



Investigating the interplay between the reported witnessing and experiencing of physical violence within the home, the death of a parent or sibling, stress-sensitivity, and reported false confessions in males



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ABSTRACT

This study investigates the interplay between the reported witnessing and experiencing of physical violence within the home, the death of a parent or sibling, latent stress-sensitivity levels, and reported false confessions in males. Data were obtained from 5394 male students in further education in Iceland. Zero-inflated negative binomial models were fitted, showing that reported levels of physical violence within the home and the death of a parent or sibling significantly increased the likelihood of reported false confessions. Latent stress-sensitivity interacted with both reported levels of physical violence and the reported experience of the death of a parent or sibling, strengthening the effect of such adverse experiences on the likelihood no false confessions reported. Trait stress-sensitivity therefore appears to increase susceptibility to external influences, and may be a critical factor in predicting the likelihood of false confessions, for a variety of reasons, in young males. Stress-sensitive male interviewees may find it harder to adapt and adjust following adversity, and harder to deal with their emotions during police questioning, rendering such detainees more vulnerable and at risk.

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1. Introduction

Despite advancements in police interviewing methods, what still has not improved is the identification rates of psychological vulnerability of suspects in police custody (see Young, Goodwin, Sedgwick, & Gudjonsson, 2013). Young et al. (2013) cited the 1993 Royal Commission's finding of 35% of detainees that could be considered vulnerable, affecting their ability to cope with the police interview (Gudjonsson, Clare, Rutter, & Pearse, 1993). Studies of police detainees does not take into account all potential suspects within the general population that could be less able to cope with the pressure of questioning, due to the possession of subtle inherent psychological characteristics that render them more susceptible to external influences (including the pressure of police questioning) (see Drake, Bull & Boon, 2008; Drake, Gudjonsson, Sigfusdottir, & Sigurdsson, 2015). Research into identifying the most important predictors of the tendency towards false confessions therefore remains relevant to current practice, and helps to improve our understanding of why general population

individuals can also be highly susceptible (and at risk) during police questioning.

Child development, longitudinal, cohort-studies have consistently shown the adverse effects of contextual risk factors, such as neighbourhood deprivation, negative parenting (including violence, abuse and neglect), and parental divorce and conflict, on the development of emotional and behavioural problems across the life-span (e.g. Bradley & Corwyn, 2008; Drake, Belsky, & Fearon, 2014; Flouri, Tzavidis, & Kallis, 2010). Some cross sectional studies have also documented significant associations between the reporting of negative life events and both interrogative suggestibility and reported false confessions during police questioning (e.g. Drake & Bull, 2011; Gudjonsson, Sigurdsson, & Sigfusdottir, 2009; Gudjonsson, Sigurdsson, Sigfusdottir & Asgeirsdottir, 2008).

Using undergraduate samples, Drake et al. (2008) and Drake and Bull (2011) showed significant correlations, in particular, between the reporting of negative life events and sensitivity to pressure during questioning. In these studies, the *negative life events* composite measure consisted of items asking whether or not a person has been a victim of bullying, whether they had witnessed family conflict, physical abuse, and parental divorce. Gudjonsson et al. (2009) also reported that witnessing and/or experiencing physical violence within the home, where an adult was involved, the death of a parent or sibling were the

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strongest predictors of false confessions — for boys, especially. Based on this body of literature, it might therefore be concluded that a history of exposure to such environmental adversities may be a critical indicator of the likelihood of false confessions.

It has also been documented though that not all individuals are equally as susceptible to the effects of adversity, with studies showing striking variation in psychological adjustment in response to the experience of a range of contextual risk factors (see Belsky, 2013 for a literature review). Phenotypic stress-sensitivity (indicated by high scores on characteristics such as nervousness, tension, negative emotionality and fearfulness) is what appears to act as the susceptibility factor (rather than a history of exposure to environmental adversities), with stress-sensitive individuals not only being disproportionately more susceptible to the effects of negative (risk) influences, but thriving disproportionately more in their absence or in the presence of protective/positive/supportive environmental influences. Drake et al. (2015) showed that stress-sensitive interviewees were more likely to report a false confession, owing to heightened physiological responsiveness towards and a negative perception of situations and social encounters. The effect of witnessing or experiencing physical violence within the home, where an adult was involved, and the death of a parent or sibling on the likelihood of false confessions occurring may therefore, in fact, depend upon the stress-sensitivity of the interviewee.

