

Can inner and outer containment counteract pulls and pushes toward delinquency? A test of Walter Reckless's containment theory

Janssen, Heleen J.; Bruinsma, Gerben J.N.; Weerman, Frank M.

DOI

[10.1177/1477370820988815](https://doi.org/10.1177/1477370820988815)

Publication date

2021

Document Version

Final published version

Published in

European Journal of Criminology

Citation (APA)

Janssen, H. J., Bruinsma, G. J. N., & Weerman, F. M. (2021). Can inner and outer containment counteract pulls and pushes toward delinquency? A test of Walter Reckless's containment theory. *European Journal of Criminology*, 19(6), 1615-1637. <https://doi.org/10.1177/1477370820988815>

Important note

To cite this publication, please use the final published version (if applicable). Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.

Can inner and outer containment counteract pulls and pushes toward delinquency? A test of Walter Reckless's containment theory

European Journal of Criminology

1–23

© The Author(s) 2021



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/1477370820988815

journals.sagepub.com/home/euc**Heleen J Janssen** 

Delft University of Technology, The Netherlands

Gerben JN Bruinsma**Frank M Weerman**

Netherlands Institute for the Study of Crime and Law Enforcement (NSCR), The Netherlands

Erasmus University Rotterdam, The Netherlands

Abstract

The aim of the current study is to provide an empirical test of containment theory of Walter Reckless (1899–1988). The theory proposes that outer and inner containment hold adolescents back from delinquency even when external factors pull and push them toward it. This early control theory was ahead of its time, but never received the empirical attention it deserves. This article outlines the core theoretical concepts and the basic propositions in order to empirically examine their validity. We employed hybrid linear regression analysis using longitudinal survey data of 612 adolescents (12–18 years old) in the city of The Hague, the Netherlands. The results indicate that outer and inner containment can be meaningfully distinguished, and that several but not all propositions of the theory are supported. Inner and outer containment function as a buffer against external pulls and are able to counteract the effect of increases in environmental pulls during adolescence. We conclude that containment theory is still a promising interaction theory that can help us understand why adolescents who experience external pulls toward delinquency are able to resist these influences.

Keywords

Containment theory, delinquency, inner containment, outer containment

Corresponding author:

Heleen J Janssen, Department of Urbanism, Faculty of Architecture and the Built Environment, Delft University of Technology, PO Box 5043, 2600 GA, Delft, The Netherlands.

Email: h.janssen@tudelft.nl

Introduction

Criminology has a long tradition of formulating theories about the causes of delinquent behaviour, going back to the early 19th century (Bruinsma, 2014; Burkhead, 2006; Jones, 1986). These theories have ‘careers’, just like the careers of scholars, offenders and rock stars (Dooley, 2010). A few theories become famous and reach the standard criminology textbooks, whereas other theories receive hardly any attention. Theories can also be ‘in fashion’ for some years and then become forgotten and ignored after a while. In the ideal world, the careers of criminological theories are determined by their intrinsic qualities (for example, clarity of concepts, parsimony) and by the amount of empirical support they receive (for example, Opp, 2002; Popper, 1934). In reality, however, theories are often embraced or ignored for other, more practical or contextual, reasons (see, for example, Cullen et al., 2011). Some theories are simply better sold than others or combined with innovative types of research, or put forward by authors with an influential position in the discipline whose students continue their work after they have retired. Sometimes, theories become popular because they align with cultural changes and shifts in public opinion. On the other hand, theories also get dismissed or ignored for non-scientific reasons – because they do not fit into the zeitgeist anymore, or because other, similar but better sold theories take over.

An example of a criminological theory with a scientific career that waxed and waned is containment theory, formulated by Walter Reckless (1899–1988) at the beginning of the 1960s but already in development during the late 1950s (Reckless, 1961a, 1961b; see also Flexon, 2010; Lilly et al., 2015). Focusing on what restrains – or ‘contains’ – individuals from engaging in crime, Reckless’s containment theory is considered to be one of the earliest control theories. The central notion of the theory is that containment (we discuss these concepts in detail later) is able to protect a young person from delinquency even when external pulls and pushes to act delinquently are present (Reckless, 1961a). Originally, Reckless was searching for a theory to explain why ‘good’ kids in ‘bad’ neighbourhoods can stay out of trouble (Flexon, 2010; Huff and Scarpatti, 2011; Reckless et al., 1957), but the final formulation of the theory became much more than that. At the time it was developed, it offered an integration of many of the correlates of delinquency that were recognized in the early 1950s and 1960s. Reckless’s theory evolved in a period when other scholars were also promoting control theories as rivals to Sutherland’s differential association theory. Reiss (1951) stressed the importance of accepting moral rules to get individuals to refrain from crime, and believed that personal controls and social controls could stimulate this. Nye (1958) distinguished four types of social control: direct social control, internalized control, indirect control and access to means as mechanisms that make adolescents less vulnerable to crime and delinquency.

Reckless’s containment theory on control and delinquency emerged during the early 1960s. It became very popular and frequently cited in the field of criminology (see, for example, Flexon, 2010; Lilly et al., 2015). This was facilitated by the fact that Reckless was already a well-known and influential criminologist, who had written a standard work, *The Crime Problem*, in the 1950s (with several editions), and who served as

president of the American Society of Criminology for three consecutive years in the 1960s. The theory also aligned with the rising popularity of the control perspective in criminology during a time of social change in which much behaviour of young people seemed to be characterized by problems of social and self-control.

After the 1960s, containment theory fell out of fashion and its position was superseded by Hirschi's more straightforward and easier to grasp version of control theory, published in *Causes of Delinquency* (Hirschi, 1969). Hirschi demonstrated the salience of the theory directly with data from a youth survey; he used strong rhetoric and presented his 'social control theory' as a competitor of other theories in criminology (in particular, differential association and strain theory). In the 1980s and 1990s, Hirschi's control theory became one of the most investigated theories in criminology (see, for example, Kempf, 1993). This success was only surpassed by Hirschi's new 'general theory of crime', formulated together with Michael Gottfredson (Gottfredson and Hirschi, 1990). This theory has been subject to multiple empirical tests and nowadays it is one of the most cited works in criminology (Cohn and Farrington, 2012; Gottfredson, 2006; Pratt and Cullen, 2000).

Although containment theory seems to be regarded nowadays as a 'historic' theory, we believe that there are several reasons to scrutinize its empirical validity. First, the theory has several interesting features and qualities that are still relevant and are absent in other control theories of crime. For example, Reckless theorized an *interaction* between external criminogenic neighbourhood circumstances and controls at the level of the individual and the family (nowadays this is conceptualized as resilience; see, for example, Rutter, 1987; Smith et al., 1995). Containment theory also integrated motivational approaches and control theory, which means that the theory was ahead of its time, since other integrated interactional theories of delinquency emerged much later (Elliott et al., 1985; Thornberry, 1987; Wikström and Treiber, 2016). In fact, few contemporary theories are as comprehensive as containment theory was. An integrative theory that comes close to containment theory is that of Thornberry, who combined elements from control theory as well as social learning perspectives. (Thornberry, 1987; Thornberry et al., 1994). Thornberry stated that human behaviour occurs in social interaction and he focused on the reciprocal interrelationships between six core concepts of social learning and control theories. However, he did not model explicit moderations between controlling and stimulating causes of delinquency, as Reckless did. Another contemporary theory that resembles the core ideas of containment theory is the Situational Action Theory of Wikström, who aims to explain how individuals in certain settings make moral decisions to break the law or not (Wikström, 2014; Wikström and Treiber, 2016; Wikström et al., 2012). This theory more explicitly posits interaction effects between different elements. However, containment theory also distinguishes different types of control (inner and outer) and types of motivation (pushes and pulls), and specifies the conditions under which control matters the most. As such, the theory as a whole still differs from contemporary interactional theories.

