adolescents in US penitentiary institutions showed similar results (Sellers, Desmarais, & Hanger, 2017).

In order to look for variables that affect the change, Draycott and others (2012) analyzed the dynamics of risk factors depending on static factors (duration of punishment) and personality characteristics (psychopathy and paranoid personality disorder) in a sample of adult men who had committed serious sexual or violent offences. The

results showed that during six months of treatment the risk factors reliably decreased in 31 percent of cases and reliably increased in 7 percent of cases. In addition, the decrease in risk factors was significantly greater for patients without a diagnosis of paranoid personality disorder than for patients with a diagnosis of psychopathy (Draycott, Kirkpatrick, & Askari, 2012). These findings provide some assumptions about the risk-factor change mechanisms of adult males; however, the question remains open as to which personality and behavioural characteristics accelerate or inhibit the change of dynamic risk factors in a sample of delinquent adolescents.

It should be noted that some dynamic risk factors change relatively slowly, while others change very sharply. According to the potential speed of change, dynamic risk factors are divided into stable and acute dynamic factors (Andrews & Bonta, 2010; Douglas & Skeem, 2005; Hanson, Harris, Scott, & Helmus, 2007; Klepfisz et al., 2016; Mann, Hanson, & Thornton, 2010; Ward & Beech, 2015). This categorization helps to distinguish between trait-type factors and factors that reflect a temporary status or situational features (Thornton, 2016). According to Beech and Ward (2004), stable dynamic factors are aetiologic factors of criminal behaviour, therefore by initiating their changes with the help of correctional interventions, subsequent criminal behaviour risk changes can be expected. Under certain conditions (e.g. in a conflict situation), stable dynamic factors (e.g. personality traits) activate acute dynamic factors (e.g. poor emotional control) that signal an increased instant risk of committing a crime. In other words, it is assumed that acute dynamic factors mediate the relationship between stable risk factors and delinquent behaviour (Beech & Ward, 2004).

1.2.2. Risk factors according to the areas of psychosocial functioning

Delinquent behaviour risk factors can be categorized according to the distinguished levels of the ecological model of human development (Bronfendbrenner & Morris 2007). The following four levels are

distinguished in this model: individual (including the individual's knowledge, attitudes, skills; interpersonal (reflecting communication with family members, other adults, and peers); organizational (reflecting the context of schools, other organizations or social institutions); and societal. For example, Murray and Farrington (2010) systemized the results of prospective longitudinal studies identifying three main groups of risk factors for delinquent behaviour: (1) *individual factors* (impulsivity, low self-esteem, depression, delays in moral development, lack of empathy, low intelligence, poor academic performance); (2) *family factors* (inappropriate parenting styles, child abuse, parental conflict and divorce, criminality of parents and family size); (3) *social factors* (poor socioeconomic state, influence of peers) (Murray & Farrington, 2010). Another study also distinguished individual, family and social risk factor categories but divided individual factors into psychosocial characteristics, personality, self-perception and cognitive ability factors (Morgado & Vale-Dias, 2013). Finally, Frías-Armenta and Verdugo (2013) suggest dividing the risk factors into two main categories: *environmental* and *individual* risk factors, which will be elaborated on further.

1.2.3. Environmental risk factors

Adolescence is a complex time of biological, cognitive and psychosocial maturation (Cauffman & Steinberg, 2012), supplemented with the process of individualization (Eder & Nenga, 2006). Since friends become more influential during this period (Catalano & Hawkins, 1996), it is important to distinguish them as a separate domain of environmental risk factors for delinquent behaviour. On the other hand, family remain an important source of socialization at this age (Catalano & Hawkins, 1996), as many adolescents still live with and are dependent on their parents. Therefore, the family is distinguished as another domain of environmental factors.

1.2.3.1. Factors relating to friends

Some authors claim that as the family and school play a secondary role during adolescence, adolescents choose friends based on the values they emphasized and the behaviours that parents and the school environment instilled (Oetting & Donnermeyer, 1998). Others raise the assumption that choosing friends is a conscious, "deliberate" action, based on certain motives (Carroll et al., 2009). Authors note that visibility is necessary to confirm a social identity, i.e. a particular audience has to notice and appreciate the behaviours specific to that identity. Therefore, if the adolescents chose an antisocial identity, they should be seen by others as rule-breakers. As a result, adolescent delinquent behaviours are usually group-based, and without peer support it is very difficult to maintain a delinquent reputation because parents and teachers generally do not support such behaviour (Carroll et al., 2009). Finally, a delinquent reputation is consciously chosen in order to belong to a particular group: research shows that achieving a particular status in the eyes of peers is a powerful motivating factor (Carroll et al., 2009).

It is important to note that the links between delinquent peers and delinquent behaviour are not one-way. In other words, behaviours that do not conform to social norms lead to engaging in friendships with delinquent peers, which in turn increases the likelihood of delinquent behaviour through a positive social environment created by peers (Matsueda & Anderson, 1998; Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). Therefore, delinquent behaviour must be treated as part of a dynamic social process, not just as an outcome (Thornberry et al., 1994).

At the same time, results from longitudinal studies (e.g. Higgins, Ricketts, Marcum, & Mahoney, 2010) suggest that friendship with delinquent peers as a single predictive factor was significant only when comparing the group of non-delinquent adolescents to adolescents with few delinquent behaviours. The more delinquent

behaviour occurs, the more additional factors are associated with it, ranging from negative school experiences to a combination of male tendencies to risk and other individual factors (Higgins, Ricketts, et al., 2010). Therefore, in order to assess the influence of peers on the subsequent delinquent behaviours of convicted adolescents, the relations of this factor with other - individual and environmental – risk factors need to be evaluated.

1.2.3.2. Factors relating to family

There is no doubt that the nuclear family environment influences the behaviour of the child, and parenting is identified as one of the main risk factors for the delinquent behaviour of convicted adolescents (Higgins, Jennings, & Mahoney, 2010; Hoeve et al., 2009, 2012; Pardini & Frick, 2013; Pinquart, 2017). However, the relationship between parenting and delinquent behaviour is reciprocal, i.e. parental neglect and lack of boundaries encourage inappropriate behaviours in adolescents, and the worse the behaviour becomes, the stricter parenting appears (Hoeve et al., 2009).

Another important predictor of delinquent behaviour is poor family functioning, such as divorce (Murray & Farington, 2010), or the imprisonment of one parent (Dodge & Pettit, 2003). However, it is assumed that parental conflicts and family instability (Morgado & Vale-Dias, 2013; Tremblay, 2010) are the risk factors for delinquent adolescence, rather than the divorce itself.

Family risk factors may not be related directly to delinquent behaviour, but through other risk factors, i.e. poor self-control (Gibbs, Giever, & Higgins, 2003; Gibbs, Giever, & Martin, 1998), lack of empathy, (Frías-Armenta & Verdugo, 2013), mental health problems (Field, Diego, & Sanders, 2002), or involvement in criminal activities (Walker-Barnes & Mason, 2001, 2004). According to Hoeve and colleagues (2012), parental rejection moulds distorted mental representations that the children have of themselves and the

environment, thus increasing the tendency of convicted adolescents to behave delinquently by seeking support and emotional support elsewhere, usually within the peer group.

At the same time, it is important to note the increasing emphasis on the protective function of family factors in the context of delinquent behaviour. For example, significant negative correlations are found between adequate parenting skills and delinquent behaviour (Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Moreover, parental involvement predicts improved adolescent self-esteem, which in turn is negatively associated with violent reoffending (Pflieger & Vazsonyi, 2006). Thus, it is important to determine the extent to which family factors play a role in both increasing the risk of delinquent behaviour and protecting from it.

1.2.4. Individual risk factors

This study analyses four main groups of individual risk factors: (1) personality traits; (2) criminal attitudes; (3) factors related to psychological maturity and (4) factors related to resocialization.

1.2.4.1. Personality traits

Psychopathy is identified as one of the major risk factors for reoffending (Andrews & Bonta, 2010), commonly investigated in empirical research on criminal behaviour (see DeLisi, 2009; Frick, 2009, 2012; Frick, Ray, Thornton, & Kahn, 2014; Frick & Viding, 2009; Frick & White, 2008; Pardini & Frick, 2013; Wolff & Ollendick, 2011).

The triarchic psychopathy model (TriPM, Patrick, Fowles, & Krueger, 2009) distinguishes three dimensions of psychopathy: *disinhibition* (i.e. the tendency to react spontaneously without considering the potential consequences), *boldness* (i.e. quick recovery from stressful experiences, high self-esteem and a desire to dominate),

and *meanness* (i.e. the lack of empathy and remorse, tendency to exploit others and demonstrate callousness).

Research suggests that convicted adolescents with traits of psychopathy exhibit more severe forms of delinquent behaviour (Frick, Cornell, Barry, Bodin, & Dane, 2003; Frick, 2009; Frick & Dickens, 2006; Frick & Viding, 2009; Frick & White, 2008; Jolliffe & Farrington, 2006; Wolff & Ollendick, 2011). In addition, parents of adolescents with psychopathic traits show less warmth, concern and attention towards their children (Pardini & Frick, 2013), as well as apply a more inconsistent parenting style and physical punishment, reject their children more often, misuse substances and have traits of psychopathy themselves (Farrington, Ullrich, & Salekin, 2010). However, adolescents with psychopathic traits regulate their behaviour on the basis of non-conformist motives, thus, usually are not surrounded by (delinquent) peers (Farrington et al., 2010).

1.2.4.2. Criminal attitudes

Summarizing the large amount of theoretical perspectives and empirical research on criminal attitudes, Andrews and Bonta (2010) distinguish the following three categories: *neutralization techniques*, *identification with criminal others*, and *rejection of convention*. All three categories of attitudes can be studied separately, but Shields and Simourd's (1991) modified Criminal Sentiments Scale (CSS-M) allows them to be evaluated simultaneously. A meta-analysis of Walters (2016) showed that all four CSS-M parameters have a significant predictive value for criminal recidivism. In another study, the power of CSS-M to predict reoffending was significant but rather weak (AUC = 0.69) (Skilling & Sorge, 2014).

The relationship between criminal attitudes and the characteristics of adolescent psychosocial functioning (Ahmadi, Khodadadi Sangdeh, Aminimanesh, Mollazamani, & Khanzade, 2013; Banse, Koppehele-Gossel, Kistemaker, Werner, & Schmidt, 2013; Chu,

Daffern, Thomas, Ang, & Long, 2014; Lacourse et al., 2006) provides the basis for targeting criminal attitudes through most of the correctional interventions, especially those based on cognitive behavioural therapy (Bonta & Andrews, 2016). Although a meta-analysis by Serin, Lloyd, Helmus, Derkzen, and Luong (2013) has shown that changes in criminal attitudes are associated with changes in criminal behaviour, other authors argue that criminal attitudes are a relatively stable construct, appearing as the outcome of the delinquency rather than its cause, because it helps to justify the antisocial acts (Banse et al., 2013).

1.2.4.3. Factors relating to psychological maturity

Insights from developmental psychology provide a useful perspective from which to understand the reasons for which adolescents engage in higher levels of antisocial behaviour than adults (Casey, 2011a). Most often this is attributed to changes in the adolescent brain system that explain why adolescent cognitive abilities and abstract thinking develop faster than the ability to withstand peer pressure, and control emotions and impulses (Cauffman & Steinberg, 2012). Therefore, psychological maturity should be defined by characteristics such as temperance (impulse control and suppression of aggression), perspective (consideration for others and future orientation), and responsibility (personal responsibility and resistance to peer influence) (Monahan, Steinberg, Cauffman, & Mulvey, 2009).

Psychological maturity is influenced by parenting style (Hoeve et al., 2009) and affection (Higgins, Jennings, et al., 2010; Hoeve et al., 2012). On the other hand, a longitudinal study by Monahan and colleagues (2009), which examined trajectories of antisocial behaviour among serious juvenile offenders from 14 to 22 years of age, showed that, compared with minors who desisted from antisocial behaviour, individuals who persisted in antisocial behaviour exhibited deficits in elements of psychosocial maturity. This suggests that

factors reflecting psychological immaturity are important predictors of delinquent behaviour

1.2.4.4. Factors relating to resocialisation

Substance use, absence from school and low response to treatment can be attributed to delinquent behaviour (Wolff & Ollendick, 2011). On the other hand, such violations of social and legal norms increase the risk of being involved in serious criminal activities as well as shifting from probation conditions to confinement. Taking into consideration that these behaviours are the main focus of correctional officers, they are closely related to resocialization.

Despite legal prohibition, substance use is very common among adolescents (Brunelle Tremblay, Blanchette-Martin, Gendron, & Tessier, 2014; McArdle, 2008). For example, in Lithuania 34% of boys and 30% of girls, aged 11-15, reported being intoxicated by alcohol at least once in their life (Zaborskis et al., 2016). In their study of the relationship between substance use and property crime, Brunelle and others (2000) identified two potential models: (1) substance use gives the courage to commit crime or to interpret offences as entertainment; and (2) property crime provides adolescents with the financial resources needed to purchase the substances (Brunelle, Brochu, & Cousineau, 2000).

Another risk factor is related to the lack of school engagement (Henry, Knight, & Thornberry, 2012), which has a reciprocal association with delinquent behaviour (Wang & Fredricks, 2014). Furthermore, resocialization is closely related with the motivation for change. The responsivity principle of the R-N-R model (Andrews & Bonta, 2010) indicates that treatment is effective only if it is compatible with the ability and willingness to accept it (Bourgon & Bonta 2014). In the sample of adolescent convicts, motivation to participate in the correctional interventions had a predictive effect on seeking social support, cognitive empathy, hostile intent attribution

and self-centeredness (van der Stouwe, Asscher, Hoeve, van der Laan, & Stams, 2018). Whereas limited correctional possibilities are available for adolescent convicts in Lithuania, their response to treatment might be very important in preventing further delinquent behaviour.

1.3. Protective factors of delinquent behaviour

There has recently been increasing interest in the predictive and treatment utility of positive factors in correctional practice (Ward, 2017) directing the research of antisocial behaviour towards a strength-based approach (Wanamaker, Jones, & Brown, 2018). It is assumed that by identifying the psychosocial processes capable of buffering the effects of adversity and modifying risk factors, more attractive interventions can be designed, making it easier to engage people in correctional treatment and help them to successfully desist from further offending (Adjorlolo, 2017; de Vries Robbé, Mann, Maruna, & Thornton, 2015; Lodewijks, de Ruiter, & Doreleijers, 2010; Shepherd, Strand, Viljoen, & Daffern, 2018; Ward, 2017). In addition, some individuals desist from crime by themselves, and this process is associated with exposure to protective factors rather than to the reduction of risk factors (Griffin, 2012; Polaschek, 2016).

It should be noted that terminology can be a problem when it comes to discussing protective factors (Miller MacDonald, 2016; Shepherd et al., 2018; Wanamaker et al., 2018); however, Polaschek (2016) has summarized them into the following three groups: (1) protective factors as the absence of risk factors or the opposite of risk factors; (2) protective factors as independent, incremental factors; and (3) protective factors as buffers against the risk factors' effect on delinquent behaviour. In our study, protective factors are conceptualized as separate from risk factors, static or dynamic, individual or environmental characteristics, which reduce the likelihood of further delinquent behaviour (de Vries Robbé, 2014).