Furthermore, although results are mixed in this area, evidence is emerging of a gender difference in the psychological consequence of being stress-sensitive: compared to insecure-disorganised attachment in girls (insecure-disorganised attachment being a product of negative parenting influences, and the breakdown in the attachment system; Bowlby, 1988), insecure-disorganised boys, also scoring high on shyness and behavioural inhibition, which can manifest as consistent fearfulness and withdrawal from unfamiliar situations or objects, have been shown to exhibit higher levels of internalising problems, such as anxiety (including social anxiety), depression, and to suffer greater levels of social rejection and peer-exclusion (see Lewis-Morrarty et al., 2015). Windfuhr et al. (2013) also found that young males were more vulnerable to mental health problems than females. Gudjonsson et al. (2009) also found that reported false confessions in boys to be most strongly linked with witnessing or being involved in physical abuse at home and the death of a parent or sibling. It might therefore be the case that those boys, with a history of exposure to physical violence and the trauma of losing a parent or sibling may also have scored highly on stress-sensitivity; and that it was their stress-sensitivity that rendered those boys significantly more susceptible to the adverse experiences, and more vulnerable to false confessions.

The aim of this study is to investigate the role of stress-sensitivity in the effect of a reported history of: (a) exposure to physical violence, within the home, where an adult is involved and (b) the death of a parent or sibling on the likelihood of reporting false confessions, in males. It is hypothesised that exposure to physical violence, within the home, where an adult is involved and the death of a parent or sibling will directly increase the likelihood of reported false confessions. It is also hypothesised that as levels of inherent stress-sensitivity increase, the effect of the experience of (a) exposure to physical violence, within the home, where an adult is involved and (b) the death of a parent or sibling on reported false confessions will strengthen significantly.

2. Method

2.1. Participants

The sample comprised of 5394 male students, aged between 18 and 24 years old, in further education in Iceland. Age-wise: $N = 4$ (0.1%) 18 years old, $N = 5$ (0.1%) 19 years old, $N = 1793$ (32.2%) were 20 years old, $N = 1791$ (32.2%) were 21 years old, $N = 1755$ (32.5%) were 22 years old, $N = 13$ (0.2%) were 23 years old, and $N = 2$ (<0.1%) were 24 years old. $N = 31$ did not indicate their age.

The data used in the study come from a national *Youth in Iceland* programme of surveys that have been conducted, in Iceland, by the Icelandic Centre for Social Research and Analysis for the past 17 years. All students attending junior colleges on the day of the survey were invited to take part in the survey. The participants have 80 min (two school lessons) to complete the questionnaires and seal them in blank envelopes. The data collection is conducted in accordance with the Privacy and Data Protection Authority in Iceland, including anonymity and participants' informed consent by and under the direction of the Icelandic Centre for Social Research and Analysis. Participation is voluntary and students were not paid.

2.2. Measures

2.2.1. False confessions (see Gudjonsson, Sigurdsson, & Asgeirsdottir, 2008)

False confessions data were obtained through participants being asked if they have ever been interrogated by the police at a police station, and how they reacted to being questioned, including whether or not they had ever made either a confession or false confession. Participants were asked: (1) 'How often have you been interrogated at a police station as a suspect in a criminal offence' — Never, Once, Twice, 3–5 times, 6 or more times? (Only tick one column in each category); (2) 'Did you commit the offence?' ('Yes' or 'No'); and (3) 'Have you ever confessed during police interrogation to a criminal offence that you did not commit?' The reply was rated on the five-point scale: 'Never', 'Once', 'Twice', '3–5 times', '6 or more times'. Participants who indicated that they had falsely confessed were also asked to categorise the reasons for the false confession, by being asked: "What was the reason for you confessing to something you did not do?"; participants had to select from the following reasons: to cover up for somebody else, due to being threatened, due to police pressure, [they] wanted to get away from the police, [they were experiencing] alcohol/drug withdrawal, [they were] taking revenge on the police, cannot remember the reason, and other.