A second reason to investigate a seemingly 'outdated' theory is that, despite its potential, the theory has actually scarcely been empirically tested. Only a few studies have tested some of its propositions, and no study yet has tested all of its propositions. The empirical validity of Reckless's theory therefore remains to be determined. We found

only five studies from the USA (Dinitz et al., 1958; Jensen, 1973; Rohde, 1976; Thompson and Dodder, 1983), one from the UK (Marshall, 1973) and a recent study from Canada (Kennedy, 2015) that have tested the theory empirically. The absence of a strong body of empirical literature is unfortunate, because we still do not know how well this theory performs in comparison with other theories that have been tested more extensively. Containment theory might have been laid to rest prematurely.

The purpose of the current study is to empirically test containment theory as completely as possible, and to scrutinize its empirical validity and contemporary relevance. We employed rich longitudinal data from the Study of Peers, Activities, and Neighborhoods that were collected among adolescents in the Netherlands and include indicators of core concepts of containment theory. In contrast to previous studies that tested only some propositions of the theory, we attempt to provide a more complete and adequate analysis of all propositions.

The remainder of this article is outlined as follows. First, we discuss containment theory as Reckless stated it and provide an overview of the empirical evidence for the theory thus far. We then formulate the central propositions of containment theory that we aim to test empirically. Following this, we describe our methods and analytical strategy and also discuss the complexity in measuring and distinguishing the core concepts of the theory. Then we present our findings, and we conclude our article with a discussion on what our results mean for the empirical status of containment theory and its position in the stock of criminological knowledge.

The basics of containment theory

Walter Reckless published his containment theory in 1961 as ‘a new theory of delinquency and crime’ (Reckless, 1961b). Reckless did not advocate a general theory of crime but aimed at one that was in line with the philosophy of Robert Merton to strive for theories of the middle range (Merton, 1968). He limited his theory to the category of ordinary norm violations:

Containment theory does not explain the entire spectrum of delinquency and crime. It does not explain crime or delinquency which emerges from strong inner pushes, such as compulsions, personality disorders . . . , from organic impairments such as brain damage and epilepsy, or from neurotic mechanisms. (Reckless, 1961b: 42)

The underlying assumption of the concept of ‘containment’ is that strong inner and outer containment can serve as insulation against what Reckless termed ‘normative deviancy’, better known in the literature as deviant attitudes. With his theory, Reckless attempted to get closer to the mechanisms that regulate conduct.

The four central concepts of the theory are: inner containment, outer containment, environmental pushes, and environmental pulls. According to Reckless, inner containment ‘consists mainly of self-components, such as self-control, good self-concept, ego strength, well-developed superego, high frustration tolerance, high resistance to diversions, high sense of responsibility, goal orientation, ability to find substitute satisfactions, tension-reducing rationalizations, and so on’ (Reckless, 1961b: 44–5). Outer

containment represents ‘the structural buffer in the person’s immediate social world which is able to hold him within bounds’.

It consists of such items as a presentation of a consistent moral front to the person, institutional reinforcement of his norms, goals, and expectations, the existence of a reasonable set of social expectations, effective supervision and discipline (social controls), provision for reasonable scope of activity (including limits and responsibilities), as well as for alternatives and safety-valves, opportunity for acceptance, identity, and belongingness. Such structural ingredients help the family and other supportive groups contain the individual. (1961b: 45)

Two concepts that are related to the environment of the individual also play a vital role in containment theory: environmental pushes and environmental pulls. Environmental pushes ‘may be looked upon as a condition associated with poverty or deprivation, conflict or discord, external restraint, minority group status, limited access to success in an opportunity structure’ (1961b: 45). And environmental pulls can be seen to represent ‘the distractions, attractions, temptations, patterns of deviancy, advertising, propaganda, carriers of delinquent and criminal patterns (including pushers), delinquency subculture, and so forth’ (1961b: 45). According to the theory, inner and outer containment serve as a buffer against these external conditions. Apart from external (or environmental) pushes and pulls, Reckless also acknowledged that there can be various internal drivers of deviancy, ‘ordinary pushes’ in his words, consisting of ‘the drives, motivations, frustrations, restlessness, disappointments, rebellion, hostility, feelings of inferiority, and so forth’. However, in line with other representatives of the control perspective, Reckless regarded these internal drivers as given, and did not devote much attention to them.

Being socialized as a Chicagoan criminologist, Reckless viewed social disorganization as very important because it can cause a breakdown of social controls in a community. However, one of Reckless’s main arguments was that the largest portion of residents in disorganized neighbourhoods refrain from delinquency and crime (Flexon, 2010). He stated that social disorganization theories and other theories that were oriented at push or pull factors need more to explain crime. To understand why many adolescents do not commit crimes in socially disorganized neighbourhoods, despite the pulls and pushes, one needs to uncover the mechanisms that regulate behaviour. Reckless was convinced that the interplay between the environment, on the one hand, and inner self-controls and outer social controls, on the other, explained why some people engage in crime and delinquency and others do not (Reckless, 1940: 26–58). According to Lilly, Cullen and Ball (2015: 103):

He argued that to commit crime or delinquency requires the individual to break through a combination of outer containment and inner containment that together tend to insulate the person from both the pushes and the pulls. With rare exceptions, only when these powerful containing forces were weakened, could deviance occur.

Empirical evidence thus far

The few existing empirical studies thus far have provided mixed support for containment theory. Reckless and his colleagues tested preliminary versions of his containment

theory twice (Dinitz et al., 1958; Reckless et al., 1957). Both studies built on a pilot study among white boys in Columbus, Ohio, that gathered reports of teachers on their pupils. Both studies reported that 'insulated' boys in high delinquent areas are less delinquency prone than others. A non-deviant, harmonious and stable family setting with maternal supervision keeps the boys away from the 'pervasive delinquent patterns characteristic of his residential area'. Reckless did not test the complete theory himself.

The first formal tests of the final version of the theory appeared in the 1970s. Marshall (1973) carried out a study using a sample of English boys. He used a Delinquency Proneness Scale that had been developed previously by Dinitz et al. (1958), which included some elements of inner and outer containment. The findings revealed that this scale is predictive when external social pressures on acting delinquent are present, which would imply that inner and outer containment function as a buffer, as predicted by Reckless. Marshall (1973) found the lowest delinquency rates for boys with high inner and outer containment and the highest rates for boys with low inner and outer containment. Jensen (1973) investigated the effects of inner and outer containment in a larger and more diverse sample of youths, the Richmond Youth Study. His findings suggested that elements of inner containment (self-esteem, self-control, conventional belief) are negatively related to delinquency, and that they account for some variation in delinquency among boys from similar socio-economic conditions and similar family conditions, and among boys who have friends picked up by the police. Jensen concluded that the outcomes of his analyses are largely consistent with containment theory. In contrast, Rankin (1976) reported less supportive findings, particularly in relation to the role of inner containment. Based on a school-based sample of youths, he found that the negative association between inner containment and conformity vanished after controlling for delinquent companions. However, in this study, inner and outer containment were not measured in the way that Reckless had conceptualized them. For example, attachment to school and educational expectations were used as indicators of inner containment instead of outer control.

In the 1980s, only one test of the theory was published. Thompson and Dodder (1983) conducted a survey among high school students and residents of three juvenile correctional institutions. They found empirical support for the theory only among white boys, but not among black youths, and therefore questioned the generality of containment theory. The authors did not make a distinction between inner and outer containment but identified seven elements of containment (each measured by a scale of 12 items). These seven containment variables did not explain much variation in delinquency.

