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ABSTRACT

Family Stress and the Intergenerational Correlation in Self-Control*

We examine the correlation in self-control between parents and their young-adult children. Analyzing two decades of population-representative panel data, we exploit variation in the family environment during childhood to investigate how family stress related to: i) parenting responsibilities; ii) parents' relationship quality; iii) household finances; and iv) poor mental health shapes the transmission of self-control across generations. A finite mixture model is used to account for unobserved heterogeneity in young adults' capacity for self-control. Our results indicate that some young people may be particularly sensitive to growing up in a stressful environment, opening the door for family stress to shape the intergenerational transmission of disadvantage through the formation of self-control.

JEL Classification: D91, D10, J13

Keywords: intergenerational self-control, Brief Self-Control Scale, finite mixture models

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"The ability to control and regulate our actions is perhaps the quintessential characteristic of human beings."

Forgas et al. (2009)

1. INTRODUCTION

People's capacity for self-control is closely tied to their life chances. Those with higher self-control have healthier lifestyles, higher educational attainment, more labor market success, greater financial well-being and life satisfaction, as well as a lower chance of substance abuse and criminal conviction (e.g., Boals et al. 2011; Botha & Dahmann 2024; Cobb-Clark et al. 2022; Duckworth & Seligman 2005; Kaur et al. 2015; Moffitt et al. 2011; Strömbäck et al. 2017; Tangney et al. 2004). Self-regulation is as important as socioeconomic background in predicting life success (Duckworth & Kern 2011), making it unsurprising that questions are being raised about the role of self-control in perpetuating poverty (Bernheim et al. 2013). If parents transmit their own lack of self-control to their offspring, this becomes a potential mechanism through which intergenerational disadvantage occurs.[1]

Our study makes an important contribution to this debate by using large-scale, population-representative data to examine the intergenerational correlation in the trait self-control of parents and their young-adult children. Much of what is currently known about the transmission of self-control across generations comes from studies of parents and their young or early adolescent children (see Bolger et al. 2018 for a review). One consequence of this is that the measures used to capture self-control typically vary across generations, with parents (usually mothers) not only reporting their own self-control, but also that of their children – often using different measures.[2] There is little doubt that the way self-control is measured matters for the strength of the intergenerational relationship that we observe. Meldrum et al. (2017), for example, report that mothers' own self-control is positively associated with the self-control they report for their primary school-aged children; yet they find less support for an intergenerational correlation when teacher-reported self-control using the same scale is considered instead. A particular strength of our study is the analysis of a validated measure of self-control – the Brief Self-Control Scale (BSCS) (Tangney et al. 2004) – that is both self-reported and consistently measured across generations.

Studying young adults also has the advantage of deepening our understanding in the way self-control evolves as people age. In their General Theory of Crime, Gottfredson and Hirschi (1990) argue

[1] Self-control is closely related to concepts such as self-regulation, impulsivity, delay of gratification, inattention, hyperactivity, executive functioning, willpower, and conscientiousness which have been widely studied in psychology and neuroscience (Moffitt et al. 2011). Self-control is related to other personality traits (Hoyle & Davisson 2016) but has predictive power over and above these traits and related economic preferences (Cobb-Clark et al. 2022).

[2] Similarly, one of the few studies on the intergenerational relationship in adult self-control asks young adults to report on their parents' self-control using behavioral indicators (see Meldrum et al. 2015).

that self-control is likely to increase with age as “socialization continues to occur throughout life”, postulating that within-age cohort positions in the distribution of self-control are generally stable after age 10. Subsequent research has found substantial support for this stability hypothesis, with evidence pointing towards children remaining within their cohort growth profiles over time (Diamond 2016; Hay & Forrest 2006; Jo 2015). Meanwhile, family background and gender appear to be much stronger predictors of self-control in childhood than adulthood (see Cobb-Clark et al. 2024), implying that the development of self-control may not be a linear process, and likely proceeds at different rates for different cohorts of children.[3] Given the consequential nature of self-control in adult decision-making, it is important to study self-control in adult, as well as non-adult, populations to gain a more complete picture of the role of self-control in shaping life outcomes.

Traditional estimation approaches are generally unable to account for the unobserved heterogeneity in the way that self-control is shaped by this broader context (see Deb & Trivedi 2002; Deb et al. 2011). Consequently, we adopt a finite mixture variant of latent class modelling (see Aitkin & Rubin 1985) as our preferred estimation approach. This allows for unobserved heterogeneity in young adults’ capacity for self-control to be captured in our model through multiple finite mixture latent classes, i.e., ‘types’, representing different subpopulations.[4] Finite mixture models deliver reasonable numerical approximations even when the underlying distribution of classes is continuous (Laird 1978) and, because they are semiparametric, do not rely on mapping the data onto a single parametric distribution (Lindsay 1995). Importantly, finite mixture models produce estimates that differ across latent classes, generating a richer understanding of the factors associated with adult self-control.[5]

Our study contributes to the emerging literature on the intergenerational transmission of personality traits and economic preferences. A related study provides evidence of a modest unconditional intergenerational correlation in the BSCS of parents and their adult children in Germany (Cobb-Clark et al. 2022). We extend that research by using rich data from the Household Income and Labour Dynamics in Australia (HILDA) Survey to not only provide a measure of the intergenerational

[3] Most children rapidly develop the capacity for self-control between the ages of 3 and 7 along growth trajectories that are correlated with factors such as gender, language development, and maternal education (see Montroy et al. 2016 for a review).

[4] We are aware of one other study that uses latent class analysis to examine the intergenerational correlation in self-control. Bolger et al. (2018) estimate the intergenerational correlation in proxy measures of self-control for fathers, as well as mothers, and their children (aged 0 – 15) in a small, non-representative sample of U.S. families (N = 356). The authors lack a standardized measure of self-control and, instead, rely on selected items from scales that measure neuroticism, extraversion, and openness.

[5] Finite mixture models have been used in a variety of applications including labor (Etilé & Sharma 2015; Heckman & Singer 1984) and health economics (Carrieri et al. 2020; Deb & Trivedi 1997; Deb et al. 2011; Eckardt et al. 2017) as well as in the crime (Bacci et al. 2019; Etilé 2006), behavioral, (Brown et al. 2014; Bruhin et al. 2010, 2019; Clark et al. 2005; Clark & Postel-Vinay 2009; Conte et al. 2011; Etilé et al. 2021), and inequality literature (Rohde et al. 2023).

correlation in self-control in a different context, but to also explore the childhood (ages 0–12) circumstances that shape young adults' (ages 15 – 28) self-control.[6] We pay particular attention to the role of stress in the home environment given the evidence that the stress parents feel around their relationships (Amato & Anthony 2014; Sillekens & Notten 2020), parenting responsibilities (Higgins et al. 2011), and finances (Kong et al. 2021) as well as their mental health (Kiss et al. 2014) all influence their children's development of self-regulation.[7]

Importantly, we examine the intergenerational correlation in both mothers' and fathers' self-control. This is a novel extension of the existing literature which, to date, has focused almost exclusively on mothers (Bridgett et al. 2015; Nofziger 2008). Research suggests, however, that fathers also matter for their children's cognitive development (Cabrera et al. 2018; Islamiah et al. 2023; Volker & Gibson 2014) and may, in fact, play a distinct role to that of mothers in children's social, psychological, and academic development (see Jeynes 2016 for a meta-analysis). Fathers approach parenting differently, devoting less time to child rearing (Craig et al. 2014) and adopting a more authoritative and dominant parenting style (Biblarz & Stavey 2010). Given this, it seems reasonable to believe that fathers may have a differential role in the development of children's self-control. The focus on mothers in this research has meant that "fathers more often than not contribute silently to children's development or are forgotten" (Cabrera et al. 2018). The few studies that do explicitly consider fathers have produced mixed results. Mothers' self-control appears to be substantially more important than that of fathers in understanding the capacity of very young children to self-regulate (Boutwell & Beaver 2010; Meldrum et al. 2018), while studies of adolescents reach conflicting conclusions about whether their self-control is (e.g. Bolger et al. 2018; Wang et al. 2017), or is not (e.g. Lansing et al. 2017), associated with that of their fathers. Our study adds to this limited evidence base by not only considering fathers in addition to mothers, but also by expanding the focus to young adults rather than solely adolescents or young children.

Like other studies examining the transmission of personality traits and economic preferences across generations, we lack experimental variation, making ours a descriptive analysis. While our results do not have a causal interpretation, they are nonetheless important in highlighting the factors that contribute to heterogeneity in the capacity for self-control. We find that the unconditional intergenerational correlation in self-control within Australian families (0.15) is virtually identical to

[6] We focus on ages 0–12 because there is consensus among psychologists that the development of executive functioning (i.e., the cognitive process necessary for self-control) slows considerably once adolescence is reached (see Best & Miller 2010; Anderson et al. 2001; Uytun 2018 for reviews).
[7] See Bridgett et al. (2015) who provide a comprehensive review of the literature in developmental, social, and clinical psychology, criminology, physiology, genetics, and human and animal neuroscience on the pathways through which self-regulation can be transmitted across generations.

the intergenerational correlation in self-control within German families (Cobb-Clark et al. 2022) and is similar in magnitude to the correlations in other personality traits.