2.2.2. Negative Life Events scale (see Drake et al., 2015)

Negative Life Events scale was used to collect data on participants' reported history of: witnessing physical abuse at home involving an adult, experiencing physical abuse at home involving an adult, and whether a parent or sibling had died. Participants answered yes/no in response to whether or not they had experienced those events: (a) over the past 30 days, (b) over the past 12 months, and (c) more than 12 months ago. A composite score was then created, summing participants' responses. Scores therefore ranged between 0 and 3. The internal reliability of the scale (α) is .79.

2.2.3. Nerves, fearfulness and tension

Nerves, fearfulness and tension scores were derived from three items chosen from the Symptom Check List-90 (Derogatis, Lipman, Covi, & Rickels, 1971). Participants were asked how often, in the past 30 days, have you been feeling: (i) nervous/anxious; (ii) scared for no reason; and (iii) tense? The items were rated on a four-point frequency scale ('never', 'seldom', 'sometimes' and 'often') to indicate severity of symptoms.

2.3. Analytical strategy

Given the zero-inflated negative binomial distribution of the false confessions outcome variable, random intercept, zero-inflated negative binomial (ZINB) models were fitted to the data, using MPlus software (Muthén & Muthén, 2012). ZINB models are used for modelling count variables (false confessions, in this study) where there are excessive zeros. Within the ZINB model there are two parts: (i) a count model, which predicts the probability of a false confession being reported, and follows a negative binomial distribution, and (ii) a logit model, predicting the probability of no false confessions being reported, and relating the covariates in the model to the absence of false confessions

reported (Long, 1997). The maximum likelihood with robust standard errors (MLR) estimate was used to calculate parameter estimates and model fit indices. MLR is robust to any non-normality and non-independence of observations, and is recommended with general, random intercept models, with at least one binary or ordered categorical dependent variable (Muthén & Muthén, 1998–2012).

Within the models, false confessions were the outcome measure; in model 1: latent stress-sensitivity (SS); the cumulative risk composites (*trauma*), as well as the corresponding interaction terms were the covariates in the model. *Trauma* is a cumulative risk composite, comprising: (a) the reported experience of physical violence within the home, the reported experience of witnessing of physical violence within the home, and the death of a parent or sibling. Modelling cumulative risk, by creating a composite variable (*trauma*, in this study) can be advantageous over modelling life events independently, if the risk factors covary sufficiently, because they capture the natural co-variation between the contextual risk factors, they will tend to be more stable across time, and have increased power to detect error effects (see Flouri et al., 2010). A second model was also fitted, however, to assess the independent effects of the reported experience of physical violence within the home, the reported experience of witnessing of physical violence within the home, and the death of a parent or sibling (separately), as well as latent stress-sensitivity and the interaction terms on the likelihood of both reported false confessions, and the absence thereof.

Prior to fitting the ZINB model, confirmatory factor analysis (CFA) was used to evaluate the quality of both the latent stress sensitivity variable before they were subsumed within the broader ZINB models (Lei & Wu, 2007). Levels of nerves, fear and tension indicated latent stress sensitivity. The factor loading of the indicator, nerves, onto the latent stress-sensitivity (SS) construct was fixed to 1, such that the latent construct acquired the scale of 1 to 4: 1 = nearly never; 2 = rarely-seldom; 3 = sometimes; and 4 = often.

2.4. Model fit

The quality of the latent stress construct, derived from CFA, was assessed using indices of absolute model fit (i.e. the Comparative Fit Index [CFI], the Tucker–Lewis Index [TLI], and the Root Mean Square Error of Approximation [RMSEA]). CFI of values of .90 or above and RMSEA values of .08 or lower are considered to indicate an acceptable model fit. An RMSEA of less than .05 is considered a close fit, from .05 to .08 is acceptable, and .08 to .10 is regarded as a fairly average (Bentler, 1990). The TLI values close to 1.00 indicate that the statistical model is close fitting to the data.