Since then, empirical tests of the theory are virtually absent. More recently, Kennedy (2015) tested the usefulness of containment theory to explain unethical business decision behaviour among 90 (under)graduate students. He found associations between lack of inner containment and some types of unethical decisions, and between lack of outer containment and other types. Further, he concluded that 'on the whole, findings appear to contradict Reckless' assertions regarding the relationships between factors of inner and outer containment' (2015: 60).

We may conclude that containment theory does not have a strong record of empirical testing. Only a few empirical tests have been conducted; these tests varied strongly in scope, method and quality, and they had contradictory results. Researchers had difficulties in measuring the key concepts of the theory, used very different measurement

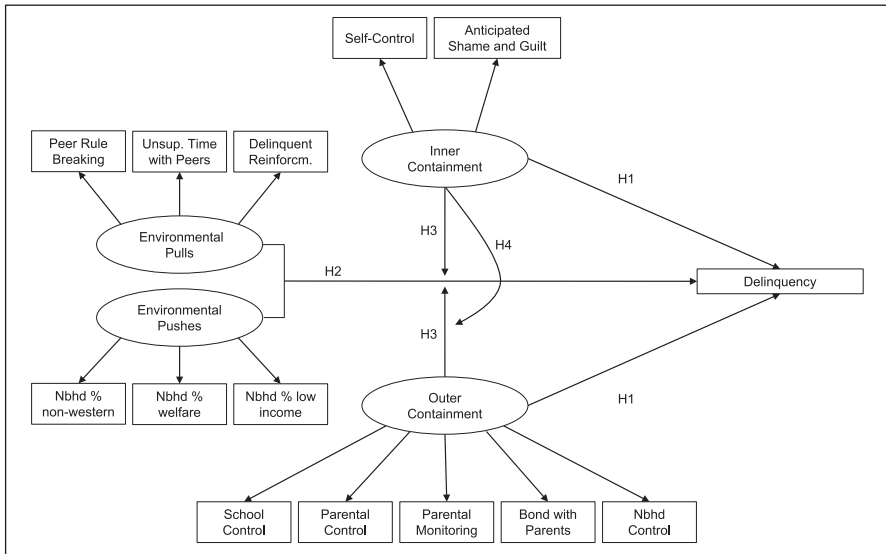


Figure 1. Conceptual model of containment theory.

instruments, left key variables such as environmental pulls and pushes outside the test, used limited versions of the theory, and did not elaborate propositions carefully. Besides that, the interactional nature of the theory was neglected, partly owing to the state of the art of statistical techniques at the time of research. Of course, this is a practice that is not unique to containment theory. In fact, partial and inconsistent empirical testing of (crime-causation) theories is quite common in criminology (Bruinsma, 2016). But for containment theory it means that, more than 50 years after its original formulation, we cannot conclude much about its empirical status.

Current study and hypotheses

Although previous studies have examined some of the propositions from Reckless’s containment theory, no study has yet fully tested the theory and all its propositions, including supposed interaction effects. In the current study we seek to examine the theory more completely by investigating the extent to which inner and outer containment counteract the influences of environmental pulls and pushes on delinquent behaviour. Do inner and outer containment explain why some adolescents do not engage in delinquent behaviour or less than others, despite environmental pulls and pushes?

Previous studies recommended that further empirical research was needed to investigate how to distinguish the two essential theoretical constructs of inner and outer containment, and this was also pointed out by Reckless himself (1961b). Therefore, the current study starts with Reckless’s statement that inner and outer containment can be distinguished as two separate and meaningful constructs. Next, we proceed by testing the core propositions from containment theory as we have elaborated them. A conceptual model of containment theory and the derived hypotheses is presented in Figure 1. The

first two hypotheses address the main effects of inner and outer containment and environmental pulls and pushes on delinquency.

Hypothesis 1. The stronger one's inner and outer containment, the less delinquent an individual will be (main effects).

Hypothesis 2. The stronger one's environmental pushes and environmental pulls, the more delinquent an individual will be (main effects).

The next proposition reflects Reckless's statement that external pulls and pushes have no impact when inner and outer containments are strong. This is the central hypothesis of containment theory.

Hypothesis 3. The stronger one's inner and outer containment, the less impact environmental pushes and environmental pulls have on delinquency (two-way interaction effects).

The final proposition is derived from Reckless's notion that outer controls take over the buffering protective role of inner containments when these are weak.

Hypothesis 4. The weaker one's inner containment, the stronger the interaction effect between outer containment and environmental pushes and environmental pulls on delinquency (three-way interaction effects).

We test the main effects of inner and outer containment and environmental pulls on delinquency in two ways. The first way is to investigate the extent to which inner and outer containment and environmental pulls and pushes are related to *differences* in delinquency (between-person effects). The second way is to investigate the extent to which *changes* in inner and outer containment and in environmental pulls and pushes are related to *changes* in delinquency (within-person effects). This dynamic test provides a more stringent test of the hypotheses derived from the theory, but it is also important because adolescence is a period of developmental changes in individual and social functioning (Mulvey, 2014; Smetana et al., 2006; Steinberg and Morris, 2001). Reckless did not discuss the issue of change during adolescence in his original article in which he presented his theory (Reckless, 1961b), but in an earlier article he did acknowledge the possibility:

Whether the subjects, now largely unreceptive to delinquent norms of conduct, will continue to remain 'good' in the future remains problematic. The answer to this question, it is felt, will depend on their ability to maintain their present self-images in the face of mounting situational pressures. (Reckless et al., 1957: 746).

In the same two ways (analysing between-person as well as within-person effects), we scrutinize the buffering protective effects of inner and outer containment (H3 and H4). We investigate the extent to which inner and outer containment buffer the effects of *differences* in environmental pulls and pushes (interactions at the between-person level). And, in addition, we investigate the extent to which inner and outer containment buffer the effect of *increases* in environmental pulls over time on increases in delinquency (cross-level interactions, in which the containment variables are at the between-person level, whereas environmental pulls are within-person variables).

Method

The Study of Peers, Activities and Neighborhoods (SPAN) is a longitudinal (panel) study consisting of two waves of data collection among adolescents, conducted in The Hague and its neighbouring suburbs. The Hague is the third-largest city of the Netherlands, with 486,000 inhabitants in 2009. The first wave took place between October 2008 and May 2009 (843 respondents); the second wave between November 2010 and June 2011 (615 respondents). In total, the retrieval rate in the second wave was 73 percent. The study employed a survey questionnaire to measure self-reported offending, together with many explanatory variables informed by major criminological perspectives.

Sample

We approached 40 schools for secondary education in the first wave, and 10 schools agreed to participate in the study, allowing students to be surveyed and interviewed during school hours (see, for more details, Bruinsma et al., 2015; Pauwels et al., 2011; Svensson et al., 2013; Weerman et al., 2013).¹

The study was conducted among two cohorts of secondary school students: one cohort of students who were 1st graders in the first wave (mainly ages 12 and 13) and one cohort of students who were 4th graders in the first wave (ages 15 and 16). In the second wave, most respondents of the younger cohort were in the 3rd grade of secondary school (mainly ages 14 and 15), and respondents from the older cohort were in the 6th grade of the highest form of secondary education, in the 1st or 2nd grade of follow-up education, working part time or full time, or jobless (ages 17 and 18).

The final sample of the current study comprises adolescents who participated in both waves of the study. This resulted in a sample of 1230 observations of 615 adolescents living in 149 neighbourhoods. The sample is almost evenly split on gender (53 percent boys), and has an age range of 11–17 years ($M=13.9$ at T1). A relatively large proportion (45 percent) of the sample consists of youths from ethnic minorities, and relatively many adolescents come from lower forms of secondary education (66 percent).