Model selection statistics lead us to estimate a finite mixture model with two latent classes. The first is characterized by lower self-control tightly distributed around the mean (Class 1); the second is characterized by more variable self-control that is on average significantly higher (Class 2). The gender gap in young adults' self-control is not significant irrespective of latent class; young men have levels of self-control that are statistically equivalent to that of young women. At the same time, there are distinctive differences across latent classes in the association between young adults' self-control and their mothers' and fathers' self-control and experiences of stress. Mothers' relationship stress and poor mental health, for example, are associated with a much larger reduction in the self-control of young adults allocated to the latent class characterized by relatively high self-control (Class 2), than is the case for their peers (Class 1). Extending this analysis to also account for paternal stress reveals that the consequences of family stress in childhood are not homogenous, but rather depend on which parent is experiencing the stress. Unlike the case for mothers, fathers' relationship stress is associated with higher, rather than lower, levels of young-adult self-control for those in Class 2. These differences are often obscured in standard OLS estimates; we generally find no evidence that family stress during childhood shapes young adults' self-control when we ignore any potential unobserved heterogeneity in the determinants of self-control. The single exception is that fathers' poor mental health is significantly associated with higher levels of self-control in young adulthood; though paternal stress overall is not jointly significant.

Gaining a deeper understanding of the nuances in the drivers of self-control is important given that adult self-control is unrelated to major life events and is highly stable over the medium term (Cobb-Clark et al. 2023), implying that the self-control a person develops in childhood is likely to have consequences that last well into adulthood. In this regard, self-control is not unlike other non-cognitive skills that develop early in life, persist into adulthood, and are costly to redress once deficiencies form (Cunha & Heckman 2010; Heckman 2000). Initiatives that successfully support families in developing their children's capacity for self-control may offer the potential to reduce intergenerational disadvantage and promote economic opportunity.

2. DATA

Our data come from the HILDA Survey which interviews a representative sample of approximately 17,000 Australians each year (Watson & Wooden 2021). Commencing in 2001, the HILDA Survey interviews all household members aged 15+, providing rich information on people's demographic characteristics, life outcomes, and family background. Sample members continue to be followed over time even as they leave and establish new households, allowing us to link young adults to their parents regardless of co-residence and to the family circumstances they experienced while growing up. Importantly, in 2019 the HILDA Survey included for the first time the BSCS (see Tangney et al. 2004), making it one of only two large-scale, population-representative data sources to contain a well-established measure of adult self-control.[8]

2.1 The Brief Self-Control Scale

We measure self-control using the BSCS which consists of a 13-item battery of questions assessing people's ability to resist temptation, exhibit self-discipline, and think before acting. The BSCS is derived from the (full) 36-item Self-Control Scale (SCS) and is commonly used as a measure of self-control in psychology, criminology, and sociology (Duckworth & Kern 2011; Hagger et al. 2021; Maloney et al. 2012). The 13-item BSCS is highly correlated with the 36-item SCS, has high internal consistency and test-retest reliability, and is predictive of key life outcomes (Bertrams & Dickhäuser 2009; Cobb-Clark et al. 2022; Tangney et al. 2004).

Individuals respond using a five-point Likert scale ranging from 1 ("not at all") to 5 ("very well") to indicate how well each of the 13 items in the BSCS reflect how they typically are (see Table 1). Responses to these items are aggregated to construct an overall score ranging from 13 to 65 points, with higher values indicating greater self-control. This overall score is then standardized to aid interpretation and enable comparisons with the existing literature.

2.2 Family Stress

The panel structure of the HILDA data allows us to capture the stress that parents experienced while their young-adult children were growing up. We focus on a broad range of stress factors that have been linked to the development of children's self-control including: i) parenting stress; ii) relationship stress; iii) financial stress; and iv) poor mental health (see Amato & Anthony 2014; Higgins et al. 2011; Kiss et al. 2014; Kong et al. 2021; Sillekens & Notten 2020). Our approach is to first create age-specific indicators of 'high' versus 'low' stress during young adults' childhood for each form of stress, separately for mothers and fathers. We then calculate the proportion of their childhood between ages 0 and 12 that each young adult was exposed to these family stressors. Details are provided below.

[8] The other is the German Socio-Economic Panel Innovation Sample (GSEOP-IS) which included the BSCS in 2017 and 2020.

2.2.1 Parenting Stress:

Our measure of parenting stress comes from the Aggravation in Parenting Scale (see Wooden 2003), a widely used metric that reliably captures the stressors associated with caregiving responsibilities (Kenney et al. 1999). Specifically, each year, parents of children aged 17 or younger are asked how strongly they agree with the following statements: i) "Being a parent is harder than I thought it would be"; ii) "I often feel tired, worn out, or exhausted from meeting the needs of my children"; iii) "I feel trapped by my responsibilities as a parent"; and iv) "I find that taking care of my child/children is much more work than pleasure" using a seven-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). These responses are averaged to form an overall parenting stress score that ranges from 1 to 7, with higher scores indicating greater parenting stress. We then create an indicator of 'high' parenting stress that takes the value 1 if a respondent's overall parenting stress score exceeds 4.25, placing them in the upper quartile of the HILDA sample as a whole.[9]

2.2.2 Relationship Stress:

We construct a measure of relationship stress using parents' annual responses to the following question: "*How satisfied are you with your relationship with your partner?".* Individuals respond to this question using an 11-point Likert scale that ranges from 0 ("completely dissatisfied") to 10 ("completely satisfied"). Following Kippen et al. (2013), we categorize parents as experiencing 'high' relationship stress if their relationship satisfaction score lies between 0 and 7. Parents in this range are in the lowest quartile of the relationship satisfaction distribution (indicating the highest stress) and are substantially more likely to experience marital separation in the future (Kippen et al. 2013).[10]

2.2.3 Financial Stress:

Our measure of financial stress aggregates two widely used summary scales of financial difficulty: i) financial hardship; and ii) cash-flow problems (see Bray 2001). HILDA respondents aged 15 and above are independently surveyed each year about the things that happened to them since their last interview due to "a shortage of money". We use responses to this question to create an indicator of 'high' financial stress that is equal to 1 if parents report experiencing any form of either financial hardship (pawning something, missing meals, unable to heat home, accessing welfare/charity help) or cash-flow problems (unable to pay rent/mortgage, unable to pay utilities, borrowing from friends)

[9] See Besemer and Dennison (2018) who adopt a similar approach.

[10] More than 75 percent of HILDA respondents report a relationship satisfaction score of 8 or higher, indicating that responses to questions about relationship satisfaction are highly skewed, a finding that has been well documented in the previous literature (Besemer & Dennison 2018).

over the previous year.

2.2.4 Poor Mental Health:

We capture poor mental health using the Mental Health Inventory (MHI) – a component of the Short Form General Health (SF-36) Survey. This is a widely used self-completion questionnaire that has been found to reliably capture respondents' general mental health status (Ware 2004). Raw scores for each survey item within the MHI are summed and then transformed into a scale ranging from 0 – 100, with higher scores representing better mental health. Parents with MHI scores equal to or below 52 are categorized as having poor mental health, with previous research indicating that this threshold is associated with a greater incidence of emotional problems and psychological distress (Rukavina et al. 2012; Silveira et al. 2005; Viertiö et al. 2021)

2.3 Controls

To account for the broader family context while young adults were growing up, our analysis also incorporates a range of controls measured in childhood that are associated with the development in the capacity for self-control. Specifically, we control for household income and size, experiences of relationship breakdown, as well as parental education levels (see Gottfredson & Hirschi 1990; Hay & Forrest 2006; Hope et al. 2003; Kurtz & Derevensky 1994; Phythian et al. 2008). Despite being distinct constructs, a greater internal locus of control is associated with higher self-control (Botha & Dahmann 2024). We therefore also control for parental locus of control to ensure the intergenerational transmission of self-control can be isolated.

Greater detail on the definitions and construction of all variables in the analysis is provided in Appendix Table A1.

2.4 Estimation Sample

Our objective is to understand how family stress during childhood shapes the relationship between young-adult self-control and that of their parents. Consequently, we restrict our analysis to young adults who: i) were observed in HILDA at least once when they were children between the ages of 0 and 12; and ii) in 2019 answered at least 11 of the 13 items used to construct the BSCS. A total of 2,731 young adults meet these conditions (referred to as the 'Young-Adult Sample'). We also require that young adults can be linked to their mothers and fathers, and that both parents answered at least 11 of the 13 items in the BSCS in 2019. As children may have multiple parental figures in their lives, we match young adults to the biological parent or stepparent who was most present in their lives while they were between 0 and 12 years old. There are 1,867 young adults who satisfy these conditions (referred to as the 'Intergenerational Sample'). After dropping observations for item non-response in parenting stress and control variables, we are left with our 'Analysis Sample' consisting of 1,587 family triads (young adults, mothers, fathers) providing full information. Figure 1 documents the sample restrictions that underpin this final analysis sample.

Our research question necessitates the stringent sampling restrictions outlined above. At the same time, it is useful to understand the extent to which sample selection may limit the generalizability of our results. To examine this, we make two comparisons. First, we consider whether there is evidence of sample selection effects resulting from item non-response in parenting stress and control variables. Two-way summary statistics are presented in Table 2 for the Analysis Sample (N = 1,587) and the Intergenerational Sample (N = 1,867). We find that, on average, children in the Analysis Sample are slightly younger (by 10 months) and have a somewhat lower incidence (2.7 percentage points) of fathers experiencing parenting stress in comparison to the Intergenerational Sample which imposes no restrictions on controls. In all other cases, there are no significant differences across these two samples, leading us to conclude that sample selection associated with item non-response is unlikely to have a major impact on our conclusions.

Second, we consider whether there are fundamental differences in the distribution of self-control among the young adults in the Analysis Sample who are matched to both of their parents, and those who are not (Young-Adult Sample). These distributions are depicted in Figure 2. The difference in mean BSCS across samples is not significant (p = 0.682), and a Kolmogorov-Smirnov test fails to reject the hypothesis that the Analysis and Young-Adult Samples are drawn from the same distribution (p = 0.967). Taken together, these results do not indicate major differences in the distribution of self-control across samples.