This approach enables the domain of psychosocial functioning to be assessed as a risk and at the same time as a protective factor. For example, delinquent peers increase an adolescent's likelihood of engaging in illegal activities, but having one prosocial friend helps prevent it.

Yet, protective factors do not have a clear and defined place in the context of the delinquent behaviour of adolescent convicts. A review by Wanamaker and others (2018) showed that in practice protective factors are not considered equivalent to risk factors, and in empirical research they are often conceptualized through the third – responsivity – principle of the R-N-R model. Therefore, protective factors may be valuable for intervention planning but not for risk assessment (Wanamaker et al., 2018). In fact, protective factors are important predictors of delinquent behaviour (Abidin et al., 2013; Desmarais et al., 2012; Viljoen, Beneteau, et al., 2012). For example, if a convicted adolescent has at least one protective factor, his overall risk of reoffending over a six-month follow-up decreases 3.2 times compared to the adolescent who has none (Shepherd et al., 2018).

1.4. The interplay of risk and protective factors in predicting delinquent behaviour

According to Dodge and Petit (2003), one factor alone cannot explain the large degree of variance in the dependent variable, therefore it is necessary to analyze a set of different factors. According to the scientific literature (e.g. de Vries Robbé, 2014; Polaschek, 2016; Ward, 2017), risk and protective factors work together composing the following three mechanisms that affect delinquent behaviour:

1. The main effect. Risk and protective factors can be directly related to delinquent behaviour (see Figure 1), i.e. risk factors have the effect of increasing the risk of reoffending while protective factors have the effect of reducing it (Serin et al., 2016). Some authors (e.g. Jones, Brown, Robinson, & Frey, 2015; Shepherd et al., 2018) suggest

that such protective factors should be called *promotive* factors. According to Lösel and Farrington (2012), non-violence promoting factors at the individual level include higher intelligence, prosocial attitudes (especially towards family and school), emotional stability and self-control, and at the family level they include a positive parental relationship with children, secure attachment and the involvement of children in family life. At the peer level, the promotive factor is friendship with prosocial peers, and at the community level – living in a safe neighbourhood.

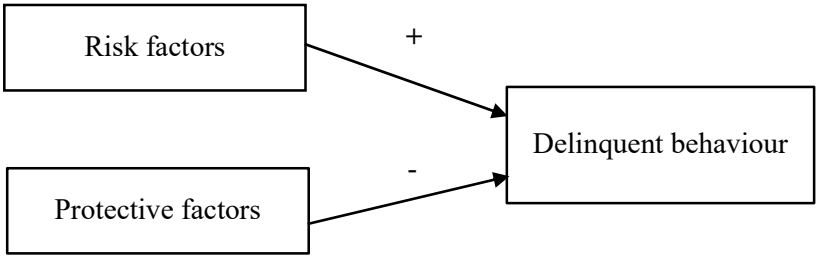

Figure 1. *The main effect of risk and protective factors.*

Promotive and risk factors are qualitatively distinct characteristics rather than opposite sides of the same factor (Desmarais et al., 2012; Viljoen, Beneteau, et al., 2012; Viljoen, Cruise, et al., 2012). For example, a minor constantly breaks the rules at school but is disciplined during sport activities, or one parent is strict and violent while the other is caring and supportive. Other authors (e.g. Jolliffe, Farrington, Loeber, and Pardini, 2016; Farrington et al., 2016) also support the position that promotive factors should not be equated with the absence of risk factors. However, various studies identify different sets of variables that have the main effect on delinquent behaviour. According to Kreamer and others (2001), some factors may strongly correlate with each other and, when included in regression models, eliminate each other's significance. Therefore, overlapping factors

should be grouped together to increase their predictive value (Kraemer et al., 2001).

2. Buffering effect. Risk and protective factors may work in such a way that protective factors mitigate the relationship between risk factors and delinquent behaviour (de Vries Robbé, 2014; Jones et al., 2015; Lösel & Farrington, 2012; Wanamaker et al., 2018; Ward, 2016; Zimmerman et al., 2013). In other words, if a protective factor is present, then the risk factor does not increase the risk of delinquent behaviour, and if it is absent, the risk of delinquent behaviour increases with the magnitude of the risk factor (Farrington et al., 2016; Serin et al., 2016).

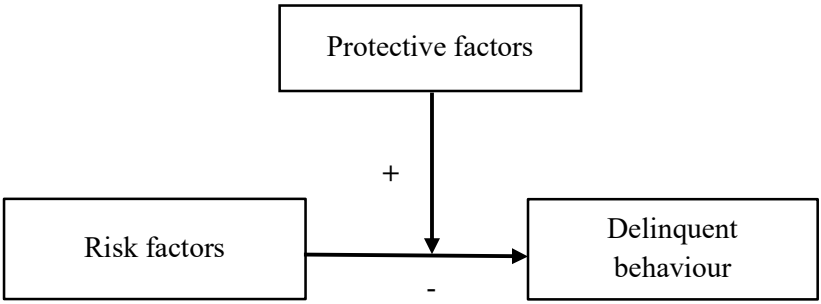

Figure 2. *The buffering effect of protective factors.*

Research has shown that, in a sample of adolescents, protective factors such as high intelligence, high academic achievement, and strong parental interest in school life reduce the link between childhood neglect and antisocial behaviour, while a stable family income buffers the impact of parental conviction on the delinquent behaviour of their children (Farrington, Ttofi, & Piquero, 2016). It is also notable that static factors, such as the onset of delinquent behaviour, sex, and ethnicity, moderates the likelihood that dynamic risk factors will lead to adverse outcomes (Dodge & Pettit, 2003; Folk et al., 2018). For example, in Walsch's (2013) study, the relationship between psychopathy traits and further violent behaviour in a sample

of adolescent convicts was moderated by ethnicity: psychopathy traits were more likely to predict violence in White Americans than Black or Latin Americans.

3. Additive effect. As depicted in Figure 3a, risk factors can increase the likelihood of delinquent behaviour by diminishing the magnitude of protective factors (Griffin, 2012; Zimmerman et al., 2013). In other words, risk factors have an impact on delinquent behaviour by weakening the protective mechanisms (Fitzpatrick, 1997). For example, a lack of parental support leads to lower self-esteem in adolescents, which in turn leads to an increased risk of violence during dating (Pflieger & Vazsonyi, 2006). Noyori-Corbett and Moon (2010) found that poor parental involvement predicts lower motivation in adolescents to participate in preventive programs, which then increases the likelihood of delinquent behaviour (substance abuse, tobacco smoking, and violent behaviour).

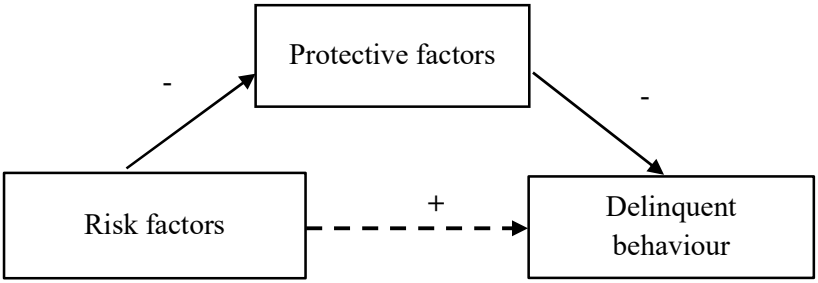

Figure 3a. *The mediation effect of protective factors.*

Another combination of risk and protective factors reflects the risk-reducing effect (see Figure 3b), when protective factors have a diminishing effect on the risk factors (de Vries Robbé, 2014; Serin et al., 2016), as in the study of Noyori-Corbett and Moon (2010) where parental involvement is related to less delinquent behaviour via decreasing deviant peer influence.

According to de Vries Robbé (2014), the mechanisms described above are not mutually exclusive and often occur simultaneously. Their main effect reveals the power of separate risk and protective factors in predicting delinquent behaviour and indicating specific targets for correctional interventions (Bonta & Andrews, 2016). On the other hand, the main effect does not disclose how one factor affects the relationship between other factors and further delinquent behaviour, although it is true that little research has yet been published on the interplay of risk and protective factors in predicting reoffending (Ullrich & Coid, 2011). This may be due to the fact that a prerequisite for a multiplicative model is that risk and protective factors are not significantly intercorrelated (Kraemer et al., 2001). The problem of multicollinearity is often used to explain the results when no buffering effect is obtained (e.g. de Vries Robbé, 2014).

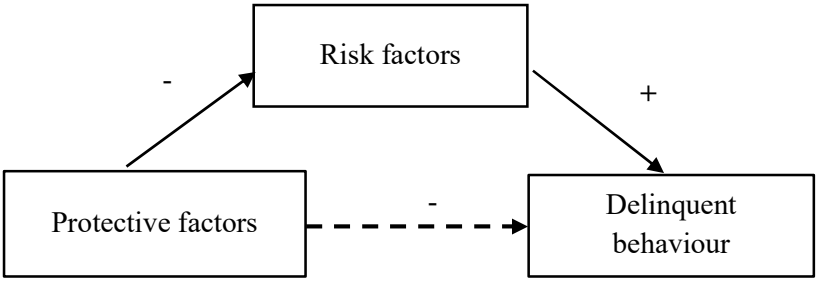

Figure 3b. *The risk-reducing effect of protective factors.*

Another model of the interplay between risk and protective factors reveals how risk factors diminish the protective mechanisms and increase the risk of misconduct, or inversely, how protective mechanisms work to mediate the negative impact of risk factors on the outcome (Baumeister, Gailliot, DeWall, & Oaten, 2006; Finkel et al., 2012; Slotter & Finkel, 2011). The latter is of prime practical importance as it specifies the correctional interventions targeted not

only at reducing the likelihood of misconduct, but also at eliminating the impact of certain risk factors.

1.5. The relevance and novelty of the study

A review of the scientific literature suggests that juvenile risk assessment has long been overshadowed by a focus on adult offenders. However, research on adolescent convicts is gaining momentum, and this study also contributes to that. Some aspects of the novelty of this dissertation will be described further.

First, most research on adolescent convicts focuses on severe offences (such as violence or sexual assault), although official statistics and self-reported data reveal a broader range of delinquent behaviour specific to adolescents. On the one hand, such behaviour, is called normative (Compas, Hinden, & Gerhardt, 1995), or useful for the pursuit of autonomy (Moffitt, 1993), but on the other hand, the absence of on-time intervention may result in adaptation difficulties at a later age (Ustinavičiūtė, Žukauskienė, & Laurinavičius, 2009). This study seeks to explore what risk and protective factors are relevant for predicting different types of delinquent behaviour.

Secondly, most of the studies tend to concentrate on the predictive validity of the total scores of risk and protective factors (Stoddard et al., 2013), lacking evidence of which components manifest the most. The analysis of risk and protective factors reflecting different domains of psychosocial functioning reveals their significance in predicting delinquent behaviour. The factors related to psychological maturity, resocialization, family and friends are distinguished in the current study, and they correspond to the internal, motivational and external categories of factors outlined by de Vries Robbé (2014).

Third, most studies on delinquent behaviour emphasize a display of risk factors, although some recent studies have focused on the protective factors for adolescent convicts (Barnes, 2017) or on a combination of risk and protective factors reflecting different domains

of psychosocial functioning (Hilterman et al., 2016). The current study is based on the assumption that the same individual may exhibit both risk and protective factors in the same domain of psychosocial functioning, because they are qualitatively different characteristics and not opposite poles of the same construct.

Fourth, the rare assessment of both delinquent behaviour and its risk and protective factors contradicts the developmental aspects of adolescents related to the rapid changes in their psychosocial functioning (Hartwell, 2000). Therefore, re-assessment should occur at least every three-months (Viljoen, Cruise, et al., 2012; Viljoen et al., 2018). This study aims at exploring the changes in adolescent risk and protective factors as well as their predictive opportunities during that period of follow-up.

Fifth, the paper examines theoretical assumptions about the mechanisms of the interplay of risk and protective factors in predicting delinquent behaviour. In adolescence, rapidly changing individual or environmental characteristics occur in the context of each other (Beech & Ward, 2004; Bonta & Andrews, 2016; de Vries Robbé, 2014; Douglas & Skeem, 2005; Griffin, 2012; Klepfisz et al., 2016; Mann et al., 2010). In addition, dynamic factors are affected by other, more stable risk factors. Therefore, the present study investigates models of both direct, mediating and buffering effects of risk and protective factors in predicting the delinquent behaviour of adolescent convicts.

The objective of this dissertation is to determine both the mechanisms of change in the risk and protective factors, and their opportunities to predict delinquent behaviour in convicted male adolescents.

The research questions are as follows**:**

1) What are the characteristics of risk and protective factors in a sample of adolescent convicts?

2) What anticipates the changes in risk and protective factors of adolescent convicts during the three-month follow-up?
3) Which risk and protective factors predict particular types of delinquent behaviour during the three-month follow-up?
4) Which of the following theoretical models -the main effect, buffering effect or additive effect -are confirmed in explaining the interplay between risk and protective factors in predicting the delinquent behaviour of adolescent convicts?

2. METHOD

2.1. Participants

The whole sample consists of 189 male adolescents. The average age was 17.02 years (*SD* = .80; ranged from 14 to 18 years). The majority of adolescents (84.1 %, *N* = 159) were on probation while the rest 15.9 % (*N* =30) served their sentence in penitentiary institution. The sociodemographic characteristics of the total sample and separate groups are presented in Table 1.

The average duration of the sentence/supervision was 16.35 months (SD = 14.09; ranged from 3 months to 8 years) and the average duration of the sentence/supervision already served was 5.48 mėn. (*SD* = 5.41; from 0 to 30 months). Although most of the adolescents (66.7 %) were convicted for the first time (*M* = 1.54, *SD* = .99; from 1 to 8 convictions), the average age of their first encounter with police was 14.47 years (*SD* = 2.01; from 6 to 17 years).

During the second phase of the study information about the psychosocial functioning of 176 adolescents during the last three-months as well as the information about the delinquent behaviour of 155 adolescents during the last three-months was gathered. These numbers comprise 93.1 % and 82.0 % of the total sample size respectively. Adolesccents, who have and who have not participated in the second measurement, did not differ by any of the following sociodemographic characteristics: age (t = .25, p = .802), mother tongue (χ^2 = .49, p = .920), living circumstancces (χ^2 = 1.16, p = .282), school grade (t = 1.86, p = .065), type of offences (χ^2 = 13.99, p = .082), number of convictions (t = .54, p = .592), duration of supervision (t = - .89, p = .377), age during the first encounter with police (t = - .14, p = .894).

