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The Association Between Perceived Resiliency and Change in Income  
from Childhood to Early Adulthood

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## **Abstract**

**Background:** It is well known that majority of children growing up in low income families will experience some type of adversity and as a result of their environment many will not adapt well when entering adulthood. Yet, there is a small percentage of children that overcome their childhood hardships, adapt well, and develop into successful adults. That small percentage of children are assumed to have some form of childhood resilience which might account for their subsequent success as adults. Specifically, perceived resilience may account for growth and success in adapting to the challenges and expectations of adulthood.

**Objective:** To determine if changing from low income as a child to high income as an adult correlates with a higher perceived resilience.

**Methods:** A correlation study using between subject design was conducted. The Socioeconomic Status (SES) Questionnaire and Dispositional Resiliency Scale-15 (DRS-15) Questionnaire were distributed to 48 healthy participants. The resulting data were analyzed using Pearson  $r$  correlation in SPSS 24.

**Results:** As a whole, the sample did not show significant association between the total DRS-15 scores and change in income from childhood to early adulthood ( $r = .123, p = .404$ ). A subgroup having shown an increase in income ( $n=7$ ) had a mean total DRS-15 score of 22.86 ( $SD = 3.36$ ) and four individuals of this subgroup that only came from low-income families had a mean total DRS-15 score of 25.5 ( $SD = 1.29$ ). According to the total DRS-15 scoring scale, both group's mean total DRS-15 scores can be found in the "low" range of the total Hardiness score. However, the subgroup with increased income ( $n=7$ ) had a significant correlation with total

DRS-15 scores and change in income from childhood to early adulthood, suggesting that as these individual's total DRS-15 scores increased they were more likely to make more money ( $r = .727, p = .032$ ). For individuals with declining income from childhood to early adulthood ( $n=26$ ) there was no significant correlation ( $r = .089, p = .666$ ). After controlling for childhood income as a possible confounding variable, we still found no significant correlation between individuals with decreased income after leaving home and total DRS-15 scores indicating childhood income had no effect on this association ( $r = .013, p = .949$ ). On the other hand, after removing childhood income from the correlational study between individuals with increased income after leaving home and total DRS-15 scores there was no longer a significance, suggesting that childhood household income significantly influenced the correlation between income change and total DRS 15 scores ( $r = -.278, p = .594$ ).

**Conclusion:** These results suggest that coming from low-income families and obtaining higher income as early adults doesn't correlate with perceived resilience. Yet, for a subset of low-income individuals show a positive correlation between changed income and their total DRS-15 scores. Further studies are recommended to see if the results found in this study are replicable but should take into account the limitations as mentioned in the study or take into account other measurements.

## Introduction

The success and growth of our society depends on the healthy development of future generations of children. Therefore, it is important to combat and prevent childhood adversity from negatively affecting the growth of our youth. As one of the major components in determining an individual's success and ultimate value to society, financial income can significantly influence the trajectory of a child's future. As one of several components of socioeconomic status (SES), financial income can be used as a proxy measure of success in adulthood. In particular, money is used to obtain better health, better education, security and safety, and the relief of psychological stress that may emerge from the inability to manage societal demands (Richards, 2015). All of these benefits of income give an individual an advantage in succeeding in life. On the other hand, low-income (low-SES) families experience more threatening and uncontrollable life events, such as exposure to violence and adversity, and these families have a greater risk of experiencing family dissolution (Bradley et al., 2002).

Scientific evidence suggests there is a correlation between socioeconomic status and family stability, including parenting practices, psychological health, distribution of resources, education and developmental outcomes for children ("Children, Youth, Families and Socioeconomic Status", 2019). As parents tackle the stressors associated with low-income, they may become more prone to violent, aggressive, and neglectful actions towards children. For parents, the chronic strain associated with unstable income and the hardships associated with low-income can lead to reduced self-esteem, decreased sense of control over life, as well as greater anger, and depression (Bradley et al., 2002). When low-income families experience dissolution of family bonds the children can be most affected when presented with childhood

adversities as a result of living in poverty. Children experience increased stress levels when faced with adversity that, without proper care and education from parents, can have life-long negative outcomes for those children as they enter early adulthood (Shonkoff et al., 2012).