2.5. Missing data

Missing data patterns were analysed, with Little's missing completely at random (MCAR) test performed to test the notion that missingness

was completely at random. Given that this was not the case (see Table 1), a dummy outcome (false confessions) variable was created (1 = missing; 0 = non-missing), to see if any of the covariates were related to the outcome; if the covariates, but not the false confessions variable itself, were related to this missingness variable, this would suggest that missing was at random (MAR); if both the false confessions variable and the covariates were related to missingness, this would suggest missing not at random. It emerged that MAR and, thus, in light of the fact that statistical interaction terms were being estimated in the model, the full information maximum likelihood (FIML) method, rather than multiple imputation, was used to estimate reliable and plausible values for missingness (Schafer & Graham, 2002).

3. Results

3.1. Descriptive statistics

Table 1 also reports the means and standard deviations along with non-parametric correlation coefficients across the measures, given the skewed distribution of the negative life event measures.

Out of the $N = 5394$, $N = 4938$ reported never having made a false confession, with $N = 104$ falsely confessing just once, $N = 23$ two times, $N = 13$ reported three to five false confessions and $N = 19$ reporting six or more false confessions. The main reasons given for the false confessions were: police threats and coercion ($N = 22$), pressure from someone else ($N = 7$), wanting to get rid of police ($N = 31$), covering for someone ($N = 48$), substance use withdrawal ($N = 6$), taking revenge ($N = 2$), could not recall the reason ($N = 55$), and other – unspecified ($N = 113$).

The reported experience of physical violence within the home and the death of a parent or sibling correlated significantly (although weakly; $r < .200$) with the reporting of false confessions. Scores of tension and fear correlated significantly, but weaker still ($r < .100$) with false confessions, such that the higher the scores of tension or fear reported, the more likely a false confession. Nerves did not correlate significantly with reported false confessions.

3.2. Confirmatory factor analysis (CFA)

Table 2 shows the CFA estimates and model fit indices.

Results show that measurement model, stress-sensitivity (SS), fits closely to the data. The higher the scores on reported nerves, fear, tension and negative life events experienced the higher participants' underlying stress-sensitivity tendencies. Indicators: nerves, fear and tension load strongly onto the latent factor ($\beta > .7$).

3.3. ZINB modelling (see Table 3 and Fig. 1)

Results show that both reported levels of trauma experienced, as well as latent stress-sensitivity exert significant direct effects on the

Table 1
Descriptive statistics and non-parametric correlation coefficients ($N = 5394$).

	Missingness	FC	Nerves	Tense	Fear	Par/sib death	Wit violence	Exp violence
Missingness	–	.001	.033*	.004	.025	.010	.013	.012
FC		–	.011	.060*	.059*	.075*	.159*	.124*
Nerves			–	.516*	.527*	.050*	.705*	.084*
Tense				–	.501*	.077*	.095*	.098*
Fear					–	.102*	.118*	.148*
Par/sib death						–	.266*	.322*
Wit violence							–	.596*
Exp violence								–
M (SD)	–	–	1.72 (.912)	1.73 (.908)	1.45 (.797)	.050 (.220)	.044 (.212)	.043 (.215)
% missing	–	5.5	2.5	3.2	2.5	1	0	0
Little's MCAR test								$\chi^2(74) = 171.848; p < .0001$.

Note: FC = false confession; violence = reported experience of witnessing and experiencing physical violence at home, where an adult is involved; par/sib death = parent or sibling death; conflict = experience of serious arguments with parents. M = mean; SD = standard deviation.

* $p < .001$.

Table 2
Measurement model estimates and fit indices.

	Loadings	χ^2	df	CFI	TLI	RMSEA
<i>Stress-sensitivity (SS)</i>						
Nerves	.774* (.007)	0.000	0	1.000	1.000	0.000
Tense	.705* (.007)					
Fear	.755* (.007)					

Note: Loadings = standardised loadings with standard errors in parentheses; CFI = comparative fit index; TLI = Tucker–Lewis Index; RMSEA = Root Mean Square Error of Approximation.

* $p < .001$.

likelihood of no false confession being reported, such that the higher the levels of stress-sensitivity and the greater the history of trauma reported, the less likely the absence of reported false confession(s) (102% decrease in likelihood or 2.02 times as unlikely, as stress-sensitivity increases, and 213% less likely or 3.13 times as unlikely as the rate of physical violence reported increases). Latent stress-sensitivity levels and the reported history of trauma also interact significantly, showing that as stress-sensitivity increases, the likelihood of no false confession being reported decreases by a further 48.6% (or 1.49 times as unlikely) per unit increase in trauma reported.

