Keeping Your Friends Close: The Influence of Socioeconomic Status, Residential Stability, and Economic Uncertainty on Interpersonal Orientation

A DISSERTATION
SUBMITTED TO THE FACULTY OF THE
UNIVERSITY OF MINNESOTA
BY

John Eldon Myers

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

Jeffry A. Simpson, PhD

August 2016

© 2016 John Eldon Myers

Acknowledgements

First, I would like to thank my family and friends for supporting me throughout my interminable education. Without their support, I probably wouldn't have embarked on this endeavor in the first place, or at very least, may have abandoned it long ago.

I would also like to thank Dr. Sara Hodges for her guidance as my honors and master's thesis advisor. Her contributions to my success cannot be understated. A big thanks to Dr. Gail Unruh and the rest of the good people at the University of Oregon McNair Scholars program too. You guys are fantastic, and have done much to help change the lives of countless aspiring academics, myself included.

I can't express the appreciation I have for the faculty and staff of the Psychology Program at the University of Minnesota enough. In particular, doctors Jeffry Simpson and Vladas Griskevicius. I entered graduate school to glean some insight into human nature. I gained that insight, in spades, largely from the two of you.

Finally, I would like to thank the following people for the invaluable suggestions and assistance they provided in the preparation of this dissertation (in alphabetical order):

Dr. Leona Aiken

Dr. Jeremy Dawson

Dr. Christopher Federico

Dr. Jennifer Fillo

Dr. Marti Hope Gonzales

Dr. Shegihiro Oishi

Dr. Paul Piff

Dedication

J, you taught me to jump.

K, you inspired me to jump.

Abstract

From a life history perspective, individuals from higher-SES backgrounds should adopt a slower life history strategy, whereas individuals from lower-SES backgrounds should adopt a faster life history strategy. However, some researchers have found that lower-SES individuals behave more prosocially than higher-SES individuals. This finding is somewhat problematic for the popular view that faster life history strategists ought to behave more opportunistically than slower life history strategists. The goal of the current line of research was to resolve this paradox by identifying a moderator (the cohesiveness of one's social network) that might help to explain the prosocial interpersonal orientations observed among lower-SES individuals. Three studies were designed to test the notion that there are two ways faster life history strategists might interact with members of their social networks: (1) a dependent strategy among faster life history strategists who live in residentially stable environments that provide immediate, on-demand resources from members of narrower and deeper social networks, and (2) an opportunistic strategy among faster life history strategists who live in residentially unstable environments that allow them to maximize the resources they can extract from their environments in the absence of narrower and deeper social ties. Although the current studies provided very limited support for the hypothesis that faster life history strategists (lower-SES individuals) who possess more social network/residential stability would behave more prosocially than slower life history strategists (higher-SES individuals) or faster life history strategists who lack social network/residential stability,

some of the current findings suggest that this hypothesis should not be abandoned out of hand.

Table of Contents

ACKNOWLEDGEMENTS……i

DEDICATION……...ii

ABSTRACT……..iii

LIST OF TABLES……...vii

LIST OF FIGURES…….……ix

INTRODUCTION…….....1

The Fundemental Motives Approach……..……..……2
Altruism and the Evolution of the Affiliattion Motive……..……..……3
Life History Theory……..……..……6
Life History Theory and Interpersonal Orientations……..……..……9
The Role of Punishment in Maintaining Social Cohesion……...……13
Additional Environmental and Developmental Considerations Regarding Interpersonal Orientations…….....14
Summary and Predictions……..……..17

STUDY 1……19

Goals and Hypotheses……19

STUDY 1 METHODS……24

Participants.....24
Materials and Procedure.....24
Data Analysis Strategy.....28

STUDY 1 RESULTS & DISCUSSION…….30

Tests of Primary Hypotheses……..30
Exploratory Analyses……....36
Discussion……..39

STUDY 2……...42

Goals *and Hypotheses*……....43

STUDY 2 METHODS……..……47

Participants……..47
Materials and Procedure…….48

STUDY 2 RESULTS……...50

Tests of Primary Hypotheses……..50
Exploratory Analyses……...56
Discussion……..57

STUDY 3…….59

Goals and Hypotheses…….60

STUDY 3 METHODS……64
Participants…….64
Materials and Procedure……64

STUDY 3 RESULTS……..67

Tests of Primary Hypotheses……...67
Exploratory Analyses……...68
Discussion……69

GENERAL DISCUSSION……..71

References…….126

Appendices……136

List of Tables

Table 1. Means, Standard Deviations, and Tests for Gender Differences among All Predictor and Outcome Measures (Study 1).....81

Table 2. Correlations among All Predictor and Outcome Measures (Study 1).....82

Table 3. Predicting Cheating During the Dice-Rolling Game (Model 2)……83

Table 4. Simple Slope Significance Tests for Study 1, Model 2 by Childhood SES, Childhood Residential Stability and Gender, Evaluated at +/- 1 SD from the Mean of Childhood SES……...……...……84

Table 5. Predicting Cheating During the Dice-Rolling Game (Model 3)……85

Table 6. Simple Slope Significance Tests for Study 1, Model 3 by Childhood SES, Adolescent Social-network stability, and Gender, Evaluated at +/- 1 SD from the Mean of Childhood SES…….....…….....86

Table 7. Predicting Cheating During the Dice-Rolling Game (Model 7).....87

Table 8. Predicting Cheating During the Dice-Rolling Game (Model 9).....88

Table 9. Means, Standard Deviations, and Tests for Gender Differences among All Predictor and Outcome Measures (Study 2).....89

Table 10. Correlations among All Predictor and Outcome Measures (Study 2).....90

Table 11. Predicting Amount Allocated to Receiver (Model 1).....91

Table 12. Simple Slope Significance Tests for Study 2, Model 1 by Childhood Social-network stability, Childhood SES, and Condition, Evaluated at +/- 1 SD from the Mean of Childhood SES and +/- 1 SD from the Mean of Childhood Social-network stability.....92

Table 13. Predicting Amount Allocated to Receiver (Model 2)…….....93

Table 14. Simple Slope Significance Tests for Study 2, Model 2 by Childhood SES, Childhood Residential Stability and Condition, Evaluated at +/- 1 SD from the Mean of Childhood 94

Table 15. Predicting Amount Allocated to Receiver (Model 3).....95

Table 16. Predicting Amount Allocated to Receiver (Model 5)….....96

Table 17. Predicting Amount Allocated to Receiver (Model 6)….....97

Table 18. Predicting Amount Allocated to Receiver (Model 7)….....98

Table 19. Means, Standard Deviations, and Tests for Gender Differences among All Predictor and Outcome Measures (Study 3)……..99

Table 20. Correlations Among all Predictor and Outcome Measures (Study 3).....100

Table 21. Predicting Amount Spent to Punish the Allocator (Model 1).....101

Table 22. Predicting Amount Spent to Punish the Allocator (Model 7).....102

List of Figures

Figure 1. Amount of cheating in dice-rolling game by childhood residential stability and condition (Step 2).....103

Figure 2. Amount of cheating in dice-rolling game by childhood residential stability and condition (Step 3)…….....104

Figure 3a. Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- 1 SD from mean of childhood residential stability)….....105

Figure 3b. Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .75 SD from mean of childhood residential stability)….....106

Figure 3c. Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .5 SD from mean of childhood residential stability)….....107

Figure 4a. Amount of cheating in dice-rolling game by childhood SES, adolescent social-network stability and gender (evaluated at +/- 1 SD from mean of adolescent social-network stability)…….....108

Figure 4b. Amount of cheating in dice-rolling game by childhood SES, adolescent social-network stability and gender (evaluated at +/- .75 SD from mean of adolescent social-network stability)…….....109

Figure 4c. Amount of cheating in dice-rolling game by childhood SES, adolescent social-network stability and gender (evaluated at +/- .5 SD from mean of adolescent social-network stability)…….....110

Figure 5. Amount of cheating on dice-rolling game by childhood SES, zip code residential stability, and gender (Model 7).....111

Figure 6. Amount of cheating in dice-rolling game by childhood residential stability and condition (Model 9).....112

Figure 7. Amount donated by participants to "second participant" by childhood SES and gender (Model 1)…….....113

Figure 8. Amount donated by participants to "second participant" by childhood SES, childhood social-network stability, and gender (Model 1).....114

Figure 9a. Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- 1 SD from the mean of childhood residential stability (Model 2)…..…..115

Figure 9b. Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- .75 SD from the mean of childhood residential stability (Model 2)…..…..116

Figure 9c. Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- .5 SD from the mean of childhood residential stability (Model 2)…..…..117

Figure 10. Amount donated by participants to "second participant" by childhood SES, adolescent social-network stability, and condition (Model 3)…...118

Figure 11. Amount donated by participants to "second participant" by childhood SES and gender (Model 5)…….....119

Figure 12. Amount donated by participants to "second participant" by childhood SES and gender (Model 6)…….....120

Figure 13. Amount donated by participants to "second participant" by childhood SES and gender (Model 7)…….....121

Figure 14. Amount donated by participants to "second participant" by childhood SES and age (Model 7)……122

Figure 15. Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and age (Model 1)……123

Figure 16. Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and condition (Model 1)……...124

Figure 17. Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and condition (Model 7)……..……125

Keeping Your Friends Close: Interpersonal Orientation as a Function of Socioeconomic Status, Residential Stability, and Economic Uncertainty

Questions surrounding the origins of altruism in humans have fascinated scholars for decades. Recently, Tomasello, Melis, Tennie, Wyman, and Herrmann (2012) proposed a model to explain the emergence of human altruism. According to these researchers, altruism evolved because at some point in our evolutionary history humans became dependent upon those in their social networks to help satisfy the basic requirements for survival. Thus, in this view, the emergence of altruism made cooperation among members of increasingly cohesive, interdependent social networks possible. Put another way, we are nice to others because we need to affiliate with them to survive.

Other researchers have looked for more proximate antecedents of altruism. There is a growing literature that suggests socioeconomic status (SES) is an important determinant of altruism and morality. Specifically, this work suggests that lower-SES individuals tend to be more moral, altruistic, and community-oriented than their higher-SES counterparts (Piff, Kraus, Cote, Cheng, Keltner, & 2010; Piff, Stancato, Cote, Mendoza-Denton, & Keltner, 2012). These researchers claim that lower-SES individuals might be particularly prosocially-oriented because they depend on members of their social networks in order to navigate their chronically difficult environments.

If it is true that altruism emerged in humans because it fostered affiliation, which in turn improved the chances that our ancestors would survive, then it is likely that the development of a prosocial interpersonal orientation depends on the cohesiveness of one's social network, and the degree to which one must rely on one's social network for access to important material resources. The goal of the current line of research is to

investigate whether and how the cohesiveness of one's social network and the degree to which one is dependent on one's social network interact to determine one's interpersonal orientation.

The Fundamental Motives Approach

Throughout the course of evolutionary history, humans have faced several recurrent challenges to survival and reproduction. These challenges can broadly be classified into six domains: (1) attracting and (2) retaining mates, (3) acquiring status, (4) protecting the self, (5) caring for kin, and (6) forming cooperative coalitions. Because the successful navigation of each of these challenges was likely critical to our ancestors' survival and reproductive success, some evolutionary psychologists have theorized that humans gradually developed fundamental motives designed to overcome each of the challenges listed above (Kenrick, Li, & Butner, 2003; Kenrick, Maner, Butner, Li, Becker, & Schaller, 2002).

This fundamental-motives framework has been used to examine the distinct ways in which the activation of a particular motive influences attention, memory, behavior and social perception (Kenrick, Neuberg, Griskevicius, Becker, & Schaller, 2010). For example, the activation of the self-protection motive has been shown to increase conformity (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006), to mitigate, or even to reverse the outgroup homogeneity effect (Ackerman, Shapiro, Neuberg, Kenrick, Schaller, Becker et al., 2006), to increase the cognitive availability of threat-relevant (e.g., criminal), but not threat-irrelevant (e.g., lazy) outgroup stereotypes (Schaller, Park, & Faulkner, 2003), and to lead people to over-perceive anger in the faces of expressionless outgroup members (Maner, Kenrick, Becker, Robertson, Hofer,

Neuberg et al., 2005). In a similar vein, the activation of mating motives has been shown to divergently influence the behavior and cognition of men and women in a variety of ways that are consistent with an evolutionary perspective (Griskevicius, Cialdini, & Kenrick, 2006; Griskevicius, Goldstein, et al., 2006; Griskevicius, Tybur, Sundie, Cialdini, Miller, & Kenrick, 2007; Maner, et al., 2005). Additionally, status motives influence consumer and conservation behavior (Griskevicius, Tybur, & Van den Bergh, 2010), and increase direct aggression among men and indirect aggression among women (Griskevicius, Tybur, Gangestad, Perea, Shapiro, & Kenrick, 2009).