3. EMPIRICAL STRATEGY

For our main analysis, we adopt a finite mixture model as our preferred estimation approach to account for unobserved heterogeneity in the drivers of self-control in a parsimonious and intuitive way. In effect, our finite mixture model divides the population into endogenously determined classes, or 'types', which we assume to be characterized by different childhood experiences. This allows us to estimate distinct intergenerational correlations within each class, providing insights that are likely to be obscured in standard OLS estimates of the overall population correlation.

Specifically, we postulate that the conditional probability density of our transformed outcome variable – standardized self-control in young adulthood (y_i) – is probabilistically drawn from an additive mixture of C conditional densities, each of which is assumed to be normally distributed as follows:

$$f(y_i|\boldsymbol{x}_i) = \sum_{j=1}^{C} \pi_j f_j(y_i|\boldsymbol{x}_{ij}; \boldsymbol{\theta}_j), \tag{1}$$

where j = 1, 2, ..., C index the distinct latent classes that appear in the population with unknown corresponding mixture probabilities $(\pi_1, \pi_2, \dots, \pi_C)$ to be estimated.[11] These mixtures are assumed to be unconditional and are therefore constant across individuals, i.e., each individual i has the same probability of belonging to Class j ($\pi_{ij} = \pi_j$). To ensure these probabilities are constrained to be positive $(0 < \pi_j \leq 1)$ and sum to one $(\sum_{j=1}^{C} \pi_j = 1)$, they are parameterized using a multinomial logistic model. As usual, $\boldsymbol{x}_{ij}$ is a vector of control variables, while $\boldsymbol{\theta}_j$ is a vector of unknown j-class parameters that must also be estimated.

The model is estimated using maximum likelihood (ML), with the expectation maximization (EM) algorithm used to refine initial parameters. This allows us to optimize the likelihood function iteratively, improving the accuracy of estimation and convergence towards the true underlying parameters of the model. To ensure our estimates converge to a maximum that best reflects the data, each model specification is estimated 1000 times with different starting values.[12] We then select the vector of estimates that is most frequently converged to and conduct inference using robust standard errors.[13]

We begin our main analysis with a baseline model that considers only the link between mothers and the self-control of their young-adult children. This allows us to compare our results to the existing literature, which largely ignores the effects of fathers. Specifically, we estimate the following model:

$$\begin{aligned} f_j(y_i|\boldsymbol{x}_{ij}; \boldsymbol{\theta}_j) = SDSC_{ij}^{YA} = \beta_{0j} + \beta_{1j} SDSC_{ij}^{M} + \beta_{2j} SDSC_{ij}^{M} * Male_{ij}^{YA} + \beta_{3j} Male_{ij}^{YA} \\ + \boldsymbol{Stress}'^{M}_{ij} \boldsymbol{\gamma}_j + \boldsymbol{x}'_{ij} \boldsymbol{\rho}_j + \epsilon_{ij}, \end{aligned} \tag{2}$$

where $SDSC_{ij}^{YA}$ is the standardized self-control score of young-adult i in Class j, with i=1,…,n and j=1,..,C, and $SDSC_{ij}^{M}$ denotes the self-control of his or her mother. The vector $\boldsymbol{Stress}_{ij}^{M}$ captures the array of mothers' parenting, relationship, and financial stress indicators, as well as an indicator for poor mental health. Moreover, $\boldsymbol{x}_{ij}$ is a vector of additional controls representing key child, household, and parent characteristics (see Appendix Table A1) that prior studies in psychology, child development, and criminology have shown to be associated with the development of children's capacity for self-control (see Bridgett et al. 2015; Meldrum et al. 2016, 2018; Wright & Beaver 2005). These include household income and size, young adults' age, indicators capturing young adults' gender

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[11] When j =1, this model, like all finite mixture models, is equivalent to OLS.
[12] All estimation is carried out in StataMP 17.0. Different starting values are specified to explore the data plane and find the convergence point that best reflect our data. Starting values are specified using iterative seed selection in STATA. This involves looping through the seed value 210'i' with 'i' (=0, 1, …1000).
[13] As the aim of this paper is to effectively describe the data, we present the specification that has the greatest frequency of convergence - prioritizing consistency and stability in the convergence of the log-likelihood function.

and whether their parents experienced a relationship breakdown, as well as mothers' traits including maternal education and locus of control. An interaction between mother self-control and young-adult gender is also included to account for potential gender heterogeneity in the transmission of self-control. Finally, ϵ_{ij} is the random error of individual i in Class j, with errors in each latent Class j assumed to follow a normal distribution $\epsilon_{ij} \sim N(0, \sigma_j^2)$.[14] To examine the additional explanatory power of maternal stress on young-adult self-control, we estimate two specifications; one with, and one without, controls for maternal stress factors. Despite our rich controls, we do not claim to have achieved causal estimation. Instead, our results should be considered conditional correlations.

One of the strengths of our data is the ability to study self-control in a family context. We consider the transmission of self-control from both mothers and fathers by estimating an extended specification that also accounts for fathers' characteristics:

$$f_j(y_i | x_{ij}^*; \boldsymbol{\theta}_j) = SDSC_{ij}^{YA} = \beta_{0j} + \beta_{1j} SDSC_{ij}^{M} + \beta_{2j} SDSC_{ij}^{M} * Male_{ij}^{YA} + \beta_{3j} Male_{ij}^{YA} + \boldsymbol{Stress'}_{ij}^{M} \boldsymbol{\gamma}_j + \boldsymbol{x}_{ij}^{*'} \boldsymbol{\rho}_j + \beta_{4j} SDSC_{ij}^{F} + \beta_{5j} SDSC_{ij}^{F} * Male_{ij}^{YA} + \boldsymbol{Stress'}_{ij}^{F} \boldsymbol{\delta}_j + \varepsilon_{ij}, \quad (3)$$

where $SDSC_{ij}^{F}$ and $\boldsymbol{Stress}_{ij}^{F}$ capture fathers' self-control and stress covariates, respectively. The control vector $\boldsymbol{x}_{ij}^*$ has also been extended to include paternal education and locus of control. As above, the error term within each latent class is assumed to follow a normal distribution $\varepsilon_{ij} \sim N(0, \sigma_j^2)$.

While finite mixture models do not require that mixture components – given, in our case, by Equations 2 and 3 – have a natural interpretation, "it is desirable that the hypothesis of LCM should be supported both by a priori reasoning and by meaningful a posteriori differences in the behavior of latent classes", as they may fit the data better simply because of outliers (Deb & Trevedi 2002; Deb et al. 2011). In our case, the specification of mixture components is conceptually motivated by both our research question and the previous literature. We also empirically assess whether any differences across latent classes are meaningful using a series of standard inference tests.

To examine the determinants of class membership, we regress our control values on the posterior probability from our baseline model, estimated as follows:

$$\pi_{ij}^{posterior} = \frac{\pi_j f_j(y_i | \boldsymbol{x}_{ij}; \boldsymbol{\theta}_j)}{\sum_{j=1}^{C} f_j(y_i | \boldsymbol{x}_{ij}; \boldsymbol{\theta}_j)}. \quad (4)$$

Unlike the unconditional class probability π_j described above, the posterior probability is a function of both outcome and baseline control variables, allowing each individual i to have a unique probability value for each class. By examining which factors affect the posterior probability that individual i belongs to Class j, we are able to characterize the nature of latent heterogeneity. That is, we can

[14] Note that our model allows for unequal residual variance across latent classes.

examine which measures are most strongly associated with the likelihood that a young adult belongs into a latent class distinguished by higher, rather than lower, self-control. This is one of the advantages of using finite mixture estimation over quantile regression which merely detects heterogeneity (Deb et al. 2011).

4. RESULTS

Our empirical analysis proceeds in four steps. We begin by considering the unconditional intergenerational correlation in self-control between parents and their young-adult children. Ignoring the influence of fathers, we move on to investigate the association between young adults' capacity for self-control and the stress their mothers reported while they were children. We then expand our analysis to also consider fathers' self-control and the stress they experienced while their children were young. In our final step, we explore the factors that determine whether a young adult is more likely to be assigned to a class characterized by higher self-control.

4.1 *The Unconditional Intergenerational Correlation in Self-Control*

The intergenerational relationship in adult self-control is depicted in Figure 3. This graph shows the unconditional intergenerational correlation in self-control for the broadest possible sample our data permit, i.e., the 2,574 young adults matched to at least one of their parents (see Figure 1). The overall correlation in the self-control of young Australians and their parents is 0.15, which is virtually identical to the 0.14 correlation Cobb-Clark et al. (2022) find between young-adult Germans and their parents. The intergenerational correlation in self-control varies by gender, ranging between 0.20 (fathers and daughters) to 0.08 (mothers and sons) (see Figure 4). Interestingly, parents' self-control is more closely related to that of their young-adult daughters than their young-adult sons. In contrast, the German evidence points to within gender correlations that are close to zero and statistically insignificant (Cobb-Clark et al. 2022).

Our estimates of the intergenerational correlation in self-control are very similar in magnitude to those for other personality traits. Previous studies point to a correlation in young adults' and parents' Big Five personality traits on the order of 0.10 to 0.25 (Anger 2012; Loehlin 2009). Moreover, there is evidence that the intergenerational correlations in locus of control (Nowicki et al. 2018), preferences around time, risk, and trust (Brown & van der Pol 2015; Dohmen et al. 2012; Kiessling et al. 2021), as well as non-cognitive skills (Anger 2012) also lie within this range. The consistency in the degree to which a broad range of personality traits, economic preferences, and non-cognitive skills are transmitted across generations is striking and raises questions about the potential for a single mechanism to underlie these findings.

