Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood

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Abstract

Using prospective data from the Dunedin Multidisciplinary Health and Development Study birth cohort, we found that adolescents with low self-esteem had poorer mental and physical health, worse economic prospects, and higher levels of criminal behavior during adulthood, compared to adolescents with high self-esteem. The long-term consequences of self-esteem could not be explained by adolescent depression, gender, or socioeconomic status. Moreover, the findings held when the outcome variables were assessed using objective measures and informant reports; therefore, the findings cannot be explained by shared method variance in self-report data. The findings suggest that low self-esteem during adolescence predicts negative real-world consequences during adulthood.

Over the past century, thousands of studies have examined the correlates and consequences of self-esteem. A wide and diverse literature that spans disciplines and theoretical perspectives suggests that high self-esteem promotes goals, expectancies, coping mechanisms, and behaviors that facilitate productive achievement and work experiences and impede mental and physical health problems, substance abuse, and antisocial behavior (Bandura, 1982; Brown, 1998; Covington, 1992; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; DuBois & Tevendale, 1999; Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Harter, 1998; McGee & Williams, 2000; McGee, Williams, & Nada-Raja, 2001; Mecca, Smelser, & Vasconcellos, 1989; O'Connor & Vallerand, 1998; Robins, Norem, & Cheek, 1999). Moreover, a recent meta-analysis showed that self-esteem enhancement programs "…do at least as well as other types of interventions in changing other domains of functioning such as behaviors, self-reported personality functioning, and academic performance" (Haney & Durlak, 1998, p. 429). However, despite the theoretical arguments and empirical literature suggesting that self-esteem has adaptive consequences, debates persist about whether or not low self-esteem is a risk factor for important life outcomes (Baumeister, Campbell, Krueger, & Vohs, 2003).

Indeed, several researchers have suggested that self-esteem plays no causal role in predicting future adjustment. One view is that self-esteem is an "epiphenomenon" of socially significant outcomes (e.g., Seligman, 1993). Thus, if good things are happening in life then self-esteem is high and if bad things are happening in life then self-esteem is low. This perspective asserts that self-esteem is a consequence rather than a cause of positive social adjustment. Moreover, in the most comprehensive review to date, Baumeister et al. (2003) concluded that there is weak support for the view that high self-esteem leads to better adjustment (e.g.,

improved school performance, reduced antisocial behavior). Thus, many researchers take a pessimistic view of the causal role played by self-esteem in forecasting adaptive life outcomes.

However, as Baumeister et al. (2003) pointed out, many previous studies of the benefits of self-esteem have serious methodological limitations: "although many thousands of publications refer to self-esteem, relatively few of them report studies that used highly rigorous methods to examine the causal impact of self-esteem on personal and social problems" (p. 10). Thus, the research literature on the importance of self-esteem is perhaps best characterized as inconclusive, rather than as clearly supporting one side of the debate or the other.

In fact, there are compelling reasons to suspect that self-esteem may be related to future outcomes of social and personal significance. For example, ample evidence supports the proposition that high self-esteem individuals are more likely than low self-esteem individuals to persist in the face of failure (Baumeister et al., 2003). This increased persistence could translate into greater academic and occupational success over the long-term, especially in challenging educational settings and labor market conditions. In addition, there is evidence that high self-esteem is related to security and closeness in relationships (e.g., Murray, 2005), which could foster future mental health and social connectedness. Thus, there are reasons to suspect that self-esteem could be related to socially significant life outcomes.

The question of whether self-esteem has adaptive benefits is critically important because if self-esteem is not related to important life outcomes, then programs aimed at boosting self-esteem may not be worth the effort and expense. Some researchers have argued that interventions designed to raise self-esteem may produce little tangible benefit and may even lead to harmful and unintended consequences (e.g., Baumeister, Smart, & Boden, 1996).

Accordingly, Baumeister et al. (2003) called for further research on the consequences of self-esteem, lamenting the lack of studies that used multiple methods, longitudinal designs, large representative samples, and appropriate controls to test the effects of low self-esteem.

The present research uses data from a large scale, multi-method longitudinal study to address the question: Is low self-esteem a risk factor for important life outcomes? We report results that extend previous research in several ways. First, previous research has often relied on small, homogeneous samples leading to the possibility of a restriction of range on the outcomes of interest. The present study used a large, representative birth cohort, which helped ensure sufficient variability in the outcomes to allow detection of the effects being tested.

Second, previous research has often relied on cross-sectional, short-term longitudinal, or experimental designs. Although these designs are invaluable for understanding basic relations and processes, they do not provide an effective way to examine the long-term, real-world consequences of self-esteem. The present study used a prospective, longitudinal design to test whether having low self-esteem during early adolescence predicts early adult outcomes more than 10 years later.

Third, previous research has often relied on self-report measures for both self-esteem and its outcomes, leading to the possibility that observed relations are due to shared method variance. The present study used informant reports of mental health and objective measures, such as court convictions, in addition to self-reports.

Fourth, previous reviews have suggested that the effects of self-esteem may be a product of other co-varying variables (Baumeister et al., 2003). The present study provides a conservative test of the influence of self-esteem on adult outcomes by controlling for several theoretically relevant variables. We controlled for adolescent depression because it has been suggested that low self-

esteem is not distinct from depression, and therefore should not have any predictive power over and above depression (Watson, Suls, and Haig, 2003). We controlled for socioeconomic status (SES) because it has been shown to be a powerful predictor of almost all important life outcomes (Bradley & Corwyn, 2002). We controlled for IQ in all analyses of economic prospects because it is one of the most powerful predictors of educational and occupational success (Lubinski, 2004). Likewise, because high body mass index (BMI) is a risk factor for health outcomes (Gunnell, Frankel, Nanchahal, Peters, & Smith, 1998), we controlled for childhood BMI in all analyses of physical health.