Children learn from their environment and most importantly from their parents. With the help of its parents, a child begins to learn at a young age how to regulate their emotions in a healthy manner that is appropriate within a given situation. Yet, low-income parents under distress tend to overuse negative control strategies, provide lower warmth or responsiveness, and sometimes fail to adequately monitor their young (Bradley et al., 2002). Therefore, many children from low-income families tend to fall victim to childhood adversities within the household. Some of these adversities can include violence within the home, hunger, parental neglect, abuse, and living in poverty.

Nevertheless, to the contrary of evidence supporting negative life-long outcomes in children exposed to adversity, there remain some children who display some form of resilience to these negative experiences. There is a challenge in determining the core essence of resilience since it is not dependent on any particular set of tests, but rather dependent on the way a person's life unfolds (Konnikova, 2016). Developmental psychologist Emmy Werner conducted a 32-year longitudinal project on 698 children from before birth to their third decade of life and discovered that a third of at-risk children overcame their hardships through a variety of psychological strengths and factors related to the developmental environment (Konnikova, 2016). Environmental factors could include positive influence from care givers, role models, community events, or community programs. Or, it could be that these few children had an "internal locus of control" in that they controlled their outcome and success in life and not

their circumstance (Konnikova, 2016). Many of these hypotheses remain to be fully tested. Although there are many theories as to what makes a child resilient to adversity, the focus of this project is the role of perceived resilience. Here, perceived resilience is defined as an individual's ability to cope and adapt to adversities attributed to personal skills and the point of view that they are in control of their fate, not some form of luck (Konnikova, 2016).

In a previous study it was found a higher internal locus of control was associated with resilient outcomes (Gartland et al., 2019). Having perceived resilience gives an individual a sense of control over their own fate and they can achieve great things in life, such as higher income (Konnikova, 2016). Therefore, we hypothesize that participants that come from low income families as children and obtain higher income as young adults will have a higher perceived resilience as measured by a scale of hardiness. Previous research indicates many children coming from low income families will experience unstable circumstances, learning disabilities, behavioral problems and adversity that contribute to lower levels of success as adults (Gartland et al., 2019). Therefore, we additionally expect that there will be a small number of participants that meet the expected outcome as stated by the first hypothesis.

## **Methods**

### *Participants*

To examine the relationship between perceived resilience and income differences from childhood to early adulthood, 48 healthy participants (25 men, 23 female) between the ages of 18 to 29 years old were recruited for a larger study on cognitive performance under sleep

deprivation and stress. For this study, we did not focus on the larger sleep deprivation portion of the study, but instead focused on a subcomponent of the project. Specifically, as a subcomponent to the overall study, each participant filled out a socioeconomic status questionnaire and DRS-15 questionnaire beforehand. Individuals with a history of any psychiatric disorder, neurological disorder, or other illness that could present a danger to their health during the study period were excluded. Other exclusion criteria included a history of drug or alcohol abuse within the past year.

### *Materials and Procedure*

For this study, participants were administered the Dispositional Resiliency Scale-15 (DRS-15) Questionnaire, with an internal reliability of .80 it is used to measure perceived resiliency or hardiness (Madrigal et al., 2016). The DRS-15 is split into three subcomponents: commitment, control, and challenge (5 items per subcomponent) and is measured on a 4-point Likert scale of 0 (not at all true) to 3 (completely true) for a composite hardiness score ranging from 0 to 45 (Subcomponents range from 0 to 15) with a score of 45 revealing a person shows to have higher perceived resiliency (Madrigal et al., 2016).