4.2 Maternal Stress in Childhood

Self-control in adulthood is shaped in part by childhood experiences, including the extent to which the family is under stress. The next step in our analysis focuses solely on the association between young adults' capacity for self-control and the stress their mothers reported while they were children. Results from estimating our baseline specification (Equation 2) using the Analysis Sample are provided in Table 3. To facilitate comparisons we report OLS estimates, first ignoring and then accounting for the effects of maternal stress (see Columns 1 and 2, respectively). OLS estimates provide an interesting benchmark because they mask any heterogeneity in the drivers of self-control by considering a single class that effectively averages across latent class subpopulations.

Our OLS estimates indicate that, although young-adult men report slightly less capacity for self-control than do young-adult women, this difference is not statistically significant. The absence of a gender gap in adult self-control contrasts with the disparities found between girls' and boys' ability to self-regulate (see, e.g., Matthews et al. 2009; Silverman 2003), but is consistent with the findings from previous studies of adults (Cobb-Clark et al. 2024). Ignoring the effects of maternal stress before young adults turned 13 years old, we find that each standard deviation (std.) increase in mothers' self-control is associated with a significant increase (0.158 std.) in their daughters' self-control and a modest increase in their sons' self-control (0.053 std.). This gender disparity is consistent with previous evidence that the intergenerational correlations in mothers' risk (Brown & Van der Pol 2015; Alan et al. 2017) and time preferences (Brenøe & Epper 2022; Gauly 2017), gender ideology (Perales et al. 2021; Filler & Jennings 2015), sociability (Okumura & Usui 2014), and interpersonal characteristics (Liu et al. 2018) are larger among their daughters than among their sons.

Young adults' self-control is also positively associated with family size, the extent to which their mothers' have an internal locus of control, and whether their mothers' relationships with their partners remained intact throughout the young adults' childhood; it is negatively associated with household income.

Taking account of the stress that mothers experienced while their adult children were young leaves our OLS estimates of the intergenerational correlation in self-control largely unchanged. Moreover, parenting, relationship, and financial stress as well as poor mental health are neither individually nor jointly ($p = 0.530$) significant in determining young-adult levels of self-control, and a likelihood ratio test rejects the hypothesis that accounting for maternal stress adds significant explanatory power to the model. Thus, when we ignore any potential unobserved heterogeneity in the determinants of self-control, there is no evidence that mothers' stress during childhood shapes the self-control of young adults.

At the same time, the extensive evidence that children's development of self-control is influenced by numerous family circumstances, parenting practices, and childhood experiences – many of which are not captured in our data – suggests that the distribution of adult self-control may, in fact, be characterized by substantial unobserved heterogeneity. Given this, we compare our OLS results to those from a two-class finite mixture model (see Columns 3 – 6). We focus on two latent classes because model selection criteria do not lend clear support for a three-class model relative to a two-class model (Appendix Table A3).[15] When we ignore maternal stress, approximately 80 percent of young adults fall into Class 1, while 20 percent are assigned to Class 2 (see Figure 5). The Class 1 distribution is shifted leftward with a significantly lower mean level of self-control than that of Class 2 (41.3 vs. 45.4) and less variance. Controlling for differences in maternal stress during childhood alters the allocation of young adults into the classes somewhat, leaving 73 percent assigned to Class 1 and 27 percent assigned to Class 2. Those in Class 2 continue to have a degree of self-control that is significantly higher on average (40.9 vs. 45.1) and much less variable. Standard Kolmogorov-Smirnov tests allow us to reject the hypothesis that the distribution of self-control in Class 1 and 2 are drawn from the same population irrespective of whether we do ($p = 0.000$), or do not ($p = 0.000$), control for mothers' stress. When discussing our results, we will refer to Class 1 as 'low self-control' and Class 2 as 'high self-control', reflecting differences in the mean level of self-control in each class. Our model selection statistics indicate that a model including maternal stress fit the data better than a model without. Consequently, we focus our discussion on the results in Columns 5 and 6 of Table 3.

We begin by noting the distinctive gender patterns in the determinants of self-control across latent classes. There is no gender gap in the self-control of young adults in either latent class. At the same time, the intergenerational correlation in the self-control of young adults and their mothers is notably different across classes. There are small, insignificant correlations in the self-control of young adults and their mothers in the 'low self-control' class. In contrast, for those in the 'high self-control' class, each standard deviation increase in mothers' self-control is associated with a modest (0.214 std.) increase in the self-control of their young-adult sons – and an even larger and statistically significant increase in the self-control of their young-adult daughters (0.339 std.).[16]

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[15] We consider two model selection statistics when choosing the optimal number of latent classes: the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC). Both strike a balance between the increase in model fit (i.e., log-likelihood) gained by increasing the number of latent classes and the loss of degrees of freedom due to the estimation of additional parameters.

[16] The overall intergenerational correlation in the self-control of mothers and young-adult sons is given by the sum of the coefficients for mothers' self-control and the gender interaction.

There are also differences across classes in the relationship between adult self-control and maternal stress during childhood.[17] Mothers' parenting, relationship, and financial stress and poor mental health before children enter adolescence are jointly insignificant ($p = 0.538$) in predicting the self-control of young adults with relatively low levels of self-control (Class 1), but are jointly significant ($p = 0.000$) for those with relatively high levels of self-control (Class 2). Similarly, while none of these stressors are individually significant for young adults in Class 1, for those in Class 2, increases in mothers' relationship stress and poor mental health are both associated with significantly lower levels of self-control among their young-adult children. In short, childhood experiences of mothers' stress are much more strongly associated with a reduction in the self-control of young adults with relatively high self-control (Class 2) than is the case for their peers.

4.3 Family Stress in Childhood: Taking Account of Both Mothers and Fathers

We next estimate an extended model that accounts for fathers' capacity for self-control, stress during young adults' childhood, and background characteristics. Results are presented in Table 4. As before, we compare the OLS estimates that mask heterogeneity through the consideration of a single class with estimates from a two-class finite mixture model.

Extending the estimation model to account for fathers adds considerable explanatory power. A likelihood ratio test ($p = 0.000$) indicates that an OLS model accounting for both mothers and fathers fits the data better than an equivalent model excluding fathers. Similarly, the Akaike Information Criterion indicates that our two-class finite mixture model is enhanced when fathers' characteristics are included in the model (see Appendix Table A3).[18] While much of the literature examining the intergenerational correlation in self-control focuses solely on mothers, our results clearly indicate that young adults' capacity for self-control is correlated with that of their fathers – not only their mothers – and is associated with their fathers' stress while they were children.

Conditioning on a rich set of controls – but ignoring any underlying unobserved heterogeneity in young adults' self-control – we again find that the gender gap in young-adult self-control (-0.061 std.) is not significantly different from zero (see Column 1). The intergenerational correlation in self-control between mothers and their daughters remains positive and significant, is slightly smaller than when the influence of fathers is ignored (0.138 vs. 0.156 std.), and is significantly larger than the correlation in the self-control between mothers and sons ($p = 0.059$). Similarly, fathers' self-control

[17] A chi-square test leads us to reject the hypothesis that the estimated relationship between adult self-control and maternal stress in childhood is the same for those in Class 1 (low self-control) and those in in Class 2 (high self-control).
[18] In contrast, the BIC does not support the extension of the model to consider fathers' characteristics, likely because it penalizes additional model parameters more heavily than does the AIC.

is significantly linked to the self-control of their daughters, but not their sons – though this difference is insignificant (p = 0.309). Specifically, each standard deviation increase in fathers' capacity for self-control is associated with a 0.161 std. increase in their daughters' self-control, but an increase of only 0.109 std. in the self-control of their sons. Using German data, Cobb-Clark et al. (2022) also find that the intergenerational correlation in self-control is smaller between fathers and sons than it is between fathers and daughters.

As before, we account for unobserved heterogeneity in the determinants of young-adult self-control using a two-class finite mixture model (Columns 2 and 3). Fully, 84.4 percent of young adults are assigned to Class 1 (low self-control), while 15.6 percent are assigned to Class 2 (high self-control) (Figure 5). The results generate several key insights. First, accounting for paternal stress does not alter our conclusions regarding the self-control gender gap. The gender gap in young adults' self-control is not significant irrespective of latent class; young men have levels of self-control that are statistically equivalent to that of young women.

Second, we continue to find that the way young adults' self-control is related to that of their parents varies with latent class. Increases in mothers' capacity for self-control are associated with large and statistically significant increases (0.551 std.) in their daughters' self-control when they are in Class 2; but small, insignificant increases (0.066 std.) when not. This bifurcation is also apparent between mothers and their young-adult sons, with the intergenerational correlation ranging from as little as -0.005 (Class 1) to 0.345 (Class 2). Interestingly, the correlation between fathers' and their daughters is similar in magnitude across classes; yet each standard deviation increase in fathers' self-control is associated with an increase (0.120 std.) in the self-control of sons in Class 1, but a small reduction (-0.050 std.) in the self-control of sons in Class 2.

Third, mothers' relationship stress and poor mental health during childhood continue to be particularly important in shaping the self-control of young adults in Class 2 even after accounting for measures of paternal stress during childhood. Young adults in Class 2 are characterized by levels of self-control that are higher on average and more variable. In contrast, mothers' stress measures are neither individually nor jointly significant in predicting the self-control of young adults in Class 1.

Finally, accounting for paternal stress highlights key differences in the consequences of relationship and financial stress, depending on whether that stress is experienced by mothers or fathers. Specifically, fathers' relationship stress is associated with a substantial increase in the self-control (0.679 std.) of young adults in Class 2, while mothers' relationship stress is associated with a large reduction in self-control (-1.352 std.). Similarly, mothers' financial stress and poor mental health are not related to the self-control of young adults assigned to Class 1. In contrast, fathers financial stress is associated with significantly lower levels of self-control (-0.236 std.), while poor mental health is associated with sizable increases in self-control (0.467 std.). Taken together, our results indicate that the consequences of family stress in childhood are not uniform, but rather depend on which parent is experiencing the stress. Unlike the case for mothers, fathers' stress is in some cases associated with higher, rather than lower, levels of self-control.