Finally, the present study will also examine whether low self-esteem affects the cumulative number of adjustment problems an individual has during adulthood. Although it is important to demonstrate that self-esteem has an effect on singular outcomes, developmental research has shown that the accumulation of multiple risks has more powerful effects on long-term outcomes across the life course (Evans, 2004).

Methods

Sample

Participants were members of the Dunedin Multidisciplinary Health and Development Study—a longitudinal investigation of health and behavior in a complete birth cohort (for details see Moffitt, Caspi, Rutter, & Silva, 2001). The study members were born in Dunedin, New Zealand, between April, 1972, and March, 1973. Of these individuals, 1037 (91% of eligible births; 52% male) participated in the first follow-up assessment at age 3 years and constituted the base sample for the remainder of the study. Cohort families represented the full range of socioeconomic status in the general population of New Zealand's South Island and were mainly white. Follow-ups were done at ages 5, 7, 9, 11, 13, 15, 18, 21, and most recently at age 26 years when we assessed 980 (96%) of the 1019 study members still alive. The various assessments (e.g., health examination, psychiatric interview) were presented as standardized modules in

counterbalanced order, each administered by a different examiner who was unaware of responses given in other assessments.

Measures

Self-Esteem was measured at ages 11, 13, and 15 with the 10-item Rosenberg (1965) Self-Esteem Scale (RSE). The RSE was administered at ages 11 and 13, using a yes/no response format (age 11 alpha = .64, M = 7.75, SD = 1.92 and age 13 alpha = .60, M = 8.15, SD = 1.68). At age 15, participants were administered the RSE, using a 5-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree" (alpha = .85, M = 38.50, SD = 6.15). Self-esteem scores were moderately stable over time; the correlations over time were .38 (age 11 to 13), .36 (age 11 to 15), and .42 (age 13 to 15; all ps < .05). The three self-esteem scores were standardized and then averaged to create a mean adolescent self-esteem score (reliability of composite = .83; see Nunnally, 1978, p. 248).i[1] Self-esteem scores were reverse coded so that a high score represents *low* self-esteem.

The present study includes the 978 participants (94% of the initial cohort; 49% female) who completed at least one measure of self-esteem at age 11 (N = 812; 78% of the initial cohort), 13 (N = 736; 71% of the initial cohort), or 15 (N = 866; 84% of the initial cohort).

Adult Outcomes (Age 26)

Overview. We collected self-report data and three other types of data that were not based on self-report methodologies. First, informant-reports were collected for mental health, substance problems, and economic prospects. These reports were collected for 91% of the study members by mailing a brief questionnaire about problem behavior to informants nominated by

each study member as people who knew them well. Most informants were best friends, partners, or other family members. Second, health professionals with either a medical or nursing degree conducted physical health examinations of study participants. Third, court records for criminal convictions were searched for 95% of study members, all those giving written consent in person or via post. Computerized records covered all courts in Australia, New Zealand, and surrounding islands.

Self-reported mental health and substance use. Mental health and substance abuse was assessed with the Diagnostic Interview Schedule, administered by health professionals with either a medical or clinical masters degree. The reporting period was the 12 months before the interview. We report on study members who met criteria for a major depressive episode, anxiety disorder, alcohol dependence, cannabis dependence, or tobacco dependence according to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994). The rates of mental health problems were: 16.5% had major depression disorder, 24.3% had an anxiety disorder, 17.2% were dependent on alcohol, 9.4% were dependent on cannabis, and 12.0% were dependent on tobacco (Kim-Cohen et al., 2003).

Informant-reported mental health and substance use. Informants reported *depression symptoms (e.g.,* "feels depressed miserable, sad, or unhappy,"; M = .96, SD = 1.18, 3 items); *anxiety symptoms (*e.g., "has unreasonable fears or worries,"; M = 1.67, SD = 1.13, 3 items); *alcohol problems* (M = .13, SD = .35, 1 item); and *marijuana problems* (M = .13, SD = .36, 1 item; Moffitt, Caspi, Harrington, & Milne, 2002).

Physical health. Physical health was assessed through *cardiorespiratory fitness* (predicted VO$_2$max while riding an exercise bicycle; M = 44.19, SD = 11.02), *body-mass index*

(M = 25.03, SD = 4.41), *waist:hip ratio* (M = 79.92, SD = 6.88), *systolic blood pressure* (M = 116.84, SD = 11.13), and study members' *self-perceived level of fitness* rated on a 5-point scale ranging from "Much less fit than my friends" to "Much more fit than my friends" (M = 2.02, SD = 0.77). Cardiorespiratory fitness and self-perceived fitness were recoded so that high scores reflect levels of poor fitness. Detailed descriptions can be found in Poulton et al. (2002).

Court records of adult criminal convictions. Convictions were divided into *violent crimes* (e.g., aggravated cruelty to animal, common assault, assault with intent to injure with weapon, assault of police officer, robbery, robbery aggravated with firearm, manslaughter, rape, breach of non-molestation order) and *any crimes* (e.g., property theft, court-order violations, drugs trafficking, drunk driving, but not including other traffic offenses). Adult conviction records began at age 17. 6.6% of study members had been convicted of a violent crime during adulthood and 16.3% had been convicted of any crime during adulthood.

Economic prospects. Months of unemployment (defined as not working, not a student or homemaker, and looking for work) was recorded (Caspi et al., 1996), and *longterm unemployment* was defined as six months or longer. 12.3% of study members experienced longterm unemployment. *Early school leaving* was defined as choosing to end secondary education prior to receiving qualifications, and not returning to earn qualifications later. Qualifications are based on national exams that almost all students take by age 16, which determine promotion in secondary school and technical schools; passing this exam also helps secure better employment in the labor market (Kennedy, 1981). 15.1% of study members did not have any secondary educational qualifications at age 26. *University graduate* was defined as receiving a bachelor's degree or higher. 21.9% of study members had a minimum of a

bachelor's degree at age 26. Informants reported *financial problems* as "lacks enough money to make ends meet" and "poor money manager" (M = .82, SD = .97). Informants reported *work problems* as "has conflicts with people at work" and "problems finding or keeping a job" (M = .42, SD = .59; Moffitt et al., 2002).