With regard to the current line of research, it is important to point out that the same environmental input might not activate a fundamental motive uniformly in all individuals. Indeed, the fundamental motive activated by a given environmental input might differ from person to person. For example, cues in the environment that signal economic threat might activate a self-protection motive in individuals who lack material resources and a cohesive social network, a status motive in those who already have ample material resources, and the affiliation motive in those who lack material resources, but who enjoy membership in a cohesive social network. The goal of the current suite of studies is to determine which individuals become motivated to affiliate, and thus adopt a more prosocial interpersonal orientation in response to economic threats in the immediate environment.

Altruism and the Evolution of the Affiliation Motive

Affiliation has long been thought to be a fundamental human need. Maslow (1968) suggested that "love and belongingness needs" are secondary only to basic needs such as those for food and safety. Evolutionary psychologists Kenrick, Griskevicius,

Neuberg, and Schaller (2010) also place affiliative needs near the foundation of their renovation of Maslow's pyramid of needs. Similarly, Baumeister and Leary (1995) hypothesized that humans have a "need to belong." That is a, "*fundamental motivation* [emphasis added]... to form and maintain at least a minimum quantity of interpersonal relationships" (p. 499). Indeed, Baumeister and Leary conceived of this need as having evolutionary roots. The notion that affiliation improves survival and reproductive outcomes makes good intuitive sense. In our ancestral past, groups were able to accomplish tasks that would be difficult or impossible for an individual to accomplish alone. For example, groups of individuals could take down big game and share food. Groups could also improve vigilance against predators or dangerous outgroup members. Finally, groups could provide a pool of potential mates for their members. Thus, the emergence of group living likely afforded our ancestors many unprecedented advantages during the early stages of human evolution. However, in order to enjoy the benefits of group living, group members would have periodically been forced to provide benefits to others at immediate costs to themselves. In other words, to form these groups that were probably essential to our ancestors' survival, humans had to develop altruism, possibly the most confounding of all human traits, at least from an evolutionary perspective.

Pure altruism requires one to incur costs to the self in order to provide benefits to another individual. Because the resources available to an organism are finite, it is difficult to explain where this self-sacrificing nature originated, or indeed, whether any biological entity truly engages in pure altruism: From a biological standpoint, any act of pure altruism necessarily hinders one's own reproductive success while making one's competitors more competitive. Hamilton (1964) introduced his *inclusive fitness theory* in

order to explain the prosocial nature of humans and other animals. His theory suggests that an altruistic[1] gene could have evolved and propagated within a population when the benefits to the recipient of a prosocial act, multiplied by the genetic relatedness between the benefactor and the beneficiary outweighed the cost incurred by the benefactor. That is, humans could have evolved to behave prosocially toward kin, especially kin with a high degree of genetic relatedness (e.g., siblings), because genetic relatives share many of the same genes. Thus, biologically speaking, when a man provides his sister with much needed resources, he directly enhances his own genetic fitness.

However, humans incur personal costs in the service of non-relatives as well. The theory of *reciprocal altruism* was developed to explain this apparent paradox (Axelrod, 1984; Axelrod & Hamilton, 1981; Trivers, 1971). According to this theory, humans could have evolved to behave prosocially toward non-relatives so long as these prosocial acts were reliably reciprocated. For example, there was almost certainly a great deal of variability in the success of our ancestors' hunting expeditions. However, social groups likely mitigated variability in calorie consumption among group members through the practice of food sharing: Successful hunters likely shared their bounty with less successful hunters and their families when the benefactor could be confident that the beneficiary would return the favor if the tables turned sometime in the future.

A central problem for reciprocal altruists is the problem of cheating. Some individuals may seek to extract benefits from others without any intention to reciprocate in the future (Cosmides & Tooby, 1992; 2005). Research suggests that humans may have evolved capacities to detect both cheaters (Cosmides & Tooby, 1992; 2005) and

[1] In order to avoid confusion, this is not to say a genetic predisposition toward *pure altruism*. However, it is beyond the scope of this dissertation to make arguments for or against the existence of pure altruism.

prospective cooperators (Brown & Moore, 2000) in order to overcome this problem. Thus, an individual's standing in a group and, in turn, the individual's ability to reap the benefits associated with group living should have been optimized by the extent to which the individual had a reputation for being a reliable cooperator.

In this vein, another route through which prosocial behavior could have evolved is through *indirect reciprocity* (Alexander, 1987; Nowak, 2006; Nowak & Sigmund, 2005). This refers to the fact that people who perform prosocial acts are able to advertise (either through direct observation or reputation) to third parties that they are ideal group members. According to this framework, individuals benefit indirectly from their prosocial acts by enhancing their standing in a group, rather than through direct reciprocation from the beneficiary of a prosocial act. For example, a woman who provides assistance to an individual who is unlikely to reciprocate that assistance might still enjoy the benefits of a bolstered reputation so long as other members in her group are in some way made aware of her prosocial act.

Thus, prosocial behavior in humans could evolve if: (a) the beneficiaries of prosocial acts were kin, (b) prosocial acts directed toward non-kin were reciprocated, and (c) prosocial acts directed toward non-kin could serve to promote one's status within a group. From this view, it is likely that the characteristics of the social networks to which individuals belong strongly influence their prosocial inclinations. Members of more cohesive social networks are likely more prosocial than members of less cohesive social networks because cohesive social networks foster reciprocation and make the formation of a strong reputation possible.

Life History Theory

Life history theory was developed in evolutionary biology to explain how and why organisms in most species allocate resources among competing life tasks. All organisms, including humans, must allocate effort to potentially conflicting life tasks, most notably bodily maintenance (e.g., immune functioning, predation defenses), growth (e.g., acquisition of physical, social, and cognitive competencies), and reproduction (e.g., mating and parenting; see Kaplan & Gangestad, 2005; Roff, 2002; Stearns, 1992). Because energy and resources are limited, all organisms must make tradeoffs in how they divide their resources among different competing tasks at any given point during their development. Energy allocated to one task cannot simultaneously be allocated to another task. For example, energy used to maintain the body's immune system cannot simultaneously be spent on somatic growth (Kaplan & Gangestad, 2005; Roff, 2002). These tradeoffs tend to be made nonconsciously. However, the rationale underlying how an individual makes these tradeoffs can be inferred through the individual's preferences, desires, and behaviors (Kenrick, Griskevicius et al., 2010; Simpson, Griskevicius, & Kim, 2011).

A person's life-history–relevant preferences, desires, and behaviors constitute his or her *life history strategy*. Life history strategies are believed to exist along a slow-to-fast continuum (Promislow & Harvey, 1990). Slower strategies are associated with reproducing at a relatively later age, having fewer but more committed and stable sexual relationships, having fewer children, and investing more time, effort, and resources in each child. Faster strategies, which have the opposite characteristics, are associated with reproducing at an earlier age, having more uncommitted and less stable sexual

relationships, having more children, and investing less time and effort, and fewer resources into each child.

These life history strategies correlate with specific clusters of psychosocial traits, many of which should facilitate the successful enactment of each strategy. For example, faster strategists tend to be more opportunistic, more risk-seeking, more aggressive, and less able to delay gratification, favoring immediate benefits over potentially larger long-term benefits. Slower strategists, in contrast, tend to be long-term planners who take fewer risks, display less aggression, and delay gratification to maximize future payoffs (Belsky, Houts, & Fearon, 2010; Figueredo, Vasquez, Brumbach, Schneider, Sefeck, Tal et al., 2006; Griskevicius, Tybur, Delton, & Robertson, 2011; Nettle, 2010).

Faster strategies are adaptive in environments that are harsh, unpredictable, dangerous, or have scarce resources, which are often characterized by higher levels of predation, injury, disease, and/or starvation. Because an organism's expected lifespan tends to be shorter in these environments, it pays more for the organism to reproduce as quickly as possible, rather than make the investments required to form long-term relationships, the benefits of which might never be realized. If organisms adopt slower strategies in such environments, they run the risk of failing to reproduce and, thus, failing to propagate their genes into future generations. Conversely, when external causes of mortality can be managed, it is more adaptive to enact a slower strategy by delaying reproduction and investing more in future outcomes (Ellis, Figueredo, Brumbach & Scholmer, 2009).

Individual differences in life history strategies develop partly in response to a person's early rearing environment, when children are rapidly learning about the world

and are particularly receptive to incorporating information from their local environments (Belsky, Steinberg & Draper, 1991; Belsky et al. 2010; Chishom, 1999; Chisholm, Quinlivan, Peterson & Coall 2005; Simpson et al., 2011). Early-life environments that have higher levels of unpredictability and harshness motivate individuals to enact faster strategies by speeding up the timing of their development and sexual maturation (Ellis, 2004). For example, greater local mortality (i.e., higher death rates) strongly predicts having a first child at a comparatively younger age (Chisholm et al., 2005; Griskevicius, Delton, Robertson, & Tybur, 2011; Low, Hazel, Parker, & Welch, 2008; Wilson & Daly, 1997).

Life History Theory and Interpersonal Orientations

As was discussed above, environmental harshness tends to evoke a faster life history strategy. In Western societies, harshness is typically indexed by SES given that lower levels of SES are linearly related to virtually all forms of morbidity and mortality (Adler, Boyce, Chesney, Folkman, & Syme, 1993; Chen, Matthews, & Boyce, 2002; Ellis et al., 2009; Marmot, Rose, Shipley, & Hamilton, 1978). The more impoverished a local environment is, the higher the rate of morbidity (e.g., illness, injury) and mortality (death) at every age within a society. From a life history perspective, therefore, individuals from higher-SES backgrounds should adopt a slower life history strategy, whereas individuals from lower-SES backgrounds should adopt a faster life history strategy. However, some researchers have provided evidence that apparently contradicts this view. It is this contradictory evidence that provides the impetus for the current research.

Recent research examining SES-based differences in morality and prosocial behavior (Piff, Kraus, Cote, Cheng, Keltner, & 2010; Piff, Stancato, Cote, Mendoza-

Denton, & Keltner, 2012) suggests how life history strategies might moderate the influence that environmental threats have on certain interpersonal orientations. Piff, Kraus, Cote, Cheng, and Keltner (2010), for example, found that lower-SES individuals tend to be more concerned about the welfare of other people than are their higher-SES counterparts. These researchers posit that lower-SES individuals orient this way to adapt to their chronically hostile and difficult environments, an explanation that is compatible with a life history perspective. Indeed, lower-SES individuals often lack the material resources needed to cope effectively with the harsher everyday environments in which they live. As a result, these individuals may need to band together to overcome the difficulties inherent in their environments.

Piff, Stancato, Cote, Mendoza-Denton, and Keltner (2012) also found that higher-SES individuals are more likely than lower-SES individuals to cheat in order to win a prize, to take valuable goods from others, to display unethical decision-making tendencies, and to endorse unethical behavior at work. According to these researchers, the unethical actions exhibited by their higher-SES study participants may partially be explained by a stronger dispositional inclination toward greed. From a life history perspective, however, this inclination could be the result of a stronger desire among slower individuals to invest heavily in the self and to accrue resources. Additionally, slower individuals may be less concerned about being ostracized by their social groups because they are less reliant on their social groups for resources than their lower-SES counterparts are.

In addition, Piff, Stancato, Martinez, Kraus, and Keltner (2012) found that lower-SES individuals react to perceptions of unpredictability in their environment (another

important determinant of life history strategy; Ellis et al., 2009) by becoming more communally-oriented and better connected to their community, whereas higher-SES individuals react to environmental unpredictability with an increased reliance on their wealth, along with an increased desire for financial gains. This suggests that exposure to unpredictable environments may accentuate status-based differences in how high- and low-SES individuals relate to other people in general.

Similarly, Henrich et al. (2001) found great variation in the degree to which members of 15 diverse societies cooperate in economic games. Specifically, members of societies characterized by greater interdependence tend to cooperate more than members of societies that are more independent in nature. Given that lower-SES individuals are likely to be more dependent on members of their social network for access to immediate resources, it stands to reason that individuals from lower-SES backgrounds may develop prosocial tendencies, whereas higher-SES individuals, who require very little assistance from their social networks, may be less likely to behave prosocially toward social network members.