Measurements: Toward a more complete test of containment theory

In his containment theory, Reckless introduced complex theoretical concepts but he did not clearly define how to operationalize them. He simply stated that future research should ‘setter out’ how to measure these concepts, and he was optimistic ‘that such assessments can be measured in a standard way’ (Reckless, 1961b: 45–6). As may be clear from our summary of previous research, this has in fact never happened sufficiently. Therefore, we went back to the original formulation of the theory, and we carefully tried to find the most suitable indicators for each of the main elements of the theory from the measures that we had available in the SPAN study (not only inner and outer containment, but also environmental pulls and pushes).

Self-reported delinquency was measured by a summary construct based on the scale developed by Wikström and Butterworth (2006). This scale consists of 20 items asking how often the respondent committed various types of crimes during the past year. The offence types ranged from minor (for example, vandalism) to serious offences (for

example, robbery). For each item, the following response categories were used: 0 times; 1 time; 2 times; 3–5 times; 6–10 times; more than 10 times. These responses were coded 0 through 5, respectively, and then summed. The scale ranges from 0 (that is, zero delinquent acts) to 100 (that is, all 20 acts more than 10 times). The average score of the delinquency frequency variable is 5.8 at T1 ($SD=8.7$; Skewness=2.7; Kurtosis=11.9) and 4.8 at T2 ($SD=7.9$; Skewness=3.16; Kurtosis=15.7).² The majority of the respondents (about 70 percent) committed at least one of the offences.

Inner containment was measured by 21 items that relate to ‘self-components’ about doing things that may be dangerous without thinking about the consequences or just for fun, the ability to hold back anger and not to get angry quickly, thinking first before saying something or acting, and the extent to which an adolescent would feel guilty and ashamed in relation to significant others if he or she had offended.

The second central concept of containment theory, *outer containment*, is measured by 24 items that relate to ‘the structural buffer in the person’s immediate social world’ about the expected reactions from parents, teachers and neighbours to rule-breaking behaviour, and the relationship with parents. These items cover several examples of outer containment mentioned by Reckless, in particular ‘a consistent moral front, institutional reinforcement of norms, effective supervision and discipline (social controls), and opportunity for belongingness’.

As indicators of *environmental pulls*, we used 13 items pertaining to ‘the distractions, attractions, temptations, patterns of deviancy, . . . , carriers of delinquent and criminal patterns, delinquency subculture’ about peer rule breaking, unsupervised peer activity, and delinquent reinforcements.

As indicators of *environmental pushes*, we could not use measures from the questionnaires but instead used existing register data from Statistics Netherlands. We chose three characteristics of the respondents’ residential neighbourhoods to capture ‘conditions associated with poverty or deprivation, conflict or discord’: (1) percentage of households receiving welfare benefits, (2) percentage of residents having an income below the poverty line, (3) percentage of non-western immigrants.

All items used to measure inner and outer containment and environmental pulls can be found in Table A1 of the online Appendix. The confirmatory factor analyses that were performed are presented in the Findings section.

Finally, we included a few control variables in the models: sex, ethnic minority status, educational level, and two-parent household. These are demographics that are known to be related to delinquent behaviour and therefore often included as standard controls in regression models. By including these variables, we are more certain that our findings with regard to the theoretical variables of interest are not due to the effects of (other explanatory factors related to) these demographics. Reckless himself stated that inner and outer containment provides ‘insulation’ against the pressures and pulls toward delinquency, regardless of social class or other environmental conditions. This means that the effects of interest should remain after inclusion of the control variables.

Analytical strategy

First, we needed to determine whether the concepts of inner and outer containment can be distinguished as meaningful and distinct dimensions. We conducted confirmatory factor analyses using structural equation modelling in Stata14 and compared fit indices of

models with a one-factor and a two-factor solution. In addition, determination of measurement invariance across both waves was accomplished by a multistep process following the checklist provided by Van de Schoot et al. (2012). Model fit and factor loadings for environmental pulls and pushes were also evaluated.

Second, we performed a series of multilevel models in Stata14 (StataCorp, 2015). The multilevel structure consisted of three levels: time at Level 1, which is nested in persons at Level 2, who are clustered in neighbourhoods at Level 3 (Bryk and Raudenbush, 1992; Hox et al., 2010; Snijders and Bosker, 2012).

For the composite measures (scale scores) of inner containment, outer containment, environmental pulls and environmental pushes, two variables were constructed: a *between-person* variable and a *within-person* variable. The between-person variables were computed by first averaging the factor scores on the latent constructs across both waves for each respondent and then centring this variable around the grand mean. The within-person variables were computed by subtracting the between-person score from the score at each time point. Third, we examined between-person as well as cross-level interaction effects between inner/outer containment and environmental pulls and pushes. The between-person interactions indicate the differential effects of environmental pulls and pushes for different levels of inner and outer containment, whereas the cross-level interactions indicate the differential effects of *changes* in environmental pulls (Level 1) for different levels of inner and outer containment (Level 2). We also estimated the three-way interactions between inner containment, outer containment and environmental pulls/pushes to test whether outer containment can take over the role of inner containment.

Intraclass correlation coefficients showed that, of the total amount of variance in delinquency, 1.8 percent is at the neighbourhood level, 40.2 percent at the individual level (time stable), and 58.0 percent at the time level (time-varying).

The dependent variable of our research (the delinquency frequency measure) is skewed, and we needed to account for this in our estimation of interaction effects. To arrive at robust estimates of interaction effects, we used a relatively new method, ordinary least squares regression with robust standard errors together with the quadratic terms of the predictor variables to control for spurious moderator effects (introduced by Lubinski and Humphreys, 1990; see, for applications, for example Hirtenlehner et al., 2015; Janssen et al., 2017). The quadratic terms are not interpreted substantively, because they just serve to adjust the models to the non-normality of the response variable and, thus, correct for spurious interaction effects.

Findings

Factor analysis

The implementation of the confirmatory factor analysis is guided by the theoretical relationships between the observed and unobserved variables. The confirmatory factor analyses were conducted in two steps. In the first step we constructed subscales that were measured by the items, and in the second step we constructed inner and outer containment measured by these subscales. The subscales for inner containment were self-control and feelings of guilt and shame; the subscales for outer containment were school control, parental control, bond with parents and neighbourhood control. The model fit of the first

step can be found in Table A1 of the online Appendix, which also includes factor loadings for all items.

Table 1 presents the results of the second step of the confirmatory factor analysis of containment. The analysis revealed that the two theoretical concepts can be distinguished meaningfully from each other. The model fit of the one-factor solution was worse ($\chi^2=142.807$, $df=8$, $p \leq .000$, CFI=.892, TLI=.797, RMSEA=.165, BIC=3110.268, AIC=3026.226) than the model fit of the two-factor solution (t1: $\chi^2=30.729$, $df=7$, $p \leq .000$, CFI=.981, TLI=.959, RMSEA=.074, BIC=3004.613, AIC=2916.148; t2: $\chi^2=29.713$, $df=7$, $p \leq .000$, CFI=.970, TLI=.937, RMSEA=.073, BIC=2967.486, AIC=2879.021 at t1). Factor loadings are shown in Table 1.

Results for the confirmatory factor analyses for environmental pulls and pushes are also shown in Table 1. Although the RMSEA was slightly higher than the general rule for acceptable fit, other fit indices indicated good fit (t1: $\chi^2=78.635$, $df=8$, $p \leq .000$, CFI=.966, TLI=.936, RMSEA=.136, BIC=13942.316, AIC=13863.014; t2: $\chi^2=107.769$, $df=8$, $p \leq .000$, CFI=.955, TLI=.915, RMSEA=.163, BIC=13180.088, AIC=13101.267). The factor loadings of these constructs are also presented in Table 1.