The experience of the death of a parent or sibling, physical violence within the home, as well as latent stress-sensitivity exerts significant direct effects on the likelihood of the absence of reported false confession(s). The higher the levels of stress-sensitivity, the reported death of a parent or sibling, and the reported level of physical violence experienced, the less likely it is that there will be no false confession reported (147% decrease in likelihood or 2.47 times as unlikely, as stress-sensitivity increases, 327% less likely or 33.8 times as unlikely as a result of experiencing the death of a parent or sibling, and 5.37 times as unlikely per unit increase in the experience of physical violence). Latent stress-sensitivity levels and the reported experience of the death of a parent or sibling also interact significantly, showing that as stress-sensitivity increases, the absence of false confession(s) is 3.74 times as unlikely, per unit increase in the reported death of a parent or sibling. A small interaction effect also emerged between stress-sensitivity, the reported levels of

physical violence and the absence of false confessions as stress-sensitivity increases, the absence of false confession(s) is 1.91 times as unlikely.

4. Discussion

The hypotheses were largely confirmed: first, the direct effects of a reported history of trauma (including the reported witnessing and experiencing of physical violence, and the death of a parent or sibling) on the likelihood of reported false confessions in males proved statistically significant. Per unit increase in reported domestic trauma, the probability of the absence of a false confession decreases significantly. This effect is further attenuated by inherent levels of latent stress-sensitivity, which is what was expected, given research suggesting that stress-sensitivity increases susceptibility to environmental influences (Belsky, 2013).

A history of witnessing and experiencing physical violence within the home, as well as the death of a parent or sibling, could lead to an increased risk of false confessions, in males, for the following reasons: first, externalising behaviour (shown as disruptive, aggressive and oppositional behaviour) and parental punishment, including severe corporal punishment are linked bi-directionally, such that boys' externalising behaviour encourages greater levels of parental aggression and punishment, which in turn encourages greater levels of externalising behaviours (Lansford et al., 2011; Xing & Wang, 2013). The death of a parent or sibling is also associated with an increased risk of externalising behaviour; especially if social-support is lacking after the death, and an individual's relationship with their remaining family is poor (Ellis, Dowrick, & Lloyd-Williams, 2013; Hovens et al., 2012; Van Veen, Wardenaar, Carlier, Spinhoven, & Penninx, 2013). When confronted and questioned by authority figures outside of the home (i.e. police), who may be perceived negatively by males who have, as children, experienced a history of physical punishment from parents (also authority figures) (Drake et al., 2015), males' externalising behaviour may surface. False confessions, as a result of a desire for revenge, wanting to get rid of police, or to in some way impede the investigation (reflecting a degree of aggressiveness and obstinacy), may be a consequence of this externalising behaviour, which they

Table 3
Zero-inflated negative binomial model estimates ($N = 5394$).

	Count model (FC)			Logit model (No FC)		
	B	IRR	$\Delta\%$	B	IRR	$\Delta\%$
SS	.177 (.185)	1.19	19.4	-.701** (.203)	-2.02***	-102**
Trauma	.023 (.138)	1.02	2.33	-1.14*** (.254)	-3.13***	-213***
SS × trauma	.137 (.097)	1.15	14.7	.396* (.196)	1.49***	-48.6*
SS	.294 (.177)	1.34	34.2	-.905*** (.231)	-2.47***	-147***
Par/sib death	.331 (.338)	1.39	39.2	-3.52*** (.679)	-33.8***	-327***
SS × par/sib death	.219 (.295)	1.24	24.5	-1.32*** (.370)	-3.74***	-274***
SS	.221 (.174)	1.25	24.7	-.660** (.196)	-1.93**	-98.4**
Violence	-.111 (.203)	1.12	11.7	-1.68*** (.480)	-5.37***	-437***
SS × violence	.221 (.129)	1.25	24.7	.649* (.317)	-1.91*	-91.4*

Note: FC = false confession; No FC = absence of false confession; trauma = cumulative risk composite = reported experience of witnessing and experiencing physical violence at home, where an adult is involved, plus the parent or sibling death. Par/sib death = parental or sibling death. Violence = reported experience of witnessing and experiencing physical violence at home, where an adult is involved.