Table 1. *The demographic characteristics of the sample.*

Demographic characteristics	Total sample		Probation group		Penitentiary group	
	N	*%*	*n*	*%*	*n*	*%*
Mother tongue						
Lithuanian	169	89.4	146	91.8	23	76.7
Russian	10	5.3	6	3.8	4	13.3
Polish	4	2.1	3	1.9	1	3.3
Other (Roma)	1	.5	1	0.6	-	-
Missing information	5	2.6	3	1.9	2	6.7
Living circumstances						
With parents / caregivers	156	82.5	132	83.0	24	80.0
Foster care institutions	31	16.4	26	16,4	5	16.7
Missing information	2	1.1	1	0.6	1	3.3
School grade						
4th – 7th	8	4.2	3	1.8	5	16.7
8th	24	12.7	21	13.2	3	10.0
9th	44	23.3	34	21.4	10	33.3
10th	66	34.9	57	35.8	9	30.0
11th	23	12.2	21	13.3	2	6.7
12th	4	2.1	4	2.5	-	-
Missing information	20	10.6	19	11.9	1	3.3
Offences*						
Homicide	2	1.1	-	-	2	6.7
Bodily harm	24	12.7	23	14.5	1	3.3
Sexual offence	9	4.8	8	5.0	1	3.3
Robbery	54	28.6	42	26.4	12	40.0
Theft	59	31.2	47	29.6	12	40.0
Infringement of public oder	30	15.9	29	18.2	1	3.3
Smuggling	2	1.1	2	1.3	-	-
Road traffic offences	1	.5	1	.6	-	-
Drug-related offences	7	3.7	7	4.4	-	-
Missing information	1	.5	-	-	1	3.3

Note. * The last conviction of almost 15 % adolescent included two and more articles of the Penal Code; howerer the information is provided on the basis of the most severe offence.

2.2. Measures

Demographic questionnaire was developed to gather the sociodemographic information of the research participants. The questions related to the age, living circumstances, education, current and previous convictions, type of offence, etc., age of the first contact with police, duration of probation, etc. This questionnaire was filled in by probation or penitentiary officers on the basis of the case records.

Subtypes of Antisocial behaviour Questionnaire (STAB; Burt & Donnellan, 2009) measures self-reported history of delinquent behaviour. The STAB is composed of 32 items which are rated using a 5-point scale ranging from never (1) to nearly all the time (5). The STAB contains the following three scales: Physical Aggression (PA), Social Aggression (SA), and Rule Braking (RB), consisting of 1. 11, and 11 items respectively. The participants completed the STAB reporting if the indicated behaviour occurred in past three-months. In the current study, Cronbach's α of STAB total score was .93, Physical Aggression α = .88, Social Aggression α = .85, and Rule Braking α = .83. In comparison the Cronbach's α in the original study were .86, .82 and .84 respectively (Burt & Donnellan, 2010).

Triarchic Psychopathy Measure (TriPM; Patrick, 2010). 58-item self-reported inventory that yields an overall psychopathy score along with 3 subscales of Disinhibition, Meanness, and Boldness corresponding to construct of the Triarchic model of psychopathy. The Disinhibition scale evaluates general propensity towards externalizing problems and comprises 20 items. The Meanness subscale evaluates the callous aggression subdomain of the externalizing spectrum, and the Boldness subscale evaluates the adaptive component of psychopathy entailing dominance, emotional stability, and adventurousness. The latter two subscales comprise 19 items each. The participants were asked to rate their agreement to each statement on 4-point scale: *true* (0); *somewhat true* (1); *somewhat false* (2); *false*

(3). Although the TriPM is developed for measuring the psychopathy constructs of adults, the studies in three different samples of adolescents showed good internal consistency of both total score and separate scales (α > .80) (Somma, Borroni, Drislane, & Fossati, 2016). In the present sample, the internal consistency is sufficient (Cronbach's ranged from .69 to .85).

Criminal Sentiments Scale – Modified (CSS-M; Shields & Simourd, 1991) is a self-reported instrument designed to measure three general categories of criminal attitudes (Martinez & Andres-Pueyo, 2015). It consists of 41 items: first 25 items compose the subscale of Attitudes towards the Law, Court, and Police (LCP); next 10 items compose the subscale of Tolerance for Law Violations (TLV); and the latter 6 items compose the subscale of Identification with Criminal Others (ICO). Each item is scored on a 3-point scale: *agree* (0), *undecided* (1), *disagree* (2), with higher scores reflecting stronger criminal attitudes. Previous researches have shown that CSS-M possesses good psychometric properties and predictive validity in samples of adult criminals (Simourd & van de Ven, 1999); in our sample the internal consistency of the CSS-M total score is high (Cronbach α = .91); however it is lower for separate subscales (Cronbach's ranged from .53 to .89).

Short-Term Assessment of Risk and Treatability: Adolescent Version (START:AV; Viljoen et al., 2014). is a structured professional judgement scheme guiding the assessment of risk and protective factors of adolescents between 13 and 18 years of age. It contains 25 items, each coded separately as Strengths and Vulnerabilities evidenced during the past three-months. These items are coded on the basis of information gathered from different sources of information, namely interviews with adolescents, their parents, teachers other service providers, etc. Further this information is coded on the 3-point scale (0 = *low*, 1 = *moderate*, 2 = *high*). Total scores of Strengths and Vulnerabilities were calculated for the research

purposes; however, Item 23 “Medical Adherence” and Item 25 “Case Specific Items” were excluded from the analysis, as there were only few ratings for them.

The team of researchers, comprised of three colleagues with doctoral degree, one colleague coming from practical field and the author of this thesis, conducted the START: AV ratings on the basis of recorded interviews (see Chapter 2.3). On purpose to calculate the interrater reliability coefficients, 30 interviews were randomly selected and rated by pairs of researchers. The two-way random effect model was used for calculation of intra-class correlation coefficients (ICC) (McGraw & Wong, 1996). As interrater reliability of evaluations varied from fair to excellent (see Klimukiene et al., 2018), the rest of the cases were coded independently.

Due to the lack of information some of the Strengths and Vulnerabilities were not evaluated. For example, in the first phase of the study, most information was missing on adolescents’ relationships with peers, with risk and protective factors not being rated up to 44 % of cases. Also, correctional officers had less information about adolescents’ daily life events that positively or negatively influenced their behaviour: The Item “External triggers” was not evaluated by 30.2% of cases (for more information see Klimukiene et al., 2018).

According to previous research practice (e.g., Viljoen et al., 2012b;), the cut-off of 20% of the missing items (which equals to 5 non-rated items) was selected for the exclusion of START: AV protocols. This resulted in the exclusion of 33 cases (17.5 %) in the first phase and 10 cases (5.7 %) in the second phase of the study. After the comparison of included and excluded protocols it was found that the excluded adolescents did not differ from the included ones on all the evaluated demographic characteristics, with the exception of the length of supervision/sentence (Mann-Whitney, U = 1624.00. p = .019) and the length of the interview (Mann-Whitney, U = 1722.50. p = .007). This finding shows, that the shorter contacts of officers with the adolescents makes them having less information about the

psychoscial functioning of the adolescents, and less knowledge shorterns the duration of the interview.

For the cases having fewer missing ratings we followed the instructions provided in previous studies (see Desmarais et al., 2012), and prorated total scores by formula: prorated total score = [(raw total score / 50) x number of missing items] + raw total score.

Table 2. *The model fit coeficients for the models of risk and protective factors.*

	Model fit coeficients			
	IFI	TLI	CFI	RMSEA (90% CI)
Model of protective factors	.950	.922	.947	.049 (.026 – .069)
Model of risk factors	.949	.921	.947	.053 (.032 – .072)

Note. IFI = Incremental fit index; TLI = Tucker-Lewis index; CFI = Comparative fit index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence intervals.

For the evaluation of the groups of risk and protective factors of psychosocial maturity, resocialization, family and friends we have selected 14 START: AV items which were grouped into four factors (see Figure 4a and 4b). The CFA analysis for both models of risk and protective factors showed good fit to the data (Table 2).

The Cronbach α of the above mentioned risk and protective factors ranged from .67 to .81; therefore these factors can be further used in the analysis (Cortina, 1993).

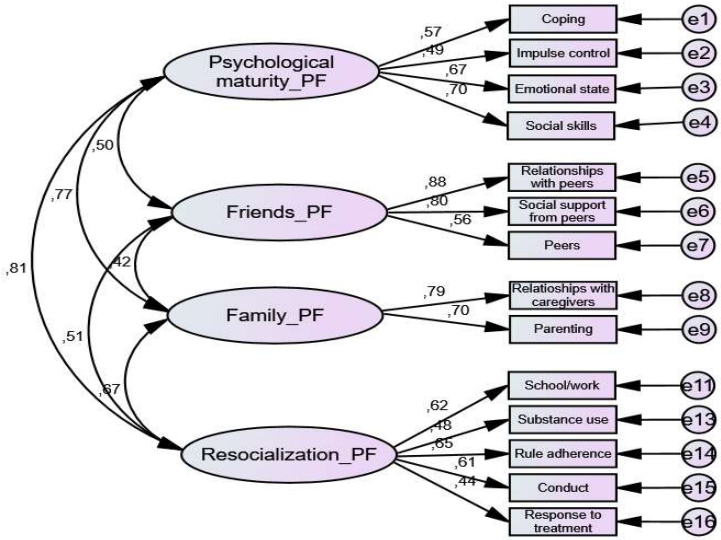

Figure 4a. *The CFA model of protective factors (PF).*

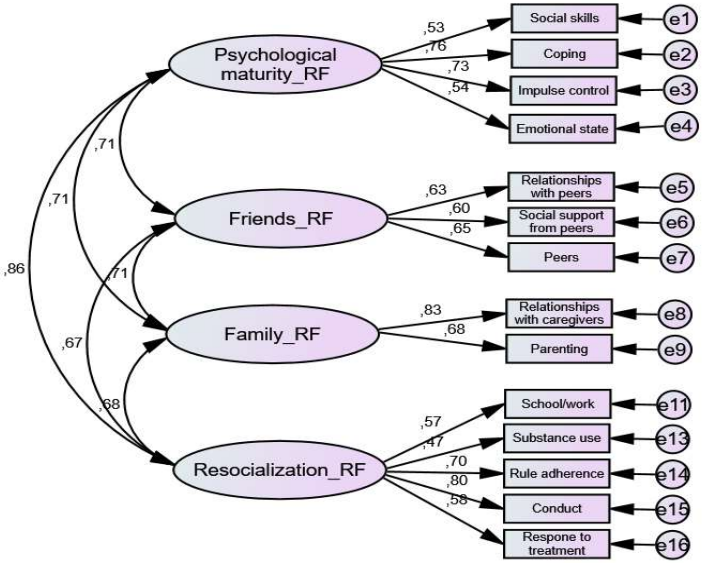

Figure 4b. *The CFA model of risk factors (RF).*

Delinquent behaviour during the three-month follow-up of the adolescent convicts was measured according the list of delinquent activities provided in the Delinquent Activities Scale (DAS; Reavy, Stein, Paiva, Quina, & Rossi, 2012) DAS is comprised of 39 items devoted to measure how many times the certain activity occured within a particular period of time (three-months in our case) and whether it was related to substance use. DAS is a self-report instrument; however with the permission of the authors we used it for the corerctional officers feetback on the behaviour of the adolescents they supervise (for more information see Laurinavičius et al., 2019; Ustinavičiūtė et al., 2019).

The total score of the delinquent behaviour was calculated summing all the indicated times the adolescent convict misbehaved. The violence were rated as occured if the correctional officer indicated at least one of the 13 items describing the violent behaviour. Non-violent offences and unauthorized absence were rated as occured if the officer indicated at least on of 14 and 5 items respectively. The substance use were rated as occured if the officer indicated that any mis behaviour was related with intoxication.

2.3. Procedure

In this study the data are analyzed, which were gathered within the framework of the project „The prediction of the delinquent behaviour of the adolescents on the basis of risk and protective factors“ implemented in 2017-2019 and financed by the Lithuanian Research Council (No. P-MIP-17-149). The project aimed at evaluating the significance of risk and protective factors for predicting the delinquent behaviour during the period of nine moths of adolescents who are under the State‘s supervision ordered by the court. Therefore the project consisted of three phases measuring risk and protective factors as well as delinquent behaviour variables after three and six months. In this disseration the data of two phases only are analysed focusing

on the following groups of risk and protective factors: psychological maturity, resocialization, family and friends. It should be noted that the analysis of these groups of factors as well as their dynamics during the three-month follow-up are unique to this thesis. Moreover, unlike the project, this thesis aims to analyse the relation and interaction of risk and protective factors in predicting the delinquent behaviour of adolescent convicts.

The research was conducted in collaboration with 56 probation and 2 prison officers. Participants of the study were selected on the basis of the following criteria: male gender; younger than 18 years; and the duration of supervision/sentence left is not shorter than three-months. The parents or caregivers of the selected adolescents provided a written consent on their child participation in the study. The research participants completed self-reported questionnaires and returned them in sealed envelopes. Each participant was assigned an identification code. Correctional officers completed a demographic questionnaire and were contacted regarding the appointment for the semi-structured interview on each participants‘ psychosocial-functioning. The probation officers provided information about convicted adolesccents whom they supervised for approximately 4.5 months (*SD* = 3.87, ranged from 0 to 23 months), and penitentiary officers – about adolescents who were already imprisoned in average for 10.8 months (*SD* = 8.72, ranged from one to 30 months). In average one probation officer provided information about 2-3 adolescents (*M* = 2.82, *SD* = 2.06, ranged from one to nine). One of the penitentiary officers was interviewed about 27, the other – about three confined adolescents. The structure of interviews was based on the START:AV and recorded. The average duration of the interview during the first phase of the study was 35.81 minutes (*SD* = 11.68).

The second phase of the research took place approximately three-months after the first phase (*M* = 100.6 days, *SD* = 14.24). The correctional officers were requested to provide all available information about the mis behaviour of the research participants

during this period. The telephone interviews on START:AV items were scheduled with the officers as well. The average duration of the interview during the second phase of the study was 28.50 minutes (*SD* = 12.71). The general scheme of the study is provided in Figure 5.