Changes in income from childhood to early adulthood were assessed with a socioeconomic status (SES) questionnaire that addressed income, education, adversity, and household from childhood and early adulthood. Bradley et al. (2002) mentioned, “there is a general consensus that income, education, and occupation together represent SES better than any of these alone, but there is no consensus on how best to composite the set of indicators; whether it works best to examine relations between SES and child outcomes using a composite,

a statistical procedure that includes each indicator, or each indicator singly; or how best to measure each component.” Therefore, the socioeconomic status questionnaire (SES) was created by me and administered to participants after IRB approval. Both questionnaires were administered to participants prior to being exposed to stressors and sleep deprivation conditions. Based on previous research suggesting that there are a few at-risk children that show resilience through autonomous and independent positive views (Konnikova, 2016), a positive correlation was predicted between total DRS-15 scores and change in income from childhood to adulthood, using the Pearson  $r$  and two-tailed test. The change in income from childhood to early adulthood was calculated by taking the difference of the mean adulthood income from the mean childhood income, then correlate it with the total DRS-15 score using a Pearson’s zero-order correlation in SPSS 24.

## **Results and Discussion**

As a whole, the sample data ( $n=48$ ) showed that the change in income from childhood to early adulthood, as calculated from the socioeconomic status questionnaire, did not significantly correlate with the total scores obtained from the DRS-15 questionnaire ( $r = .123, p = .404$ ) (Table 1). This finding does not support the hypothesized positive association between hardiness and increasing household income from childhood to adulthood. Based on prior research (Konnikova, 2016) however, we expected that this association between hardiness and income change would only be observed within a subset of individuals initially coming from low income during childhood and obtaining higher income as early adults. Therefore, to assess this aspect of the hypothesis, we first split the sample population into groups of low, medium, and

high-income during childhood based on a tercile split of the income ranges. Participants claiming childhood low-income ranged from \$0-\$40,000, childhood medium-income ranged from \$40,001-\$80,000, and childhood high-income ranged from \$80,001-\$120,000+. Then, we plotted the median income change from childhood to early adulthood to identify which individuals increased in income, decreased in income, or broke even (no change in income) (Figure 1).

Table 1. Correlation between incoe change and total DRS 15 scores for the sample as a whole (n=48)

		Income_Change	Total_DRS_15_Score
Income_Change	Pearson Correlation	1	.123
	Sig. (2-tailed)		.404
	N	48	48
Total_DRS_15_Score	Pearson Correlation	.123	1
	Sig. (2-tailed)	.404	
	N	48	48