At first blush, these findings seem to run counter to the predictions of life history theory. For example, the tendency of higher-SES individuals to cheat in order to get ahead and to prioritize personal financial gains over group harmony appears to contradict the risk aversion and tendency toward forming long-term romantic relationships that characterize most slow life history strategists. Similarly, the tendency of lower-SES individuals to cultivate interdependent relationships with social network members seems to run in contrast to the opportunistic, impulsive characterization of faster life history strategists described above. However, recent work by Oishi and his colleagues (2007,

2012) suggests that access to resources is only one determinant of an individual's interpersonal orientation.

According to Oishi et al. (2007), residential stability is central to the development of a community identity, which in turn results in pro-community action. Thus, the residential stability of an individual's environment might also result in a more prosocial orientation. In their investigation of the extent to which individuals benefit from forming deep, narrow social networks, Oishi and Kesebir (2012) found that only lower-SES individuals who live in residentially stable environments benefit from such a social arrangement: Higher-SES individuals are independent enough to build larger, more diffuse social networks (which also provide important benefits to their members; see Granovetter, 1973), whereas lower-SES individuals who live in residentially unstable environments risk significant wasted effort in forming narrow, deep relationships that are relatively unlikely to persist.

Viewed together, this literature suggests that the interpersonal orientations adopted by faster life history strategists may be more subject to environmental influences than those of slower life history strategists. To the extent that faster life history strategists (i.e., lower-SES individuals) orient themselves to extract immediate, on demand resources from their environments, it may be that faster life history strategists who live in more residentially stable areas enact a strategy of interpersonal dependence in order to acquire resources (especially in times of economic uncertainty), thus becoming more prosocial. Conversely, faster life history strategists who live in less residentially stable areas may improve their ability to extract immediate, on demand resources from their

environments by enacting a more opportunistic strategy to acquire the resources they need (especially in times of economic uncertainty), thus becoming less prosocial.

The Role of Punishment in Maintaining Social Cohesion

A central concern to prosocial members of a social system is the possibility that some members of the system may extract benefits from the group without making any significant contributions to the other members within the group. If the actions of these members go unchecked, the social network may begin to unravel. Thus, in addition to engaging in prosocial acts, members of a group can foster and maintain the cohesion and stability of the group by punishing cheaters. Indeed, some theoretical formulations have implicated punishment as the primary force driving cooperation in social networks (Boyd, Gintis & Bowles, 2010; Fehr & Gachter, 2002).

Punishing group members for cheating carries costs: Punished group members may seek retribution for the punishments inflicted upon them by others in their group. However, not all punishment is created equally. *Second-party punishment* refers to the direct retaliation against an individual who defected on the punisher. For example, a woman who cuts ties with a friend who has stolen from her is engaging in second-party punishment. A second form of punishment is *third-party punishment*. This refers to the punishment of an individual whose violation did not directly impact the punisher. For example, a woman who cuts ties with a friend when she discovers that her friend stole from a third party is engaging in third-party punishment. The latter form of punishment is most critical to the maintenance of cohesive social groups: If group norms are enforced primarily through second-party punishment, only a limited number of these social norms

could be upheld because many norm violations do not hurt other people (e.g., the violation injunctive norms; Fehr & Fischbacher, 2004).

Altruistic punishment is an extension of third-party punishment that refers to the punishment of an individual whose violation did not directly impact the punisher, even though the punishment is costly to and yields no direct benefits for the punisher (Fehr & Gachter, 2002). For example, a woman who cuts ties with a friend when she discovers that her friend stole from a third party, even though doing so puts her relationships with others in her social network in jeopardy, is engaging in altruistic punishment. This form of punishment is most central to the current line of research. It is hypothesized that individuals who tend to rely heavily on their social network for resources will be more likely than more independent individuals to engage in this form of punishment because it is important for these individuals to maintain cohesion and equity within their social groups.

Although the maintenance of group cohesion should be beneficial to individuals who rely on their groups for access to resources, research by Barclay (2006) suggests that individuals also benefit more directly from punishing freeloaders. Individuals who engaged in justified punishment tended to be seen by group members as being more trustworthy, group-focused, and worthy of respect than those who failed to punish cheaters. Thus, engaging in altruistic punishment might be an additional means to bolster one's reputation. It may be that individuals who are more dependent on members of their social networks stand to gain the most from boosting their reputations in such a way.

Additional Environmental and Developmental Considerations Regarding Interpersonal Orientations

Thus far, I have provided a rationale for the existence of apparently selfless behaviors exhibited by humans. However, an account of how these behavior patterns develop across the lifespan and are triggered by immediate environmental inputs has been neglected. These considerations are the focus of this section. More specifically, I will more thoroughly explore the central role that sensitive periods and immediate environmental threats might play in the development of prosocial interpersonal orientations and the manifestation of the prosocial behaviors associated with them.

Immediate Environmental Threats

Past research provides ample evidence that many life-history-relevant behaviors tend to manifest themselves in response to immediate environmental threats (e.g., Griskevicius et al., 2011; Griskevicius et al., 2013). Thus, if behaving in a prosocial manner is a strategy enacted by some individuals to better extract resources from their social networks, it is possible that these kinds of behaviors are more likely to emerge in response to such threats. Indeed, Piff, Stancato, Martinez et al.'s (2012) finding that lower-SES individuals tend to respond to unpredictability in their environments by becoming more community-oriented seems to support this notion.

Individuals who develop a prosocial interpersonal orientation in response to resource-scarce environments might not chronically and indiscriminately engage in prosocial behavior, but instead might focus the energy they spend ingratiating themselves with group members in times of uncertain access to resources. In ancestral environments, periods of famine or drought may have triggered behaviors associated with a prosocial interpersonal orientation in such individuals. In modern, industrialized environments, an analog to these triggering events might be periods of economic uncertainty. Thus, in

contemporary Western societies, those who are predisposed to a prosocial interpersonal orientation might be especially likely to engage in prosocial behavior when economic uncertainties are made salient to them.

Sensitive Periods

Past research suggests that individuals calibrate to their environments relatively early in life by adopting a life history strategy that is adaptive to their childhood environment (Belsky et al., 1991; Belsky et al. 2010; Chishom, 1999; Chisholm et al., 2005; Simpson et al., 2011). Other authors have found that the development of a prosocial interpersonal orientation occurs at a similarly young age due at least in part to socialization processes (Eisenberg, Fabes, & Spinrad, 2007). Although it stands to reason that individuals might adopt a prosocial interpersonal orientation in response to their early rearing environments, this assertion is by no means self-evident.

If the social milieu in which individuals find themselves is an important determinant of the interpersonal orientations they adopt, people's interpersonal orientations may emerge at a later developmental stage than other life history traits. If social-network stability is an important determinant of having a prosocial interpersonal orientation, it is difficult to know a priori which social networks should be most influential to the formation of such an orientation. Although the early childhood environment is generally thought to have the strongest impact on an individual's life history strategy (e.g., Belsky et al., 1991; Belsky et al. 2010; Chisholm, 1999; Chisholm, et al., 2005; Simpson et al., 2011), it could be that childhood social networks have little to do with the interpersonal orientation one eventually adopts in adulthood. Due to the importance of adolescence and adolescent peer groups to social cognitive development

(Choudhury, Blakemore, & Charman, 2006) and other life history traits such as risk-taking (Gardner & Steinberg, 2005), adolescent rather than childhood social networks could have the strongest impact on the interpersonal orientations people eventually adopt.

A final possibility is that people adapt to the social networks in which they currently find themselves throughout the lifespan. That is, it could be that the availability of resources during childhood orients individuals toward the life history strategy they eventually adopt, but that this strategy manifests itself differently, depending upon the social network in which individuals currently find themselves.

Summary and Predictions

As already discussed, the primary tool humans have historically used to form narrow, deep social networks has been the adoption of a prosocial interpersonal orientation. Given that uncertain access to resources and membership in small, cohesive groups were likely to be common in our ancestral environments, a prosocial interpersonal orientation may have evolved to be our default mode of interaction with other individuals (Oishi & Kesebir, 2012). Two hallmarks of a prosocial interpersonal orientation are the extent to which individuals exhibit altruistic[2] and moral tendencies. Individuals who display higher levels of altruism and morality benefit from their benevolence by bolstering their reputation within their group, thereby positioning themselves to have more access to resources from the group when those resources are most needed. However, according to the research discussed above, there are important environmental conditions that might make a prosocial interpersonal orientation somewhat less adaptive. Specifically, under conditions of ample resources and/or tenuous social relationships

[2] For the purposes of this dissertation, the term "altruism" simply refers to a tendency to provide assistance and resources to others, regardless of the motivations underlying this kind of behavior.

(e.g., residential instability), individuals may be less motivated to adopt a prosocial interpersonal orientation. With these considerations in mind, two hypotheses can be derived:

> **Hypothesis 1**: Lower-SES, residentially stable environments will result in a tendency for those who reside in such environments to respond to economic threat by behaving more morally. Economic threat should not influence the moral behavior of higher-SES individuals, or lower-SES individuals who live in residentially unstable environments.
>
> **Hypothesis 2**: Lower-SES, residentially stable environments will result in a tendency for those who reside in such environments to respond to economic threat by behaving more altruistically. Economic threat should not influence the altruistic behavior of higher-SES individuals, or lower-SES individuals who live in residentially unstable environments.

Individuals who rely on their social groups for resources must also be vigilant of cheaters. When these individuals detect defections, they may be more likely to punish defectors in order to minimize inequities or maintain stability within their group. They should do so even when they are not directly impacted by the defections and when their punitive measures might come at a personal cost. Individuals who are more independent, and thus have less to gain by maintaining harmony within their social groups, should be less likely to punish offenses that do not directly impact them, especially if their punitive measures come at a personal cost. To the extent that one's SES and residential stability are associated with independence from one's group, the following hypothesis can be derived:

Hypothesis 3: Lower-SES, residentially stable environments will result in a tendency for those who reside in such environments to respond to economic threat by becoming more inclined to punish defectors who do not directly impact them, even if this punishment comes at a personal cost (i.e., they will engage in altruistic punishment). Economic threat should not influence the rates at which higher-SES individuals or lower-SES individuals who live in residentially unstable environments punish cheaters.

Study 1: SES, Residential Stability and Moral Behavior

Study 1 was completed entirely online. Participants first provided information about their self-perceived SES and social-network stability at various stages in their lives. They also provided information about the number of times they changed residences across various stages in their lives, and supplied other important demographic data, including the zip code in which they currently reside. Half of the participants then read a fictitious news article intended to prime them with economic threat, while the other half read an article that was not intended to induce an economic threat prime (a control prime). Immediately after participants read the article to which they were randomly assigned, they played a "dice-rolling" game that was designed in such a way as to make it possible for participants to cheat by manipulating their final scores on the game. Morality was operationalized as the extent to which participants cheated on the game.

Goals and Hypotheses

The central goal of Study 1 was to determine whether and how economic threat, residential/social-network stability, and SES interact to affect moral behavior, which was

operationally defined as participants' self-reported scores on the dice-rolling game on which they could cheat.

Primary hypotheses. Although previous research suggests that childhood SES has a strong impact on the life history strategy that individuals adopt (e.g., Belsky, et al., 1991; Belsky et al. 2010; Chisholm, 1999; Chisholm, et al., 2005; Simpson et al., 2011) and, thus, perhaps the interpersonal orientations they adopt, it is less clear how the nature of individuals' childhood social networks might impact the interpersonal orientations they adopt later in life. Two regressions were carried out to test whether and how individuals' childhood social-network stability and/or their childhood residential stability interacted with their childhood SES to affect their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 1 and 2, respectively). The expected patterns of results for these two regressions were as follows:

> ***Hypothesis 1a (Model 1):*** Participants who were reared in lower-SES families, and who had more stable social networks during their childhood, should respond to economic threat by behaving more morally (i.e., they should be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks during their childhoods.
>
> ***Hypothesis 1b (Model 2):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence during their childhood, should respond to economic threat by behaving more morally (i.e., they will be less inclined to cheat during the dice-

rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence during their childhoods.

However, given their importance to social-cognitive development (Choudhury, Blakemore, & Charman, 2006) and other life history traits such as risk-taking (Gardner & Steinberg, 2005), it is possible that the nature of individuals' *adolescent* social networks could have a greater impact on the interpersonal orientations individuals adopt than their childhood social networks do. Two regressions were carried out to test whether and how individuals' adolescent social-network stability and/or their adolescent residential stability interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 3 and 4, respectively). The expected patterns of results are as follows:

Hypothesis 1c (Model 3): Participants who were reared in lower-SES families, and who had more stable social networks during their adolescence, should respond to economic threat by behaving more morally (i.e., they will be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks during their adolescence.

Hypothesis 1d (Model 4): Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence

during their adolescence, should respond to economic threat by behaving more morally (i.e., they will be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence during their adolescence.