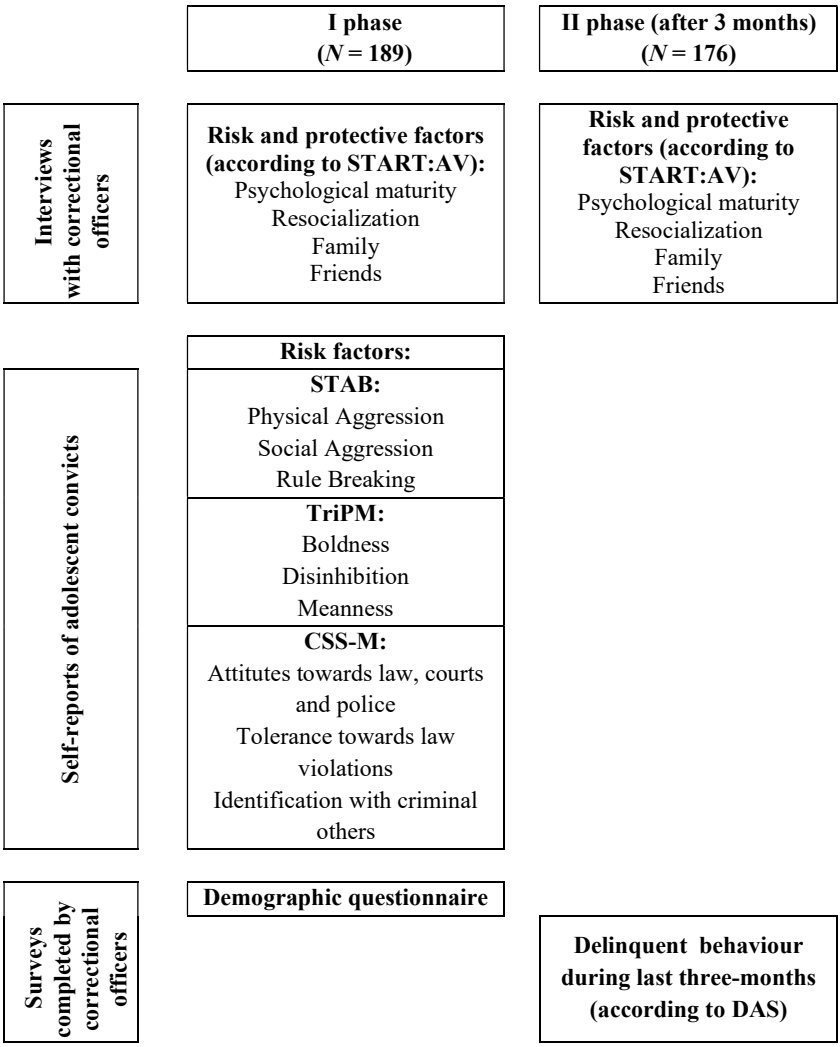

Figure 5. *The general scheme of the study.*

2.4. Data analysis

Statistical data analysis was carried out using statistical software IBM SPSS Statistics 23, its added modules IBM SPSS AMOS 23 and PROCESS.

For the reliability evaluation the following coefficients were applied: internal consistency (Cronbach α) and intra-class correlation coeficient (ICC). The missing values were excluded from the analysis pairwise and the Confirmatory Factor Analysis was conducted using the Full Information Maximum Likelihood (FIML) method. Model fit was evaluated by Root Mean Square Error of Approximation (RMSEA), Incremental fit index (IFI), Tucker-Lewis index (TLI), and Comparative fit index (CFI). The good model fit is considered if RMSEA ≤ .06, IFI ≥ .9. CFI ≥ .90 ir TLI ≥ .90 (Hu & Bentler, 1999).

Taking into consideration that the distribution of the variables was very close to normal, parametric statistics was applied for their correlation analysis. The interpretation of effect sizes was based on Cohen (1992) guidlines, where $r > .10$ considered as weak, $r > .30$ medium, and $r > .50$ strong relation between variables. Stjudento t criteria was used for the comparison of group differences with .05 level of significance.

The dynamics of risk and protective factors within three-months was measured by computing reliable change index (RCI; Jacobson & Truax, 1991):

$$RCI = \frac{X_2 - X_1}{\sqrt{2(s_x\sqrt{1 - r_{xx}})^2}}$$

X_1 = the score of risk or protective factor at initial assessment; X_2 = the score of risk or protective factor at the three-month follow-up; s_x = is the standard deviation of scores of risk or protective factors at initial assessment; r_{xx} = test-retest reliability. The RCI distinguishes various individual patters of change: reliable decrease, reliable

increase, and no reliable chane. For example, if RCI is 1.96 or greater, the difference between scores of the first and second phase of the study is considered to be indicative of statistically significant (95% confidence interval) and meaningul increase. Alternatively RCI value smaler than 1.96 reflects significant decrease of the variable and RCI value between ± 1.96 reflects no reliable change (Sellers et al., 2017).

The predictive significance of risk and protective factors was determined by AUC value of ROC analysis. The interpretation of AUC values was base on the recommendations of Douglas and Reeves (2011) that AUC values between .65 and .70 show medium and AUC values above .70 show strong predictive power.

The model of direct effect of risk and protective factors was tested using negative binomial regression, which is used to modelling the over-dispersed count data (Winkelmann, 2015). The mediation model was tested via generating a bootstrap confidence interval for the indirect effect and determining if zero is not in the interval (Hayes, 2013). The moderation effect was tested by regression model where the dependent variable is predicted by the centered independent variable, moderator variable and their interaction. Analogous to mediation model, moderation was tested by bootstraping and determining its significance by the 95 % confidence intervals.

3. RESULTS

The results of the study revealed that during the three-month follow-up the adolescent convicts, who were either on probation or in penitentiary institution, committed from 0 to 13 delinquent acts (M = 1.52; SD = 2.16). The majority of the cases (51.9%) were related to the rule breaking, i.e. adolescents did not attend school or skipped the appointments with specialists, they breached curfews or the inner rules of the institution. During this period the 17.9 % of the sample were violent and 13.5 % committed non-violent offences. The correctional officers provided information about the substance use in 8.6 % of cases.

3.1. The manifestation of risk and protective factors in the sample of adolescent convicts

The risk and protective factors in the sample of adolescent convicts were analysed in two ways: (1) through their inter-correlations, and (2) by comparing the risk and protective factors between groups of adolescents wgo are on probation and in penitentiary institution.

The inter-correlations of risk and protective factors revealed that START:AV-based risk and protective factors are significantly associated with each other ($p < .01$) with the effect sizes ranging from $r = -.33$ to $r = -.68$ (see Annex 1). Significant strong correlations were found between START:AV-based risk and protective factors and neither TriPM nor CSS-M scores; however the protective factors were positively and the risk factors – negatively related with Boldness, confirming the adaptive side of this psychopathic dimension (Somma et al., 2018).

The comparison of means of risk and protective factors between the groups of adolescents on probation and adolescents in penitentiary institution has show that the latter have more risk factors related to psychological maturity, family and friends and less

protective factors related to family (Table 3). Confined minors also have more history of antisocial behaviour and more expressed disinhibition, while those, serving community-based sentences, stand out by boldness. In contrary to our expectations, no significant differences were found between the meanness and criminal attitudes of the groups of adolescent convicts. The groups of adolescents also differed with regards to demographic charakteristics. Imprisoned minors were older, but studying at lower school-grade; moreover they comprised more cases of repeated school-year and unauthorized school termination.

The adolescents of penitentiary group also had significantly more convictions, longer sentences and they have encountered the police for the first time at younger age in comparison to the probation group. No differences between the groups with regards to their living circumstances (i.e. living with parents/caregivers or in foster-care institutions) were found.

Table 3. *The comparison of risk factors, protective factors, and demographic charakteristics between the groups of adolescents, who are on probation and in penitentiary institution.*

	Probation group		Penitentiary group		
	n	*M (SD)*	*n*	*M (SD)*	*t*
STAB	156	57.87 (15.22)	29	74.07 (17.16)	**- 5.16****
Phy. aggression	156	22.44 (7.44)	29	25.62 (6.37)	**- 2.16****
Soc. aggression	156	19.40 (5.83)	29	23.48 (6.32)	**- 3.42****
Rule breaking	156	16.04 (4.22)	29	24.97 (7.64)	**- 9.02****
TriPM	157	68.19 (17.88)	30	75.07 (21.23)	- 1.87
Boldness	157	29.91 (6.97)	30	26.30 (8.59)	**2.50***
Meanness	157	17.10 (9.27)	30	16.90 (8.66)	.11
Disinhibition	157	21.18 (9.81)	30	31.87 (9.73)	**- 5.48****
CSS-M	157	28.25 (15.01)	30	33.60 (14.20)	- 1.80
L-C-P	157	15.12 (1.36)	30	18.63 (9.72)	- 1.71
TLV	157	8.94 (4.04)	30	9.87 (3.58)	- 1.17
ICO	157	4.19 (2.58)	30	5.10 (2.35)	- 1.79

Table 3. (continued)

PF_total score[1]	127	17.16 (9.39)	29	15.82 (5.16)	1.05
Psy.maturity_PF[1]	121	2.58 (2.05)	29	2.72 (1.19)	- .50
Family_PF[1]	144	1.89 (1.14)	29	1.10 (1.11)	**3.40****
Friends_PF[1]	62	2.79 (1.62)	29	2.28 (1.53)	1.44
Resoc._PF[1]	126	3.36 (2.23)	29	3.31 (1.58)	.13
RF_total score[1]	127	15.44 (9.33)	29	19.89 (5.78)	**- 3.28****
Psy.maturity_RF[1]	120	2.43 (2.07)	29	3.10 (1.47)	**- 2.02***
Family_RF[1]	143	1.44 (1.20)	29	2.17 (1.26)	**- 2.98****
Friends_RF[1]	64	1.67 (1.46)	26	2.77 (1.27)	**- 3.35****
Resoc._RF[1]	125	3.43 (2.74)	29	3.14 (1.81)	.71
Demografic charakteristics					
Age	159	16.96 (.83)	30	17.35 (.53)	**- 3.31****
School grade	140	9.57 (1.17)	29	9.00 (1.20)	**2.39***
No. of convictions	156	1.40 (.76)	29	2.24 (1.62)	**- 2.73****
Length of the sentence	150	12.66 (7.12)	28	36.12 (23.27)	**- 5.29****
Age of first encounter with police	148	14.88 (1.59)	29	12.41 (2.60)	**4.93****
	n	*%*	*n*	*%*	χ^2
Institutional care	158	16.5	29	17.2	.01
Repeated school-year	155	28.4	29	86.2	**34.85****
Unauthorized school termination	156	17.3	29	55.2	**19.65****

Note. M = mean; SD = standard deviation; STAB = Subtypes of Antisocial behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; CSS-M = Criminal Sentiments Scale – Modified; L-C-P = Subscale of Law-Courts-Police; TLV = Subscale of Tolerance towards Law Violations; ICO =Subscale of Identification with Criminal Others; PF = protective factors; RV = risk factors. [1] = data from the first phase of the study. Significant differences are bolded. * $p < .05$; ** $p < .01$

3.2. The prediction of the dynamics in risk and protective factors

In order to answer the second research question, the changes of START:AV based risk and protective factors during the three-month follow-up were determined. The Reliable change index (*RCI*) was calculated for each of the risk and protective factor (see Chapter 2.4). The reliable decrease, reliable increase and no reliable changes of the risk and protective factors are presented in Table 4.

Table 4. *The changes of START:AV-based risk and protective factors during the three-month follow-up*.

	Reliable decrease % (n)	No reliable change % (n)	Reliable increase % (n)
PF_total score	2.8 % (4)	92.4 % (133)	4.9 % (7)
Psychol.maturity_PF	3.7 % (5)	94.8 % (128)	1.5 % (2)
Family_PF	3.2 % (5)	92.3 % (143)	4.5 % (7)
Friends_PF	2.6 % (2)	94.9 % (74)	2.6 % (2)
Resocialization_PF	4.9 % (7)	87.5 % (126)	7.6 % (11)
RF_total score	4.9 % (7)	93.1 % (134)	2.1 % (3)
Psychol.maturity_RF	3.7 % (5)	95.5 % (128)	.7 % (1)
Family_RF	3.9 % (6)	91.5 % (140)	4.6 % (7)
Friends_RF	3.5 % (3)	94.1 % (80)	2.4 % (2)
Resocialization_RF	7.0 % (10)	89.5 % (128)	3.5 % (5)

Note. PF = protective factors; RF = risk factors.

The results have shown, that during the three-months of supervision / sentence, the total score of risk or protective factors has changed in 8 % of cases. However, the changes happened in both, i.e. positive andd negative, directions. The protective factors increased and risk factors decreased in almost 5 % of cases while protective factors decreased and risk factors increased in 2 – 3 % of cases. The analysis of changes of separate risk and protective factors revealed that the greatest changes took place with resocialization-related risk and protective factors The least dynamic were the psychological maturity- and friends-related risk and protective factors.

Table 5. *The associations between changes of risk and protective factors and behaviour- and personality-related factors.*

	Changes of PF_total	Changes of PF_Psy. maturity	Changes of PF_Family	Changes of PF_Friends	Changes of PF_Resoc.	Changes of RF_total	Changes of RF_Psy. maturity	Changes of RF_Family	Changes of RF_Friends	Changes of RF_Resoc.
STAB	- .09	.01	- .09	- .18	- .09	.04	.05	- .05	.03	.12
Phy. aggression	- .03	.09	- .02	- .14	- .11	.00	- .05	- .03	.04	.11
Soc. aggression	- .08	- .03	- .11	- .14	- .08	.07	.06	- .04	- .03	.11
Rule breaking	- .15	- .06	- .12	- .18	- .04	.03	.11	- .08	.07	.09
TriPM	- .13	- .06	**- .21****	- .16	**- .19***	.10	- .00	.00	.03	.14
Boldness	- .01	- .02	**- .18***	- .06	- .04	.05	- .07	- .03	.05	- .03
Meanness	- .04	- .03	- .14	- .09	- .11	.02	- .05	- .06	- .02	.08
Disinhibition	**- .19***	- .11	- .14	- .17	**- .20***	.11	.09	.07	.05	**.20***
CSS-M	**- .20***	**- .24****	**- .19***	.02	**- .16***	.14	.07	.03	.12	**.17***
L-C-P	**- .19***	**- .22***	**- .18***	.04	- .15	.14	.03	.07	.13	.15
TLV	**- .18***	**- .21***	**- .21***	.02	**- .17***	.15	.13	.01	.13	**.18***
ICO	- .15	- .16	- .07	- .05	- .11	.04	.06	- .08	.01	.09

Note. STAB = Subtypes of Antisocial behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; CSS-M = Criminal Sentiments Scale – Modified; L-C-P = Subscale of Law-Courts-Police; TLV = Subscale of Tolerance towards Law Violations; ICO =Subscale of Identification with Criminal Others; PF = protective factors; RV = risk factors. Significant correlations are bolded. * $p < .05$; ** $p < .01$

In order to determine the mechanisms of change of risk and protective factors, the links were tested between the interval variables of reliable changes of risk and protective facors and factors, reflecting more stable personality feachures, such as psychopathic traits, criminal attitudes and history of antisocial behaviour. According to the results, presented in Table 5, changes of risk and protective factors are not related to the history of antisocial behaviour. However, both, the psychopathy domains and criminal attitudes can be the significant predictors of the changes of risk and protective factors. For example, the less pronounced boldness is associated with the increase in family protective factors while the more pronounced disinihibition predicts the decrease of total amount of the protective factors, and also has negative effect on factors related to resocialization.

The results of our study revealed that criminal attitudes play an important role for the dynamics of risk and particularly protective factors. For example, the greater teolerance towards law violations is related with the increase of resocialization risk factors. Furthermore, the more positive atittudes towards the law, courts and police the adolescent has, and the less neutralization techniques he uses, the greater increase of protective factors related to psychological maturity, family and resocialization is observed. Unfortunately, in our sample the identification with criminal others did not have any significant links with the changes of either risk or protective factors.

3.3. The predictive opportunities of risk and protective factors

In order to evaluate the opportunities of risk and protective factors to predict different types of delinquent behaviour during the three-month follow-up, the ROC analysis was carried out. The AUC value helps to determine, how precisely one variable predicts the other binary variable. Therefore, this study seeks to test the significance of the risk and protective factors for predicting dichotomous violence, non-

violent offences, substance abuse and unauthorized absence of adolescent convicts (Table 6).