Control Variables

Adolescent major depression was assessed at ages 11, 13, and 15 with the Diagnostic Interview Schedule for Children, administered by a psychologist. The reporting period was 12 months before the interview. Here we report on study members who met criteria for a major depressive episode according to the then-current third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association, 1980).ii[2] Diagnoses were combined across ages 11 to 15 (Kim-Cohen et al., 2003). 7% of study members had a depressive diagnosis during adolescence. Adolescents with low self-esteem were twice as likely as other adolescents to be depressed (Odds Ratio = 2.00, p < .05).

Socioeconomic status (SES). A 6-point scale designed to tap the social classes of New Zealanders (Elley & Irving, 1972) was used to measure the SES of each participant's family (M = 3.75, SD = 1.14). Scores ranged from 1 (unskilled laborers) to 6 (professionals). SES scores were obtained in multiple assessments, and the SES variable used here is the average social class of each participant's family from birth to age 15. SES was recoded so that high scores represent *low* SES. Adolescent low self-esteem and low SES were significantly correlated (r = 0.21, p < .05).

IQ was assessed using the mean of the participant's WISC-R (Wechsler, 1974) scores at ages 7, 9, 11, and 13. The average IQ of study members was 106.72 (SD = 14.38). IQ was recoded so that high scores represent *low* IQ. Adolescent low self-esteem and low IQ were significantly related ($r = 0.36$, $p < .05$).

Childhood BMI is the average BMI from age 5 to 11; scores were first standardized and then averaged. Adolescent low self-esteem was not related to adolescent BMI ($r = -0.03$, $p = .39$).

Statistical Analysis

Regression analyses were used to test the hypothesis that low adolescent self-esteem predicts poor adult outcomes. For continuous adult outcomes (e.g., cardiorespiratory health), we used ordinary least squares regression; for dichotomous outcomes (e.g., depression), we used logistic regression. For all analyses, continuous variables were standardized. In each regression model, we first estimated the effect of self-esteem alone on adult outcomes (Model 1) and then added controls for gender and SES (Model 2) and then adolescent depression (Model 3). When other controls were of interest, they were added last (Model 4).iii[3] For continuous outcomes, we report standardized betas with 95% confidence intervals (CI), representing the amount of change in the outcome associated with a standard unit of change in self-esteem. For dichotomous outcomes, we report odds ratios with CI, representing the risk associated with a one standard unit of change in self-esteem.

Results

Is Adolescent Self-Esteem Related to Adult Mental Health?

Adolescents with low self-esteem grew up to have more mental health problems during adulthood than adolescents with high self-esteem (Table 1). Adolescents with low self-esteem were 1.26 times more likely to develop major depression disorder, 1.60 times more likely to develop anxiety disorder, and 1.32 times more likely to be dependent on tobacco during adulthood. These findings held controlling for the increased risk of gender, SES, and adolescent depression. In addition, these findings held using informant-report of mental health, demonstrating that these results cannot be attributed to shared method variance between two self-report measures (Table 2). There was no consistent relation between adolescent self-esteem and alcohol dependence or cannabis dependence.

Is Adolescent Self-Esteem Related to Adult Physical Health?

Adolescents with low self-esteem grew up to have more physical health problems during adulthood than adolescents with high self-esteem (Table 3). Adolescents with low self-esteem were more likely to have poor cardiorespiratory health, high waist-to-hip ratios, and poor self-perceived health during adulthood, over and above the increased risk of gender, SES, adolescent depression, and childhood BMI. There was no relation between adolescent self-esteem and adult BMI or systolic blood pressure.

Is Adolescent Self-Esteem Related to Adult Criminal Convictions?

Adolescents with low self-esteem grew up to have more criminal convictions during adulthood than adolescents with high self-esteem (Table 4). Adolescents with low self-esteem were almost 1.48 times more likely to be convicted of a violent crime and about 1.32 times more

likely to be convicted of any crime during adulthood. These findings held controlling for the increased risk of gender, SES, and adolescent depression.

Is Adolescent Self-Esteem Related to Adult Economic Prospects?

Adolescents with low self-esteem grew up to have fewer economic prospects during adulthood than adolescents with high self-esteem (Table 5). Adolescents with low self-esteem were 2.13 times more likely to leave school early and were less likely to attend university. These findings held controlling for the increased risk of gender, SES, adolescent depression, and IQ. Adolescents with low self-esteem were about 1.45 times more likely to experience longterm unemployment, but this effect was reduced to nonsignificance when all the controls were included in the model. In addition, informants reported that adolescents with low self-esteem were more likely to have money and work problems during adulthood, over and above the increased risk of gender, SES, adolescent depression, and IQ.

Cumulative Index of Adjustment Problems

The analyses show that adolescents with low self-esteem are at increased risk for a variety of poor adult outcomes. To test whether adolescents with low self-esteem had more cumulative problems, we created a composite index of eight problems in adult adjustment, based on the significant findings reported above (1 point each was summed for major depression, anxiety disorder, tobacco dependence, poor cardiorespiratory health, high waist-to-hip ratio, any criminal conviction, early school leaving, and longterm unemployment). For continuous variables, we created groups as follows: poor cardiorespiratory health was defined as the lowest quartile, and high waist-to-hip ratio was defined using medical research guidelines for increased

health risk (over .80 for women and over .95 for men; International Task Force for Prevention of Coronary Heart Disease, 1998). Figure 1 shows the cumulative risk for each of these self-esteem groups: one standard deviation below the mean (low self-esteem), average, and one standard deviation above the mean (high self-esteem). The three groups differed significantly from each other in their number of adult adjustment problems ($F = 35.91$, $p < .05$). The figure shows that only 17% of adolescents with low self-esteem were free from problems as adults, whereas 56% had multiple problems as adults. In contrast, 51% of adolescents with high self-esteem were free from problems as adults, whereas only 17% had multiple problems.