It is also possible that individuals calibrate their interpersonal orientations to their social environments throughout their childhood *and* adolescence. Two regressions were carried out to test whether and how individuals' social-network stability and/or their residential stability prior to the age of 18 interacted with their childhood SES to affect their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 5 and 6, respectively). The expected patterns of results are as follows:

Hypothesis 1e (Model 5): Participants who were reared in lower-SES families, and who had more stable social networks prior to the age of 18, should respond to economic threat by behaving more morally (i.e., they will be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks prior to the age of 18.

Hypothesis 1f (Model 6): Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence prior to the age of 18, should respond to economic threat by behaving

more morally (i.e., they will be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence prior to the age of 18.

Finally, individuals may calibrate their interpersonal orientations to the social environments in which they currently reside. One regression was carried out to test whether and how the stability of the zip codes in which individuals reside (operationalized as the percentage of residents who recently moved into the zip code) interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (this regression will henceforth be referred to as Models 7). The expected pattern of results are as follows:

Hypothesis 1g (Model 7): Participants who were reared in lower-SES families, and who live in more residentially stable zip codes, should respond to economic threat by behaving more morally (i.e., they will be less inclined to cheat during the dice-rolling game). Economic threat should not influence the moral behavior of participants who were reared in higher-SES families, or those who live in less residentially stable zip codes.

Exploratory Analyses. Much of the work investigating the ways in which SES impacts prosocial behavior focuses on the influence of individuals' *current* SES on their inclination to behave in a prosocial manner (e.g., Piff et al., 2010). Although individuals' current life circumstances tend to be of less interest to researchers who take a life history

perspective, 7 additional regressions were conducted to further investigate whether and how individuals' current social status impacts their interpersonal orientations. These regressions correspond to the seven regressions described above, with the exception that individuals' *current* SES was entered into these models rather than their *childhood* SES. These regressions will henceforth be referred to as Models 8-14. Although no a priori hypotheses were generated about the patterns of results these regressions might yield, the results are reported below.

Method

Participants. A total of 612 participants were recruited via Amazon's Mechanical Turk (MTurk; www.mturk.com), an online crowdsourcing data collection service. Of these, 157 participants either reported earning impossible scores after playing the dice-rolling game (i.e., the dependent variable), failed to complete the study, or correctly inferred that the purpose of the dice-rolling game was to identify cheaters. These participants were removed from the dataset[3]. Analyses were conducted on the remaining 455 participants (272 women, 183 men). These participants' ages ranged from 18 and 75 (M = 34.89, SD = 12.38). All participants received $0.75 for participating in the study.

Materials and Procedure. Participants were told that they were taking part in a study designed to examine how cognitive load influences the enjoyment of probabilistic games. The study description read as follows:

[3] Supplemental analyses revealed that participants who were excluded from the analyses differed significantly from those who were included in the analyses on the measures of the dependent variable ($t(609) = -7.45$, $p < .001$), childhood SES ($t(610) = -2.46$, $p < .001$), current SES ($t(610) = 2.33$, $p = .02$), childhood social network stability ($t(604) = -5.49$, $p < .001$), adolescent social network stability ($t(606) = -6.96$, $p < .001$), residential stability prior to age 18 ($t(610) = -2.85$, $p = .005$). However, since many of these participants were dropped from the analyses due to the spurious data the provided, it is difficult to determine the relevance of these differences.

> "Gambling establishments are often spaces filled with distracting stimuli. This study seeks to determine how cognitive load impacts the enjoyment of games that have a probabilistic reward structure. In this study, you will be asked to provide some demographic information. You will also be asked to read a short news article. Immediately after you read the news article you will play a probabilistic game. After you play the game, you will be asked to report your score for the game and tell us how much you enjoyed the game."

Following Piff et al. (2012), participants were told that they would play an online dice-rolling game for a chance to win a $100.00 Amazon gift card at the end of the study. The participants were informed that the online survey software would "roll" a pair of dice for them five times. Participants were told that, for each of their rolls that were higher than 7, they would be awarded a credit toward a drawing for the $100.00 prize. Finally, participants were told that the experimenter had no way of recording what their actual rolls were, and that they should keep track their score because they would be asked to report it at the end of the game. In reality, all of the participants' "rolls" were predetermined to be below 7, thus the final score of honestly played games was predetermined to be 0. Cheating was ascertained by the extent to which participants' self-reported scores exceeded 0, with the highest possible score being 5.

Before participants played the dice-rolling game they were asked to read a short (roughly 500 word) article, purportedly to serve as a distracting stimulus. They were told that they should read the article carefully because they would be asked about details of the article at the end of the study. Half of the participants were asked to read an article

designed to prime economic threat. The other half were asked to read a neutral control article (see Appendix A and B, respectively).

During the study, participants were asked to estimate their household income during childhood, as well as their current household income (see Appendix C). One example of the five items on the scale that assessed childhood SES is: *My family struggled financially when I was growing up.* An example of the four-item scale that assessed current SES is: *I feel relatively wealthy these days.* All of the items for both the childhood and current SES scales were reported on using a seven-point scale (1 = strongly disagree, 7 = strongly agree). These scales were designed to tap subjective perceptions of participants' relative social status[4]. Reliability analyses showed that the scales used to gauge childhood SES (Cronbach's Alpha = .88) and current SES (Cronbach's Alpha = .91) were reliable.

In addition, participants reported how many times they had changed residences, the ages at which these moves occurred, and the approximate distance of each move (see Appendix D). This information was used to assess participants' residential mobility. The number of times participants moved to a residence that should have disrupted their social networks was tallied at four stages across participants' lifespans: childhood (ages 5-12), adolescence (ages 13-18), young adulthood (ages 19-25), and adulthood (older than 25). Due to a lack of sufficient data across the three studies, only information about participants' residential stability from ages 5 to 18 were used in the analyses. Moves that may have disrupted participants' social networks between the ages of 5 and 18 were those

[4] Supplemental analyses revealed that 27.3% of participants reported an annual childhood household income of less than $25,000, and 29.9% of participants reported a current annual income of less than $25,000.

in which the participant: (1) moved within the same city (but into a different school district); (2) moved to a different city (either within the same state or to a different state); (3) moved to a different state; or (4) moved to a different country. Moves that were not inferred to significantly impact participants' social networks were those in which the participant: (1) moved before starting kindergarten; (2) moved within the same city (but did not move into a different school district); or (3) moved within the same city after finishing school (either by graduating or dropping out). Thus, a composite variable was created to represent participants' residential stability prior to adulthood. To create this variable, the number of moves that might have disrupted participants' social networks from the ages of 5 to 18 were tallied.

Participants were also asked to estimate the stability of their social networks by reporting on how frequently membership in them changed during their childhood (ages 5-12), adolescence (13-18), young adulthood (19-25), and adulthood (older than 25). Once again, only data from the childhood and adolescent social-network stability variables were used in the analyses. Examples of these items are: *My circle of friends changed very little throughout my childhood/adolescence*; and *I lost many friends during my childhood/adolescence*. These items were reported on using a seven-point Likert-type scale (1 = strongly disagree, 7 = strongly agree; see Appendix E). Reliability analyses showed that the scales used to assess childhood (Cronbach's Alpha = .90) and adolescent social-network stability (Cronbach's Alpha =.90) were reliable. Thus, a composite variable was created to represent participants' social-network stability prior to adulthood. To create this variable, the mean score of participants' childhood and adolescent social-network stability was calculated.

Finally, participants completed a demographics questionnaire that assessed their age, ethnicity, gender, relationship status, and current zip code (see Appendix F). Following Oishi and Kesebir (2012), census data and participants' current self-reported zip codes were used to create a composite variable representing the residential stability of participants' environments, which was operationalized as the percentage of residents living within a zip code who moved into the zip code during or after the year 2010[5]. Zip codes were thought to be less residentially stable when they had a higher percentage of residents moving to the zip code since 2010. To determine whether participants saw through the cover story used in this study, they were asked to report what they were thinking while they played the dice-rolling game at the conclusion of the study.

Table 1 provides information about the descriptive statistics of all the continuous predictor variables and the dependent variable. Table 2 shows the correlations among all of the predictor variables and the dependent variable.

Data Analysis Strategy

To analyze the data collected for Study 1 (as well as Studies 2 and 3, which follow), fourteen hierarchical linear regressions were conducted. These regressions differed only in the variables used to represent SES and residential/social-network stability within each model. In the regressions that test the primary hypotheses of this study (Models 1-7), self-reported childhood SES was the SES variable of interest. In the exploratory analyses (Models 8-14), self-reported current SES was the SES variable of interest. Within these two groups of seven models, residential/social-network stability was represented by childhood social-network stability (Models 1 and 8), childhood

[5] At the time these studies were designed, this was the most recent year for which relevant census data were available.

residential stability (Models 2 and 9), adolescent social-network stability (Models 3 and 10), adolescent residential stability (Models 4 and 11), social-network stability prior to age 18 (Models 5 and 12), residential stability prior to age 18 (Models 6 and 13), or the percentage of residents living within participants' zip codes who moved into the zip code during or after the year 2010 (Models 7 and 14[6]).

In addition to the variables hypothesized to influence prosocial behavior (i.e., experimental condition, SES, and residential/social-network stability), prior research suggests that gender and age might also affect individuals' interpersonal orientation (e.g., Beadle, Sheehan, Dahlben, & Gutchess, 2015; Eagly, 2009; Hine & Leman, 2014). To take into account the possible influence of gender and age on prosocial behavior, these variables were also included in each of the models. Thus, all of the regression analyses conducted in Study 1 (as well as those conducted in Studies 2 and 3) included the main effects of gender, age, experimental condition, the SES variable of interest, and the stability variable of interest in the first step. In the second step of each regression analysis, the SES x stability interaction and all possible two-way interactions including either the SES variable of interest or the stability variable of interest were entered into the model. Finally, in the third step of each regression, all possible three-way interactions including both the SES variable of interest and the stability variable were entered into the model.

Simple slope analyses were conducted using procedures by Aiken and West (1991), Dawson (2013), and Dawson and Richter (2006). These procedures allow for the plotting of interaction effects, the calculation of the statistical significance of simple

[6] Due to a lack of zip code data among participants of Study 3, these models were only tested for Studies 1 and 2.

slopes, and in the case of three-way interactions, tests for significant differences among the gradients of all of the simple slopes in a model.

Results: Study 1 Tests of Primary Hypotheses

Model 1 (focal variables: childhood SES and childhood social-network stability): Model 1 tested Hypothesis 1a. The first step of the Model 1 regression analysis was statistically significant, $F(5, 445) = 3.711$, $p = .003$, adjusted $R^2 = .029$. Only two main effects predicted moral behavior in the first step: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than women ($\beta = .106$, $p = .025$), and younger participants cheated more than older participants ($\beta = -.144$, $p = .003$). No other main effects or interactions in any of the steps of the Model 1 regression analysis were significant. These results did not support Hypothesis 1a.

Model 2 (focal variables: childhood SES and childhood residential stability): Model 2 tested Hypothesis 1b.The first step of this regression was statistically significant, $F(5, 449) = 3.648$, $p = .003$, adjusted $R^2 = .028$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men cheated more on the dice-rolling game than did women ($\beta = .104$, $p = .028$) and younger participants cheated more on the dice-rolling game than did older participants ($\beta = -.152$, $p = .001$).

Although the second step of the Model 2 regression analysis did not significantly improve the predictive power of the model beyond the first step (adjusted $R^2 = .033$), it was statistically significant ($F(12, 442) = 2.276$, $p = .008$). The main effects of gender ($\beta = .117$, $p = .014$) and age ($\beta = -.144$, $p = .003$) remained significant in this step. However, this step also detected a significant main effect of childhood residential stability (β = -

.179, p = .028). This main effect was qualified by a significant condition x childhood residential stability two-way interaction (see Figure 1). Simple slope analyses revealed that participants in the control condition who were 1 SD below the mean of childhood residential stability were significantly more likely to cheat during the dice-rolling game than participants in the control condition who were 1 SD above the mean of childhood residential stability (t = -2.19, p = .029). Although an opposite trend was observed among participants in the economic threat condition, simple slope analyses revealed that childhood residential stability did not significantly impact cheating behavior in this condition (t = .348, *ns*). These results provide partial support for the notion that individuals who had more residentially stable childhoods behave in a more prosocial manner than those who had less residentially stable childhoods, at least in nonthreatening circumstances.