Before analysing the longitudinal data, we checked for measurement invariance over time following the checklist from Van de Schoot et al. (2012). We compared a series of increasingly constrained factor models (multiple group). Results indicate that the model representing metric invariance, in which only the factor loadings are equal across waves but the intercepts are allowed to differ between waves, has the lowest AIC and BIC value. This means that this model has the best trade-off between model fit and model complexity. The other fit indices of this model also indicate good fit. This means that we can assume metric invariance in our data, and that we can model changes in the constructs over time.

Multilevel analysis

Model 1 in Table 2 presents the main effects of inner and outer containment on delinquency. The results show that, when examined simultaneously, both inner containment and outer containment are negatively related to delinquency. The between-person coefficients indicate that adolescents with higher levels of inner and outer containment are less involved in delinquency than adolescents with lower levels of containment (between-person effect). The within-person coefficients indicate that decreases in inner and outer containment between the two waves are related to increases in delinquency between the two waves (within-person effect). These results support Hypothesis 1 that, the stronger one's inner and outer containment, the less delinquent an individual will be (main effects).

In Model 2 of Table 2 the main effects of environmental pulls and pushes are presented. The coefficients show that adolescents who reported higher levels of environmental pulls are more strongly involved in delinquency (between-person effect). In addition, adolescents who experience an increase in environmental pulls over time are increasingly involved in delinquent behaviour (within-person effect). The effect of environmental pushes is not statistically significant. This indicates that, controlling for environmental pulls, adolescents living in disadvantaged neighbourhoods are not more involved in delinquent behaviour than adolescents in other neighbourhoods. Together,

Table 1. Measurement model: Containment and environmental pulls and pushes.

	Factor loading t1	Factor loading t2
<i>Measurement model containment</i>		
Inner containment		
Self-control	1	1
Anticipated shame and guilt	0.624	0.533
Outer containment		
School control	1	1
Parental control	1.010	1.084
Bond with parents	1.063	1.447
Neighbourhood control	1.448	1.420
Model fit	$\chi^2 = 30.729$, $df = 7$, $p \leq .000$, CFI = .981, TLI = .959, RMSEA = .074, BIC = 3004.613, AIC = 2916.148	$\chi^2 = 29.713$, $df = 7$, $p \leq .000$, CFI = .970, TLI = .937, RMSEA = .073, BIC = 2967.486, AIC = 2879.021
<i>Measurement model environmental pulls and pushes</i>		
Environmental pulls		
Unsupervised time with peers	1	1
Peer rule breaking	0.760	0.655
Delinquent reinforcement	0.753	0.912
Environmental pushes (neighbourhood level)		
Percent non-Western immigrants	1	1
Percent low income	3.152	3.196
Percent welfare	0.266	0.274
Model fit	$\chi^2 = 78.635$, $df = 8$, $p \leq .000$, CFI = .966, TLI = .936, RMSEA = .136, BIC = 13942.316, AIC = 13863.014	$\chi^2 = 107.769$, $df = 8$, $p \leq .000$, CFI = .955, TLI = .915, RMSEA = .163, BIC = 13180.088, AIC = 13101.267

these findings only partially support Hypothesis 2 that, the stronger one's environmental pushes and environmental pulls, the more delinquent an individual will be.

The effects of inner and outer containment and of environmental pulls and pushes are simultaneously estimated in Model 3, together with our control variables. The results show that inner containment and environmental pulls remain significantly related to delinquency, whereas outer containment is no longer related to delinquency.

Buffering effect of inner containment. As a next step, we examined whether inner containment is able to serve as a buffer against environmental pulls and pushes by including interaction terms. The results of the full models can be found in Table A2 in the online Appendix. To facilitate interpretation, we graphically present the interaction effects that were statistically significant.

Table 2. Multilevel models predicting delinquency.

	Model 1		Model 2		Model 3	
	Estimate	SE	Estimate	SE	Estimate	SE
<i>Inner containment</i>						
Between	-9.124***	0.921			-3.780***	1.015
Within	-7.124***	1.215			-3.762**	1.193
<i>Outer containment</i>						
Between	-8.318**	2.614			-3.056	2.365
Within	-7.022*	3.053			-2.776	2.781
<i>Environmental pulls</i>						
Between			12.382***	.840	9.288***	1.048
Within			9.314***	1.150	7.354***	1.245
<i>Environmental pushes</i>						
Between			0.005	0.008	-0.007	0.011
Within			-0.002	0.038	0.001	0.035
<i>Control variables</i>						
Minority					0.520	0.530
Younger subsample					-1.211**	0.384
Male					-0.022	0.348
Two-parent family					0.024	0.433
Education level (ref: practical education)						.
Pre- vocational					-0.518	0.599
Pre- higher vocational					-0.979	0.675
Pre-university					-0.211	0.598
Constant	5.323***	0.206	5.376***	0.195	6.040***	0.699
Residual variance between	12.054***		7.699***		5.749***	
Residual variance within	32.281***		28.373***		26.194***	

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; $n_{\text{observations}} = 1230$; $n_{\text{individuals}} = 615$; $n_{\text{neighbourhoods}} = 149$.

The interaction term between inner containment and environmental pulls (between-person) in Model 4 appears to be statistically significant. This indicates that the effect of environmental pulls on delinquency is weaker for adolescents with higher levels of inner containment. This is illustrated in Figure 2.

The cross-level interaction between inner containment and *changes* in environmental pulls (within-person), included in Model 5, is also statistically significant. Figure 3 shows a similar pattern to the between-person interaction effect. Adolescents who experienced an increase in environmental pulls between the two waves become more involved in delinquency, but only if they have lower levels of inner containment. Increases in environmental pulls are not related to increases in delinquency for adolescents who have high levels of inner containment. Both the between- and within-person effects support the idea of a buffering protective effect of inner containment.

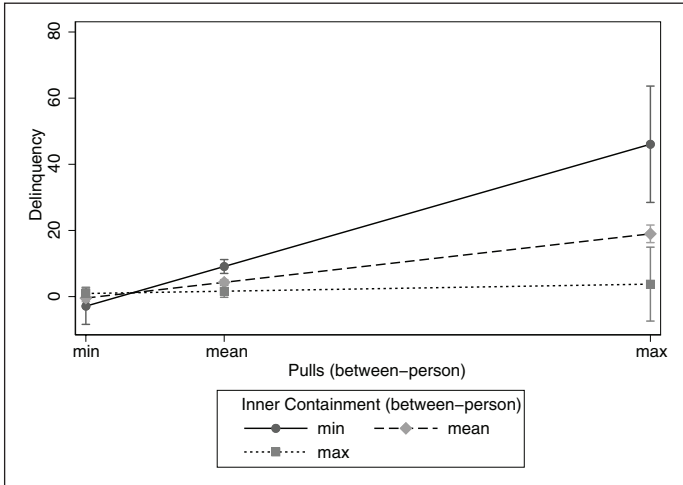


Figure 2. Two-way interaction effect of inner containment (between-person) and environmental pulls (between-person) on delinquency (Model 4).