We tested the significance of the trends depicted in Figure 1 by conducting an OLS regression analysis predicting the cumulative risk index from self-esteem and the control variables (gender, SES, depression, BMI, and IQ). Low self-esteem alone correlated .31 ($p < .05$) with the cumulative risk index. The inclusion of the four control variables reduced this relation, but low self-esteem remained a significant predictor of the cumulative number of adult adjustment problems ($\beta = .18$, $p < .05$).

Discussion

The aim of this study was to test the hypothesis that low self-esteem predicts negative real-world consequences. Using prospective data collected from a representative birth cohort, we found that adolescents with low self-esteem were at increased risk for poor mental and physical health as adults and had worse economic prospects than adolescents with high self-esteem. In addition, adolescents with low self-esteem were more likely to be convicted of a crime during adulthood. These findings could not be explained by gender, SES, or adolescent depression. Moreover, the findings held when the outcome variables were assessed using

informant reports and objective measures, suggesting that the findings cannot be explained by shared method variance in self-report data. Below we comment on the theoretical and practical implications of these findings.

These results are relevant to debates about whether or not self-esteem is an important construct that predicts real-world outcomes. Our findings support the notion that self-esteem is a useful construct because we found that low self-esteem had predictive validity while controlling for relevant third variables. Thus, it appears that self-esteem is more than simply a reflection of how things are progressing in one's life (e.g., Seligman, 1993), and may even have a causal force in determining future outcomes. This conclusion contrasts with the central conclusion of Baumeister et al.'s (2003) recent review. One reason for this inconsistency may be due to differences in the type of outcomes studied. For example, previous studies have focused on specific outcomes such as school grades and job performance whereas our study focused on broader outcomes such as college graduation and longterm unemployment. Although job performance and unemployment share many predictors in common, different factors are likely to influence performance in a specific job versus the capacity to find and maintain stable, gainful employment over the course of a decade.

It is important to neither overestimate nor underestimate the practical significance of these findings. One critique of the self-esteem literature, including the findings presented here, is that the small effect sizes do not justify investing in interventions to improve self-esteem (Baumeister et al., 2003). Several points are worth considering. First, our design is a conservative test of the effect of low self-esteem on adult outcomes. We used prospective longitudinal data over an 11-year interval and controlled for shared method variance whenever

possible. Thus, the estimates in this paper likely provide lower-bound estimates for the effect of low self-esteem on adult outcomes. Second, small effects are to be expected because adult adjustment is a quintessential example of a multiply determined outcome (Ahadi & Diener, 1989). Third, it is often overlooked that small effect sizes can have a major impact on outcomes over time (Abelson, 1985; Rosenthal & Rubin, 1982). The effect size for any individual outcome is less important in view of the tendency of low self-esteem individuals to accumulate multiple adjustment problems, which in combination may have powerful negative consequences for future life outcomes. This is illustrated by our findings based on the cumulative risk index, which shows that low adolescent self-esteem sets in motion a set of longterm developmental problems.

Another critique of the self-esteem literature is that if, as reported in the literature, self-esteem scales are positively skewed (i.e., most people appear to have high self-esteem), then programs to raise self-esteem may not be necessary (Baumeister et al., 2003). Put differently, low self-esteem may not be a widespread problem given that only a small percentage of the population strongly endorse low self-esteem items. However, our findings show that for every standard deviation increase in self-esteem, risk for a variety of negative outcomes increases. Moreover, we did not find evidence that self-esteem had nonlinear effects on any of the outcome variables. Thus, increasing a child's self-esteem may be beneficial, regardless of his or her initial level of self-esteem.

In addition to replicating these results in other countries and in different developmental periods there are several other important directions for future research. First, experimental interventions are necessary for establishing causation. The present study shows that self-esteem

has unique, prospective associations with a variety of adult outcomes, which is necessary but not sufficient for proving causation. Second, research is needed to identify protective factors that explain why not all adolescents with low self-esteem experience problems during adulthood. For example, there may be developmental "turning points" that protect against the negative effects of low self-esteem, such as getting into a good relationship (Rutter & Quinton, 1984). Third, self-esteem was assessed during adolescence but not during adulthood when the outcomes were assessed. Therefore, the present study could not disentangle predictive from concurrent effects of self-esteem. That is, adolescent self-esteem may be related to adult adjustment because adolescent self-esteem is related to adult self-esteem and adult self-esteem is concurrently related to adult adjustment. On the other hand, adolescent self-esteem may be predictive of adult adjustment independently from any concurrent relations. Future research that includes self-esteem at both time points is needed to disentangle these effects. Fourth, the present study is based on the Rosenberg Self-Esteem scale, which assesses global self-esteem. Previous research suggests that domain-specific aspects of the self-concept may be differentially evaluated. Thus, research should test the generalizability of the present findings to domain-specific self-evaluations that are more closely aligned to the outcomes studied, such as academic self-esteem or physical self-esteem (Marsh, Parada, & Ayotte, 2004).

Finally, research is needed to understand the underlying mechanisms linking self-esteem to life outcomes. Identifying the processes that link self-esteem to adjustment outcomes can not only inform theoretical research, but also help in developing sound intervention strategies. One approach is to study developmental processes involving person-environment transactions (Caspi, 1998). For example, individuals with low self-esteem in childhood and adolescence may be unable or unwilling to form supportive relationships with conventional peers and/or romantic

partners, which may exacerbate adjustment problems and create additional new problems in young adulthood. Similarly, it has been theorized that children and adolescents with low self-esteem seek out various forms of antisocial behavior as a way of enhancing their self-worth (Kaplan, 1975). Thus, low self-esteem may help propel children and adolescents into criminogenic environments. Low self-esteem children and adolescents may also receive less attention and support from parents, teachers, and peers. For example, a low self-esteem child may appear quiet and withdrawn and may not be willing or able to ask a teacher for help when needed. As a result, the child would continue to fall further behind in school never receiving the help needed.