Table 6. *The predictive validity of risk and protective factors.*

	Case ratio		AUC	SE	95% CI	
Violence	28:124	STAB	**.62***	.06	.52	.73
	28:124	Physical aggression	**.62***	.06	.51	.72
	28:124	Social aggression	.53	.06	.42	.64
	28:124	Rule breaking	**.63***	.06	.51	.74
	28:127	TriPM	**.64***	.06	.53	.74
	28:127	Boldness	.49	.05	.39	.59
	28:127	Meanness	**.63***	.06	.52	.74
	28:127	Disinhibition	**.64***	.05	.54	.74
	27:128	CSS-M	.55	.06	.44	.66
	27:128	L-C-P	.54	.06	.43	.65
	27:128	TLV	.54	.06	.43	.65
	27:128	ICO	.56	.06	.44	.68
	25:105	PF_total score[1]	.58	.05	.47	.68
	22:101	Psy.maturity_PF[1]	.58	.06	.46	.70
	27:115	Family_PF[1]	.62	.06	.51	.73
	15:59	Friends_PF[1]	.50	.09	.32	.68
	22:106	Resocialization_PF[1]	.49	.06	.37	.61
	25:105	RF_total score[1]	**.65***	.05	.55	.75
	22:101	Psy.maturity_RF[1]	.58	.06	.45	.71
	27:114	Family_RF[1]	**.64***	.06	.52	.76
	15:62	Friends_RF[1]	.63	.08	.48	.78
	22:106	Resocialization_RF[1]	.58	.06	.46	.69
Non-violent offences	20:132	STAB	.54	.07	.41	.68
	20:132	Physical aggression	.51	.06	.39	.64
	20:132	Social aggression	.48	.07	.35	.61
	20:132	Rule breaking	.59	.07	.46	.72
	20:135	TriPM	.60	.07	.47	.73
	20:135	Boldness	.49	.08	.34	.64
	20:135	Meanness	.56	.07	.43	.70
	20:135	Disinhibition	.61	.07	.47	.74
	20:135	CSS-M	.58	.06	.45	.70
	20:135	L-C-P	.59	.06	.47	.71
	20:135	TLV	.52	.07	.38	.65

	20:135	ICO	.52	.06	.40	.64
	20:110	PF_total score[1]	**.70****	.05	.59	.80
	19:104	Psy.maturity_PF[1]	.59	.06	.48	.70
	21:121	Family_PF[1]	.62	.06	.51	.74
	10:64	Friends_PF[1]	**.70***	.10	.50	.90
	18:110	Resocialization_PF[1]	**.67***	.07	.54	.79
	20:110	RF_total score[1]	**.71****	.06	.59	.83
	19:104	Psy.maturity_RF[1]	**.65***	.06	.53	.77
	21:120	Family_RF[1]	**.69****	.06	.58	.80
	11:66	Friends_RF[1]	**.71***	.09	.53	.89
	18:110	Resocialization_RF[1]	**.68***	.06	.55	.80
Substance use	13:135	STAB	.45	.07	.31	.59
	13:135	Physical aggression	.48	.07	.34	.62
	13:135	Social aggression	.43	.07	.29	.57
	13:135	Rule breaking	.45	.08	.30	.60
	12:139	TriPM	.63	.06	.51	.75
	12:139	Boldness	**.70***	.08	.55	.86
	12:139	Meanness	.58	.08	.43	.73
	12:139	Disinhibition	.49	.09	.32	.66
	13:138	CSS-M	.56	.08	.41	.70
	13:138	L-C-P	.56	.08	.41	.71
	13:138	TLV	.54	.09	.37	.71
	13:138	ICO	.45	.07	.32	.57
	11:115	PF_total score[1]	.60	.08	.44	.75
	11:108	Psy.maturity_PF[1]	.49	.09	.31	.67
	13:125	Family_PF[1]	.52	.08	.37	.67
	5:65	Friends_PF[1]	.54	.10	.35	.74
	11:113	Resocialization_PF[1]	.53	.09	.35	.72
	11:115	RF_total score[1]	.65	.09	.48	.81
	11:108	Psy.maturity_RF[1]	.63	.09	.45	.82
	13:124	Family_RF[1]	***.66***	.08	.52	.81
	6:67	Friends_RF[1]	.67	.12	.44	.90
	11:113	Resocialization_RF[1]	.59	.11	.38	.80
Unauthorized absence	79:73	STAB	.58	.05	.49	.67
	79:73	Physical aggression	**.61***	.05	.52	.70
	79:73	Social aggression	.55	.05	.46	.64
	79:73	Rule breaking	.56	.05	.47	.65
	80:75	TriPM	**.60***	.05	.51	.69

80:75	Boldness	.52	.05	.43	.61
80:75	Meanness	.59	.05	.50	.68
80:75	Disinhibition	**.60***	.05	.51	.69
80:75	CSS-M	.52	.05	.43	.61
80:75	L-C-P	.54	.05	.45	.63
80:75	TLV	.43	.05	.34	.52
80:75	ICO	.57	.05	.48	.66
69:61	PF_total score[1]	**.76****	.04	.68	.84
67:56	Psy.maturity_PF[1]	**.75****	.05	.66	.83
74:68	Family_PF[1]	**.64****	.05	.54	.73
34:40	Friends_PF[1]	.60	.07	.47	.73
69:59	Resocialization_PF[1]	**.70****	.05	.61	.79
69:61	RF_total score[1]	**.75****	.04	.67	.83
67:56	Psy.maturity_RF[1]	**.67****	.05	.57	.76
74:67	Family_RF[1]	**.66****	.05	.57	.75
36:41	Friends_RF[1]	.59	.07	.47	.72
69:59	Resocialization_RF[1]	**.69****	.05	.60	.78

Note. AUC = Area Under the Curve; SE = Standard Error. CI = Confidence Interval; STAB = Subtypes of Antisocial behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; CSS-M = Criminal Sentiments Scale – Modified; L-C-P = Subscale of Law-Courts-Police; TLV = Subscale of Tolerance towards Law Violations; ICO =Subscale of Identification with Criminal Others; PF = protective factors; RV = risk factors. [1] = data from the first phase of the study. [a] = for calculating the predictive significance of protective factors, the value of delinquent behaviour was changed from 1 (committed) to 0 (did not commit). Significant values are bolded * $p < .05$; ** $p < .01$.

The results of the study showed, that risk and protective factors have different significance in predicting certain type of delinquent behaviour For example violence can be predicted by such factors as family related-risk factors, the history of physical aggression and rule breaking, meanness and disinhibition, although their predictive power is rather weak (AUC < .65). The protective factors in our sample had no significant predictive power at all. The substance use was significantly and pretty strongly predicted by boldness and family risk factors. The total score of the START: AV based risk factors as well as friends-related risk factors predicted the non-violent offences during the three-month follow-up. On the other hand, the total score

of the START: AV based protective factors and friends-related protective factors predicted the absence of non-violent offences. With regards to unauthorized absence, our study revealed the quite strong predictive power of all START:AV based risk and protective factors except for risk and protective factors related to friends

3.4. The interplay of risk and protective factors in predicting the delinquent behaviour of adolescent convicts

This section provides the results of the following three patterns of how risk and protective factors interact in predicting delinquent behaviour: the direct effect, buffering effect and compesatory effect. The total score of the delinquent behaviour (DE) was selected as a dependent variable.

The direct effect model. Taking into consideration that the dependent variable in our study reflected count data, and its variance ($D = 4.67$) was greater than the mean ($M = 1.52$), the direct effect was tested using negative binomial regression (Winkelmann, 2015).

Table 7. *Correlations between risk and protective factors with delinquent behaviour.*

Delinquent behaviour	r_s	Delinquent behaviour	r_s
STAB	**.20***	RF_total score[1]	**.49****
Physical aggression	**.22****	Psychol.maturity_RF[1]	**.33****
Social aggression	.09	Family_RF[1]	**.38****
Rule breaking	**.20***	Friends_RF[1]	**.28****
TriPM	**.25****	Resocialization_RF[1]	**.33****
Boldness	.02		
Meanness	**.21****	PF_total score[1]	**- .43****
Disinhibition	**.25****	Psychol.maturity_PF[1]	**- .35****
CSS-M	.09	Family_PF[1]	**- .29****
L-C-P	.11	Friends_PF[1]	- .23
TLV	- .04	Resocialization_PF[1]	**- .31****
ICO	.12		

Note. STAB = Subtypes of Antisocial behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; CSS-M = Criminal Sentiments Scale – Modified; L-C-P =

Subscale of Law-Courts-Police; TLV = Subscale of Tolerance towards Law Violations; ICO =Subscale of Identification with Criminal Others; PF = protective factors; RV = risk factors. [1] = data from the first phase of the study. r_s = Spearman correlation coeficient. Significant correlations are bolded. * p < .05; ** p < .01.

The risk and protective factors, which had significant correlations with delinquent behaviour (see Table 7) were chosen as independent variables in the regression model. Therefore, the following regressors were included into the model: STAB Physical Aggression and Rule Breaking subscales, TriPM Meanness and Disinhibition subscales, and the total scores of START:AV risk and protective factors. The regression model was significant, Likelihood ratio $\chi^2 = 43.3$, $p < .001$; *the ratio of deviance value/df* = 1.08. However, not all regresors were significant (see Table 8).

Table 8. *The initial negative binomial regression of risk and protective factors on delinquent behaviour of adolesccent convicts.*

Dependent variable = Delinquent behaviour	*B (SE)*	*Exp (b)*	*p*	*95% CI (Exp (B))*	
Physical aggression	.003 (.02)	1,00	.879	.97	1,04
Rule breaking	.023 (.03)	1,02	.373	.97	1,08
Meanness	.007 (.02)	1,01	.649	.98	1,04
Disinhibition	.003 (.02)	1,00	.871	.97	1,03
PF_total score[1]	**-.04 (.02)**	**.96**	**.030**	**.92**	**1,00**
RF_total score[1]	**.05 (.02)**	**1,05**	**.010**	**1,01**	**1,09**

Note. B = regression coeficient; SE = standard error; CI = confidence intervalas. PF = protective factors; RF = risk factors. [1] = data from the first phase of the study. Significant values are bolded.

When the statistically insignificant regressors were excluded from the model, the new model was significant: Likelihood ratio $\chi^2 = 39.95$, $p < .001$; the ratio of deviance value/df = 1.09. The values of information criteria of the final model $AIC_2 = 407.66$ and $BIC_2 = 419.04$ are less than of primary model $AIC_1 = 412.31$ and $BIC_1 = 435.07$, confirming that the final model is better (see Table 9). It should be admitted that the predictive model with regressors of separate risk and protective factors related to psychological maturity,

family, friends and resocialization was not significant (Likelihood ratio $\chi^2 = 13.82$, $p = .09$). Therefore, it might be summarized that the total scores of risk and protective, assessed by the START:AV have a direct effect on the delinquent behaviour of adolescent convicts during the three-month follow-up. The increase of total score of START:AV protective factors by one unit decreases the likelihood of delinquent behaviour by 0.93 times, and the increase of total score of START:AV risk factors by one unit increases the likelihood of delinquent behaviour by 1.06 times.

Table 9. *The final model of negative binomial regression of risk and protective factors on delinquent behaviour of adolesccent convicts.*

Dependent variable = Delinquent behaviour	*B (SE)*	*Exp (b)*	*p*	*95% CI (Exp (B))*	
PF_total score[1]	**-.04 (.02)**	**.96**	**.05**	**.93**	**1,00**
RF_total score[1]	**.06 (.02)**	**1,06**	**.001**	**1,03**	**1,10**

Note. B = regression coeficient; SE = standard error; CI = confidence intervalas. PF = protective factors; RF = risk factors. [1] = data from the first phase of the study. Significant vaules are bolded.

Buffering model was tested by choosing risk factors, which correlate with delinquent behaviour, as independent variables and protective factors a moderators of these links. According to Hayes (2013), the moderation effect is significant if the product of certain risk and protective factors significantly predicts the dependent variable (Table 10).

Table 10. *The moderating effect of protective factors.*

Dependent variable = Delinquent behaviour				
Independent variable	Moderator	*B*	95 % CI after bootstrapping	
STAB	PF_total score[1]	.001	- .00	.004
	Psychol.maturity_PF[1]	.01	- .01	.03
	Family_PF[1]	.01	- .01	.03
	Friends_PF[1]	.01	- .01	.03
	Resocialization_PF[1]	- .003	- .02	.01
Physical aggression	PF_total score[1]	.002	- .01	.01
	Psychol.maturity_PF[1]	.01	- .02	.05
	Family_PF[1]	.03	- .01	.08
	Friends_PF[1]	- .02	- .08	.04
	Resocialization_PF[1]	.004	- .02	.03
Rule breaking	PF_total score[1]	.001	- .01	.01
	Psychol.maturity_PF[1]	.02	- .02	.06
	Family_PF[1]	.03	- .03	.08
	Friends_PF[1]	.04	- .01	.08
	Resocialization_PF[1]	- .02	- .05	.02
TriPM	PF_total score[1]	- .002	- .00	.01
	Psychol.maturity_PF[1]	- .01	- .02	.02
	Family_PF[1]	- .004	- .02	.01
	Friends_PF[1]	.01	- .01	.02
	Resocialization_PF[1]	- .01	- .02	.00
Meanness	PF_total score[1]	- .001	- .01	.004
	Psychol.maturity_PF[1]	- .01	- .04	.01
	Family_PF[1]	- .002	- .04	.03
	Friends_PF[1]	.01	- .02	.05
	Resocialization_PF[1]	- .000	- .02	.02
Disinhibition	PF_total score[1]	- .004	- .01	.001
	Psychol.maturity_PF[1]	- .02	- .04	.01
	Family_PF[1]	- .01	- .04	.02
	Friends_PF[1]	.02	- .01	.04
	Resocialization_PF[1]	**- .02**	**- .04**	**- .01**
RF_total score[1]	PF_total score[1]	- .003	- .01	.01
	Psychol.maturity_PF[1]	- .01	- .03	.02
	Family_PF[1]	.01	- .03	.04
	Friends_PF[1]	- .004	- .04	.03
	Resocialization_PF[1]	- .01	- .03	.01
Psy. maturity_RF[1]	PF_total score[1]	- .02	- .04	.01
	Psychol.maturity_PF[1]	- .01	- .16	.14

	Family_PF[1]	.04	- .16	.24
	Friends_PF[1]	.06	- .14	.26
	Resocialization_PF[1]	- .02	- .12	.08
	PF_total score[1]	- .04	- .08	.004
	Psychol.maturity_PF[1]	- .13	- .34	.09
Family_RF[1]	Family_PF[1]	.07	- .21	.34
	Friends_PF[1]	- .02	- .27	.23
	Resocialization_PF[1]	- .11	- .27	.06
	PF_total score[1]	.01	- .03	.05
	Psychol.maturity_PF[1]	.08	- .13	.28
Friends_RF[1]	Family_PF[1]	.23	- .06	.52
	Friends_PF[1]	- .01	- .25	.22
	Resocialization_PF[1]	- .001	- .16	.16
	PF_total score[1]	- .01	- .02	.01
	Psychol.maturity_PF[1]	- .01	- .09	.08
Resocialization_RF[1]	Family_PF[1]	.03	- .11	.17
	Friends_PF[1]	.06	- .08	.21
	Resocialization_PF[1]	.01	- .06	.08

Note. B = unstandardized coefficient of moderation; PI = confidence interval; STAB = Subtypes of Antisocial Behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; PF = protective factors; RV = risk factors. [1] = data from the first phase of the study. The significant moderating effect is bolded.