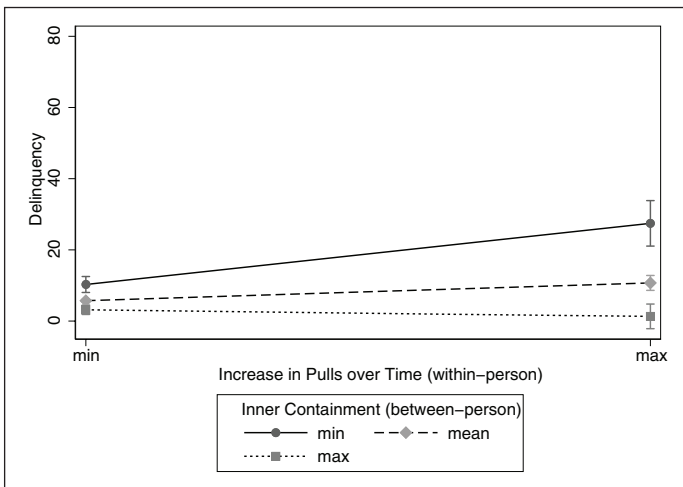


Figure 3. Two-way interaction effect of inner containment (between-person) and increases in environmental pulls (within-person) on delinquency (Model 5).

The interaction effects of inner containment and environmental pushes, included in Models 6 and 7, are not significant. These results are not surprising given that environmental pushes were not related to delinquency in Models 2 and 3.

Buffering effect of outer containment. In a next set of models, we estimated the interaction effects of outer containment and environmental pulls and pushes, in order to

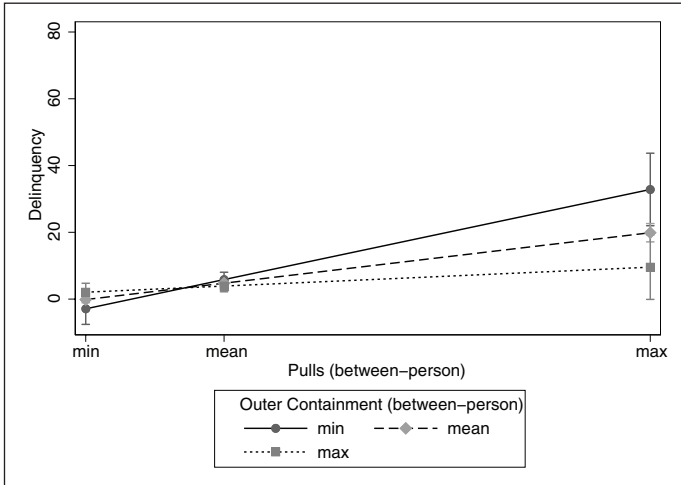


Figure 4. Two-way interaction effect of outer containment (between-person) and environmental pulls (between-person) on delinquency (Model 8).

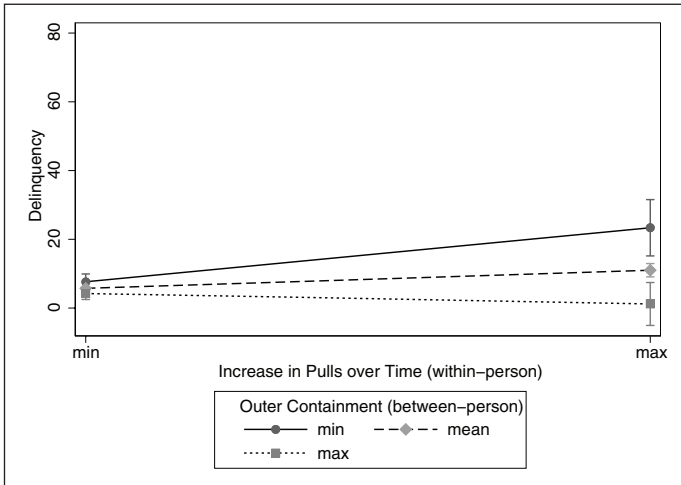


Figure 5. Two-way interaction effect of outer containment (between-person) and increases in environmental pulls (within-person) on changes in delinquency (Model 9).

examine the buffering protective effect of outer containment (Models 8–11 of Table A3 in the online Appendix). The results from these models indicate a similar buffering protective effect of outer containment as we have found for inner containment. Outer containment is able to mitigate the effect of environmental pulls and *increases* in environmental pulls. These interaction effects are graphically represented in Figures 4 and 5. Adolescents who experience increases in environmental pulls between the two waves

are increasingly involved in delinquency, but the estimated effect appears to disappear when outer containment is high.

Buffering effect of outer containment when inner containment is weak. In order to test Hypothesis 4, three-way interactions between inner and outer containment and environmental pulls and pushes were estimated (Models 12–15 in Table A4 of the online Appendix). None of the three-way interaction effects appears to be significant. These findings offer no support for Hypothesis 4 that outer containment can take over the role of inner containment as a buffering protective factor when inner containment is weak.

Conclusions and discussion

The aim of the current study was to test containment theory (Reckless, 1961b). This version of control theory has not received much attention in empirical research and seemed to have been forgotten and regarded as ‘outdated’ since Travis Hirschi formulated his well-known social control theory (1969). However, in a sense, Reckless’s theory goes ‘deeper’ (Opp, 2002) than its famous successor. Social control theory postulated relatively simple direct relationships between attachment, commitment, involvement and beliefs, on the one hand, and delinquency on the other. In Reckless’s theory, inner and outer containment not only have a direct effect on delinquency but also function as a buffer against external pushes and pulls, even when these pushes and pulls become stronger as young people grow older.

The current study has contributed to the existing literature by (1) operationalizing the central theoretical constructs more completely by employing detailed data on multiple aspects of inner and outer containment and environmental pulls and pushes and by scrutinizing the operationalization of the theoretical constructs; (2) examining the complete theory, including all four central theoretical concepts; (3) providing a more stringent and dynamic test of the theory by analysing within-person in addition to between-person relations; (4) providing better insight into the theorized interplay between the constructs of the theory by empirically analysing interaction effects; more specifically (5) examining the buffering protective effects of both inner and outer containment that may counteract the effects of high levels of environmental pulls and pushes (that is, two-way between-level interactions) as well as increases in environmental pulls and pushes over time (that is, two-way cross-level interactions); and (6) examining whether outer containment is able to take over the role of inner containment as a buffering protective factor when inner containment is weak (that is, three-way between- and cross-level interactions).

We have also tried to overcome the two biggest criticisms of containment theory – that its core concepts are not operationally well defined and that it cannot be empirically tested. The results of our confirmatory factor analyses indicate that all of these constructs can be measured in a meaningful way and in particular that inner and outer containment can be empirically distinguished as separate and meaningful concepts.

The results of the current study offer partial support for three of the four hypotheses derived from containment theory. Hypothesis 1, about the main effects of inner and outer containment, received complete support – inner and outer containment are both strongly

related to delinquency during adolescence. Hypothesis 2 was partially confirmed. We found that environmental pulls (that is, crime conducive peer environments) are related to delinquency, whereas the effect of environmental pushes (that is, neighbourhood structural conditions) was not statistically significant. At the within-person level, it appeared that an increase in environmental pulls over a two-year period was also significantly related to increases in delinquent behaviour over time.

As indicated by the two-way interactions, both inner and outer containment were able to protect adolescents from the negative influences of environmental pulls. Inner and outer containment appeared to substantially reduce the effect of crime-conducive peer environments. Our cross-level interactions revealed that high levels of both inner and outer containment were also able to counteract the effect of *increases* in environmental pulls. Both forms of containment played a moderating role in preventing juveniles from becoming involved in delinquency by mitigating the effect of increases in environmental pulls during adolescence. All in all, our findings substantially supported Hypothesis 3: at a considerable level of inner and outer containment, high levels of and increases in environmental pulls do not seem to be detrimental.

We did not find support for Hypothesis 4 – that outer containment has a relatively strong effect when inner containment is weak. This means that outer containment does not substantially take over the role of inner containment in counteracting the detrimental effects of environmental pulls and pushes. A substantial level of inner containment seems to be necessary to stay ‘insulated’ from a criminogenic environment.