Another approach to studying the underlying mechanisms linking self-esteem to life outcomes involves more proximal factors such as intrapsychic or cognitive processes. For instance, individuals with low self-esteem may journey through life feeling worthless, ashamed, and lacking self-efficacy. This will likely lead to chronically accessible negative schemas about the self, others, and the broader social world that lead to unsatisfying and even distressing interpersonal interactions and less adaptive achievement-oriented behaviors, such as giving up in the face of failure (Di Paula & Campbell, 2002). These social-cognitive processes may therefore impair the individual's ability to succeed in both the agentic and communal aspects of adult life.

In sum, our results are broadly consistent with a meta-analysis showing that interventions designed to raise self-esteem can have beneficial consequences (Haney and Durlak, 1998). However, because our effects sizes are small, our results also provide a reasonable basis to question claims that self-esteem enhancement programs are a panacea for most of the ills plaguing society (Mecca et al., 1989). The most reasonable conclusion is that low adolescent

self-esteem is one of many potentially modifiable risk factors for a range of adult adjustment problems.

References

Abelson, R. P. (1985). A variance explanation paradox: When a little is a lot. *Psychological Bulletin*, *97,* 129-133.

Ahadi, S., & Diener, E. (1989). Multiple determinants and effect size. *Journal of Personality and Social Psychology*, *56*, 398-406.

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders*. (4th ed.) Washington, DC: Author.

American Psychiatric Association (1980). *Diagnostic and Statistical Manual of Mental Disorders*. (3th ed.) Washington, DC: Author.

Bandura, A. (1982). The self and mechanisms of agency. In J. Suls (Ed.), *Psychological perspectives on the self*. Hillsdale, NJ: Erlbaum.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. E. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*, 1-44.

Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103,* 5-33.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*, 371-399.

Brown, J. D. (1998). *The self*. New York: McGraw-Hill.

Caspi, A. (1998). Personality development across the life course. In W. Damon (Ed.). Handbook of child psychology, Vol. 3: Social, emotional, and personality development, (5th edition, pp. 311-388). New York: Wiley.

Caspi, A., Moffitt, T. E., Thornton, A., Freedman, D., Amell, J. W., Harrington, H. L., Smeijers, J., & Silva, P. A. (1996). The Life History Calendar: A research and clinical assessment method for collecting retrospective event-history data. *International Journal of Methods in Psychiatric Research, 6*, 101–114.

Covington, M. V. (1992). *Making the grade: A self-worth perspective on motivation and school reform*. New York: Cambridge University Press.

Di Paula, A., & Campbell, J. D. (2002). Self-esteem and persistence in the face of failure. *Journal of Personality and Social Psychology, 83*, 711-724.

Dishion, T. J., McCord, J., & Poulin, F. (1999). When interventions harm: Peer groups and problem behavior. *American Psychologist, 54*, 755-764.

Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., Moffitt, T. E., & Caspi, A. (in press). Exploring the link between self-esteem and externalizing problems: Low self-esteem is linked to antisocial behavior and delinquency. *Psychological Science*.

DuBois, D. L., & Tevendale, H. D. (1999). Self-esteem in childhood and adolescence: Vaccine or epiphenomenon? *Applied and Preventive Psychology, 8,* 103-117.

Elley, W. B., & Irving, J. C. (1972). A socio-economic index for New Zealand based on

levels of education and income from the 1966 Census. *New Zealand Journal of Educational

Studies, 7,* 153-167.

Evans, G. W. (2004). The environment of child poverty. *American Psychologist, 59*, 77-

92.

Flory, K., Lynam, D., Milich, R., Leukefeld, C., Clayton, R. (2004). Early adolescent

through young adult alcohol and marijuana use trajectories: Early predictors, young adult

outcomes, and predictive utility. *Development and Psychopathology, 16*, 193-213.

Gunnell, D. J., Frankel, S. J., Nanchahal, K., Peters, T. J., & Smith, G. (1998). Childhood

obesity and adult cardiovascular mortality: A 57-year follow-up study based on the Boyd Orr

cohort. *American Journal of Clinical Nutrition, 67*, 1111-1118.

Haney, P., & Durlek, J. A. (1998). Changing self-esteem in children and adolescents: A

meta-analytic review. *Journal of Clinical Child Psychology*, *27*, 423-433.

Harter, S. (1998). The development of self-representations. In W. Damon & N. Eisenberg

(Eds.), *Handbook of child psychology* (pp. 553-617). New York: Wiley.

International Task Force for Prevention of Coronary Heart Disease (1998). Coronary

heart disease: Reducing the risk. *Nutrition, Metabolism, and Cardiovascular Disease*, 8, 205-

271.

Kaplan, H. B. (1975). *Self-attitudes and deviant behavior*. Pacific Palisades, CA:

Goodyear.

Kennedy, P. J. (1981). *New Zealand: A study of the educational system of New Zealand and a guide to the academic placement of students in educational institutions of the United States*. World Education Series, American Association of Collegiate Registrars and Admissions Officers. ERIC, ED249894.

Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H. L., Milne, B., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: Developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry, 60,* 709-717.

Lubinski, D. (2004). Introduction to the special section on cognitive abilities: 100 years after Spearman's (1904) "'general intelligence' objectively determined and measured." *Journal of Personality and Social Psychology, 86*, 96-111.

Marsh, H. W., Parada, R. H. & Ayotte, V. (2004). A multidimensional perspective of relations between self-concept (Self Description Questionnaire II) and adolescent mental health (Youth Self-Report). *Psychological Assessment, 16*, 27-41.