The results of the study have shown that resocialization-related protective factors moderate the link between Disinhibition and the delinquent behaviour of the adolescent convicts (see Figure 6). In other words, if the adolescent is less engaged in correctional interventions and school, has less attitudes against substance use, then the disinhibition dimension of psychopathy has a significant impact on delinquent behaviour: the more it is expressed, the higher the risk of recidivism occurs. However, if the resocialisation-related protective factors are high then the level of disinhibition has no significant impact on delinquent behaviour.

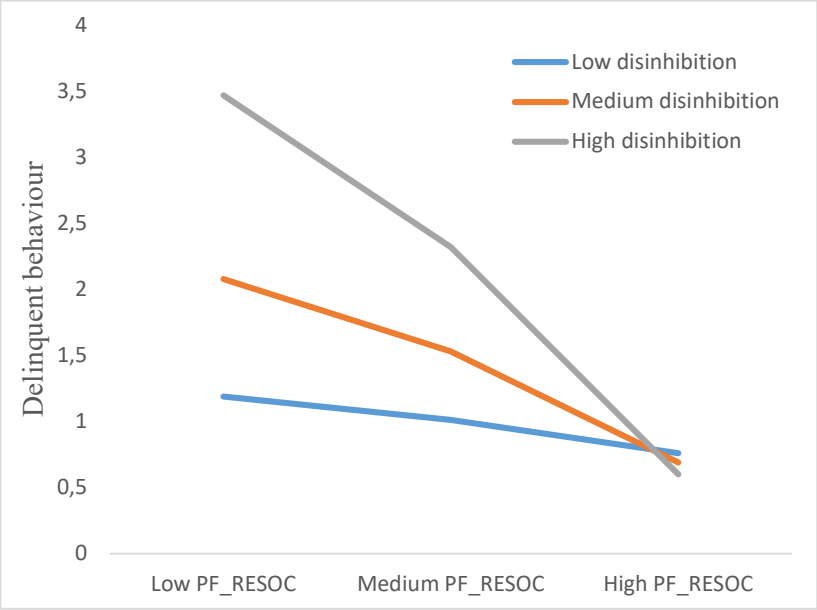

Figure 6. *The impact of disinhibition on the delinquent behaviour of adolescent convicts depending on the magnitude of resocialization-related protective factors.*

Compensatory model. The risk and protective factors can compensate each other in few ways: the model, when protective factors mediate the link between risk factors and delinquent behaviour is called the mediating effect (Griffin, 2012), while the model, when risk factors mediate the link between protective factors and delinquent behaviour is called risk-reducing effect (de Vries Robbé, 2014).

First, the mediating effect was tested in this study. Taking into consideration the condition for mediation, that the independent variable has to be correlated with mediator, the certain risk and protective factors were selected (see Annex 1). The unstandardized coefficients of indirect and direct effect as well as 95 % confidence intervals after bootstrapping are presented in Table 11.

Table 11. *The characteristics of models, when protective factors are mediating the link between risk factors and delinquent behaviour.*

IV	Mediator	Indirect effect (*95% CI*)			Direct effect (*95% CI*)		
		B	*Min*	*Max*	*B*	*Min*	*Max*
Phy.aggr.	PF_total score[1]	**.02**	**.01**	**.05**	.03	- .02	.09
	Psy.maturity_PF[1]	**.02**	**.01**	**.05**	.01	- .05	.07
	Family_PF[1]	**.01**	**.004**	**.03**	.03	-.03	.08
	Friends_PF[1]	.01	- .00	.04	.04	- .03	.12
Soc.aggr..	PF_total score[1]	**.02**	**.002**	**.05**	.02	- .05	.09
	Psy.maturity_PF[1]	**.02**	**.004**	**.05**	.02	- .07	.07
	Family_PF[1]	.01	- .00	.03	.02	- .04	.09
	Friends_PF[1]	.01	- .01	.04	.04	- .04	.12
R.break.	PF_total score[1]	.02	- .01	.04	.07	.002	.13
	Family_PF[1]	.01	- .01	.03	.07	.004	.13
	Friends_PF[1]	.01	- .01	.04	.08	.002	.15
	Resocialization_PF[1]	.01	- .00	.04	.05	- .01	.12
Meanness	PF_total score[1]	**.02**	**.002**	**.03**	.03	- .02	.07
	Psy.maturity_PF[1]	**.01**	**.001**	**.03**	.03	- .01	.08
	Family_PF[1]	**.01**	**.001**	**.02**	.03	- .01	.07
	Friends_PF[1]	.004	- .01	.02	.03	- .02	.08
Disinh.	PF_total score[1]	***.01***	***.001***	***.03***	***.05***	***.01***	***.08***
	Psy.maturity_PF[1]	***.01***	***.001***	***.02***	***.04***	***.01***	***.08***
	Family_PF[1]	***.01***	***.002***	***.01***	***.05***	***.02***	***.09***
Psy.m_RF	Psy.maturity_PF[1]	.09	- .02	.21	.28	.02	.53
	Family_PF[1]	.05	- .09	.10	.33	.11	.55
	Friends_PF[1]	.09	- .07	.26	.18	- .12	.49
	Resocialization_PF[1]	**.14**	**.02**	**.27**	.20	- .04	.44
Fam._RF	Psy.maturity_PF[1]	***.14***	***.02***	***.27***	***.59***	***.21***	***.97***
	Family_PF[1]	- .03	- .26	.15	.71	.34	1,07
	Friends_PF[1]	.09	- .06	.27	.43	.02	.84
	Resocialization_PF[1]	***.15***	***.04***	***.28***	***.48***	***.14***	***.82***
Fr_RF	Psy.maturity_PF[1]	.07	- .06	.25	.40	.02	.79
	Family_PF[1]	.02	- .16	.21	.46	.08	.84
	Friends_PF[1]	.07	- .17	.32	.36	- .04	.77
	Resocialization_PF[1]	.11	- .00	.26	.31	- .03	.64
Res	Psy.maturity_PF[1]	.06	- .00	.13	.22	.04	.39
	Family_PF[1]	.02	- .02	.07	.27	.10	.43

Friends_PF[1]	.07	- .06	.25	.17	- .06	.41
Resocialization_PF[1]	.09	- .00	.19	.17	- .02	.36

Note. IV = independent variable; B = unstandardized coefficient of mediation; PI = confidence interval; PF = protective factors; RV = risk factors. [1] = data from the first phase of the study. The full mediation effect is bolded. The partial mediation effect is in bolded italics.

The results revealed that the total score of protective factors mediate the link between the history of aggression and delinquent behaviour. It also mediates the link between meanness and delinquent behaviour. This means, that the previous aggressive behaviour as well as meanness predict fewer protective factors, which in turn predict more delinquent behaviour during the three-month follow-up. Whilst the link between disinhibition and delinquent behaviour is mediated by the number of protective factors only partially. It should be noted that the protective factors, related with both psychological maturity and family, replicate the above described effect of the protective factors total score.

The other full mediation effect was found between psychological maturity-related risk factors, resocialization-related protective factors and delinquent behaviour. In other words, the inferior emotional regulation, coping and social skills predict that the convicted adolescent will get less involved in correctional interventions and thus, will commit more delinquent acts during the three-month follow-up. It was also found that lack of close relationships with parents might also predict less resocialization-related protective factors, which predict the greater manifestation of delinquent behaviour.

The risk-reducing effect was examined by testing how certain risk factors mediate the link between respective protective factors and delinquent behaviour. The results, presented in Table 12, have shown that both psychological maturity- and family-related protective factors are linked with less delinquent behaviour via decreased risk factors such as psychological immaturity, poor relationships with parents and lack of involvement into treatment.

Table 12. *The characteristics of models, when risk factors are mediating the link between protective factors and delinquent behaviour.*

IV	Mediator	Indirect effect (*95% CI)*			Direct effect (*95% CI*)		
		B	*Min*	*Max*	*B*	*Min*	*Max*
Psy.mat._PF[1]	Psy.maturity_RF[1]	**- .18**	**- .38**	**- .02**	- .15	- .41	.12
	Family_RF[1]	**- .15**	**- .30**	**- .04**	- .21	- .45	.02
	Friends_RF[1]	- .13	- .29	.00	- .14	- .45	.18
	Resocialization_RF[1]	**- .13**	**- .27**	**- .02**	- .18	- .41	.05
Fam._PF[1]	Psy.maturity_RF[1]	**- .21**	**- .46**	**- .05**	- .24	- .64	.16
	Family_RF[1]	**- .47**	**- .87**	**- .16**	.06	- .34	.45
	Friends_RF[1]	- .27	- .59	.00	- .06	- .50	.39
	Resocialization_RF[1]	**- .22**	**- .44**	**- .07**	- .14	- .50	.22
Friends_PF[1]	Psy.maturity_RF[1]	- .10	- .30	.04	- .22	- .58	.14
	Family_RF[1]	- .10	- .27	.00	- .22	- .54	.10
	Friends_RF[1]	- .18	- .43	.03	- .11	- .47	.25
	Resocialization_RF[1]	- .12	- .31	.05	- .20	- .53	.13
Resoc_PF[1]	Psy.maturity_RF[1]	- .11	- .29	.04	- .25	- .48	- .01
	Family_RF[1]	***- .10***	***- .22***	***- .02***	***- .25***	***- .45***	***- .05***
	Friends_RF[1]	- .09	- .21	.01	- .22	- .47	.04
	Resocialization_RF[1]	- .14	- .31	.01	- .16	- .39	.07

Note. IV = independent variable; B = unstandardized coefficient of mediation; PI = confidence interval; PF = protective factors; RV = risk factors. [1] = data from the first phase of the stud. The full mediation effect is bolded. The partial mediation effect is in bolded italics.

4. DISCUSSION

The aim of our research was to analyse the risk and protective factors for adolescent convicts by assessing their change over time and the possibilities for predicting delinquent behaviour during the three-month follow-up.

On the basis of the information provided by correctional officers about the known, though not necessarily officially recorded, delinquent behaviour of the supervised adolescents, it could be concluded that during three months of supervision/sentence almost 60 percent of the adolescents engaged in delinquent behaviour. In the majority of the cases (52 % of the sample), delinquent behaviour was related to rule breaking, i.e. skipping school or appointments with specialists, and breaching curfews or the internal rules of the institution. These findings are consistent with the results of other research studies. For example, NeMoyer et al., (2014) found that more than half of the adolescents had violated the court-imposed supervision conditions at least once during the probation period. They failed to comply with the requirement to study, to stay at home at a particular time, to attend certain programmes, or to not abuse substances. During the probation period, around 35 percent of the adolescents committed violations that ended in arrest (NeMoyer et al., 2014). Our findings showed that, during the three months of follow-up, 13,5 percent of the adolescents had committed non-violent crimes (theft, property damage, offences against public order) and 8,6 percent had cases of substance abuse. It is probable that if we had followed up for a longer period, our findings would have been closer to the findings of NeMoyer et al., (2014). According to the information provided by the correctional officers, about 18 percent of the sample committed violent acts. Findings of other researchers confirm the occurrence of violence by adolescents towards each other despite stricter supervision and control conditions both in the penitentiary institutions and the

community (Cawson et al., 2004; Davidson-Arad et al., 2009; Wood et al., 2016).

In our research, the risk-factor reducing approach was combined with the strengths-based approach; therefore, both risk and protective factors were analysed by grouping them into the following factors of psychological maturity, resocialisation, family and friends. The change mechanisms of the grouped risk and protective factors as well as their interactions in predicting delinquent behaviour were analysed. We also included in the analysis the commonly investigated predictors of criminal recidivism that are outlined in the R-N-R model, i.e. history of antisocial behaviour, psychopathy traits and criminal attitudes (Andrews & Bonta, 2010; DeLisi, 2009; Skilling & Sorge, 2014). Moreover, we explored differences between two groups of adolescent convicts: those who were given community-based sentences, and those who were confined. The main results of the study are discussed below.

4.1. Associations between risk and protective factors and inter-group differences

The first step in the analysis was to examine the correlation between the risk and protective factors of the adolescent convicts. The results showed a significant negative correlation between risk and protective factors, assessed by the START:AV instrument, with effect sizes ranging from medium strong to strong. These findings differ from the correlation (r = - .22) identified by Desmarais et al., (2012), which indicates that START:AV-based risk and protective factors are related, but separate constructs. However, our results are consistent with the findings of Viljoen et al., (2012), who reported a strong correlation between risk and protective factors (r = - .74). The correlation between different categories of risk and protective factors yielded effect sizes that are slightly smaller, but still strong (ranging from r = - .54 to r = - .68). According to Viljoen, Beneteau et al.,

(2012), the magnitude of the effect size should not be surprising, as the same item of the START:AV is assessed as both a risk factor and a protective factor. In addition, when risk and protective factors were assessed using different instruments, the study yielded similar magnitudes for the effect sizes (de Vries Robbé, 2014).

The results support the assumption that a history of antisocial behaviour is an indicator of risk status, in other words it identifies those individuals who possess more risk factors and fewer protective factors (Douglas & Skeem, 2005). The size of correlations between prior physical aggression, social aggression and rule-breaking, on the one hand, and psychological maturity, family- and friends-related risk and protective factors on the other, correspond to the results of other researchers, who claim that external difficulties (aggression and lack of self-restraint) have an impact on the latter problems of psychological and social functioning, exhibited in the lack of emotional, social and cognitive skills (Campbell et al., 2016), and non-adaptive behaviour at school, home and with peers (Calkins & Keane, 2009). Correlations between a prior history of antisocial behaviour, meanness and disinhibition are similar to the correlations calculated on the basis of adult samples (van Dongen et al., 2017). Lack of significant correlation between a history of prior behaviour and boldness confirms the hypothesis that this dimension of psychopathy could be treated as an adaptive personality trait (Fanti et al., 2016).

Though criminal attitudes correlate significantly with almost all sub-scales of a history of antisocial behaviour and of psychopathy, our research did not yield significant correlation between criminal attitudes and START:AV based risk and protective factors. Other researchers emphasise the predictive efficacy of criminal attitudes on recidivism (for example, Evans, 2017) and significant correlations with other predictors of delinquent behaviour, such as delinquent peers, use of alcohol and drugs, increased demand for autonomy and lower parental support (Hill et al., 2018). However, the importance of criminal attitudes is revealed by studies using samples with a longer

criminal history, related with more severe sentences (Grieger & Hosser, 2014; O'Hagan et al., 2019; Skilling & Sorge, 2014). For example, criminal attitudes, and especially the neutralisation techniques, differentiate adolescents who are involved in gangs (Chu et al., 2014), which was actually not the case for our sample.