4.4 Latent Self-Control Class Membership

There is considerable heterogeneity in the way that gender, parental characteristics, and family stress are linked to young adults' capacity for self-control. Among those with greater – and more variable – levels of latent self-control (Class 2), being male and having a mother with high self-control and internal locus of control are associated with substantially higher levels of self-control in young adulthood. In contrast, the self-control of young adults with lower (and less variable) latent self-control is much less closely tied to their gender and mothers' psychosocial traits.

We turn now to consider what determines class membership. Is family stress important in understanding young adults' latent capacity for self-control? We address this question by using our finite mixture parameters to calculate each young adult's continuous posterior probability of being assigned to the high-mean, high-variance self-control latent class from our baseline estimation (see Equation 4). We then use a linear probability model to estimate the determinants of latent class membership. Results are provided in Table 5. Young adults who have grown up in families in which parents were together during their childhood (before age 13) are approximately two to three percentage points more likely to have high latent self-control. Mothers' experiences of relationship stress and poor mental health also matter. Young adults are significantly less likely be in the high latent self-control class if their mothers report experiencing relationship stress during their childhood. In contrast, they are significantly more likely to belong to this class if their mothers report poor mental health. Taken together, our measures of maternal stress are jointly significant in predicting latent class membership ($p = 0.014$) when we ignore the influence of fathers. When we account for the characteristics and experiences of both parents, our full set of family stress measures are jointly significant ($p = 0.052$).

5. CONCLUSIONS

People's life success depends in large measure on their capacity to regulate their attention, emotions, and behaviors to achieve their long-term goals. Disrupting the intergenerational transmission of low self-control and instead ensuring that all children's self-control is nurtured – may thus be an effective strategy for reducing intergenerational disadvantage and promoting economic opportunity. However, success in developing initiatives that lead to enduring benefits depends, in part, on having a deeper understanding of the links between the formation of self-control and childhood experiences. Our research makes an important contribution by examining the intergenerational correlation in the self-control of young adults and their fathers, as well as their mothers. Previous researchers have typically focused solely on children (or adolescents) and their mothers, despite the fact that fathers play an important and unique role in children's development (Jeynes 2016). We also extend the literature by documenting the link between young adults' self-control and the stress their parents experienced while they were growing up, and moving beyond traditional estimation approaches to reveal the degree of unobserved heterogeneity in the correlates of adult self-control.

Our results lead us to several conclusions. Empirical methods that account for unobserved heterogeneity offer a more nuanced, and in our view, potentially more useful, understanding of the factors underlying adults' self-control. There are certainly statistical arguments for considering unobserved heterogeneity – our selection criteria indicate that a finite mixture model with two latent classes fits the data better than an OLS model. More importantly, we also find economically meaningful differences across latent classes in the association between young-adult self-control and several core background factors including gender, parental self-control, and family stress. These differences are obscured in OLS estimates, leading us to reject the hypothesis that accounting for parental stress adds significant explanatory power to the OLS model.

A better representation of the data highlights that some young people seem to be particularly sensitive to the circumstances in which they grow up. Approximately one in four young adults are drawn from a self-control distribution characterized by not only a relatively high mean, but also a large variance. Their capacity for self-control is much higher if their parents report higher self-control themselves and did not experience stress; it is much lower if the opposite is true. In contrast, the self-control of their peers drawn from a distribution characterized by a low mean – approximately 75 percent of young adults – is relatively uncorrelated with parents' self-control and history of stress. Thus, while there is some scope for limited parental self-control and family stress to facilitate the intergenerational transmission of disadvantage, this may not be a widespread phenomenon and instead characterize the experiences of a subset of families.

Fathers matter. Taking their characteristics, self-control, and stress levels into account adds explanatory power to our model of young-adult self-control regardless of whether we do, or do not, account for unobserved heterogeneity. Importantly, young adults' capacity for self-control is positively correlated with the self-control of their fathers – not only that of their mothers – and is higher if their fathers were continuously present in the household while they were growing up. Moreover, the intergenerational correlation in fathers' and young-adult children's self-control is as strong, if not stronger, as it is between mothers and young adults. This contrasts with what is often observed among young children; their capacity to self-regulate appears to be more strongly tied to that of their mothers (see Boutwell & Beaver 2010; Meldrum et al. 2018). Studies that ignore fathers are therefore likely to paint a very incomplete picture of the pathways through which children develop self-control.

Family stress in childhood seems to have consequences for adult self-control that are not homogenous, but rather depend on the nature of the stress and which parent experienced it. Importantly, the issue does not seem to be the stress associated with parenting *per se,* but rather the broader contextual factors that stress families. Young adults' self-control is independent of the stress their parents felt about their parenting roles. Mothers' relationship stress and poor mental health are both associated with less self-control. Fathers' financial stress is also correlated with lower levels of self-control, yet their relationship stress and poor mental health are both associated with more – not less – self-control among their adult children.

Finally, there is value in studying self-control in adult populations. The advantage in self-control that girls are often observed to have during childhood and adolescence (see, e.g., Matthews et al. 2009; Silverman 2003) is not as apparent in adulthood. Our findings indicate that young Australian men and women have levels self-control that are statistically equivalent, which is consistent with the absence of a gender gap in adult Germans' self-control (Cobb-Clark et al. 2024). We also find that fathers' capacity for self-control seems to be much more strongly associated with their offsprings' self-control in adulthood than previous studies have found to be the case in childhood and adolescence. One possibility is that the disparity in childhood self-control associated with characteristics such as gender and parental self-control may, in part, represent short-term developmental advantages rather than lifelong advantages. Given the numerous choices that adults make not only for themselves, but also for their families, employers, and communities, it is useful to study the determinants of self-control in adult populations as well as in children.

Future research addressing two issues would be particularly valuable. First, it would be useful to understand the nature of the unobserved heterogeneity that we have uncovered. What is it that differentiates those young adults whose self-control is highly sensitive to family stress in childhood from their peers for whom this is not true? Second, previous studies demonstrate that socialization within families is important in transmitting risk and trust attitudes (Dohmen et al. 2012), and that parents who are more involved in their children's upbringing have children with "more favourable traits and characteristics" (Zumbuehl et al. 2021). We need to understand the extent to which self-control is transmitted across generations through similar pathways.

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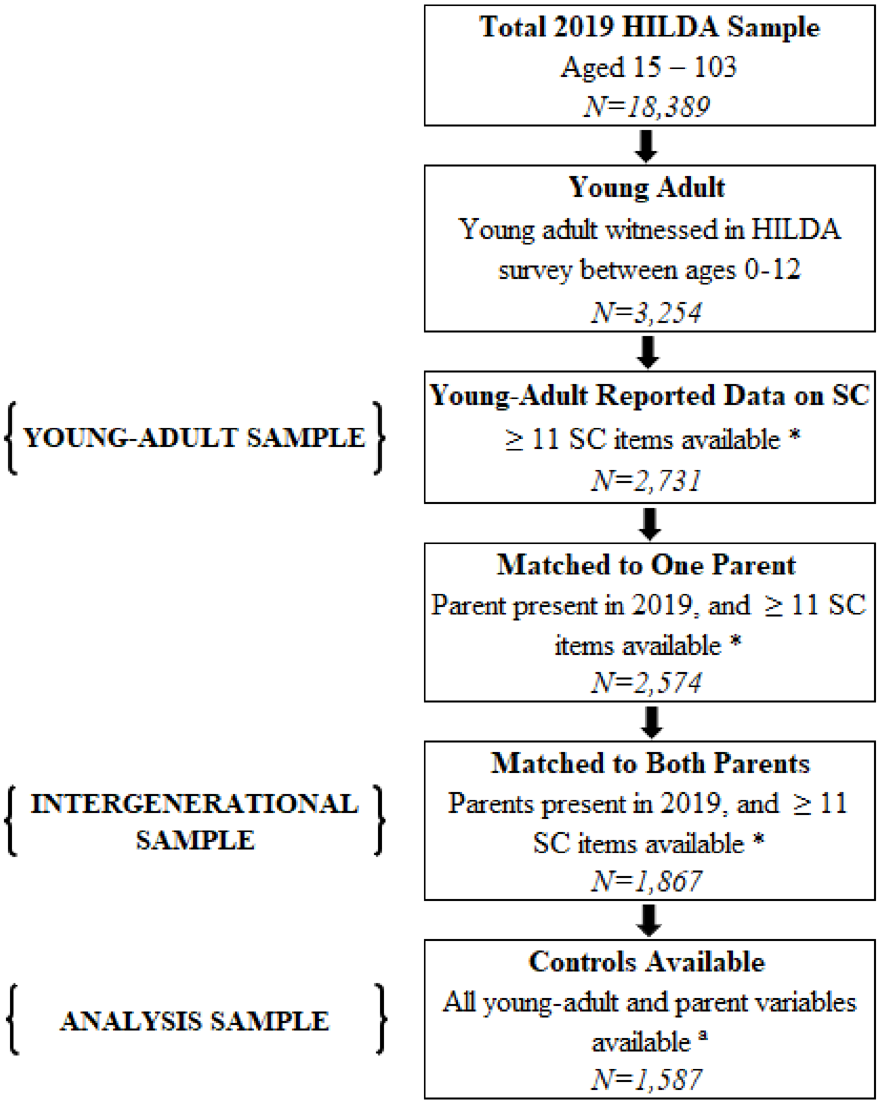
TABLES AND FIGURES

Table 1: Brief Self-Control Scale Questionnaire

Item	Question
1	I often act without thinking through all the alternatives. *[reversed]*
2	I have a hard time breaking bad habits. *[reversed]*
3	I do certain things that are bad for me, if they are fun. *[reversed]*
4	People would say I have iron self-discipline.
5	Pleasure and fun sometimes keep me from getting work done. *[reversed]*
6	I am lazy. *[reversed]*
7	I refuse things that are bad for me.
8	I am good at resisting temptation.
9	Sometimes I cannot stop myself from doing something, even if I know it is wrong. *[reversed]*
10	I say inappropriate things. *[reversed]*
11	I have trouble concentrating. *[reversed]*
12	I wish I had more self-discipline. *[reversed]*
13	I can work effectively towards long-term goals.