All in all, our tests of containment theory provide substantial support for it: most of its core propositions are not falsified and inner and outer containment are meaningfully distinguishable theoretical concepts, as Reckless suggested. Containment theory, therefore, may still have potential and contemporary relevance. In particular, it can yield insights into the way motivation and control interact in explaining adolescent delinquency and why some adolescents are able to refrain from it, despite increases in external seductions toward delinquent behaviour.

Our results may also be seen as supportive of other variants of the control perspective. For example, we do find support for a strong effect of self-control, and our findings on inner and outer containment also fit with several of the elements of the bond to society that Hirschi formulated in his social control theory. However, our results also suggest that these are not the only causes that matter and that external factors, and in particular their interaction with inner and outer containment, have an additional effect on delinquency, over and above inner and outer control variables. In future research, it would be interesting to compare various versions of control theory together in one empirical study, to test which one contributes the ‘best’ to explaining the delinquency of adolescents, and to further elaborate how inner and outer containment relate to the various control concepts of other theories.

As stated before in this article, recent integrative theories have been proposed that are similar to containment theory. Thornberry’s interactional theory suggested an interplay of reciprocal relationships between six concepts from the social control and social learning perspectives. In situational action theory, interaction effects play an even more explicit and prominent role, for example the interaction between morality and self-control, but also both together in counteracting the effects of external criminogenic settings

(in containment theory morality is not explicitly mentioned). Although situational action theory has many promising features and has received empirical support (see Wikström et al., 2012), this does not render containment theory redundant. On the contrary, containment theory specified various pulls and pushes, included both inner and outer containment, and gave a more general account of how environmental influences are buffered by levels of inner and outer containment. The results of our empirical study confirm that inner and outer containment are indeed capable of mitigating the external influences of crime-conducive peer environments. In future research, containment theory and SAT could be investigated together to find out how they compete with or complement each other.

Our findings are also in line with and add to recent advancements in public health research, which devote plenty of attention to all kinds of interactions between protective factors and risk factors in general (Fergus and Zimmerman, 2005). In this field, the concept of ‘resilience’ is used (for example, Rutter, 1987; Smith et al., 1995), which closely but not completely resembles the notion of containment. Resilience entails that protective factors may help people to overcome the negative effects of risk factors. These protective factors are either assets (that is, individual characteristics), which are closely related to inner containment, or resources (that is, external characteristics), which are closely related to outer containment.

Our findings, as well as the findings from related research based on other theories and research areas, suggest that during adolescence, when young people increasingly spend time with peers away from home and out of sight of parents, focusing on buffering protective factors may be fruitful, in particular the ‘assets’ that were subsumed under the heading of inner containments. Possible interventions strengthening inner and outer containment factors that help adolescents to overcome or become resilient to these risk factors might be more feasible than interventions strictly focused on reducing risk factors.

Although our empirical test is promising for containment theory, there is abundant room for further progress. We were limited in the measures we had available to operationalize the central concepts of the theory and in the non-representative sample that we used. For some of the theoretical concepts of the theory, we had very good indicators (for example, inner and outer containment), but for others we had to rely on less optimal measurements. For instance, only neighbourhood data were available for the measures concerning external pushes, and the factor loadings for these were also less than optimal. Future research might put effort into developing specific measurement instruments for the complex concepts of the theory at the start of their research and attempt to achieve the kind of standardization (Sullivan and McGloin, 2014) that Reckless was hoping for. Further, these measures could be developed in various contexts and populations to be able to test how universal containment theory is. The relationships suggested by Reckless and supported by our results might also be elaborated in more detail, by examining which aspects of inner and outer containment are most protective. Future research might also include schools in the multilevel structure of the analyses. Our data were nested not only in neighbourhoods but also in schools, but analysing both levels together would be too complex for our hybrid analysis, since respondents from the same school may live in different neighbourhoods. Finally, it would be interesting for future research to investigate in more detail how the different aspects of inner and outer containment and their

interaction with environmental pulls or external pushes develop over the whole period of adolescence and how this is related to the development of delinquency. Our results do suggest that the development of containment during adolescence is important, but we only had data available from two waves, of a two-year period, so longitudinal data over a longer period would be needed to further understand the complex interactions during this developmental period. However, what became clear from this study is that a relatively 'old' theory, seemingly lost in criminological history, still has value for understanding and thinking about juvenile delinquency today.

Acknowledgements

We would like to thank Francis Cullen and Lieven Pauwels for their valuable comments on a previous version of the manuscript.

Funding

The author(s) disclosed receipt of the following financial support for the research, and/or publication of this article: This research was supported by the Netherlands Organization for Scientific Research (NWO) [grant number 431-09-021] and the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013) / ERC Grant Agreement n. 615159 (ERC Consolidator Grant DEPRIVEDHOODS, Socio-spatial inequality, deprived neighbourhoods, and neighbourhood effects).

ORCID iD

Heleen J Janssen  <https://orcid.org/0000-0002-9443-0786>

Supplemental material

Supplemental material for this article is available online.

Notes

1. Comparisons of the schools we approached with the schools that agreed to participate do not reveal differences in school size or geographical location. However, the schools that participated were more often schools with vocational training (lower secondary education) or with pre-university training (higher secondary education); relatively fewer schools offered higher general education (Bernasco et al., 2013).
2. This frequency measure was highly correlated ($\rho = .97$ at T1 and T2) with a variety scale indicating the number of different types of delinquent behaviour an individual reported having committed, and analyses based on a variety index yielded similar results (see also Janssen et al., 2016).

References

- Bernasco W, Ruiter S, Bruinsma GJN et al. (2013) Situational causes of offending: A fixed-effects analysis of space-time budget data. *Criminology* 51(4): 895–926.
- Bruinsma GJN (2014) History of criminological theories: Causes of crime. In: Bruinsma GJN and Weisburd D (eds) *The Encyclopedia of Criminology and Criminal Justice*. New York: Springer, 2137–2148.

- Bruinsma GJN (2016) Proliferation of crime causation theories in an era of fragmentation: Reflections on the current state of criminological theory. *European Journal of Criminology* 13(6): 659–676.
- Bruinsma GJN, Pauwels L, Weerman FM et al. (2015) Situational Action Theory. A cross-sectional and cross-lagged test of its core propositions. *Canadian Journal of Criminology and Criminal Justice* 57(3): 363–398.
- Bryk AS and Raudenbush SW (1992) *Hierarchical Linear Models: Applications and Data Analysis Methods*. Newbury Park, CA: Sage.
- Burkhead MD (2006) *The Search for the Causes of Crime: A History of the Theory in Criminology*. Jefferson and London: McFarland.
- Cohn EG and Farrington DP (2012) Scholarly influence in criminology and criminal justice journals in 1990–2005. *Criminal Justice Review* 37(3): 360–383.
- Cullen FT, Myer AJ, Adler F et al. (eds)(2011) *The Origins of American Criminology (Advances in Criminological Theory, Volume 16)*. New Brunswick, NJ, and London: Transaction Publishers.
- Dinitz S, Kay BA and Reckless WC (1958) Group gradients in delinquency potential and achievement scores of sixth graders. *American Journal of Orthopsychiatry* 28(3): 588–605.
- Dooley BD (2010) Whither criminology? On the state of criminology's paradigm. PhD thesis, University of Missouri at St Louis, USA.
- Elliott DS, Huizinga D and Ageton SS (1985) *Explaining Delinquency and Drug Use*. Beverly Hills, CA: Sage.
- Fergus S and Zimmerman MA. (2005) Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health* 26: 399–419.
- Flexon JL (2010) Reckless, Walter C.: Containment theory. In: Cullen FT and Wilcox P (eds) *The Encyclopedia of Theoretical Criminology*. Thousand Oaks, CA, and London: Sage, 776–781.
- Gottfredson MR (2006) The empirical status of control theory in criminology. In: Cullen FT, Wright JP and Blevins KR (eds) *Taking Stock: The Status of Criminological Theory (Advances in Criminological Theory 16)*. New Brunswick, NJ, and London: Transaction Publishers, 77–100.
- Gottfredson MR and Hirschi T (1990) *A General Theory of Crime*. Stanford, CA: Stanford University Press.
- Hirschi T (1969) *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Hirtenlehner H, Pauwels L and Mesko G (2015) Is the criminogenic effect of exposure to peer delinquency dependent on the ability to exercise self-control? Results from three countries. *Journal of Criminal Justice* 43(6): 532–543.
- Hox JJ, Moerbeek M and Van de Schoot R (2010) *Multilevel Analysis: Techniques and Applications*. New York: Routledge.
- Huff CR and Scarpatti FR (2011) The origins and development of containment theory: Walter C. Reckless and Simon Ditziz. In: Cullen FT, Jonson CL, Myer AJ, et al. (eds) *The Origins of American Criminology*. New Brunswick, NJ, and London: Transaction Publishers, 277–294.
- Janssen HJ, Weerman FM and Eichelsheim VI (2017) Parenting as a protective factor against criminogenic settings? Interaction effects between three aspects of parenting and unstructured socializing in disordered areas. *Journal of Research in Crime and Delinquency* 54(2): 181–207.
- Janssen HJ, Eichelsheim VI, Deković M and Bruinsma GJN (2016) How is parenting related to adolescent delinquency? A between- and within-person analysis of the mediating role of self-control, delinquent attitudes, peer delinquency, and time spent in criminogenic settings. *European Journal of Criminology* 13(2): 169–194.