The third step of the Model 2 regression did not significantly improve the predictive power of the model beyond Step 2 (adjusted R^2 = .034), but it was statistically significant (F(15, 439) = 2.298, p = .011). The main effects of gender (β = .101, p = .037) and age (β = -.146, p = .003) remained significant in this step. Although the main effect of childhood residential stability was not significant, this step detected a marginally significant condition x childhood residential stability two-way interaction (β = .143, p = .076; see Figure 2). However, simple slope analyses revealed that participants who were 1 SD below the mean of childhood residential stability did not significantly differ from participants who were 1 SD above the mean of childhood residential stability in their likelihood of engaging in immoral behavior in either condition. Thus, this result provides little support for into Hypothesis 1b.

In addition, the third step of the Model 2 regression detected a marginally significant gender x childhood SES x childhood residential stability interaction (β = -.105, t = -1.793, p = .074). Plotting this interaction by creating groups that were +/- 1 SD from the mean of both continuous independent variables was not practical due to strong positive skew in the childhood residential stability variable[7]. Thus, this interaction was plotted at +/- 1 SD (see Figure 3a), +/- .75 SD (see Figure 3b), and +/-.5 SD (see Figure 3c) from them mean of childhood residential stability. The pattern of results was consistent across all three simple slope analyses (see Table 3 for a more detailed account of these analyses, and Table 4 for information about the simple slope investigations conducted for this analysis). Specifically, lower-SES participants who experienced less residential stability during their childhoods were less likely to cheat in the dice-rolling game than their higher-SES counterparts. However, this difference was only significant among men (p-values range from .001-.023). This finding runs contrary to Hypothesis 1b in that participants who experienced less residentially stable childhoods were not expected to behave more prosocially than those who experienced more residentially stable childhoods under any circumstances. Among participants who experienced more residentially stable childhoods, both men (p-values range from .003-.025) and women (p-values range from .007-.057) were less likely to cheat during the dice-rolling game when they had higher-SES during their childhoods. This finding, too, runs counter to Hypothesis 1b, in that participants who were reared in higher-SES families were not predicted to behave more prosocially than their lower-SES counterparts under any circumstances.

[7] Using this method resulted in negative predicted values of the dependent variable, which was bound at 0.

Model 3 (focal variables: childhood SES and adolescent social-network stability): Model 3 tested Hypothesis 1c. The first step of the Model 3 regression analysis was statistically significant, $F(5, 447) = 3.989$, $p = .002$, adjusted $R^2 = .032$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men cheated more on the dice-rolling game than did women ($\beta = .104$, $p = .027$) and younger participants cheated more on the dice-rolling game than did older participants ($\beta = -.147$, $p = .002$).

Although the main effects of age ($\beta = -.147$, $p = .003$) and gender ($\beta = .10$, $p = .035$) remained significant in the second step of the Model 3 regression, no other significant main effects or two-way interactions were detected in this step.

The main effects of age ($\beta = -.14$, $p = .004$) and gender ($\beta = .116$, $p = .016$) remained significant in the third step of this regression. However, this step also detected a significant gender x childhood SES x adolescent social-network stability three-way interaction ($\beta = .414$, $p = .022$). Plotting this interaction by creating groups that were +/- 1 SD from the mean of both continuous independent variables was impractical due to the strong positive skew in the adolescent social-network stability variable[8]. Accordingly, this interaction was plotted at +/- 1 SD (see Figure 4a), +/- .75 SD (see Figure 4b), and +/-.5 SD (see Figure 4c) from them mean of adolescent social-network stability. The pattern of results was consistent across all three simple slope analyses (see Table 5 for a more detailed account of these analyses, and Table 6 for information about the simple slope investigations conducted for this analysis). This pattern suggests that higher-SES participants were generally more likely to cheat on the dice-rolling game than lower-SES

[8] Using this method resulted in negative predicted values of the dependent variable, which was bound at 0.

participants. The only exception were women whose adolescent social networks were relatively stable. However, further analysis revealed that none of these simple slopes were statistically significant. Thus, this finding provides little support for Hypothesis 1c.

Model 4 (focal variables: childhood SES and adolescent residential stability): Model 4 tested Hypothesis 1d. The first step of the Model 4 regression analysis was statistically significant, $F(5, 449) = 3.655$, $p = .003$, adjusted $R^2 = .028$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women ($\beta = .105$, $p = .027$) and younger participants cheated more during the dice-rolling game than did older participants ($\beta = -.152$, $p = .001$). No additional main effects or interactions in any of the steps of this regression were significant. These results did not support Hypothesis 1d.

Model 5 (focal variables: childhood SES and social-network stability prior to age 18): Model 5 tested Hypothesis 1e. The first step of the Model 5 regression analysis was statistically significant, $F(5, 443) = 3.898$, $p = .002$, adjusted $R^2 = .031$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than women ($\beta = .106$, $p = .026$) and younger participants cheated more during the dice-rolling game than older participants ($\beta = -.141$, $p = .003$). No additional main effects or interactions in any of the steps of this regression were significant. These results failed to provide support for Hypothesis 1e.

Model 6 (focal variables: childhood SES and residential stability prior to age 18): Model 6 tested Hypothesis 1f. The first step of the Model 6 regression analysis was

statistically significant, $F(5, 449) = 4.084$, $p = .003$, adjusted $R^2 = .028$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than women ($\beta = .105$, $p = .027$) and younger participants cheated more during the dice-rolling game than older participants ($\beta = -.152$, $p = .001$). No additional main effects or interactions in any of the steps of this regression were significant. These results failed to provide support for Hypothesis 1f.

Model 7 (focal variables: childhood SES and the percentage of residents moving into participants' zip code during or after the year 2010): Model 7 tested Hypothesis 1g. The first step of the Model 7 regression analysis was statistically significant, $F(5, 439) = 4.381$, $p = .002$, adjusted $R^2 = .032$. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men cheated more on the dice-rolling game than women ($\beta = .097$, $p = .04$) and younger participants cheated more on the dice-rolling game than older participants ($\beta = -.151$, $p = .002$).

The second step of this regression was also significant, $F(12, 432) = 2.459$, $p = .01$. The main effects of age ($\beta = -.147$, $p = .003$) and gender ($\beta = .10$s, $p = .035$) remained significant in the second step of this regression; no additional significant main effects or two-way interactions were detected in this step.

The third step of this regression was significant, $F(15, 429) = 2.852$, $p < .001$. The main effects of age ($\beta = -.16$, $p = .001$) and gender ($\beta = .11$, $p = .021$) remained significant in the third step. However, this step also detected a significant gender x childhood SES x zip code stability interaction ($\beta = .236$, $p < .001$; see Figure 5, and Table

7 for a more detailed account of these analyses). Specifically, among participants who lived in zip codes 1 SD below the mean on zip code instability, men were more likely to cheat during the dice-rolling game when they were 1 SD below the mean of childhood SES than when they were 1 SD above it, although this simple slope was not significant. Women who scored 1 SD below the mean on zip code residential instability, in contrast, were more likely to cheat during the dice-rolling game when they were 1 SD above the mean of childhood SES than when they were 1 SD below it. This simple slope was marginally significant (t = 1.802, p = .072). This finding runs contrary to Hypothesis 1g in that participants from higher-SES backgrounds were not expected to behave in a more prosocial manner than those from lower-SES backgrounds under any circumstances. Conversely, among participants who lived in zip codes 1 SD above the mean on zip code instability, men were significantly more likely to cheat during the dice-rolling game when they were 1 SD above the mean of childhood SES than when they were 1 SD below it (t = 2.459, p = .014). This finding does not support Hypothesis 1g. Women, in contrast, were more likely to cheat during the dice-rolling game when they were 1 SD below the mean of childhood SES than when they were 1 SD above it. Although this simple slope was not significant (t = -1.559, *ns*), it was in the direction suggested by Hypothesis 1g.

Results: Study 1 Exploratory Analyses

Model 8 (focal variables: current SES and childhood social-network stability): The first step of the Model 8 regression analysis was statistically significant, $F(5, 445) = 3.67$, p = .003, adjusted R^2 = .029. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .105, p = .028)

and younger participants cheated more during the dice-rolling game than did older participants (β = -.144, p = .003). No additional main effects or interactions in any of the steps of this regression were significant.

Model 9 (focal variables: current SES and childhood residential stability): The first step of the Model 9 regression analysis was statistically significant, $F(5, 449) = 3.59$, p = .003, adjusted R^2 = .028. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .104, p = .029) and younger participants cheated more during the dice-rolling game than did older participants (β = -.152, p = .001).

The main effects of age (β = -.149, p = .002) and gender (β = .116, p = .014) remained significant in the second step of this regression. In addition, this step detected a significant main effect of childhood residential stability (β = -.169, p = .028). This main effect was qualified by a significant condition x childhood residential stability two-way interaction (β = .165, p = .015; see Figure 6 and Table 8 for a more detailed account of these analyses). Specifically, participants in the control condition were less likely to cheat during the dice-rolling game when they scored 1 SD above the mean on childhood residential stability than when they scored 1 SD below it (t = -2.199, p = .028). Childhood residential stability had no significant impact on cheating behavior in the economic threat condition (t = .204, *ns*).

Model 10 (focal variables: current SES and adolescent social-network stability): The first step of the Model 10 regression analysis was statistically significant, $F(5, 447) = 4.431$, p = .002, adjusted R^2 = .032. Only two main effects were found to

predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .104, p = .028) and younger participants cheated more during the dice-rolling game than did older participants (β = -.147, p = .002). No additional main effects or interactions in any of the steps of this regression were significant.

Model 11 (focal variables: current SES and adolescent residential stability): The first step of the Model 11 regression analysis was statistically significant, $F(5, 449) = 3.597$, p = .003, adjusted R^2 = .028. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .104, p = .029) and younger participants cheated more during the dice-rolling game than did older participants (β = -.152, p = .001). No additional main effects or interactions in any of the steps of this regression were significant.

Model 12 (focal variables: current SES and social-network stability prior to age 18): The first step of the Model 12 regression analysis was statistically significant, $F(5, 443) = 4.368$, p = .002, adjusted R^2 = .031. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .105, p = .028) and younger participants cheated more during the dice-rolling game than did older participants (β = -.141, p = .003). No additional main effects or interactions in any of the steps of this regression were significant.

Model 13 (focal variables: current SES and residential stability prior to age 18): The first step of the Model 13 regression analysis was statistically significant, F(5,

449) = 4.026, p = .003, adjusted R^2 = .028. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .104, p = .029) and younger participants cheated more during the dice-rolling game than did older participants (β = -.152, p = .001). No additional main effects or interactions in any of the steps of this regression were significant.

Model 14 (focal variables: current SES and the percentage of residents moving into participants' zip code during or after the year 2010): The first step of the Model 14 regression analysis was statistically significant, F(5, 439) = 3.933, p = .002, adjusted R^2 = .032. Only two main effects were found to predict moral behavior in this step of the regression: gender and age. Specifically, men engaged in more cheating in the dice-rolling game than did women (β = .097, p = .042) and younger participants cheated more during the dice-rolling game than did older participants (β = -.151, p = .002). No additional main effects or interactions in any of the steps of this regression were significant.

Discussion: Study 1

The two most consistent findings of Study 1 were that men were more likely to cheat than women during the dice-rolling game, and that younger participants tended to cheat more than older participants. These main effects emerged across all 14 of the regression analyses conducted in Study 1. The consistency of these findings should not come as a surprise, given that the age, gender, and experimental condition predictor variables were the only three variables that remained constant across all 14 sets of analyses. Although these findings are not central to the key predictions of the current

research, they support the findings of previous researchers (e.g., Beadle et al., 2015; Eagly, 2009; Hine & Leman, 2014), who have found that age and gender strongly influence prosocial behavior.

The results of tests of Models 2 and 9 indicate that childhood residential stability tends to foster moral behavior (i.e., less cheating), at least when opportunities to behave morally occur in non-threatening situations (i.e., in the control condition). In both models, participants who had residentially stable childhoods were *less* likely to cheat during the dice-rolling game than participants who had less residentially stable childhoods. However, this difference was found only in the control condition. In the economic threat condition (where the effect was predicted to occur), there were no differences in the cheating behavior of participants who had residentially stable childhoods versus those who had less residentially stable childhoods, which is inconsistent with the hypothesized pattern of results. It is important to note that Model 9 was an exploratory analysis, so the results of this model should not be interpreted as supporting the central hypotheses of Study 1.

The results of tests of Models 2 and 7 both indicate that participants who had more residentially stable childhoods (Model 2) and those who lived in residentially stable zip codes (Model 7) were less likely to cheat, but only when they had *higher-SES* childhoods, rather than when they had lower-SES childhoods, which is inconsistent with Hypotheses 1b and 1g. This was true for both men and women in Model 2. Although Model 7 detected a trend in this direction for men, it was non-significant. Tests of Model 7 also detected a marginally significant trend in the *opposite* direction for women (i.e., lower-SES women who lived in more residentially stable zip codes were less likely to

cheat during the dice-rolling game than their higher-SES counterparts, consistent with Hypotheses 1g).