The analysis yielded significant correlations between START:AV based risk and protective factors and psychopathy constructs. Meanness positively correlated with the risk factors of psychological immaturity and negatively correlated with the protective factors of psychological maturity. This association can be explained by the assumptions of Roberton, Daffern and Bucks (2014). First, inability to regulate emotions is expressed by aggressive behaviour as a way to get rid of an unpleasant emotional charge. Second, over-regulation of emotions increases distress, inhibits solution-seeking behaviour, decreases the social support network and, finally, is overcome by non-adaptive aggressive behaviour. Contrariwise, boldness is positively correlated with protective factors, indicating greater psychological maturity and better relationships with parents and peers. This lends support to the adaptive nature of boldness (Patrick et al., 2009).

Our results demonstrate that disinhibition is more characteristic in confined adolescents, while boldness is more characteristic in adolescents on probation. Other researchers produced similar results (for example, Weidacker, O'Farrell, Gray, Johnston, & Snowden, 2017). On the basis of the claim of DeLisi (2009), that psychopathy is the most important etiological factor of delinquent behaviour, we can assume that the dominance of the disinhibition dimension lends a probable explanation of all the other differences between the groups of adolescents, that is, differences in history of antisocial behaviour, psychological maturity, family- and peer-related risk factors.

Comparison of the demographic characteristics of the two samples showed that the confined adolescents encountered law-enforcement agencies relatively early (as 12-year olds, on average), while the average age of the adolescents on probation was 15 years when they

first encountered the police. According to Moffitt's classical taxonomy of delinquency development, the earlier onset of misconduct predicts complicated further adaptation (Casey, 2011b; Dishion & Patterson, 2006; Farrington, 2008; Frick et al., 2014; Loeber & Farrington, 2000; Moffitt, 1993, 2006). This explains other differences in demographic characteristics between the two samples: a higher number of convictions and longer sentences, which the court imposes for more severe crimes.

According to the information provided by officers who work with adolescents in the penitentiary institutions, these adolescents have weaker relationships with their parents and receive less social support from their families. The results of the research carried out by Sedlak and McPherson (2010) show that the worsening relationship of confined adolescents with their family members is largely due to physical obstacles (long distance between their home and the correctional institution, financial difficulties, limited number of phone calls and visits), and not due to a previously conflict-ridden relationship within the family.

In presenting the differences between the two samples, school-related characteristics should be discussed separately. Though the average age of the sample of confined adolescents is significantly higher, they study at a lower school-grade. In the sample of confined adolescents, the grade-retention rate is three times higher than in the sample of adolescents on probation, and the rate of unauthorised school termination is 2.5 times higher. These results support the importance of poor academic performance for delinquent behaviour (Loeber & Farrington, 2001). On the other hand, according to McGloin and Patt (2003), such factors as IQ, capabilities and academic achievements correlate with delinquent behaviour indirectly, through involvement in school activities. According to the social bond theory (Gottfredson & Hirschi, 1990), the bonds with, and involvement in, the conventional social institutions enable adolescents to control their natural antisocial impulses. Therefore, adolescents

who have no emotional bond with educational institutions and who do not consider their employees as authority have no motivation to behave pro-socially (Chriss, 2007). In addition, unresolved learning difficulties or emotional and behavioural problems lead to distancing from school life, which has an impact on criminal behaviour both in adolescence and adulthood (Henry et al., 2012; Wang & Fredricks, 2014).

In summary, risk factors reflect lower indicators and protective factors reflect higher indicators of psychosocial functioning in convicted adolescents. Differences between the two samples (confined adolescents and adolescents on probation) demonstrate that adolescents serving their sentences in penitentiary institutions are more vulnerable. Therefore, in order to prevent recidivism and to help them return to the trajectory of adaptive and successful development, they require correctional interventions to be tailored and more intense.

4.2. Change mechanisms of risk and protective factors

Analysing the change of risk (and protective) factors is important for understanding their dynamic nature (Daffern et al., 2019; Klepfisz et al., 2016). We have examined the extent to which the risk and protective factors of adolescent convicts changed during three months under the regular practices of probation or penitentiary supervision. For that purpose, we calculated the Reliable Change Index (RCI), which is applied in various repeated clinical studies aimed at evaluating the statistically significant individual change (Hinton-Bayre, 201. 2012). The main advantage of the RCI is that it assists in assessing change beyond what could be attributed to measurement variability or error (Kroner & Yessine, 2013). Our results demonstrated that, in the overall sample of convicted adolescents, reliable changes in risk and protective factors appeared in up to 8 percent of the cases. Taking into account that during the three-month follow-up no specific interventions were applied to the sampled

adolescents, we can assume that current probation and penitentiary practices result in relatively small changes in the psychosocial functioning of adolescent convicts.

As one of the RCI advantages is the possibility to compare the results of different studies (Kroner and Yessine, 2013), we examined the consistency of our findings with the findings of other researchers. The RCI of the total scores of START:AV risk and protective factors calculated in our sample were compared with the findings of Viljoen et al., (2012). In both cases, the positive changes were similar. Our findings show that in 4.9 percent of cases protective factors increased and risk factors decreased, while Viljoen et al., (2012) found an increase in protective factors and decrease in risk factors in 6.3 and 4.7 percent of cases. The negative changes are also consistent. In our sample, risk factors increased in 2.1 percent of cases, while protective factors decreased in 2.8 percent of cases (the comparable findings of Viljoen et al., (2012) are 1.6 and 4.8 percent of cases).

It should be noted that the study of Viljoen et al., (2012) targeted adolescents serving community-based sentences. In another study, with a sample of confined adolescents, Sellers et al., (2017) found reliable changes in total scores of 28 percent of adolescents. As the main aim of the RCI is to show the progress from dis-function towards proper functioning (Jacobson & Truax, 1991), the differences in the findings can be explained by the peculiarities of the correctional interventions applied in different countries. It is probable that a more individualised re-socialisation plan, focusing on specific protective and risk factors of the adolescent, could contribute to the more marked changes among Lithuanian adolescent convicts.

It is important to emphasise that small changes in risk and protective factors during three-month follow-up can be subject to relatively low test-retest reliability scores (Kroner & Yessine, 2013). The correlation coefficients between factors, assessed at the initial and follow-up stage of our study, ranged from .49 to .81. Unfortunately, other researchers either did not provide the test-retest reliability scores

or used the coefficients of internal consistency (e.g. Sellers et al., 2017).

With regards to changes in separate domains of risk and protective factors, the findings suggest that there was almost no change in relationships with peers: reliable increase or decrease of friends-related risk and protective factors was observed in a few cases only. However, as noted earlier, correctional officers had very limited knowledge about the peers of adolescents. Therefore, the findings might indicate a lack of information about these factors rather than a lack of change. The most positive change was observed in protective and risk factors related to the resocialisation domain. This might be related to the tendency of correctional officers to pay a great deal of attention to the supervision of adolescents' conduct.

In order to find out the possible mechanisms of change, the correlations between more stable behavioural and personality factors and START:AV based risk and protective factors were analysed. The findings of our research support the importance of psychopathic traits for the change in risk and protective factors. For example, more markedly expressed boldness is associated with a decrease in the family-related protective factors. In other words, during probation or confinement, adolescents who tend to dominate fearlessly embrace novelty, have high self-esteem, and also experience a worsening of their relationship with parents. These findings are in line with the other researchers' findings about the correlations between psychopathic traits and parental behaviour towards children (e.g., Farrington et al., 2010; Pardini & Frick, 2013). Another dimension of psychopathy – disinhibition – is positively correlated with a decrease in the total score of protective factors, decrease in the resocialisation-related protective factors, and an increase in the resocialisation-related risk factors. Other researchers have also discussed the negative impact of psychopathy on resocialisation (e.g. Harris & Rice, 2006; Polaschek & Daly, 2013). Therefore, in order to induce positive changes in the risk and protective factors for adolescents with psychopathic traits,

correctional interventions should be carefully and properly chosen (Salekin, 2002).

As noted earlier, no significant correlations between criminal attitudes and START:AV based risk and protective factors were found in our study. However, criminal attitudes are significantly correlated with changes in risk and protective factors. Less marked are criminal attitudes (especially a negative attitude towards the law, courts and police, and a tolerance of law violations), while strongly marked is an increase in both the total score of protective factors, and the scores of certain domains of protective factors. Contrarily, greater negative attitudes towards the law, courts and the police are linked to an increase in resocialisation related risk factors. As probation and penitentiary institution officers belong to the law-enforcement system, the negative attitudes towards officers hinders the establishment of a working alliance and involvement in measures ordered by the court. On the other hand, criminal attitudes are characteristic of individuals who have longer and more severe criminal experience and are less receptive to correctional intervention (Grieger & Hosser, 2014; Skilling & Sorge, 2014). In summary, our findings contribute to the extension of the current understanding of the value of criminal attitudes in the context of criminal behaviour: they can be considered not only as risk factors but also as predicting the dynamics of other risk and protective factors.

4.3. The significance of risk and protective factors in predicting delinquent behaviour of adolescent convicts

In order to assess the predictive possibilities of risk and protective factors, we followed the recommendations of Rice and Harris (2005) and treated the AUC scores as medium strong if they ranged between .64 and .71. If the AUC scores were higher than .71, we treated them as very strong.

Our findings suggest that a history of antisocial behaviour (physical aggression and rule-breaking, in particular) is a statistically significant, though weak, predictor of violence (AUC < .64). The power of physical aggression to predict unauthorised absence is statistically significant, yet weak (AUC = .61). These results are consistent with the results of research by Burt and Donnellan (2010), which showed significant but weak correlation between a history of physical aggression and rule breaking and the current aggressive behaviour (ranging from $r = .23$ to $r = .42$) (Burt & Donnellan, 2010). We found a statistically significant correlation between a history of social aggression and rule breaking ($r = .33$); on the other hand, our research did not reveal any significant role of social aggression in predicting the delinquent behaviour of adolescent convicts. This might be due to the disposition of convicted adolescents to provide socially acceptable answers in their self-reports about previous antisocial behaviour in order to create a better self-image.

We found that disinhibition and meanness are weak predictors of unauthorised absence but are better predictors of violence. This finding confirms the claims of the R-N-R model about the importance of an antisocial personality as one of the main predictors of further antisocial behaviour (Andrews & Bonta, 2010) and is in line with the findings of other researchers who observed the importance of psychopathic traits for the prediction of instrumental aggression (Fanti et al., 2016; Frick, Cornell, et al., 2003) and reactive aggression (van Dongen et al., 2017). Moreover, a number of researchers observed that adolescents with psychopathic traits exhibit more severe forms of delinquent behaviour (Frick & Viding, 2009; Jolliffe & Farrington, 2006).

Boldness is a statistically significant and rather strong predictor of substance use among adolescent convicts. This domain of psychopathy is often treated as an adaptive personality trait, therefore less associated with delinquent behaviour (Somma et al., 2018). The positive correlation between boldness and protective factors (see

Annex 1) supports this understanding. These contradictory findings could be explained by the moderating effect of sexual maturation (Sadeh, Bounoua and Javdani, 2019), i.e. positive correlation between boldness and substance abuse is characteristic of adolescents undergoing early puberty. As we did not research the aspect of puberty, further research is needed for testing this assumption.

Neither our research, nor that of Viljoen et al., (2012), found any statistically significant power of START:AV based risk and protective factors in predicting substance use. With regards to other types of delinquent behaviour, the total score of protective factors was found to have a sufficiently similar predictive power to that of the total score of risk factors. These findings suggest that the strength-based predictive model of delinquent behaviour is an equivalent alternative to the deficit-based model (Adjorlolo, 2017; Wanamaker et al., 2018).

The results of our research lead to the conclusion that risk and protective factors each have different power in predicting different types of delinquent behaviour. For example, the factors related to psychological maturity significantly predict unauthorised absence; however, non-violent offences are predicted by risk rather than by the protective factors of psychological maturity. The effects that emotional and impulse control, which are among the main features of psychological maturity, have on rule adherence is also noted by other authors (Kimonis & Frick, 2011; Monahan et al., 2009; Morgado & Vale-Dias, 2013; Murray & Farrington, 2010). Unlike the results of other studies (e.g. Rathert, 2013), we did not find this factor significant in predicting violent behaviour, probably because the rate of violent acts is much lower than the rate of other types of misconduct among adolescent convicts (see Fazel, Wolf, Vazquez-Montes, & Fanshawe, 2019). Moreover, violent re-offending manifests over a long period, i.e. several years (Lodewijks et al., 2008), thus the three-month follow-up could be too short to identify significant predictors among START:AV based factors.

The resocialisation-related factors, both risk and protective, were significant and medium strong predictors of unauthorised absence as well as of non-violent offences. This corresponds with the assumptions of Brunelle et al., (2000) that substance abuse encourages the commission of property crimes; on the other hand, adolescents may participate in lucrative delinquency to pay for their substances.

It should be noted that, in our research, family-related risk factors were significant and medium strong predictors of all kinds of delinquent behaviour. This finding is in line with other research, which claims that during adolescence parents are important source of socialisation (Catalano & Hawkins, 1996). However, family-related protective factors are significant predictors only in the case of unauthorised absence. This implies that during adolescence parental emotional support and supervision should not decrease, because the lack of a close relationship with parents is a significant predictor of delinquency in adolescent convicts (Frías-Armenta & Verdugo, 2013; Hoeve et al., 2009, 2012). Another external factor – friends – was a significant predictor of non-violent offences both as a risk and as a protective factor. According to Richards (2017), adolescents tend to non-violent offences committed in peer groups. However, there was no support for the hypothesis that adolescents who committed property crimes differ significantly from adolescents who committed violent crimes in terms of the number of their friends (Cuervo et al., 2015).

To sum up, contrary to the claims of some researchers (e.g. Andrews & Bonta, 2010) that certain risk factors possess a universal predictive value, our findings lend support to the hypothesis that risk and protective factors are of different value in predicting different types of delinquent behaviour (Kalvin & Bierman, 2017).

4.4. Predictive models of the interplay between risk and protective factors

Results from the negative binomial regression analysis confirmed that it is the number of both protective and risk factors that have the main effect on delinquent behaviour. This corresponds with the assumption that protective and risk factors are not opposites of the same construct, but have different value in predicting delinquent behaviour (Wanamaker et al., 2018).

Another mechanism, verified in our study, indicates the moderating effect of resocialisation-related protective factors on the relationship between disinhibition and delinquent behaviour. This means that the disposition to react spontaneously, without reflecting on the consequences, affects delinquent behaviour only if the adolescent is weakly or moderately involved in resocialisation. However, if the involvement in resocialisation is strong, the link between disinhibition and delinquency becomes insignificant. These findings suggest that the treatment of adolescents with psychopathic traits is very important and necessary, because properly selected interventions might help them to return to a prosocial developmental trajectory (Anderson & Kiehl, 2014).

Though our results did not confirm the moderating effects of other protective factors (de Vries Robbé, 2014), this can be explained by the fact that this mechanism usually occurs in samples of particularly high criminal risk (Serin et al., 2016). Our sample comprised adolescents whose delinquent behaviour during the three-month follow-up was mainly related to unauthorised absence. On the other hand, some researchers found that protective factors had a moderating effect in adolescent samples drawn from the general population (Lee, Onifade, Teasley, and Noel, 2012). However, the sample size of more than several thousand might have helped to demonstrate the buffering mechanism (Kraemer et al., 2001), which should appear when there is no significant correlation between the moderating and independent

variables, or between the moderating and independent variables (Baron & Kenny, 1986). In our sample, the correlation between risk and protective factors was statistically significant, and the magnitude of the effect in some cases was as high as $r = .73$.