Note: Respondents were asked to rate how well each statement describes them, with responses ranging from 1 ("not at all") to 5 ("very well"). We reverse responses for items marked as *"[reversed]"*.

Figure 1: Sample Selection Process



*For those with ≤ 2 missing items, the average BSCS score for the remaining items are calculated separately for young-adults, mothers, and fathers, and are used to replace the missing item for individuals in these respective sub-groups. Individuals with three or more missing BSCS items are dropped from the analysis.

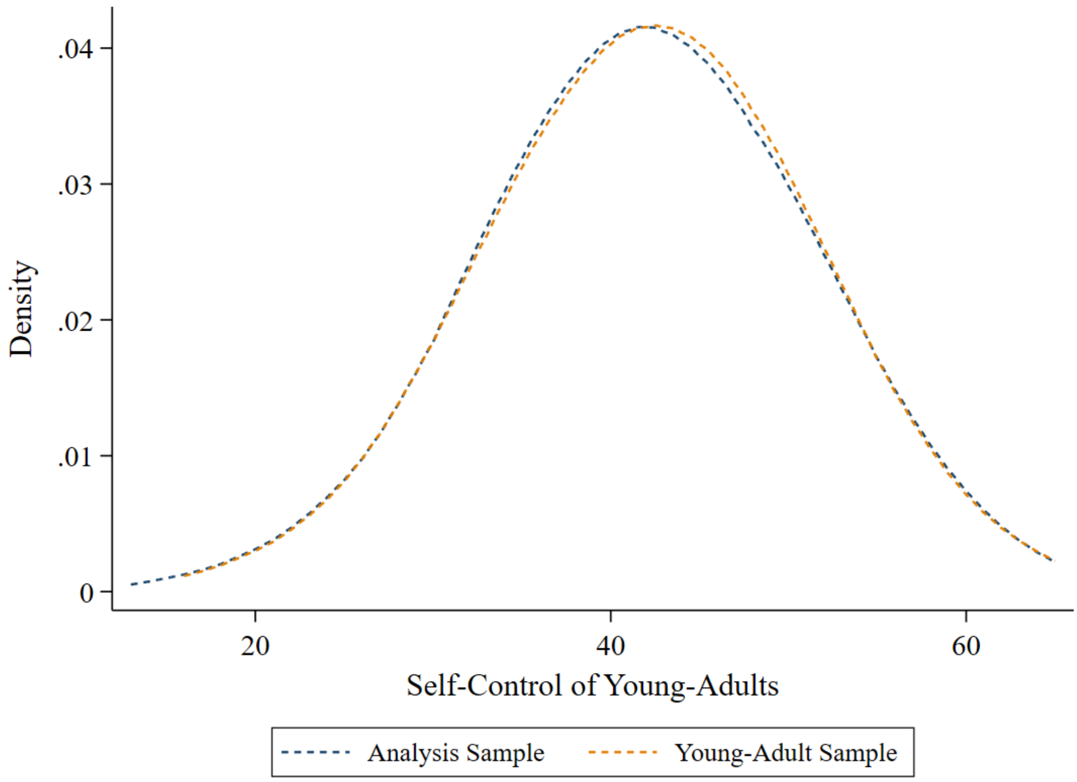
[a] These are listed in Appendix Table 1.

Table 2: Descriptive Statistics by Sample

	Intergenerational Sample		Analysis Sample		Mean Diff.
	μ_{IS}	σ_{IS}	μ_{AS}	σ_{AS}	$(\mu_{IS} - \mu_{AS})$
	(1)	(2)	(3)	(4)	(5)
Young-Adult					
Self-Control	42.133	0.201	42.141	0.215	-0.008
Survey Age	21.533	0.107	20.653	0.102	0.880***
Male	0.498	0.012	0.507	0.013	-0.010
Intact	0.822	0.009	0.818	0.010	0.004
Household Income	$50,415	$594	$49,950	$611	-$465
Household Size	4.666	0.027	4.607	0.026	0.058
Mother					
Self-Control	46.046	0.183	46.044	0.200	0.003
Locus of Control	38.085	0.161	38.108	0.165	-0.023
Parenting Stress	0.366	0.008	0.350	0.008	0.015
Relationship Stress	0.297	0.008	0.303	0.008	-0.006
Financial Stress	0.132	0.005	0.131	0.006	0.001
Poor Mental Health	0.290	0.008	0.283	0.009	0.006
Education					
Below HS/Cert	0.267	0.010	0.256	0.011	0.012
HS/Cert	0.302	0.011	0.299	0.011	0.003
Above HS/Cert	0.431	0.012	0.445	0.012	-0.015
Father					
Self-Control	45.948	0.186	45.936	0.203	0.012
Locus of Control	38.180	0.162	38.253	0.163	-0.073
Parenting Stress	0.280	0.007	0.253	0.007	0.027**
Relationship Stress	0.251	0.008	0.257	0.008	-0.006
Financial Stress	0.094	0.005	0.092	0.005	0.002
Poor Mental Health	0.263	0.008	0.263	0.008	0.001
Education					
Below HS/Cert	0.172	0.009	0.168	0.009	0.004
HS/Cert	0.426	0.012	0.422	0.012	0.005
Above HS/Cert	0.402	0.011	0.411	0.012	-0.009
N	1,867		1,587		

The statistical significance is stated as: *p ≤ 0.1; **p ≤ 0.05; ***p ≤ 0.01. Household income is provided in Australian dollars ($AUD), with further detail on the definition and construction of all variables available in Appendix Table A1. The Analysis Sample is restricted to those respondents with complete information for all relevant controls.

Figure 2: Probability Density Function of Young-Adult Self-Control
in the Analysis and Young-Adult Samples



Kolmogorov-Smirnov test statistic fails to reject the hypothesis that these two samples are drawn from the same distribution (p=0.967).

Figure 3: Intergenerational Transmission of Self-Control
[Sample of Young Adults Matched to One Parent]

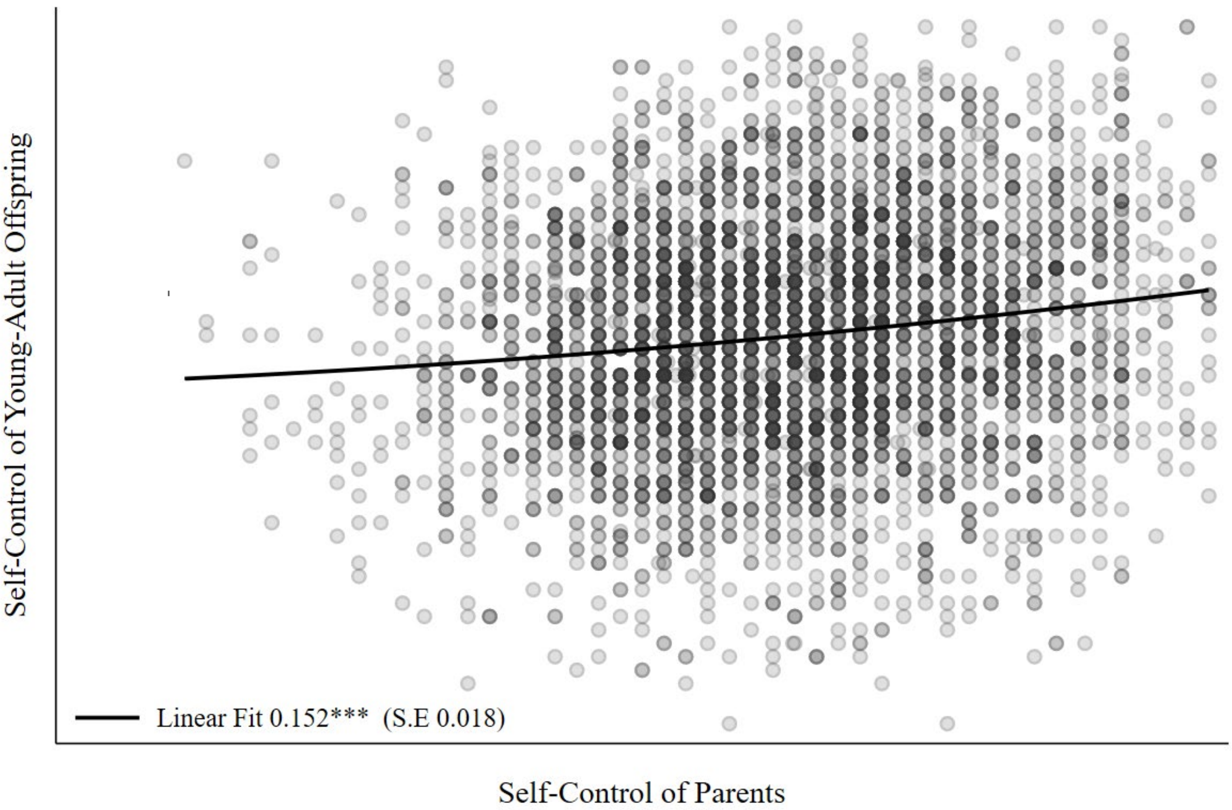


Illustration based on HILDA Wave 2019. Both the y-axis and x-axis take on the maximum BSCS range, 13 – 65. The linear fit is calculated using OLS regression on a total of 4,441 parent-young-adult (YA) pairs (mother-YA, N=2,436; father-YA, N = 2,136). Standard errors are clustered at the young adult level to account for the self-control score of repeat young adults (N= 1,867) being considered twice: once in relation to their mother's self-control, and once in relation to their father's self-control (if both parents are observed). The statistical significance is stated as: *p ≤ 0.1; **p ≤ 0.05; ***p ≤ 0.01.