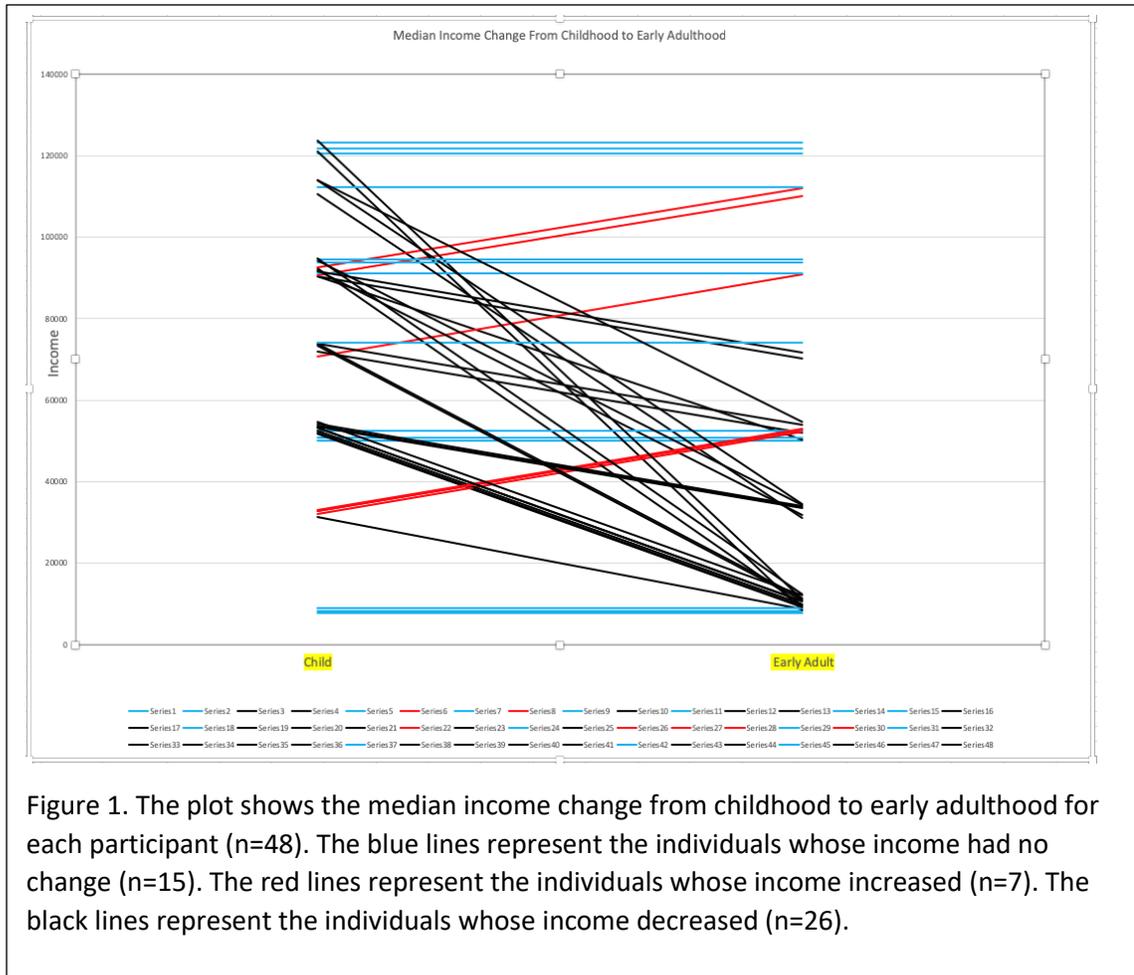


Figure 1. The plot shows the median income change from childhood to early adulthood for each participant (n=48). The blue lines represent the individuals whose income had no change (n=15). The red lines represent the individuals whose income increased (n=7). The black lines represent the individuals whose income decreased (n=26).

A subset of individuals showed an increase in income from childhood to adulthood. This was the group in which we were particularly interested. Four individuals from this small group started from low-income during childhood, one individual came from medium-income during childhood, and two individuals came from high-income during childhood. Since our focus was on the individuals that came from low-income during childhood, we found the mean total DRS-15 score of the small population with increased income (group 1) was 22.86 (SD = 3.36) and the mean total DRS-15 score among the four individuals coming from low income (group 2) was 25.5 (SD = 1.29). The DRS-15 hardiness scale total scores can be interpreted according to the

following scoring bands: 39+ (very High), 34-38 (High), 28-33 (average), 22-27 (Low), and 22 and below (very Low) (Hystad et al., 2010). Based on those normative values, our findings suggest that both groups were scoring in the “low” range of Total Hardiness scores from the DRS-15, on average. Next, the mean scores between the two groups were compared using an independent sample t-test,  $t(df) = 9$ , ( $p = .173$ ), suggesting no difference between groups.

Since we predicted only a small group of individuals out of a larger population would have higher perceived resilience if they came from low-income families as children and obtained higher incomes during early adulthood, we calculated a directional Pearson’s correlation test to analyze this small subpopulation of data. Consistent with our hypothesis, the data obtained from the small population ( $n=7$ ) that displayed an increase in income was positively correlated with total DRS-15 scores ( $r = .727$ ,  $p = .032$ ) (Table 2). These results suggest that coming from low income during childhood and obtaining high income during early adulthood significantly correlates with total DRS-15 scores, with Hardiness scores accounting for 52.5% of the variance in income change in this subgroup. It doesn’t necessarily mean these individual’s score higher in perceived resilience overall. These results show us that as these individual’s total DRS-15 scores increased they were more likely to make more money, but only among those that had an increase in income from childhood to early adulthood.

Table 2

		DRS Total	Change in Income
DRS Total	Pearson Correlation	1	.727*
	Sig. (1-tailed)		.032
	N	7	7
Change in Income	Pearson Correlation	.727*	1
	Sig. (1-tailed)	.032	
	N	7	7

\*. Correlation is significant at the 0.05 level (1-tailed).