McGee, R., & Williams, S. (2000). Does low self-esteem predict health compromising behaviors among adolescents? *Journal of Adolescence, 23*, 569-582.

McGee, R., Williams, S., & Nada-Raja, S. (2001). Low self-esteem and hopelessness in childhood and suicidal ideation in early adulthood. *Journal of Abnormal Child Psychology, 29*, 289-291.

Mecca, A. M., Smelser, N. J., & Vasconcellos, J. (1989). *The social importance of self-esteem*. Berkeley, CA: University of California Press.

Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behavior: Conduct disorder, delinquency, and violence in the Dunedin Longitudinal Study*. Cambridge, UK: Cambridge University Press.

Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course persistent and adolescent-limited antisocial pathways: Follow-up at age 26. *Development and Psychopathology, 14*, 179-206.

Murray, S. L. (2005). Regulating the risks of closeness: A relationship-specific sense of felt security. *Current Directions in Psychological Science, 14, 74-78.*

Nunnally, J. C. (1978). Psychometric theory (2nd edition). New York: McGraw Hill.

O'Connor, B. P., & Vallerand, R. J. (1998). Psychological adjustment variables as predictors of mortality among nursing home residents. *Psychology and Aging, 13*, 368-374.

Poulton, R., Caspi, A., Milne, B. J., Thomson, W. M., Taylor, A., Sears, M. R., & Moffitt, T. E. (2002). Association between children's experience of socioeconomic disadvantage and adult health: A life course study. *Lancet, 360*, 1640-1645.

Robins, R. W., Norem, J. K., & Cheek, J. M. (1999). Naturalizing the self. In L. A. Pervin and O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd Edition; pp. 443-477). New York: Guilford.

Rosenberg, M. R. (1965). *Society and adolescent self-image*. Princeton, NJ: Princeton University.

Rosenthal, R., & Rubin, D. B. (1982). A simple, general purpose display of magnitude of experimental effect. *Journal of Educational Psychology, 74*, 166-169.

Rutter, M., & Quinton, D. (1984). Long-term follow-up of women institutionalized in childhood: Factors promoting good functioning in adult life. *British Journal of Developmental Psychology, 2*, 191-204.

Seligman, M. E. P. (1993). *What you can change and what you can't: The complete guide to successful self-improvement.* New York: Fawcett.

Watson, D., Suls, J., & Haig, J. (2002). Global self-esteem in relation to structural models of personality and affectivity. *Journal of Personality and Social Psychology, 83*, 185-197.

Wechsler, D. (1974). *Manual for the Wechsler Intelligence Scale for Children-Revised*. New York: Psychological Corporation.

Acknowledgements

Table 1

Adolescent Self-Esteem Predicts Self-Reported Mental Health and Substance Dependence at Age 26

Variable	Model 1	Model 2	Model 3
	Adult Major Depressive Disorder		
Constant	0.20	0.16	0.15
Low adolescent self-esteem	**1.26***	**1.25***	**1.21* (1.01 to 1.45)**
Gender (Female = 1; Male = 0)		1.44*	1.47* (1.03 to 2.09)
Low family SES		0.96	0.95 (0.80 to 1.14)
Adolescent depression			2.20* (1.24 to 3.92)
	Adult Anxiety Disorder		
Constant	0.31	0.26	0.24
Low adolescent self-esteem	**1.60***	**1.52***	**1.45* (1.24 to 1.70)**
Gender (Female = 1; Male = 0)		1.45*	1.44* (1.05 to 1.97)
Low family SES		1.21*	1.18* (1.00 to 1.39)
Adolescent depression			2.78* (1.62 to 4.77)
	Adult Smoking Dependence		
Constant	0.13	0.16	0.15
Low adolescent self-esteem	**1.32***	**1.32***	**1.24* (1.01 to 1.52)**
Gender (Female = 1; Male = 0)		0.63*	0.59* (0.39 to 0.89)
Low family SES		1.12	1.07 (0.86 to 1.32)
Adolescent depression			3.59* (1.98 to 6.53)
	Adult Marijuana Dependence		
Constant	0.10		
Low adolescent self-esteem	**1.08**		
	Adult Alcohol Dependence		
Constant	0.21		
Low adolescent self-esteem	**1.14**		

Note. Continuous variables (self-esteem & SES) are z-scored. SES = socioeconomic status.

We report odds ratios for each model, along with significance values. Model 3 also shows the 95%

confidence intervals around each effect. Odds ratios associated with continuous predictor variables

(e.g., adolescent self-esteem) represent the increased risk in the outcomes associated with a 1

standard deviation unit of change in the predictor.

* $p < .05$

Table 2

Adolescent Self-Esteem Predicts Informant-Reported Mental Health and Substance Problems

at Age 26

Variable	Model 1	Model 2	Model 3
Adult Depression Problems			
Constant	0.00	-0.07	-0.11
Low adolescent self-esteem	**0.15***	**0.14***	**0.12* (0.05 to 0.19)**
Gender (Female = 1; Male = 0)		0.14*	0.14* (0.02 to 0.27)
Low family SES		-0.01	-0.01 (-0.08 to 0.06)
Adolescent depression			0.61* (0.35 to 0.87)
Adult Anxiety Problems			
Constant	0.00	-0.17	-0.19
Low adolescent self-esteem	**0.24***	**0.22***	**0.20* (0.14 to 0.27)**
Gender (Female = 1; Male = 0)		0.34*	0.34* (0.21 to 0.46)
Low family SES		0.04	0.03 (-0.04 to 0.10)
Adolescent depression			0.44* (0.19 to 0.70)
Adult Marijuana Problems			
Constant	0.00	0.17	0.15
Low adolescent self-esteem	**0.08***	**0.08***	**0.06 (-0.01 to 0.13)**
Gender (Female = 1; Male = 0)		-0.33*	-0.34* (-0.47 to −0.21)
Low family SES		0.11*	0.11* (0.04 to 0.18)
Adolescent depression			0.44* (0.18 to 0.71)
Adult Alcohol Problems			
Constant	0.00		
Low adolescent self-esteem	**0.03**		

Note. Continuous variables (self-esteem & SES) are z-scored. SES = socioeconomic status.