Broadly speaking, these findings run contrary to the expectation that lower-SES participants who have a history of residential stability would cheat less than other individuals. In addition, these findings fail to converge with those of researchers who have found that lower-SES individuals tend to be more prosocially oriented than higher-SES individuals (e.g., Piff et al., 2010; Piff, Stancato, Cote et al., 2012; Piff, Stancato, Martinez et al., 2012). However, the failure of these data to conform to the hypothesized pattern of results should not be viewed as an indication that SES and social network/residential stability are unimportant to the development of individuals' interpersonal orientations.

One glaring methodological shortcoming that may have prevented this study from detecting the expected pattern of results. Specifically, this study's cover story might have been transparent to many participants. When asked what they were thinking while playing the dice-rolling game, many participants stated that they were thinking that the game was designed to detect cheating. This might explain why so few people cheated on the dice-rolling game. Although the possible scores on the dice-rolling game could range from 0 (perfectly honest) to 5 (perfectly dishonest), the mean cheating score was only 0.38. In fact, the restricted range of this dependent variable was the reason that twice as many participants were recruited for Study 1 as were recruited for Studies 2 and 3 (see below). It may be that many participants who were suspicious of this study's cover story behaved in an apparently moral manner because they suspected that the scores they reported for the dice-rolling game would be used to identify immoral behavior, although

they failed to explicitly state this when probed. This might have been particularly true of participants who were afraid that their rating on the online crowdsourcing data collection service would be negatively impacted by behaving dishonestly. This rating is an important determinant of their reputation on the website.

Future researchers should consider developing more convincing behavioral measures of morality. Although the measure used in Study 1 worked well for Piff and his colleagues (2012), several participants in Study 1 expressed general suspicions about the game. A behavioral measure of morality might be more subtle if participants played a game with another person rather than a computer program. For example, a behavioral measure of morality could be constructed in the context of a game of poker. Participants could play several hands of poker with a confederate who consistently surrenders a stronger hand to the participant's weaker hand (e.g., a three-of-a-kind to the participants' two-pair, a flush to the participants' straight, etc.). A participant's morality could then be operationalized as the number of times s/he points out the "mistakes" made by the confederate.

Alternatively, an iterated prisoner's dilemma game might be a good substitute for the dice-rolling game used in this study. Although the iterated prisoner's dilemma game is intended to detect cooperation in dyads and, thus, only indirectly gauges morality, it might introduce fewer demand characteristics than the dice-rolling game used to gauge morality in Study 1.

Study 2: SES, Residential Stability, and Altruistic Behavior

Study 2 was a computer-based lab study. The measures and primes included in this study were identical to the measures and primes used in Study 1. This study diverged

from Study 1 only in terms of the prosocial behavior of interest: Whereas the dependent variable used in Study 1 was intended to gauge participants' moral behavior, the dependent variable used in Study 2 was intended to gauge participants' altruistic behavior.

Participants first completed the measures described in the introduction to Study 1. They then read a fictitious news article intended to prime economic threat or they read a control article. Immediately after participants read the article to which they were randomly assigned, they played a dictator game. In this game, participants were awarded 10 credits toward a drawing for a $50 prize. They were told that another participant, who was not awarded any credits toward the drawing, was completing the study in another lab space, and that they (the participants) could donate any number of their credits toward the drawing to this, actually fictitious, participant. Altruism was operationalized as the number of credits participants allocated to their partner.

Goals and Hypotheses

The central goal of Study 2 was to determine whether and how economic threat, residential stability, and SES interacted to impact altruistic behavior. In this study, altruism was operationalized as the number of entries toward a raffle for a $50 prize participants allocated to another (fictitious) participant in a dictator game. Dictator games are typically played by dyads. In these games, one participant (the dictator) is given a reward and is asked to allocate whatever percentage of this reward s/he would like to another participant (the receiver). The other participant has absolutely no sway over these allocations. Thus, this game is an ideal behavioral measure of altruism on the part of the dictator.

Primary hypotheses. The primary hypotheses of Study 2 were identical to those of Study 1, with the exception of the variable used to operationalize prosocial behavior. As in Study 1, two regressions were carried out to test whether and how individuals' childhood social-network stability and/or their childhood residential stability interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 1 and 2, respectively). The expected patterns of results are as follows:

> ***Hypothesis 2a (Model 1):*** Participants who were reared in lower-SES families, and who had more stable social networks during their childhood will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks during their childhoods.
>
> ***Hypothesis 2b (Model 2):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence during their childhood will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence during their childhoods.

Furthermore, as in Study 1, two regressions were carried out to test whether and how individuals' adolescent social-network stability and/or their adolescent residential stability interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 3 and 4, respectively). The expected patterns of results are as follows:

> ***Hypothesis 2c (Model 3):*** Participants who were reared in lower-SES families, and who had more stable social networks during their adolescence will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks during their adolescence.
>
> ***Hypothesis 2d (Model 4):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence during their adolescence will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence during their adolescence.

Again, as in Study 1, two regressions were carried out to test whether and how individuals' adolescent social-network stability and/or their adolescent residential

stability prior to the age of 18 interacted with their childhood SES to affect their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 5 and 6, respectively). The expected patterns of results are as follows:

> ***Hypothesis 2e (Model 5):*** Participants who were reared in lower-SES families, and who had more stable social networks prior to the age of 18 will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks prior to the age of 18.
>
> ***Hypothesis 2f (Model 6):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence prior to the age of 18 will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who were reared in lower-SES families and experienced more changes in residence prior to the age of 18.

Finally, as in Study 1, a single regression was carried out to test whether and how the stability of the zip codes in which individuals reside (operationalized as the percentage of residents who recently moved into the zip code) interacted with their

childhood SES to impact their inclination toward prosocial behavior in adulthood (this regression will henceforth be referred to as Model 7). The expected pattern of results is as follows:

> ***Hypothesis 2g (Model 7):*** Participants who were reared in lower-SES families, and who live in more residentially stable zip codes will respond to economic threat by behaving more altruistically (i.e., allocate a greater number of entries toward the $50 drawing to their partner). Economic threat is not expected to influence the altruistic behavior of participants who were reared in higher-SES families, or those who live in less residentially stable zip codes.

Exploratory Analyses. As in Study 1, seven additional exploratory analyses that correspond to the seven regressions described above were also conducted to determine the influence that participants' *current* (rather than childhood) SES had on their prosocial behavior. These regressions will henceforth be referred to as Models 8-14. Again, although no *a priori* hypotheses were generated, the results are reported below.

Method

Participants. One hundred ninety-three participants (63 men, 130 women) undergraduate psychology students were recruited to participate in Study 2. All of the participants who were recruited for this study completed the study and provided useful data. Participants' ages ranged from 16-43 years (M = 20.12, SD = 3.093). Participants were offered extra credit in undergraduate psychology courses for their participation in the study.

Materials and Procedure. Participants responded to an advertisement for a study on personality, cognitive load, and decision-making. The study description read as follows:

> "Research on decision making has shed light on several factors that influence the ways in which we make choices. One such factor is the extent to which individuals are distracted by extraneous information. In this study, you will be asked to provide us with some information about yourself. You will also read a short news article and make a decision with another participant, whom you will not meet."

Upon their arrival to the study, participants were greeted by the experimenter and asked to take a seat in front of a desktop computer and closed the lab door behind themselves. In order to provide a sense of randomness in the role that they would have in the study, participants were asked to choose one of two unmarked envelopes. Once the participant had chosen an envelope, s/he was asked to remove a piece of paper contained in the envelope and show it to the experimenter. In both envelopes the word "allocator" was printed on the piece of paper. The experimenter then informed participants that they would be playing the part of the allocator in the study, and then opened a file named "allocator" on the desktop of the computer at which participants were seated. A second file named "receiver" was conspicuously next to the allocator file. Once the experimenter opened the "allocator" file, s/he clicked on a hyperlink contained in the file, which opened the study's online survey. Participants were then asked to wait for a second participant to arrive to the study. After roughly a minute, a confederate who was concealed in a hallway adjacent to the lab space in which the study took place knocked

on the closed lab door. At this point, the experimenter briefly left the room to ostensibly situate this second fictitious participant. After roughly another minute, the experimenter returned to the lab space in which the participant was seated.

Participants were then taught how to play the dictator game. The dictator game is played in pairs. However, it can be played by only one individual (as it was in Study 2) if the participant believes that he or she is playing the game with another individual. In the game, one participant (the dictator) is given a reward and is asked to allocate whatever percentage of this reward s/he would like to another participant (the receiver). The other participant has absolutely no sway over these allocations. Thus, this game is an ideal behavioral measure of altruism on the part of the dictator.

After it was clear that participants understood how the dictator game is played, they were asked to complete the online survey. The measures used to assess childhood SES, current SES[9], childhood social-network stability, childhood residential stability, adolescent social-network stability, adolescent residential stability, social-network stability prior to adulthood, residential stability prior to adulthood, and zip code residential stability were identical to the procedures used in Study 1. Reliability analyses showed that the scales used to assess childhood SES (Cronbach's Alpha = .855), current SES (Cronbach's Alpha = .877), childhood social-network stability (Cronbach's Alpha = .848), and adolescent social-network stability (Cronbach's Alpha = .793) were reliable. Table 9 provides the descriptive statistics of all continuous predictor variables and the

[9] Supplemental analyses revealed that 7.3% of participants reported an annual household income of less $25,000 during their childhoods, and 40.9% of participants reported a current annual income of less than $25,000.

dependent variable. Table 10 depicts the correlations among all the predictor variables and the dependent variable.

After participants completed the survey, they were randomly assigned to read one of the two articles read by participants in Study 1 (see Appendix A and B). They were told to read the article carefully because they would be asked to answer questions about details of it at the end of the study.

Immediately after reading the article, participants were asked how many of 10 credits toward a drawing for a $50 prize they would like to allocate to the participant ostensibly sitting in the other room. It was made clear that the number of entries toward the $50 drawing awarded to the fictitious participant was entirely dependent on the number of entries allocated by the participant him/herself. The number of entries participants allocated to the fictitious participant was the dependent variable.

Results: Study 2 Test of Primary Hypotheses

The data analysis strategy for Study 2 was identical to that used in Study 1. Preliminary regression analyses revealed that none of the steps of the regressions carried out for Models 4, 8, 10, 11, 12, or 14 were statistically significant (including the first step, which assessed main effects of the predictor variables). Accordingly, the results of these models are not reported below.

Model 1 (focal variables: childhood SES and childhood social-network stability): Model 1 tested Hypothesis 2a. The third step of the Model 1 regression analysis was statistically significant, ($F(15, 117) = 1.649$, $p = .065$, adjusted $R^2 = .048$), and it provided a better fit to the data than the first ($F(5, 187) = 1.511$, $p = .188$, adjusted $R^2 = .013$) and second ($F(12, 180) = 1.643$, $p = .083$, adjusted $R^2 = .039$) steps. The third

step detected significant main effects of age (β = .176, p = .031) and childhood SES (β = -.89, p = .008).

The main effect of childhood SES was qualified by a significant childhood SES x gender two-way interaction (β = .851, p = .009; see Figure 7). Specifically, men who were reared in higher-SES homes behaved more altruistically than men reared in lower-SES homes (t = 2.251, p = .026). Childhood SES had no impact the altruistic behavior of women (t = -.161, *ns*). These findings suggest that individuals, or at least males, with higher-status backgrounds behave in a more prosocial manner than do those with lower-status backgrounds, which contradicts the hypothesized pattern of results.

However, the third step in this regression also detected a significant condition x childhood SES x childhood social-network stability interaction (β = .186, p = .04; see Figure 8). Simple slope analyses revealed that, although participants in every group based on experimental condition and childhood network stability were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes, this difference was not significant among participants who were in the control condition and who had less stability in their social networks during childhood (see Table 11 for a more detailed account of these analyses, and Table 12 for information about the simple slope investigations conducted for this analysis**)**. This finding conforms to the assertion that individuals from lower-status backgrounds behave more prosocially than their higher-SES counterparts. However, it fails to provide strong support for Hypothesis 2a.