The implication of the results of this correlation study suggest that coming from low-income families and obtaining higher income as early adults doesn't necessarily mean an individual will have higher perceived resilience as shown by the failure to support the hypothesis for the sample as a whole. Yet, there is the small population of individuals with increased income that show a positive correlation between income and their total DRS-15 scores. It could be assumed that if we had a larger sample size to study there may be evidence that links higher total DRS-15 scores to individuals that are more likely to make more money.

Subsequently, we conducted an additional analysis to clarify the meaning of the findings. There was a larger sample size of individuals whose income decreased from childhood to early adulthood ( $n=26$ ). A correlational analysis between income change and total DRS-15 score was conducted to find if there were any significant association in the sample who showed declines in income from childhood to adulthood. This correlation was not significant ( $r = .089, p$

= .666) (Table 3). This suggests that for individuals who declined in income in early adulthood, perceived resilience does not play a meaningful role in that decline.

Table 3

		Income_Change	Total_DRS_15_Score
Income_Change	Pearson Correlation	1	.089
	Sig. (2-tailed)		.666
	N	26	26
Total_DRS_15_Score	Pearson Correlation	.089	1
	Sig. (2-tailed)	.666	
	N	26	26

Given that most of the individuals who showed an increase in financial income also came from lower income families in childhood, we wanted to control for this potential confound in the analysis. By statistically controlling the average childhood income in partial correlation analysis, we tested if there is an association between change in income with total DRS-15 scores, exclusive of the impact of childhood household income. A partial correlation between change in income and total DRS-15 scores, controlling for childhood household income, was completed for the group with decreased income (Table 4) and for the group with increased income (Table 5). For those showing decreased income after leaving home, the results indicate that childhood income did not affect this association ( $r = .013, p = .949$ ). Thus, for those who decline in income, resilience was not related to this change, even after removing the influence of childhood household income. However, for those with increasing income, the

previously observed correlation was no longer significant after controlling for childhood income ( $r = -.278, p = .594$ ). Since the primary correlation in Table 2 was significant, whereas the partial correlation was not, this suggests that childhood household income significantly influenced the correlation between income change and total DRS 15 scores.

Table 4

			Total_DRS_15_Score	Income_Change
Control Variables Median Value of Childhood income	Total_DRS_15_Score	Correlation	1.000	.013
		Significance (2-tailed)	.	.949
		df	0	23
	Income_Change	Correlation	.013	1.000
		Significance (2-tailed)	.949	.
		df	23	0

Table 5

			Total_DRS_15_Score	Income_Change
Control Variables Median Value of Childhood income	Total_DRS_15_Score	Correlation	1.000	-.278
		Significance (2-tailed)	.	.594
		df	0	4
	Income_Change	Correlation	-.278	1.000
		Significance (2-tailed)	.594	.
		df	4	0

The fact that the association was no longer significant after controlling for childhood income implies that perceived resiliency may be more beneficial to individuals with the capacity

to achieve higher income. Hardiness, or perceived resiliency, is most likely to have an impact on those who start out at the low end of the income spectrum. An individual fresh out of college is not likely to attain a high-income paying position until they work their way up to that through long term commitment and success in their career field. Thus, individuals coming from a high-income household from childhood will be close to the ceiling for the young adult income and will find it difficult to gain further income growth, regardless of Hardiness or perceived resiliency. In other words, there is little room for improvement for someone already making high-income no matter how resilient they may be. This could also account for the large number of individuals with a decline in income from childhood to adulthood. In a previous study it was found that poor and non-poor children with high self-regulation had comparable trajectories of internalizing and externalizing problems as they grew older (Gartland et al., 2019).