B = unstandardized regression estimates with standard errors in parentheses; IRR = incidence-rate ratio = EXP (B); $\Delta\%$ = percentage change in likelihood of false confession (count model) or no false confession (logit model) = (IRR - 1) * 100.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

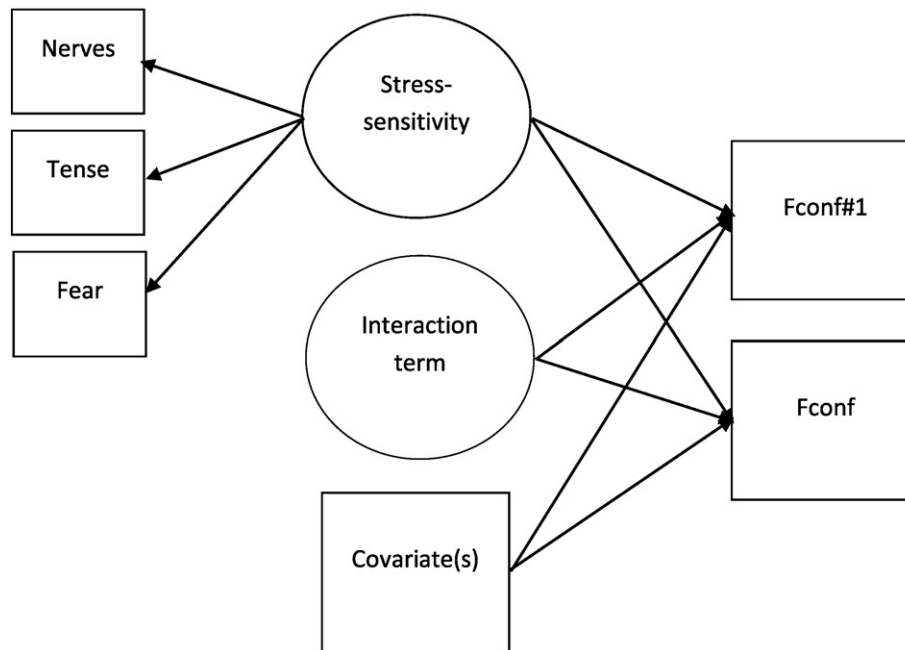


Fig. 1. Zero-inflated negative binomial model. *Note:* Fconf#1 = absence of reported false confessions = logit model out-come variable; Fconf = presence of reported false confessions = count model out-come variable. SS = latent stress-sensitivity; covariate = cumulative risk composite, trauma (model 1) or the reported experience of physical violence and the death of parent or sibling (model 2).

have always shown in the face of (perceived) challenge from authority figures. In males where the death of a parent or sibling has led to elevated levels of externalising behaviour, these types of false confessions may also be more likely.

Second, studies have shown that the death of a parent or sibling is associated with depression, anxiety, and panic disorder, characterised by recurring panic attacks and episodes of extreme anxiety (see Van Veen et al., 2013). The death of a parent can negatively impact future relationships, self-esteem, feelings of self-worth, and feelings of isolation (Ellis et al., 2013). Research has also shown that boys' internalising problems (anxiety and depression) appears to influence levels of severe corporal punishment from parents, due to the fact that, in boys, anxiety and sadness is still less socially accepted, and therefore tends to elicit more disappointment, coerciveness and power-assertion from parents (Chaplin, Cole, & Zahn-Waxler, 2005; Xing & Wang, 2013). This negative reaction from parents is likely to further entrench boys' internalising behaviours. In males where the death of a parent or sibling has led to internalising problems, or where parental punishment is linked with internalising problems, their psychological state might make it harder for them to cope with the unfamiliarity (and pressure) of the interview situation and being questioned by an authority figure, with false confessions as a result of perceived police pressure and/or pressure from others being more likely.