The findings of the study showed that the effect of a history of aggressive behaviour on delinquent behaviour during the three-month follow-up is mediated by lower protective factors related to both psychological maturity and family. An analogous mechanism is found when historical variables are replaced with meanness. According to Anderson and Kiehl (2014), meanness belongs to the group of neuropsychological factors, which, in conjunction with environmental circumstances, may disturb the socialisation process and lead to weak social bonds both in the family and beyond it. This causes chronic vulnerability followed by complicated psychological maturation (Frick & Viding, 2009) and manifests in adverse outcomes (Seepersad, 2010).

Reciprocal mediation between maturity-related protective factors and family risk factors as well as between resocialisation-related protective factors and family risk factors should be noted. These mediating effects indicate that better coping, emotional and social skills, together with engagement in a treatment process, predict better relations with parents, and this in turn decreases the probability of delinquent behaviour. Inversely, complicated relationships with parents have an effect on delinquent behaviour via poorer psychological maturity-related skills and withdrawal from resocialisation. These findings are consistent with the findings of other authors who emphasised that family factors have an indirect effect on the behaviour of adolescents (see Field, Miguel, & Sanders, 2002; Frías-Armenta & Verdugo, 2013; Gibbs, Giever, & Higgins, 2003; Murray & Farrington, 2010; Walker-Barnes & Mason, 2001). Furthermore, our findings suggest that family protective factors are significant in the context of delinquent behaviour, because they "outweigh" the family risk factors and predict a lower probability of

delinquent behaviour. In other words, good relations with one parent might minimise the negative effect of bad relations with the other, lack of parental supervision, conflict-prone relationships, divorce etc. This lends support to the statement about the importance of a proper parental role in the effective psychosocial functioning of the adolescent (Pearce et al., 2003).

Examination of the interplay between maturity- and resocialisation- related risk and protective factors revealed that the resocialisation factors mediate the relationship between psychological maturity and delinquent behaviour. These mediating relationships show that a certain level of psychological maturity might help to predict both the extent of an adolescent's involvement in the resocialisation process and his further behaviour. Therefore, interventions focused on psychological maturation should be prioritised.

To sum up, the additive effect of risk and protective factors, meanness and a history of aggressive behaviour is negatively linked to the psychological maturity of adolescents and their close relationships with parents. These latter factors protect against disengagement from the resocialisation process assuring desistance from delinquent behaviour in the immediate future.

5. LIMITATIONS AND GUIDELINES FOR FURTHER RESEARCH

Some limitations of the present research should be considered when planning similar studies in the future. First limitation is related with the sample. Invitations to participate in the research were issued by the officers of probation and penitentiary institutions who selected participants on the basis of the following criteria: the age of adolescents (younger than 18 years) and the remaining duration of confinement/supervision (at least 3 months). It is probable that the agreement of adolescents and their parents/caregivers to participate in

the research was affected by the information about the research they had received from the officers. Our sample comprised 159 adolescents on probation (appr. 48 percent of the adolescents under daily supervision of probation officers[1]) and 30 adolescents in penitentiary institution (59 percent of confined adolescents under 18-year age). However, we lack data about the number of adolescents and their parents/caregivers who refused to take part in the research. Therefore, the method of convenient sampling does not ensure the representativeness of the sample. The analysis of demographic characteristics of those, who refuse to participate in research should be taken into account in further studies. Moreover, further studies should consider the inclusion of female adolescents in order to assess the gender-related peculiarities for prediction of delinquent behaviour.

Another limitation of the present research is related to the data collection method. For the collection of information for the assessment of risk and protective factors, interviews with correctional officers were conducted. It was assumed, that regular contact with adolescent convicts, their parents or caregivers, school representatives and other service providers enable officers to have a comprehensive knowledge about the psychosocial functioning of the adolescent. Moreover, interviews with officers have certain advantages over interviews with adolescents, who tend to provide socially-desirable information for the interviewer, whom they see for the first time (Grove et al., 2000). On the other hand, though interviewed officers could provide very detailed information about the implementation of measures, ordered by the court, they lacked information about such important domains of psychosocial functioning as the relations with peers, daily events which triggers adolescent's behaviour etc. Besides, the quantity and

[1] According to the report of the Prison Department under the Minstry of Justice, on the 1 January 2018, 330 male adolescents were included into the register of the probation offices.

quality of the information, possessed by officers, depend on their skills and motivation to work with adolescents, observe the dynamics of their behaviour and also to participate in the study. In future research, it would be valuable to supplement the information from the officers with the information from the adolescents and other sources, thereby acquiring a more full-fledged picture of the risk and protective factors. Besides, adolescents, who participated in the research, are at varying stages of their supervision or confinement. This could also have an impact on the changes of risk and protective factors. Therefore, future studies could focus on changes of risk and protective factors depending on how much of the sentence is already served.

Our research employed two different methods for collecting data on different risk factors: interviews with officers and self-reports of adolescents. Some authors doubt whether self-report is an appropriate method to assess the risk factors (e.g. Edens, Hart, Johnson, Johnson, & Olver, 2000), because convicted persons might distort the data about themselves. Self-report also requires certain level of cognitive skills. Different methods of assessment might have had an effect on the results. On the other hand, the study by Walters (2006), which examined the criminal recidivism prediction power of different risk-appraisal and self-report measures, demonstrated no significant differences in the samples of adolescent convicts.

Third limitation is the number of risk and protective factors which were analysed in our research. On the basis of theoretical assumptions and other studies, we identified four groups of risk and protective factors. Though our analysis revealed both the importance and uniqueness of these groups of factors in predicting delinquent behaviour, other important factors were not included into analysis. Therefore, the community context, i.e. leisure activities, relations with other significant adults (trainers, teachers, and relatives), etc., could be examined in further research.

Finally, we relied on both the knowledge about the rapid changes of psychosocial functioning during adolescence and recommendation

of the START:AV instrument, thus, chose the three-month follow up for the measurement of delinquent behaviour. Yet, many studies examine criminal recidivism (in particular the recidivism of severe crimes) over longer period, like one- or two- years. Taking this into account, it would be important to investigate the significance of START:AV-based risk and protective factors in predicting adverse outcomes over longer time perspective. Furthermore, our research did not examine the impact of correctional interventions either on the dynamics of risk and protective factors or on their predictive power. A more detailed examination might help to arrive at valuable recommendations for the practitioners concerning the efficiency of planning and implementation of correctional intervention in the context of assessment and dynamics of risk and protective factors.

6. CONCLUSIONS

1. Risk and protective factors of adolescent convicts are interrelated characteristics, reflecting the psychosocial functioning of adolescent convicts:

1.1. Risk and protective factors are linked inversely: the greater number of the risk factors, the smaller number of the protective factors, and vice versa.

1.2. Risk factors correlate positively, and protective factors correlate negatively, with a history of antisocial behaviour, disinhibition and meanness. The correlation between risk factors and boldness is negative and the correlation between protective factors and boldness is positive.

1.3. Adolescents with higher rates of delinquency have more risk factors and fewer protective factors: confined adolescents in comparison to their peers on probation are characterised by markedly expressed risk factors, reflecting psychological immaturity, the inadequate role of parents and peer-related difficulties. In addition, they possess a longer history of antisocial behaviour and psychopathic traits. Whereas adolescents on probation are distinguished by better relations with parents and boldness.

2. Risk and protective factors related to adolescent's psychological maturity, resocialisation, family and friends are dynamic, and their changes during the three-month follow-up can be predicted:

2.1. The risk and protective factors of adolescent convicts change reliably in up to eight percent of cases. The major changes take place in the resocialisation domain while changes in the domain of psychological maturity and peers are the smallest.

2.2. Criminal attitudes and disinhibition predict the decline of protective factors and an increase in risk factors, while boldness is related to the deterioration of relationships with parents.

3. Risk and protective factors are able to significantly predict the delinquent behaviour of adolescent convicts in the immediate future:

3.1. Adolescent convicts' relationships with parents, and also meanness and disinhibition, predict violence. A history of antisocial behaviour, especially physical aggression and rule-breaking, is another significant predictor of violent behaviour.

3.2. Both the total number of risk factors and separate risk factors are significant in predicting non-violent offences, while friendship with pro-social peers and involvement in the resocialisation process protect the adolescent convicts from these offences.

3.3. Complicated relationships with parents and boldness predict substance use by convicted adolescents.

3.4. Psychological immaturity, complicated relationships with parents and resocialisation difficulties, as well as disinhibition and a history of physical aggression, are the predictors of unauthorised absence. However protective factors predict that the occurrence will be less likely.

4. Different theoretical models explain the interplay of risk and protective factors in predicting the delinquent behaviour of convicted adolescents:

4.1. The main effect is supported by the significance of the entirety of risk and protective factors in predicting delinquent behaviour.

4.2. The buffering effect is confirmed by the dependence of the association between disinhibition and delinquent behaviour on engagement in the resocialisation process. In other words, if the adolescents are actively engaged in the proposed interventions, the impulse-control related difficulties become insignificant.

4.3. The additive effect is supported by the fact that a history of prior aggression and meanness decrease psychological maturity and complicate relationships with parents, thus indirectly contributing to the increased likelihood of delinquent behaviour.

4.4. The risk-reducing effect is demonstrated by engagement in the resocialisation process of those adolescents who are psychologically mature and have better relations with parents.

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Annex 1 *Inter-correlations between risk and protective factors.*

		1	2	3	4	5	6	7	8	9	10	11	12
1	STAB	.93[α]											
2	Phys.aggress.	**.88****	.88 [α]										
3	Soc.aggress.	**.88****	**.67****	.85 [α]									
4	Rule breaking	**.81****	**.52****	**.61****	.83 [α]								
5	TriPM	**.59****	**.59****	**.43****	**.48****	.85 [α]							
6	Boldness	-.07	.03	-.13	-.10	**.39****	.69 [α]						
7	Meanness	**.48****	**.55****	**.35****	**.31****	**.86****	**.20****	.84 [α]					
8	Disinhibition	**.66****	**.54****	**.54****	**.64****	**.75****	**-.17***	**.50****	.84 [α]				
9	CSS-M	**.29****	**.34****	.11	**.27****	**.54****	**.18***	**.57****	**.34****	.91 [α]			
10	L-C-P	**.22****	**.28****	.06	**.23****	**.48****	**.18***	**.51****	**.28****	**.97****	.89 [α]		
11	TLV	**.31****	**.35****	**.15***	**.28****	**.45****	**.16***	**.46****	**.27****	**.80****	**.66****	.65 [α]	
12	ICO	**.31****	**.36****	**.18****	**.24****	**.53****	.04	**.53****	**.45****	**.71****	**.60****	**.48****	.53 [α]
13	PF_total score	**-.24****	**-.24****	**- .20***	**- .17***	- .12	**.19***	**- .16***	**-.21****	- .04	- .01	.07	- .09
14	Psy.matur._PF	**-.22****	**-.27****	**- .19***	- .09	- .11	**.20***	**- .19***	**- .18***	.04	.04	.12	- .10
15	Family_PF	**-.24****	**-.24****	**- .15***	**-.21****	- .11	**.21****	**- .15***	**-.22****	- .06	- .09	.08	- .13
16	Friends_PF	**-.25****	**- .21***	**- .21***	**- .24***	- .07	**.23****	- .10	**- .19***	- .09	- .09	- .08	- .04
17	Resoc._PF	**- .18***	- .15	- .12	**- .19***	- .07	.10	- .11	- .11	.07	.06	.11	- .02
18	RF_total score	**.37****	**.31****	**.29****	**.35****	.15	**-.21****	.10	**.32****	.00	.02	- .10	.08
19	Psy.matur_RF	**.34****	**.34****	**.28****	**.25****	**.25****	.05	**.22***	**.29****	.07	.08	.01	.09
20	Family_RF	**.27****	**.21****	**.21****	**.29****	.08	**- .15***	.05	**.20****	.04	.04	- .02	.11
21	Friends_RF	**.38****	**.31****	**.27****	**.43****	.12	**- .23***	.11	**.27***	.02	.03	- .02	.01
22	Resoc_RF	**.16***	.11	.14	**.17***	.06	- .05	.04	.12	- .13	- .10	**- .18***	- .09

Annex 1 *(continued)*.

		13	14	15	16	17	18	19	20	21	22
13	PF_total score	.90 [α]									
14	Psy.matur._PF	**.82****	.72 [α]								
15	Family_PF	**.71****	**.60****	.72 [α]							
16	Friends_PF	**.70****	**.49****	**.46****	.80 [α]						
17	Resoc._PF	**.80****	**.61****	**.49****	**.46****	.71 [α]					
18	RF_total score	**-.73****	**-.62****	**-.61****	**-.58****	**-.66****	.89 [α]				
19	Psy.matur_RF	**-.61****	**-.61****	**-.40****	**-.48****	**-.58****	**.77****	.73 [α]			
20	Family_RF	**-.50****	**-.37****	**-.63****	**-.33****	**-.39****	**.73****	**.48****	.71 [α]		
21	Friends_RF	**-.55****	**-.38****	**-.53****	**-.54****	**-.39****	**.72****	**.51****	**.48****	.67 [α]	
22	Resoc_RF	**-.56****	**-.45****	**-.39****	**-.47****	**-.68****	**.82****	**.62****	**.47****	**.56****	.77 [α]

Note. STAB = Subtypes of Antisocial behaviour questionnaire; TriPM = Triarchic Psychopathy Measure; CSS-M = Criminal Sentiments Scale – Modified; L-C-P = Subscale of Law-Courts-Police; TLV = Subscale of Tolerance towards Law Violations; ICO =Subscale of Identification with Criminal Others; PF = START:AV based protective factors from the first phase of the study; RV = START:AV risk factors from the first phase of the study. [α] = Cronbach α. Significant results are bolded. * $p < .05$; ** $p < .01$

LIST OF PUBLICATIONS

Laurinavičius, A., Sellbom, M., **Klimukienė, V.**, Wygant, D. B., Laurinaitytė, I., Ustinavičiūtė, L., & Baltrūnas, M. (2020). Examination of triarchic psychopathy measure in a sample of Lithuanian juvenile offenders. *Psychological Assessment, 32*(4), 407–413. https://doi.org/10.1037/pas0000793

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LIST OF PRESENTATIONS AT CONFERENCES ON THE DISSERTATION TOPIC

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what is helping and what is hindering?: 15th conference of the International Association for the Treatment of Sexual Offenders (IATSO) (abstract book) (p. 81). August 28-31, 2018, Vilnius, Lithuania.

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All that time Virginija Klimukienė was interested in new developments of criminal risk assessment and efective practices of correctional interventions. She is a co-author of the Lithuanian translation of the HCR-20 and SVR-2, conducts supervisions for trainers of the EQUIP programme. The lack of efficient tools for the assessment of risk and protective factors of adolescent‘s adverse outcomes in Lithuania encouraged her for doctoral studies, which have started at Vilnius University in 2015.

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