Model 2 (focal variables: childhood SES and childhood residential stability):

Model 2 tested Hypothesis 2b.The third step of the Model 2 regression analysis (F(15, 177) = 2.381, p = .004, adjusted R^2 = .097) provided better predictive power than

the first ($F(5, 187) = 3.05$, $p = .011$, adjusted $R^2 = .051$) and second steps ($F(12, 180) = 2.436$, $p = .006$, adjusted $R^2 = .082$) of the regression. Although the third step detected a significant main effect of childhood SES ($\beta = -.932$, $p = .004$), as well as significant two-way interactions between gender x childhood SES ($\beta = .967$, $p = .002$), gender x childhood residential stability ($\beta = .681$, $p = .053$), and childhood SES x childhood residential stability ($\beta = -1.342$, $p = .021$), all of these main effects and interactions were qualified by a significant gender x childhood SES x childhood residential stability three-way interaction ($\beta = 1.4$, $p = .016$).

Plotting this three-way interaction by creating groups that were +/- 1 SD from the mean of both continuous independent variables was impractical given the strong positive skew in the childhood residential stability variable[10]. Thus, this interaction was plotted at +/- 1 SD (see Figure 9a), +/- .75 SD (see Figure 9b), and +/-.5 SD (see Figure 9c) from the mean of childhood residential stability. The pattern of results was consistent across all three simple slope analyses (see Table 13 for a more detailed account of these analyses, and Table 14 for information about the simple slopes conducted for this analysis**)**.

Although all participants were more likely to behave more altruistically when they were reared in lower-SES homes than in higher-SES homes, this difference was significant only among participants in the control and threat conditions who had more residentially stable childhoods. This finding provides partial support to Hypothesis 2b: At least among participants who had residentially stable childhoods, those who were reared in lower-SES homes behaved more altruistically than those who were reared in higher-SES homes.

[10] Using this method resulted in negative predicted values of the dependent variable, which was bound at 0.

Model 3 (focal variables: childhood SES and adolescent social-network stability): Model 3 tested Hypothesis 2c.The third step of the Model 3 regression analyses accounted for more variance in participants' altruistic behavior ($F(15, 177) = 1.766$, $p = .043$, adjusted $R^2 = .056$) than the first ($F(5, 187) = 1.739$, $p = .128$, adjusted $R^2 = .019$) and second ($F(12, 180) = 1.713$, $p = .067$, adjusted $R^2 = .043$) steps. This step detected a significant main effect of childhood SES ($\beta = -.818$, $p = .011$), and a significant gender x childhood SES interaction ($\beta = .797$, $p = .01$). However, both were qualified by a significant condition x childhood SES x adolescent social-network stability interaction ($\beta = .185$, $p = .024$; see Figure 10, and Table 15 for a more detailed account of these analyses).

Simple slope analyses revealed that all participants were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes. However, this difference was only marginally significant among participants who had more stable social networks during adolescence. Specifically, among participants who scored 1 SD above the mean of adolescent social-network stability, those in the control condition were marginally less likely to behave altruistically when they also scored 1 SD above the mean of childhood SES ($t = -1.649$, $p = .1$). A similar trend was found for those in the threat condition ($t = -1.867$, $p = .063$). Although participants who scored 1 SD below the mean on adolescent social-network stability were less likely to behave altruistically when they were reared in a higher-SES home, these differences were not significant for these participants in either the control ($t = -.83$, *ns*) or threat conditions ($t = -1.095$, $p = .275$). These findings provide partial support for Hypothesis 2c: Participants who had lower-status childhoods and who had high residential stability during their

adolescence behaved more altruistically than their higher-SES counterparts (albeit only marginally so), regardless of the experimental condition to which they were assigned.

Model 5 (focal variables: childhood SES and social-network stability prior to age 18): Model 5 tested Hypothesis 2e. The first step of the Model 5 regression analysis was not statistically significant, $F(5, 187) = 1.707$, $p = .135$, adjusted $R^2 = .018$. The second step of the regression was marginally significant ($F(12, 180) = 1.779$, $p = .055$, adjusted $R^2 = .046$), and provided a better fit to the data than the third step of the regression ($F(15, 177) = 1.61$, $p = .075$, adjusted $R^2 = .045$).

The second step revealed a significant main effect of age ($\beta = .189$, $p = .028$). It also detected a significant main effect of childhood SES ($\beta = -.867$, $p = .009$). However, this main effect was qualified by a significant gender x childhood SES two-way interaction ($\beta = .829$, $p = .009$; see Figure 11, and Table 16). Simple slope analyses revealed that both men and women were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes. However, this difference was more pronounced in women ($t = -2.649$, $p = .009$) than it was in men ($t = -2.433$, $p = .016$). These findings provide some support for the assertion that participants who had lower-status childhoods behave more altruistically than their higher-status counterparts. However, beyond this, these findings provide little support for Hypothesis 2e.

Model 6 (focal variables: childhood SES and residential stability prior to age 18): Model 6 tested Hypothesis 2f. Compared to the first ($F(5, 187) = 2.369$, $p = .075$, adjusted $R^2 = .034$) and third ($F(15, 177) = 1.828$, $p = .034$, adjusted $R^2 = .061$) steps of the Model 6 regression analysis, the second step provided the best fit to the data, $F(12,$

180) = 2.157, p = .016, adjusted R^2 = .067. Furthermore, the third step did not detect any main effects or interactions that were not found in the second step of this regression.

The second step detected a significant main effect of childhood SES (β = -.857, p = .007). However, this main effect was qualified by a significant gender x childhood SES two-way interaction (β = .913, p = .003; see Figure 12, and Table 17 for a more detailed account of these analyses). Simple slope analyses revealed that both men and women were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes. However, again, this difference was more pronounced among women (t = -2.736, p = .007) than it was among men (t = -2.159, p = .032). As in Model 5, these findings provide some support for the assertion that participants who had lower-status childhoods behave more altruistically than their higher-status counterparts. However, beyond this, these findings provide little support to Hypothesis 2f.

Model 7 (focal variables: childhood SES and the percentage of residents moving into participants' zip code during or after the year 2010): Model 7 tested Hypothesis 2g. The first step of the Model 7 regression analyses was not statistically significant (F(5, 145) = .856, *ns*). Even though the second (F(12, 138) = 1.655, p = .083, adjusted R^2 = .05) and third (F(15, 135) = 1.544, p = .098, adjusted R^2 = .052) steps of this regression were only marginally significant, the second step provided a better fit to the data than the third step. Furthermore, the third step did not detect any main effects or interactions that were not found in the second step.

The second step detected a significant a main effect of childhood SES (β = -.852, p = .025). However, this main effect was qualified by significant gender x childhood SES (β = .728, p = .044) and age x childhood SES (β = .208, p = .031) two-way interactions

(see Figures 13 and 14, respectively; see Table 18 for a more detailed account of these analyses). Simple slope analyses revealed that: (a) both men and women were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes, but this difference was more pronounced among women (t = -2.271, p = .025) than men (t = -2.292, p = .023), and (b) both older and younger participants were less likely to behave altruistically when they were reared in higher-SES homes than in lower-SES homes, but this difference was more pronounced among younger (t = -2.569, p = .011) than older participants (t = -1.832, p = .069). As in Models 5 and 6, these findings provide some support for the assertion that participants who had lower-status childhoods behave more altruistically than their higher-status counterparts. However, beyond this, these findings provide little support to Hypothesis 2g.

Results: Study 2 Exploratory Analyses

Model 9 (focal variables: current SES and childhood residential stability): The first step of the Model 9 regression analysis provided a better fit to the data (F(5, 187) = 3.058, p = .011, adjusted R^2 = .051) than the second (F(12, 180) = 1.771, p = .056, adjusted R^2 = .046) and third (F(15, 177) = 1.673, p = .06, adjusted R^2 = .05) steps. Furthermore, none of the main effects or interactions in the second and third steps were statistically significant. However, the first step detected a significant main effect of childhood residential stability, such that participants who had more residentially stable childhoods behaved more altruistically than participants who had less residentially stable childhoods (β = .228, p = .002). Although this finding provides some support for the notion that childhood residential stability results in a more prosocial interpersonal orientation in adulthood, it provides little information beyond this.

Model 13 (focal variables: current SES and residential stability prior to age 18): Only the first step of the Model 13 regression analysis was statistically significant, $F(5, 187) = 2.322$, $p = .045$, adjusted $R^2 = .033$. This step detected a significant main effect of residential stability prior to the age of 18, such that participants who had more residential stability prior to their adulthood behaved more altruistically than those who lacked residential stability prior to adulthood ($\beta = .183$, $p = .014$). As in Model 9, although this finding provides some support for the notion that childhood residential stability results in a more prosocial interpersonal orientation in adulthood, it provides little information beyond this.

Discussion: Study 2

Similar to Study 1, one of the more consistent findings of Study 2 was that older participants tended to behave more prosocially than younger participants. However, this effect was not found across all 14 models, as it was in Study 1. Rather, this effect was found only in Models 1 and 5, and these two models were nearly identical to one another. Whereas Model 1 included childhood social-network stability as a focal stability variable, Model 5 included the pre-adult social-network stability variable, which was created by aggregating the childhood and adolescent social-network stability variables. These variables were highly correlated with one another ($r = .80$).

The exploratory analyses conducted for Study 2 provided some support to the notion that residential stability during childhood (Model 9), or at least prior to adulthood (Model 13), tends to foster more prosocial (altruistic) behavior. In Study 2, participants who had a history of greater residential stability behaved more altruistically than those who experienced less residential stability throughout their lives. However, these two

models were nearly identical to one another. Whereas Model 9 included childhood social-network stability as a focal stability variable, Model 13 included the pre-adult social-network stability variable, which was created by aggregating the childhood and adolescent social-network stability variables. These variables were highly correlated with one another (r = .80).

Finally, with some minor qualifications, Study 2 supports the findings of prior researchers (e.g., Piff et al., 2012) by suggesting that higher-status participants behave less altruistically than lower-status participants. This effect was found in nearly all of the models that tested the primary hypotheses of this study (Models 1-7). There was only one instance in which higher-SES participants behaved more altruistically than lower-SES participants (in Model 1).

Although these findings provide preliminary support for the notion that social-network stability during childhood, or at least prior to age 18, impacts the interpersonal orientation one adopts later in life, the findings discussed above provide little support for the hypothesis that this stability should moderate the tendency of lower-SES individuals to behave more prosocially than their higher-SES counterparts. It may be that the expected pattern of results failed to emerge due to the study's design.

The goal of using a confederate in Study 2 was to convince participants that they were participating in the study with another student. Although the use of a confederate seemed to lead most participants to believe they were interacting with another student (indeed, no participant expressed suspicions about the role the confederate played in the study after the nature of the study was revealed to them during debriefing), steps were taken to ensure that participants never saw or heard the confederate. This may have

resulted in a sense of psychological distance between participants and their ostensible partners, which may have hindered the study's ability to detect the expected pattern of results. Specifically, the lack of contact between participants and their ostensible partners may have led to a failure of more dispositionally prosocial participants to form a psychological connection with the confederate, limiting the extent to which these participants behaved prosocially toward their partners.

Future researchers could improve on the methodology used in this study by fostering greater psychological connection between participants and confederates. The simplest way this could be achieved is by designing the study such that the participant completes it in the same room in which the confederate "completes the study." However, this strategy might also introduce confounds. For example, future researchers should carefully consider whether the confederate should be the same sex as the participant, a different sex, or a counterbalanced combination of the two. If researchers run a study using mixed-sex confederate-participant dyads, they should assess the degree to which each participant finds the confederate attractive, which could have a large impact on the results. For example, participants may behave more altruistically toward comparatively attractive confederates than they do for less attractive confederates.

Study 3: SES, Residential Stability, and Altruistic Punishment

Like Study 2, Study 3 was a computer-based lab study. The measures and primes were identical to those used in Studies 1 and 2. Study 3 diverged from Studies 1 and 2 only in terms of the prosocial behavior of interest: Whereas the dependent variable used in Study 1 was intended to gauge participants' moral behavior and the dependent variable

used in Study 2 was intended to gauge participants' altruistic behavior, the dependent variable in Study 3 was intended to gauge participants' degree of altruistic punishment.

Participants initially completed the measures described in the introduction to Study 1. They then read a fictitious news article intended to prime economic threat or they read a control article. Immediately after participants read the article to which they were randomly assigned, they played a third-party dictator game. In this game, participants were awarded 10 credits toward a drawing for a $50 prize. They were told that two other participants had also played a dictator game (see the description in Study 2) one week prior to their own participation. It was further explained that the participant who played the part of the "dictator" in this game behaved selfishly toward the second participant who played the game. Participants were then given the option of punishing the behavior of the ostensible dictator by sacrificing their own credits toward the $50 drawing in order to revoke some of the credits retained by the dictator. Altruistic punishment was operationalized as the number of credits toward the drawing participants sacrificed to punish the apparently selfish behavior of the fictitious dictator.