These effects (especially the effect of experiencing the death of a parent or sibling) may be attenuated in males who also report high levels of trait stress-sensitivity (in this study, indicated by nerves, tension and fearfulness, but could also be indicated by difficult or negative temperaments; such individuals are moody, are less able to control their emotions and frustration; which is associated with the development of internalising and externalising problems (Paulussen-Hoogbeem, Stams, Hermanns, Peetsma, & Van Den Wittenboer, 2008), because trait stress-sensitivity appears to increase susceptibility to external influences (Belsky, 2013). This may, in turn, be partly because stress-sensitive children (and later adults) find it harder to deal with their emotions following punishment, and find it harder to adapt and adjust following trauma, and so tend to be more affected by external influences such as physical punishment from parents or the death of a parent or sibling (Bradley & Corwyn, 2008).

Psychological vulnerability has been known to occur in the absence of psychopathology (Gudjonsson, 2003), and this study helps show that general population vulnerable interviewees do exist, and why they can also be vulnerable during police questioning. This is the first study to show that stress-sensitivity increases the strength of the effect of exposure to physical violence and the death of a parent or sibling on the probability of falsely confessing. This study also shows that this latent, inherent, tendency towards stress-sensitivity may be a critical susceptibility factor in the likelihood of males making false confessions, as it renders males significantly more likely to suffer, and be affected, as a result of the experience and witnessing of physical violence within the home, as well as the death of a parent or sibling. As findings only apply to males, however, further research is now needed on females.

References

- Belsky, J. (2013). Differential susceptibility to environmental influences. *International Journal of Child Care and Education Policy*, 7, 15–31. <http://dx.doi.org/10.1007/2288-6729-7-2-15>.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246. URL: <http://www.ncbi.nlm.nih.gov/pubmed/2320703>.
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Bradley, R. H., & Corwyn, R. F. (2008). Infant temperament, parenting and externalizing behaviours in the first grade: A test of the differential susceptibility hypothesis. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 49, 124–131.
- Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005). Parental socialization of emotion expression: Gender differences and relations to child adjustment. *Emotion*, 1, 80–88. <http://dx.doi.org/10.1037/1528-3542.5.1.80>.
- Derogatis, L. R., Lipman, R. S., Covi, L., & Rickels, K. (1971). Neurotic symptoms dimensions: As perceived by psychiatrists and patients of various social classes. *Archives of General Psychiatry*, 24, 454–464. <http://dx.doi.org/10.1001/archpsyc.1971.01750110066011>.
- Drake, K. E., & Bull, R. (2011). Life adversity and field-dependence: Individual differences in interrogative suggestibility. *Psychology Crime and Law*, 17, 677–687. <http://dx.doi.org/10.1080/10683160903511967>.
- Drake, K. E., Bull, R., & Boon, J. C. W. (2008). Interrogative suggestibility, self-esteem, and the influence of negative life events. *Legal and Criminological Psychology*, 13, 299–307. <http://dx.doi.org/10.1348/135532507X209981>.
- Drake, K. E., Belsky, J., & Fearon, R. (2014). From early attachment to engagement with learning in school: The role of self-regulation and persistence. *Developmental psychology: special issue of conscientiousness and healthy ageing*, 50, 1350–1361. <http://dx.doi.org/10.1037/a0032779>.
- Drake, K. E., Gudjonsson, G. H., Sigfusdottir, I. D., & Sigurdsson, J. F. (2015). An investigation into the relationship between the reported experience of negative life events, trait stress-sensitivity and false confessions among further education students in