Figure 4: Gender Dyad of Intergenerational Transmission of Self-Control
[Sample of Young Adults Matched to One Parent]

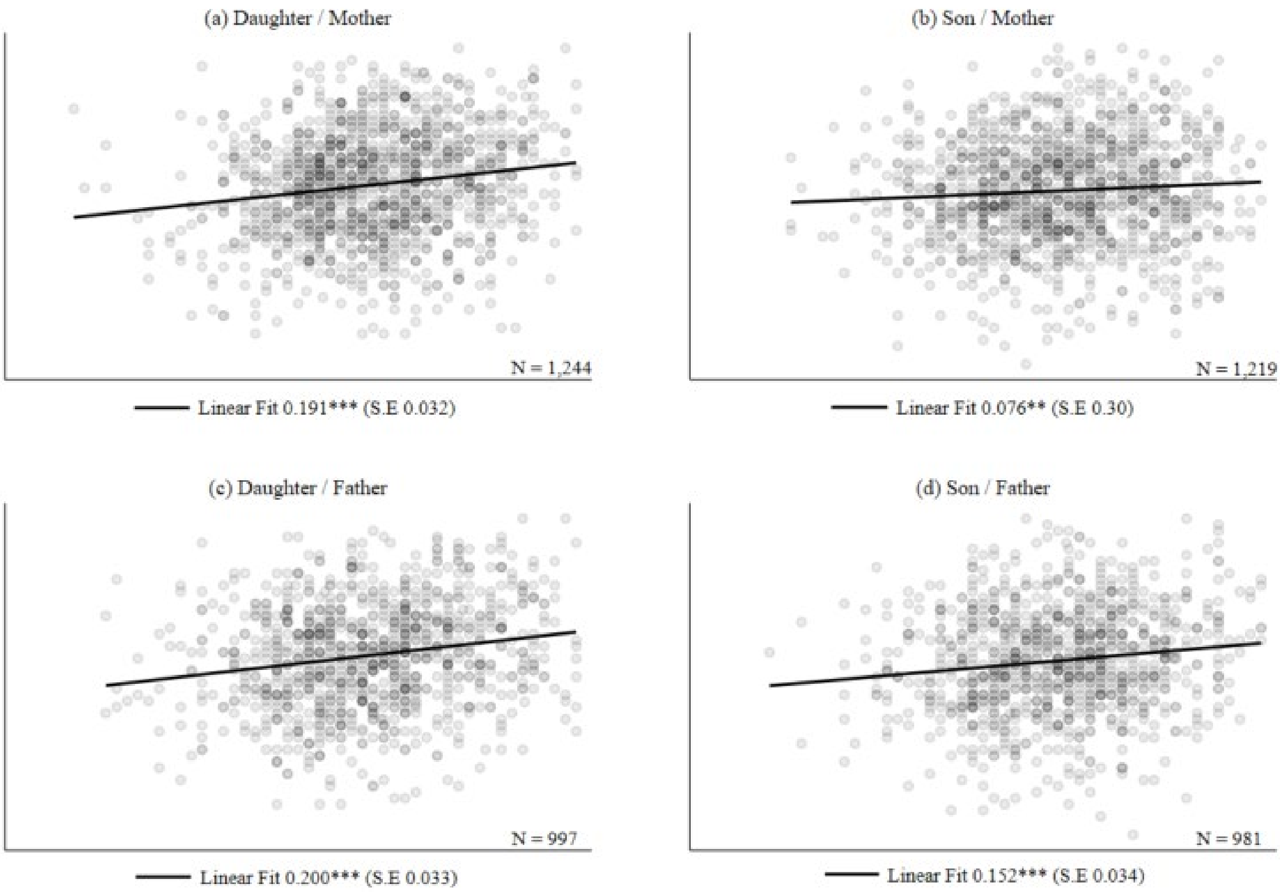


Illustration based on HILDA Wave 2019. Both the y-axis and x-axis take on the maximum BSCS range, 13 – 65. The linear fit is calculated using OLS regression, with standard errors clustered at the young adult level to account for the self-control score of repeat young adults being considered twice: once in relation to their mother's self-control, and once in relation to their father's self-control (if both parents are observed). The statistical significance is stated as: *p ≤ 0.1; **p ≤ 0.05; ***p ≤ 0.01.

Table 3: OLS/FMM of Intergenerational Self-Control [Mother/YA]

	OLS		FMM 2			
	Baseline	**+Mother Stress**	**Baseline**		**+Mother Stress**	
			Class 1	*Class 2*	*Class 1*	*Class 2*
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-0.054	-0.053	-0.159	0.334*	-0.078	-0.017
	(0.049)	(0.049)	(0.102)	(0.180)	(0.093)	(0.186)
Mother SC (std.)	0.158***	0.156***	0.079	0.432***	0.080	0.339**
	(0.038)	(0.039)	(0.089)	(0.118)	(0.059)	(0.133)
Mother SC (std.) × Male	-0.105**	-0.107**	-0.047	-0.353***	-0.096	-0.125
	(0.051)	(0.051)	(0.083)	(0.120)	(0.073)	(0.120)
Intact	0.183***	0.159**	0.162*	0.321	0.118	0.306
	(0.070)	(0.073)	(0.092)	(0.211)	(0.117)	(0.255)
Household Income	-0.151**	-0.157**	-0.153	-0.117	-0.134	-0.191
	(0.074)	(0.078)	(0.099)	(0.188)	(0.124)	(0.168)
Household Size	0.050**	0.049*	0.017	0.150*	0.109**	-0.119
	(0.026)	(0.026)	(0.032)	(0.080)	(0.047)	(0.156)
Mother LoC (std.)	0.073***	0.056*	-0.022	0.456***	0.087	-0.023
	(0.028)	(0.033)	(0.057)	(0.164)	(0.063)	(0.165)
Maternal Stress:						
Parenting		0.060			0.088	0.035
		(0.085)			(0.131)	(0.252)
Relationship		-0.117			0.166	-0.891*
		(0.081)			(0.151)	(0.478)
Financial		-0.019			0.048	-0.204
		(0.078)			(0.135)	(0.391)
Poor Mental Health		-0.103			-0.316	-1.436***
		(0.133)			(0.304)	(0.331)
Probability			0.798	0.202	0.730	0.267
Mean			41.270	45.442	40.916	45.132
N	1,587		1,587		1,587	

SC and LoC refer to self-control and locus of control, respectively. Mean values for self-control are presented in their raw (unstandardized) form. Probability represents the marginal probability of each latent class, indicating the proportion of observations assigned to each class. Mean denotes the marginal mean of each latent class, reflecting the average value of the observed data within each class. The statistical significance is stated as: *p ≤ 0.1; **p ≤ 0.05; ***p ≤ 0.01.