We report standardized OLS regression coefficients for each model, along with significance

values.

* $p < .05$

Table 3

Adolescent Self-Esteem Predicts Physical Health at Age 26

Variable	Model 1	Model 2	Model 3	Model 4
	Poor Adult Cardiorespiratory Health			
Constant	0.00	0.30	0.30	0.29
Low adolescent self-esteem	**0.13***	**0.07**	**0.07**	**0.09* (0.01 to 0.16)**
Gender (Female = 1; Male = 0)		-0.68*	-0.67*	-0.66* (-0.79 to -0.52)
Low family SES		0.12*	0.12*	0.11* (0.04 to 0.18)
Adolescent depression			0.01	0.06 (-0.23 to 0.35)
High childhood BMI				0.12* (0.05 to 0.20)
	Adult Waist-to-Hip Ratio [a]			
Constant	0.01	0.01	0.01	0.02
Low adolescent self-esteem	**0.13***	**0.12***	**0.12***	**0.13* (0.06 to 0.19)**
Gender (Female = 1; Male = 0)		--[a]	--[a]	--[a]
Low family SES		0.08*	0.08*	0.07* (0.01 to 0.14)
Adolescent depression			-0.13	-0.20 (-0.46 to 0.06)
High childhood BMI				0.21* (0.14 to 0.28)
	Adult BMI			
Constant	0.01			
Low adolescent self-esteem	**-0.04**			
	Adult Blood Pressure			
Constant	-0.01			
Low adolescent self-esteem	**0.05**			
	Adult Perceived Level of Unfitness			
Constant	0.00	0.12	0.12	0.14
Low adolescent self-esteem	**0.12***	**0.09***	**0.10***	**0.08* (0.01 to 0.15)**
Gender (Female = 1; Male = 0)		-0.25*	-0.26*	-0.28* (-0.41 to -0.15)
Low family SES		0.08*	0.08*	0.06 (-0.01 to 0.13)
Adolescent depression			-0.01	0.00 (-0.26 to 0.25)
High childhood BMI				0.14* (0.08 to 0.21)

Note. Dependent and continuous independent variables (self-esteem, SES, & BMI) are z-scored. BMI = body mass index. We report standardized OLS regression coefficients for each model,

along with significance values.

* *p* < .05

[a] Waist-to-Hip ratio was standardized within gender because the ratio has a different meaning for males and females. For example, due to the different body shapes of men and women, a

score of .85 for a woman indicates that she is overweight, but for a man it indicates he is healthy. Standardizing the measure equates the scores of men and women.

Table 4

Adolescent Self-Esteem Predicts Criminal Convictions at Age 26

Variable	Model 1	Model 2	Model 3
	Adult Violent Crime Convictions		
Constant	0.07	0.10	0.10
Low adolescent self-esteem	**1.48***	**1.42***	**1.38* (1.06 to 1.81)**
Gender (Female = 1; Male = 0)		0.16*	0.16* (0.08 to 0.33)
Low family SES		2.02*	2.04* (1.49 to 2.78)
Adolescent depression			1.30 (0.51 to 3.30)
	Any Adult Convictions		
Constant	0.20	0.33	0.32
Low adolescent self-esteem	**1.32***	**1.31***	**1.25* (1.04 to 1.50)**
Gender (Female = 1; Male = 0)		0.21*	0.21* (0.14 to 0.32)
Low family SES		1.68*	1.69* (1.38 to 2.07)
Adolescent depression			1.69 (0.88 to 3.25)

Note. Continuous variables (self-esteem & SES) are z-scored. SES = socioeconomic status.

We report odds ratios for each model, along with significance values.

* *p* < .05

Table 5

*Adolescent Self-Esteem Predicts Economic Prospects at Age 26*

Variable	Model 1	Model 2	Model 3	Model 4
		Early School Leaving		
Constant	0.14	0.15	0.15	0.12
Low adolescent self-esteem	**2.13***	**2.04***	**1.97***	**1.56* (1.24 to 1.96)**
Gender (Female = 1; Male = 0)		0.48*	0.48*	0.42* (0.27 to 0.65)
Low family SES		2.37*	2.33*	2.01* (1.53 to 2.63)
Adolescent depression			1.40	1.39 (0.64 to 3.02)
Low adolescent IQ				2.70* (2.04 to 3.57)
		College Graduate		
Constant	0.25	0.15	0.14	0.11
Low adolescent self-esteem	**0.47***	**0.50***	**0.48***	**0.57* (0.46 to 0.72)**
Gender (Female = 1; Male = 0)		1.88*	1.93*	2.17* (1.50 to 3.15)
Low family SES		0.48*	0.47*	0.60* (0.49 to 0.73)
Adolescent depression			1.24	1.11 (0.50 to 2.44)
Low adolescent IQ				0.41* (0.32 to 0.52)
		Longterm Unemployment		
Constant	0.13	0.16	0.16	0.15
Low adolescent self-esteem	**1.45***	**1.41***	**1.37***	**1.22 (0.98 to 1.52)**
Gender (Female = 1; Male = 0)		0.55*	0.54*	0.54* (0.35 to 0.82)
Low family SES		1.41*	1.40*	1.20 (0.95 to 1.53)
Adolescent depression			1.79	1.75 (0.88 to 3.48)
Low adolescent IQ				1.61* (1.26 to 2.06)
		Informant Report Money Problems		
Constant	0.00	0.12	0.09	0.11
Low adolescent self-esteem	**0.19***	**0.19***	**0.17***	**0.14* (0.06 to 0.21)**
Gender (Female = 1; Male = 0)		-0.23*	-0.22*	-0.24* (-0.37 to -0.11)
Low family SES		0.06	0.05	0.01 (-0.06 to 0.08)
Adolescent depression			0.34*	0.35* (0.09 to 0.62)
Low adolescent IQ				0.14* (0.06 to 0.22)
		Informant Report Work Problems		
Constant	0.00	0.08	0.03	0.04
Low adolescent self-esteem	**0.17***	**0.18***	**0.14***	**0.13* (0.05 to 0.20)**
Gender (Female = 1; Male = 0)		-0.15*	-0.15*	-0.16* (-0.29 to -0.03)
Low family SES		-0.01	-0.01	-0.04 (-0.11 to 0.04)
Adolescent depression			0.62*	0.64* (0.38 to 0.91)
Low adolescent IQ				0.06 (-0.02 to 0.14)

Note. Continuous variables (self-esteem, SES, & IQ) are z-scored. SES = socioeconomic status.