Although we failed to support our first hypothesis, we cannot rule out the limitations of this study. The study population consisted mostly of undergraduate college students. It can be assumed that most undergraduate college students are fresh out of their parent's home and either have help from their parents, scholarships, or from entering the workforce to cover the cost of living. Additionally, the sample size was too small to make a generalization to the larger population. If we had a larger sample size, we may find the results of the data to be different than what we have found working with 48 participants. Having a smaller sample size can affect the reliability of the questionnaire's results and it has a limited statistical power. Another limitation of the study relates to the socioeconomic status (SES) questionnaire. The SES questionnaire was designed to address multiple factors associated with income, education, household, and adversity, but the scoring scale for childhood SES and early adult SES did not

coincide and we were not able to consider other factors that could give us insight into perceived resiliency.

Although prior research has indicated that a small proportion of children from low-income families have a higher perceived resiliency and become successful as adults (Konnikova, 2016), it can be concluded that this study did not support the prediction that there will be a small number of individuals coming from low-income families during childhood and obtaining higher-income during early adulthood will have higher perceived resiliency. Overall, the data suggests there is no correlation between income changes and total DRS-15 scores. Notably, the data also show that the sample as a whole had a below-average total DRS-15 score. This raised concerns that there is a problem with the sample. The sample may not be large enough to show variation in total DRS-15 scores. On the other hand, there may be a problem with the variables. We may need to consider whether everyone had experienced adversity, is currently experiencing life stressors, may lack confidence, or other factors not addressed. Future investigations may include a different population, consider using different measures instead of income, and would benefit from a larger sample size. We only used a single resiliency metric here. Other cognitive tasks could be used to measure different cognitive functions that may coincide with perceived resiliency. Further research could help exploit perceived resilience to help individuals attain resiliency and benefit from the growth - in return creating a more successful community.

## Participant Data:

Median Childhood income	Median Adult income	Change in Income	DRS Total	Gender	Age
49999.5	49999.5	0	21	M	24
7499.5	7499.5	0	25	F	22
89999.5	69999.5	-20000	23	M	18
89999.5	49999.5	-40000	26	F	21
120000	120000	0	28	M	19
89999.5	109500	19500.5	17	M	19
7499.5	7499.5	0	25	M	27
69999.5	89999.5	20000	20	M	24
49999.5	49999.5	0	26	M	22
120000	7499.5	-112500.5	28	M	21
89999.5	89999.5	0	23	F	18
109500	29999.5	-79500.5	18	F	28
29999.5	7499.5	-22500	27	M	22
7499.5	7499.5	0	32	M	18
7499.5	7499.5	0	22	M	27
89999.5	69999.5	-20000	26	M	29
49999.5	7499.5	-42500	24	M	19
120000	120000	0	23	M	18
89999.5	29999.5	-60000	17	F	21
69999.5	49999.5	-20000	24	F	21
49999.5	7499.5	-42500	20	M	20
29999.5	49999.5	20000	27	M	22
89999.5	7499.5	-82500	16	M	20
49999.5	49999.5	0	20	F	20
49999.5	7499.5	-42500	12	F	18
89999.5	109500	19500.5	21	F	22
29999.5	49999.5	20000	26	M	25
29999.5	49999.5	20000	25	M	25
109500	109500	0	21	F	21
29999.5	49999.5	20000	24	F	18
120000	120000	0	25	F	21
49999.5	7499.5	-42500	32	F	20
49999.5	7499.5	-42500	26	M	22
69999.5	7499.5	-62500	24	F	18
49999.5	29999.5	-20000	16	F	20
120000	7499.5	-112500.5	25	F	20
89999.5	89999.5	0	20	F	19
49999.5	29999.5	-20000	29	F	25
69999.5	49999.5	-20000	23	M	26

## Participant Data:

Median Childhood income	Median Adult income	Change in Income	DRS Total	Gender	Age
69999.5	7499.5	-62500	21	M	27
49999.5	29999.5	-20000	22	F	23
69999.5	69999.5	0	20	M	19
89999.5	29999.5	-60000	18	F	29
109500	29999.5	-79500.5	25	M	21
89999.5	89999.5	0	26	M	18
109500	49999.5	-59500.5	17	F	25
49999.5	7499.5	-42500	25	F	29
89999.5	7499.5	-82500	22	F	20

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