- Iceland. *Personality and individual differences: Special issue article: Young researcher award, 2014* (81), 135–140. <http://dx.doi.org/10.1016/j.paid.2014.09.007>.
- Ellis, J., Dowrick, C., & Lloyd-Williams, M. (2013). The long-term impact of early parental death: Lessons from a narrative study. *Journal of the Royal Society of Medicine*, 106, 57–67. <http://dx.doi.org/10.1177/0141076812472623>.
- Flouri, E., Tzavidis, N., & Kallis, C. (2010). Adverse life events, area socioeconomic disadvantage, and psychopathology and resilience in children: The importance of risk factors' accumulation and protective factors' specificity. *European Child and Adolescent Psychiatry*, 19, 535–546. <http://dx.doi.org/10.1007/s00787-009-0068-x>.
- Gudjonsson, G. H., Clare, I., Rutter, S., & Pearse, J. (1993). *Persons at risk during interviews in police custody: The identification of vulnerabilities. Royal commission on criminal justice*. London: H.M.S.O.
- Gudjonsson, G. H., Sigurdsson, J. F., Sigfusdottir, I. D., & Asgeirsdottir, B. B. (2008). False confessions and individual differences. The importance of victimization among youth. *Personality and Individual Differences*, 45, 801–805. <http://dx.doi.org/10.1016/j.paid.2008.08.010>.
- Gudjonsson, G. H., Sigurdsson, J. F., & Sigfusdottir, I. D. (2009). Interrogations and false confessions among adolescents in seven countries in Europe. What background and psychological factors best discriminate between false confessors and non-false confessors? *Psychology Crime and Law*, 15, 711–728. <http://dx.doi.org/10.1080/10683160802516257>.
- Gudjonsson, G. H. (2003). *The psychology of interrogations and confessions. A handbook*. Chichester: John Wiley & Sons.
- Hovens, J. G. F. M., Giltay, E. J., Wiersma, J. E., Spinhoven, P., Penninx, B. W. J. H., & Zitman, F. G. (2012). Impact of childhood life events and trauma on the course of depression and anxiety disorders. *Acta Psychiatrica Scandinavica*, 126, 198–207. <http://dx.doi.org/10.1111/j.1600-0447.2011.01828.x>.
- Lansford, J. E., Criss, M. M., Laird, R. D., Shaw, D. S., Pettit, G. S., Bates, J. E., et al. (2011). Reciprocal relations between parents' physical discipline and children's externalizing behaviour during middle childhood and adolescence. *Development and Psychopathology*, 23, 225–238. <http://dx.doi.org/10.1017/S0954579410000751>.
- Lei, P., & Wu, Q. (2007). Introduction to structural equation modeling: Issues and practical considerations. *Instructional Topics in Educational Measurement*, 33–43.
- Lewis-Morrarty, E., Degnan, K. A., Chronis-Tuscano, A., Pine, D. S., Henderson, H. A., & Fox, N. A. (2015). Infant attachment security and early childhood behavioural inhibition interact to predict adolescent social anxiety symptoms. *Child Development*, 86, 598–613. <http://dx.doi.org/10.1111/cdev.12336>.
- Long, J. S. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage Publications.
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus User's Guide (Seventh Edition)*. Los Angeles, CA: Muthén & Muthén.
- Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user's guide (Seventh Edition)*. Los Angeles, CA: Muthén & Muthén.
- Paulussen-Hoogeboom, M. C., Stams, G. J., Hermanns, J. M., Peetsma, T. T., & Van Den Wittenboer, G. L. (2008). Parenting style as a mediator between children's negative emotionality and problematic behavior in early childhood. *The Journal of Genetic Psychology*, 169, 209–226. <http://dx.doi.org/10.3200/GNTP.169.3.09-226>.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7, 147–177. <http://dx.doi.org/10.1037/1082-989X.7.2.147>.
- Van Veen, T., Wardenaar, K. J., Carlier, I. V. E., Spinhoven, P., Penninx, B. W. J. H., & Zitman, F. G. (2013). Are childhood and adult life adversities differentially associated with specific symptom dimensions of depression and anxiety? Testing the tripartite model. *Journal of Affective Disorders*, 146, 238–245. <http://dx.doi.org/10.1016/j.jad.2012.09.011>.
- Windfuhr, K., While, D., Hunt, I. M., Shaw, J., Appleby, L., & Kapur, N. (2013). Suicide and accidental deaths in children and adolescents in England and Wales, 2001–2010. *Archives of Disease in Childhood*, 98, 945–950. <http://dx.doi.org/10.1136/archdischild-2012-302539>.
- Xing, X., & Wang, M. (2013). Sex differences in the reciprocal relationship between mild and severe corporal punishment and children's internalizing problem behaviour in a Chinese sample. *Journal of Applied Developmental Psychology*, 34, 9–16. <http://dx.doi.org/10.1016/j.appdev.2012.09.004>.
- Young, S., Goodwin, E. J., Sedgwick, O., & Gudjonsson, G. H. (2013). The effectiveness of police custody assessments in identifying suspects with intellectual disabilities and attention deficit hyperactivity disorder. *BMC Medicine*, 11, 248. <http://dx.doi.org/10.1186/1741-7015-11-248>.