For binary outcome variables (early school leaving, college graduate, and longterm unemployment),

we report odds ratios for each model, along with significance values. For continuous

outcome variables, we report standardized OLS regression coefficients for each model, along with

significance values.

* $p < .05$

Figure Caption

Number of adult adjustment problems (major depression, anxiety disorder, tobacco dependence, poor cardiorespiratory health, high waist-to-hip ratio, any criminal conviction, early school leaving, and longterm unemployment) as a function of self-esteem level.
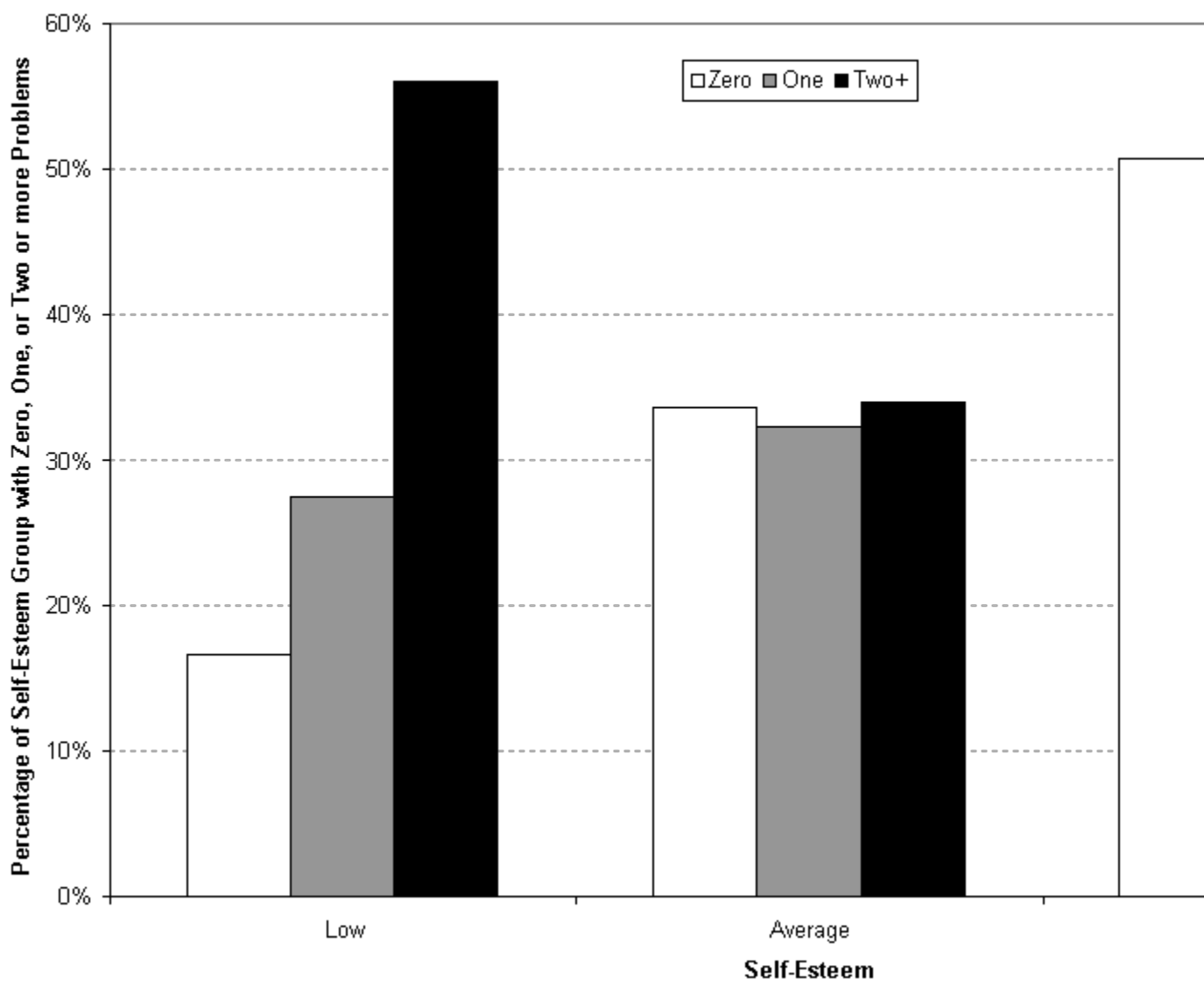
Footnotes

i[1] We examined the relation between the three self-esteem scores (at ages 11, 13, and 15) and the 16 outcome variables. Of the 48 resulting effects, 42 were significant and in the predicted direction; three other effects were in the predicted direction but non-significant, and three effects were essentially zero. Thus, the results generally replicated for all three self-esteem scores.

ii[2] Although we used a diagnostic cut-off in the present analyses, all of the results replicated when we used a continuous measure of depressive symptoms; the average absolute difference in effect sizes using the two measures was .02 (range of absolute values = .00 to .08). Tables using the continuous measure are available from the first author.

iii[3] Gender did not moderate the effects of self-esteem on any of the outcomes.