- Jensen GF (1973) Inner containment and delinquency. *Journal of Criminal Law and Criminology* 64(4): 464–470.
- Jones DA (1986) *History of Criminology. A Philosophical Perspective*. New York: Greenwood Press.
- Kempf KL (1993) The empirical status of Hirschi's control theory. In: Adler F and Laufer WS (eds) *New Directions in Criminological Theory (Advances in Criminological Theory 4)*. New Brunswick, NJ, and London: Transaction Publishers, 143–185.
- Kennedy JP (2015) Losing control: A test of containment theory and ethical decision making. *International Journal of Criminal Justice Sciences* 10(1): 48–64.
- Lilly JR, Cullen FT and Ball RA (2015) *Criminological Theory. Context and Consequences*. Thousand Oaks, CA: Sage.
- Lubinski D and Humphreys LG (1990) Assessing spurious 'moderator effects': Illustrated substantively with the hypothesized ('synergistic') relation between spatial visualization and mathematical ability. *Psychological Bulletin* 107(3): 358–393.
- Marshall TF (1973) An investigation of the delinquency self-concept theory of Reckless and Dinitz. *British Journal of Criminology* 13(3): 227–236.
- Merton RK (1968) *Social Theory and Social Structure*. New York: Free Press.
- Mulvey EP (2014) Using developmental science to reorient our thinking about criminal offending in adolescence. *Journal of Research in Crime and Delinquency* 51(4): 467–479.
- Nye FI (1958) *Family Relationships and Delinquent Behavior*. New York: Wiley & Sons.
- Opp K-D (2002) *Methodologie der Sozialwissenschaften. Einführung in Probleme ihrer Theoriebildung und praktischen Anwendung*. Wiesbaden: Westdeutscher Verlag.
- Pauwels L, Weerman FM, Bruinsma GJN et al. (2011) Perceived sanction risk, individual propensity and adolescent offending: Assessing key findings from the deterrence literature in a Dutch sample. *European Journal of Criminology* 8(5): 386–400.
- Popper KR (1934) *Logik der Forschung*. Vienna: Springer.
- Pratt TC and Cullen FT (2000) The empirical status of Gottfredson and Hirschi's general theory of crime: A meta-analysis. *Criminology* 38(3): 931–964.
- Rankin JH (1976) Investigating the interrelations among social control variables and conformity. *Journal of Criminal Law and Criminology* 67(4): 470–480.
- Reckless WC (1940) *Criminal Behavior*. New York and London: McGraw-Hill.
- Reckless WC (1961a) *The Crime Problem*. New York: Appleton-Century-Crofts.
- Reckless WC (1961b) A new theory of delinquency and crime. *Federal Probation* 25: 42–46.
- Reckless WC, Dinitz S and Murray E (1957) The 'good' boy in a high delinquency area. *Journal of Criminal Law, Criminology, and Police Science* 48(1): 18–25.
- Reiss AJ Jr (1951) Delinquency as the failure of personal and social controls. *American Sociological Review* 16(2): 196–207.
- Rohde CI (1976) An empirical test of norm-containment theory as applied to criminal behavior. PhD thesis, Lakehead University, Canada.
- Rutter M (1987) Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry* 57(3): 316–331.
- Smetana JG, Campione-Barr N and Metzger A (2006) Adolescent development in interpersonal and societal contexts. *Annual Review of Psychology* 57: 255–284.
- Smith C, Lizotte AJ, Thornberry TP et al. (1995) Resilient youth: Identifying factors that prevent high-risk youth from engaging in delinquency and drug use. *Current Perspectives on Aging and the Life Course* 4: 217–247.
- Snijders TAB and Bosker RJ (2012) *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling (2nd Edition)*. London: Sage.
- StataCorp (2015) *Stata Statistical Software: Release 14*. College Station: StataCorp LP.

- Steinberg L and Morris AS (2001) Adolescent development. *Annual Review of Psychology* 52: 83–110.
- Svensson R, Weerman FM, Pauwels L et al. (2013) Moral emotions and offending: Do feelings of anticipated shame and guilt mediate the effect of socialization on offending? *European Journal of Criminology* 10(1): 22–39.
- Sullivan C and McGloin JM (2014) Looking back to move forward: Some thoughts on measuring crime and delinquency over the past 50 years. *Journal of Research in Crime and Delinquency* 51(4): 445–466.
- Thompson WE and Dodder RA (1983) Juvenile delinquency explained? A test of the containment theory. *Youth and Society* 15(2): 171–194.
- Thornberry TP. (1987) Toward an interactional theory of delinquency. *Criminology* 25(4): 863–892.
- Thornberry TP, Lizotte AJ, Krohn MD et al. (1994) Delinquent peers, beliefs, and delinquent behavior: A longitudinal test of interactional theory. *Criminology* 32(1): 47–83.
- Van de Schoot R, Lugtig P and Hox J (2012) A checklist for testing measurement invariance. *European Journal of Developmental Psychology* 9(4): 486–492.
- Weerman FM, Bernasco W, Bruinsma GJN et al. (2013) When is spending time with peers related to delinquency? The importance of when, what, and with whom. *Crime & Delinquency* 61(10): 1386–1413.
- Wikström P-OH (2014) Why crime happens: A situational action theory. In: Manzo G (ed.) *Analytical Sociology*. Hoboken, NJ: John Wiley & Sons, 74–94.
- Wikström P-OH and Butterworth D (2006) *Adolescent Crime. Individual Differences and Lifestyles*. Cullompton, Devon: Willan Publishing.
- Wikström P-OH and Treiber K (2016) Situational Action Theory: The importance of interactions and action mechanisms in the explanation of crime. In: Piquero AR (ed.) *The Handbook of Criminological Theory*. Chichester: Wiley & Sons, 415–444.
- Wikström P-OH, Oberwittler D, Treiber K et al. (2012) *Breaking Rules. The Social and Situational Dynamics of Young People's Urban Crime*. Oxford: Oxford University Press.