Figure 5: Posterior Distribution of Young-Adult Self-Control by Class

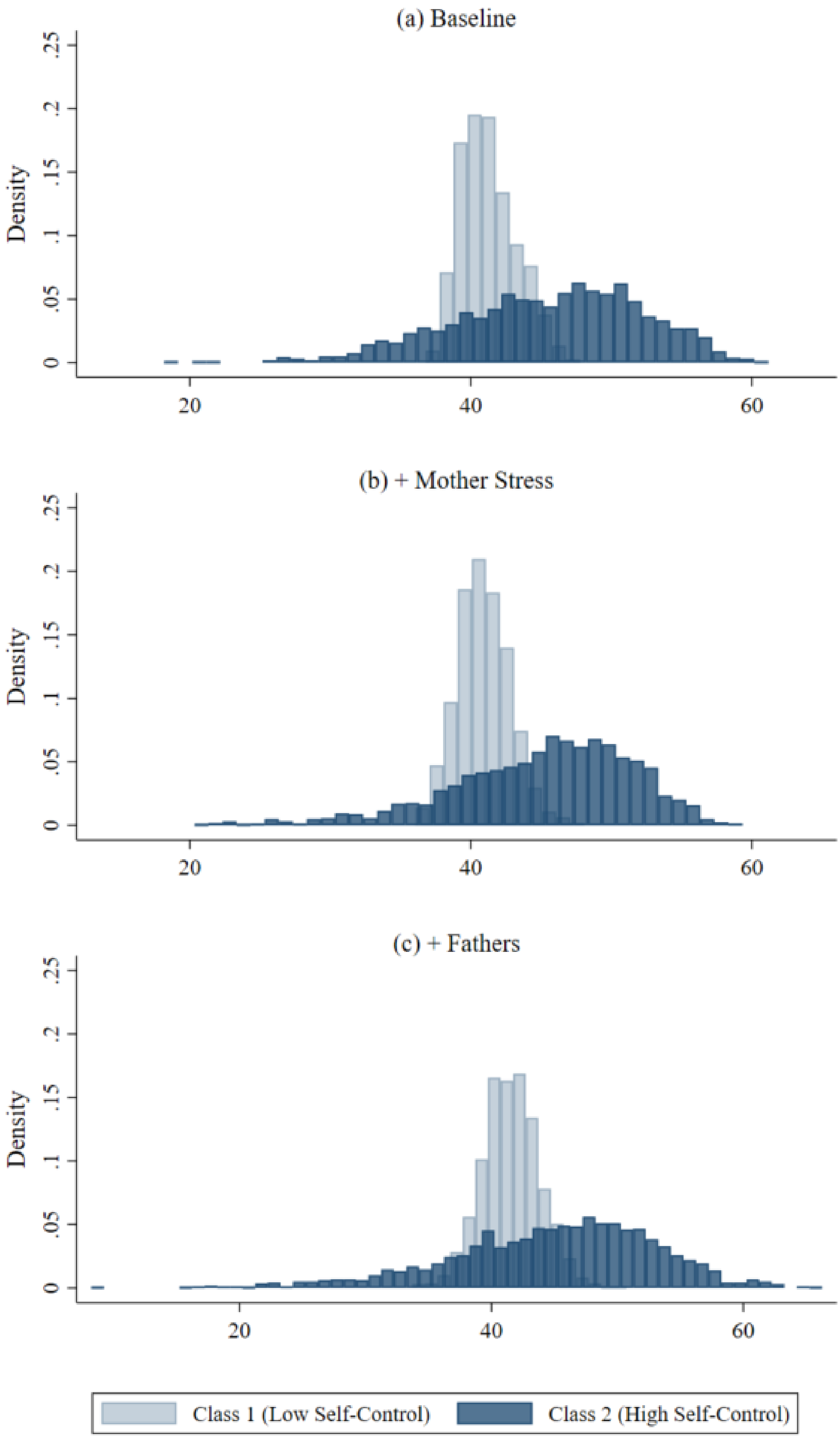


Table 4: OLS/FMM of Intergenerational Self-Control [Mother/Father/YA]

	OLS	FMM 2	
		Class 1	*Class 2*
	(1)	(2)	(3)
Male	-0.061	-0.065	-0.015
	(0.049)	(0.069)	(0.318)
Mother SC (std.)	0.138***	0.066	0.551***
	(0.038)	(0.049)	(0.183)
Mother SC (std.) × Male	-0.099*	-0.071	-0.206
	(0.051)	(0.062)	(0.290)
Father SC (std.)	0.161***	0.169***	0.147
	(0.036)	(0.043)	(0.136)
Father SC (std.) × Male	-0.052	-0.049	-0.197
	(0.049)	(0.063)	(0.216)
Intact	0.149**	0.079	0.513
	(0.072)	(0.095)	(0.355)
Household Income	-0.152*	-0.123	-0.262
	(0.081)	(0.107)	(0.281)
Household Size	0.047*	0.097***	-0.207***
	(0.025)	(0.039)	(0.068)
Mother LoC (std.)	0.045	0.083**	-0.165
	(0.033)	(0.041)	(0.151)
Father LoC (std.)	0.018	0.021	0.055
	(0.030)	(0.041)	(0.134)
Maternal Stress:			
Parenting	0.066	0.115	0.059
	(0.088)	(0.129)	(0.609)
Relationship	-0.088	0.148	-1.352**
	(0.093)	(0.142)	(0.598)
Financial	0.078	0.135	-0.050
	(0.097)	(0.152)	(0.629)
Poor Mental Health	-0.163	0.101	-1.721***
	(0.133)	(0.223)	(0.629)
Paternal Stress:			
Parenting	0.024	-0.045	0.154
	(0.096)	(0.137)	(0.597)
Relationship	-0.031	-0.139	0.679**
	(0.098)	(0.126)	(0.319)
Financial	-0.151	-0.236*	-0.136
	(0.108)	(0.130)	(0.515)
Poor Mental Health	0.352**	0.467**	-0.145
	(0.159)	(0.182)	(0.971)
Probability		0.844	0.156
Mean		41.600	44.835
N	1,587	1,587	

SC and LoC refer to self-control and locus of control, respectively. Mean values for self-control are presented in their raw (unstandardized) form. Probability represents the marginal probability of each latent class, indicating the proportion of observations assigned to each class. Mean denotes the marginal mean of each latent class, reflecting the average value of the observed data within each class. The statistical significance is stated as: *p ≤ 0.1; **p ≤ 0.05; ***p ≤ 0.01

Table 5: Posterior Linear Probability Model

	Baseline	**+Mother Stress**	**+Fathers**
	(1)	(2)	(3)
Male	0.010	0.009	0.008
	(0.009)	(0.009)	(0.009)
Mother SC (std.)	0.005	0.004	0.003
	(0.007)	(0.007)	(0.007)
Mother SC (std.) × Male	0.004	0.004	0.004
	(0.010)	(0.010)	(0.010)
Father SC (std.)			0.009
			(0.006)
Father SC (std.) × Male			0.004
			(0.009)
Intact	0.029**	0.022*	0.021*
	(0.011)	(0.012)	(0.012)
Household Income	-0.020	-0.020	-0.018
	(0.015)	(0.015)	(0.016)
Household Size	-0.002	-0.002	-0.002
	(0.005)	(0.006)	(0.005)
Mother LoC (std.)	-0.007	-0.008	-0.009
	(0.005)	(0.006)	(0.006)
Father LoC (std.)			0.004
			(0.005)
Maternal Stress:			
Parenting		0.007	0.004
		(0.015)	(0.016)
Relationship		-0.043***	-0.033**
		(0.014)	(0.016)
Financial		-0.019	-0.002
		(0.015)	(0.019)
Poor Mental Health		0.038*	0.038
		(0.023)	(0.023)
Paternal Stress:			
Parenting			0.013
			(0.017)
Relationship			-0.018
			(0.017)
Financial			-0.029
			(0.019)
Poor Mental Health			0.026
			(0.028)
Joint Significance (p-value)			
Maternal Stress		0.014	0.176
Paternal Stress			0.363
Both Parents' Stress			0.052
N	1,587	1,587	1,587
Adj R-squared	0.002	0.006	0.008

SC and LoC refer to self-control and locus of control, respectively. Estimates are regressed on the posterior probability of a young adult belonging to the higher self-control class calculated in the baseline specification (refer to Equation 4). The statistical significance is stated as: *$p \leq 0.1$; **$p \leq 0.05$; ***$p \leq 0.01$.

APPENDIX

Table A1: Variable Descriptions

Variable	Definition	Range
Young-Adult / HH		
Self-Control	BSCS (items summed) in 2019	13 – 65 +
Survey Age	Young adults' age in 2019	15 - 28
Male	Dummy = 1 if young-adult male	0 – 1
Intact	Dummy = 1 if no marital breakdown experienced by mother or father prior to young-adult age 12	0 – 1
Household Income (AUD)*	Household income, adjusted by number of household persons and indexed to 2019 CPI	\$11,610 – \$351,352 [a]
Household Size *	Number of household persons	2.25 – 12.38
Mothers / Fathers		
Self-Control	BSCS (items summed) in 2019	13 – 65 +
Education	Categorical variable of education level when young adult was aged 12 (or closest age witnessed to 12): (1) Did not complete HS; (2) Completed HS/HS equivalent; (3) Above HS	1 – 3
Locus of Control*	LoC score (items averaged)	1 – 7 +
Parenting Stress *	Dummy =1 if parenting stress score ≤ 4.25	0 – 1
Relationship Stress *	Dummy = 1 if relationship score ≤ 7	0 – 1
Financial Stress *	Dummy =1 if financial hardship/cash flow problems	0 – 1
Poor Mental Health *	Dummy = 1 if mental health inventory score ≤ 52	0 – 1

* Calculated in each wave between child ages 0–12, with the average across these waves used in analysis. Variable Transformations: data ranges indexed with (+) have been standardized, and ([a]) have been logged. Locus of control is elicited using 7 items from Pearlin and Schooler's (1978) Mastery Scale.

Table A2: OLS/FMM of Intergenerational Self-Control - P Values

	OLS			FMM 2					
	Baseline	**+Mother Stress**	**+Fathers**	**Baseline**		**+Mother Stress**		**+Fathers**	
				Class 1	*Class 2*	*Class 1*	*Class 2*	*Class 1*	*Class 2*
Joint Significance within Class									
Mother Stress		0.530	0.503			0.538	0.000	0.721	0.000
Father Stress			0.165					0.036	0.264
Parent Stress			0.228					0.174	0.000
Difference across Classes									
Maternal:									
Self-Control				0.049		0.093		0.006	
Parenting Stress						0.876		0.936	
Relationship Stress						0.032		0.023	
Financial Stress						0.602		0.800	
Poor Mental Health						0.000		0.021	
Stress Variables (Joint)						0.000		0.000	
Paternal:									
Self-Control								0.886	
Parenting Stress								0.772	
Relationship Stress								0.023	
Financial Stress								0.507	
Poor Mental Health								0.553	
Stress Variables (Joint)								0.143	
Parent Stress Variables (Joint)								0.000	
LR Tests									
Baseline vs Mother Stress	0.490								
Mother Stress vs Fathers	0.000								
Baseline vs Father	0.000								
Difference in Intergenerational SC by Gender									
Mother Self-Control	0.46	0.042	0.059	0.644	0.018	0.234	0.509	0.309	0.607
Father Self-Control			0.309					0.452	0.318

Table A3: Model Selection Statistics

	Log-likelihood	AIC	BIC
OLS			
Baseline	-2213.291	4452.583	4522.387
Mother Stress	-2211.581	4457.162	4548.446
Father Stress	-2193.05	4438.099	4577.709
FMM 2			
Baseline	-2194.101	4442.201	4587.181
Mother Stress	-2185.443	4440.885	4628.821
Father Stress	-2156.855	4419.71	4704.299
FMM 3			
Baseline	-2155.696	4393.392	4613.546
Mother Stress	-2168.33	4442.661	4727.249
Father Stress	-2140.125	4440.249	4869.817

Smaller AIC and BIC values indicate better model fit.