Goals and Hypotheses

The central goal of Study 3 was to determine whether and how economic threat, residential stability, and SES interacted to impact altruistic punishment. In this study, altruistic punishment was operationalized as the number of entries toward a raffle for a $50 prize participants revoked from an apparently selfish third-party dictator who played a prior Dictator Game.

Primary hypotheses. The primary hypotheses of Study 3 were identical to those of Studies 1 and 2, with the exception of the variable used to operationalize prosocial

behavior. As in Studies 1 and 2, two regressions were carried out to test whether and how individuals' childhood social-network stability and/or their childhood residential stability interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 1 and 2, respectively). The expected patterns of results are as follows:

> ***Hypothesis 3a (Model 1):*** Participants who were reared in lower-SES families, and who had more stable social networks during their childhood, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES families, or those who were reared in lower-SES families and had unstable social networks during their childhoods.
>
> ***Hypothesis 3b (Model 2):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence during their childhood, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES families, or among those who were reared in lower-SES families and experienced more changes in residence during their childhoods.

Furthermore, as in Studies 1 and 2, two regressions were carried out to test whether and how individuals' adolescent social-network stability and/or their adolescent residential stability interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 3 and 4, respectively). The expected patterns of results are as follows:

> ***Hypothesis 3c (Model 3):*** Participants who were reared in lower-SES families, and who had more stable social networks during their adolescence, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES families, or among those who were reared in lower-SES families and had unstable social networks during their adolescence.
>
> ***Hypothesis 3d (Model 4):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence during their adolescence, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES families, or among those who were reared in lower-SES families and experienced more changes in residence during their adolescence.

Again, as in Studies 1 and 2, two regressions were carried out to test whether and how individuals' adolescent social-network stability and/or their adolescent residential stability prior to the age of 18 interacted with their childhood SES to impact their inclination toward prosocial behavior in adulthood (these regressions will henceforth be referred to as Models 5 and 6, respectively). The expected patterns of results are as follows:

> ***Hypothesis 3e (Model 5):*** Participants who were reared in lower-SES families, and who had more stable social networks prior to the age of 18, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES families, or among those who were reared in lower-SES families and had unstable social networks prior to the age of 18.
>
> ***Hypothesis 3f (Model 6):*** Participants who were reared in lower-SES families, and who experienced comparatively few changes in residence prior to the age of 18, will respond to economic threat by engaging in more altruistic punishment (i.e., sacrifice a greater number of their own credits toward the $50 drawing to punish the selfishness of the fictitious dictator). Economic threat is not expected to influence the rates of altruistic punishment among participants who were reared in higher-SES

families, or among those who were reared in lower-SES families and experienced more changes in residence prior to the age of 18.

Unlike Studies 1 and 2, Study 3 did not investigate how zip code residential stability interacted with childhood SES to impact participants' inclination toward altruistic punishment. This was due to a lack of sufficient data for the zip code stability variable in Study 3.

Exploratory Analyses. As in Studies 1 and 2, additional exploratory analyses that correspond to the six regressions described above were also conducted to determine the influence that participants' *current* (rather than childhood) SES had on their prosocial behavior. These regressions will henceforth be referred to as Models 7-12. Again, although no a priori hypotheses were generated, the results are reported below.

Method

Participants. One hundred and sixty-nine participants were recruited to participate in Study 3. Of these, 10 participants either failed to complete the study or reported impossible values for the dependent variable. Thus, 159 (59 men, 100 women) undergraduate psychology students were recruited to participate in Study 3. Participants' ages ranged from 16-48 years (M = 19.76, SD = 3.578). Participants were offered extra credit in undergraduate psychology courses for their participation in the study.

Materials and Procedure. The cover story and study description for Study 3 was identical to the cover story and study description used in Study 2. However, participants were informed that they would be participating with two other students, rather than one.

Upon arriving for the study, participants were greeted by the experimenter and asked to take a seat in front of a desktop computer. They were informed that they would

be playing a game with two students who completed the study one week earlier. In reality, no such individuals existed. In order to convince participants of the existence of these two fictitious participants, they were seated at a computer that had three files conspicuously placed on the computer's desktop. One was named "allocator," one was named "receiver," and one was named "observer." The participants were told that the allocator and receiver had already completed the study. Ostensibly, the participants' job was to observe the outcome of a game these two participants played and then respond to the outcome.

At this point, participants were taught how to play the third-party dictator game (Fehr & Fischbacher, 2004). The third-party dictator game is played by three participants. It is similar to the dictator game described above in that a dictator is given a reward and is asked to allocate whatever percentage of this reward s/he would like to a receiver. The receiver has absolutely no sway over these allocations. However, in this version of the game, there is a third player—an "observer"—who is also given a reward at the start of the study. This player can spend whatever portion of this reward s/he chooses to punish allocations made by the dictator that the observer views as unfair. In this case, participants were told that for every credit toward the raffle they revoked from the allocator, they would sacrifice a credit of their own.

After participants learned to play the game, they were asked to complete a survey. The measures used to assess childhood SES, current SES[11], childhood social-network stability, childhood residential stability, adolescent social-network stability, adolescent

[11] Supplemental analyses revealed that 8.2% of participants reported an annual household income of less $25,000 during their childhoods, and 33.3% of participants reported a current annual income of less than $25,000.

residential stability, social-network stability prior to adulthood, residential stability prior to adulthood, and zip code residential stability were identical to the procedures used in Studies 1 and 2. Reliability analyses showed that the scales used to assess childhood SES (Cronbach's Alpha = .786), current SES (Cronbach's Alpha = .878), childhood social-network stability (Cronbach's Alpha = .848), and adolescent social-network stability (Cronbach's Alpha = .808) were reliable. Table 19 provides additional information about the descriptive statistics of all continuous predictor variables and the dependent variable. Table 20 shows the correlations among all the predictor variables and the dependent variable.

Once participants completed the survey, they were asked to read either an article designed to prime economic threat or a neutral control article (see Appendix A and B, respectively). They were told to read the article carefully, ostensibly because they would be asked questions about the details of the article at the end of the study. Immediately after reading the article, participants were prompted by the computer to ask the researcher about the outcome of the game played by the allocator and receiver. The experimenter consulted a thick pile of paper stapled together and opened to the third page. A three-column table was printed on this piece of paper. One column was titled "allocator," one was titled "receiver," and the third was titled "outcome." The cells in the "allocator" and "receiver" columns ostensibly contained the participant identification numbers of the various allocators and receivers who had already played the game. The cells in the "outcome" column ostensibly showed how many drawings toward the $50 reward were given to the receiver by the allocator. These cells were filled with random integers between 0 and 10. The first half of the rows visible to the participant were struck-through

by hand to prevent participants from becoming suspicious about the deceptive nature of the study. The first row that was not struck-through contained the value "1" in the outcome column. The participants were then reminded that, as the observer in this game, they would be awarded 10 credits toward a drawing for a $50 prize, regardless of the outcome of the game that the allocator and the receiver played. All participants were told that the dictator was also awarded 10 credits toward this drawing, and that the receiver was given 1 credit toward the drawing by the dictator. They were then asked whether they would like to punish the dictator for this allocation and how severely they would like to punish the dictator. Participants were then allowed to punish the dictator in one-credit increments. For every credit the participant deducted from the dictator's final award, the participant was told he or she would lose a credit from their final reward. These decisions served as the dependent variable.

Results: Study 3 Tests of Primary Hypotheses

The data analysis strategy for Study 3 was identical to that used in Studies 1 and 2. Regression analyses revealed that none of the steps of the regressions conducted for Models 2, 3, 4, 5, 6, 8, 9, 10, 11, or 12 were statistically significant. Thus, the results of these models are not reported below. Furthermore, zip code data were only available for 81 of the 155 participants in Study 3. Thus, regressions were not conducted for models that included this variable.

Model 1 (focal variables: childhood SES and childhood social-network stability): Model 1 tested Hypothesis 3a. Neither the first ($F(5, 152) = 1.867$, *ns*) nor the third ($F(15, 142) = 1.431$, *ns*) steps of the Model 1 regression analysis were statistically significant. However, the second step was marginally significant, $F(12, 145) = 1.642$, $p =$

.086, adjusted R^2 = .047. It detected a significant main effects of age (β = -.257, p = .026), and of childhood social-network stability (β = -.324, p = .03). However, these main effects were both qualified by a significant age x childhood social-network stability interaction (β = .262, p = .048; see Figure 15).

Simple slope analysis of this two-way interaction revealed that childhood social-network stability had little impact on older participants' likelihood of engaging in altruistic punishment (t = -.495, *ns*), but that younger participants were more likely to engage in altruistic punishment when they scored 1 SD below the mean on childhood social-network stability than when they scored 1 SD above the mean on childhood social-network stability (t = -3.202, p = .002). This finding contradicts the notion that childhood social-network stability is associated with a more prosocial interpersonal orientation, running contrary to Hypothesis 3a.

The second step also detected a significant condition x childhood social-network stability two-way interaction (β = .241, p = .05; see Figure 16, and Table 21 for a more detailed account of these analyses). Simple slope analyses revealed that childhood social-network stability had no impact on the likelihood that participants in the economic threat condition engaged in altruistic punishment (t = .045, *ns*), but that participants in the control condition were more likely to engage in altruistic punishment when they scored 1 SD below the mean on childhood social-network stability than when they scored 1 SD above the mean (t = -2.185, p = .03). Again, this finding contradicts the notion that childhood social-network stability is associated with a more prosocial interpersonal orientation, running contrary to Hypothesis 3a.

Results: Study 3 Exploratory Analyses

Model 7 (focal variables: current SES and childhood social-network stability): Although the first ($F(5, 152) = 1.954$, $p = .089$, adjusted $R^2 = .029$) and second ($F(12, 145) = 1.641$, $p = .086$, adjusted $R^2 = .047$) steps of the Model 8 regression analysis were both marginally significant, the second step provided a better fit to the data. The third step was not statistically significant, $F(15, 142) = 1.527$, *ns* (see Table 22 for a more detailed account of these analyses).

The second step detected significant main effects of age ($\beta = -.234$, $p = .039$) and childhood social-network stability ($\beta = -.273$, $p = .044$). This main effect was qualified, to some extent, by a marginally significant condition x childhood social-network stability two-way interaction ($\beta = .204$, $p = .081$; see Figure 17).

Simple slope analyses revealed that childhood social-network stability had no impact on the likelihood that participants in the threat condition engaged in altruistic punishment ($t = .054$, *ns*), but those in the control condition were more likely to engage in altruistic punishment when they scored 1 SD below the mean on childhood social-network stability than when they scored 1 SD above the mean ($t = -2.022$, $p = .045$). This finding mirrors the results of Model 1, contradicting the notion that childhood social-network stability is associated with a more prosocial interpersonal orientation.

Discussion: Study 3

The primary finding of Study 3 was that the likelihood of participants who had high childhood social-network stability engaging in altruistic punishment was less sensitive to age and condition than it was for participants who had less childhood social-network stability. Specifically, among participants who had less childhood social-network stability, those who were older were more likely to engage in altruistic

punishment than those who were younger, and those who were in the control condition were more likely to engage in altruistic punishment than those in the economic threat condition.

Study 3 failed to support any of the hypotheses outlined in Models 1-6. Furthermore, little additional information was gleaned from the exploratory analyses (Models 7-12). The failure of Study 3 to detect any meaningful results may have stemmed from the fact that participants had no contact whatsoever with the dyads with which they were ostensibly paired. As may have been the case in Study 2, this might have resulted in a sense of psychological distance between participants and the two (fictitious) students whose game participants were presumably evaluating. In future studies, it may be necessary to increase the connection participants feel toward other group members about whom they are making decisions. Although no participant expressed doubts about the existence of the dyad whose game they evaluated once the nature of the study was revealed during debriefing, they might have felt so far removed from the outcome of the game that even participants who were predisposed to engage in altruistic punishment might have felt little obligation to punish the selfish dictator.

Future researchers should consider designing their studies to put participants into more direct contact with the individuals they punish and defend. This could be achieved by introducing confederates into the third-party dictator game. It may be that participants who are predisposed to prosocial behavior might be more inclined to sympathize for players who are treated inequitably and, thus, be more inclined to defend them when they are in the same room as these the individuals.

Alternatively, future researchers might want to use a different behavioral measure of the dependent variable. One possible economic game that serves many of the same purposes as the third-party dictator game, and that fosters more interaction among players, might be a public goods game that provides players the option to punish defectors (see Fehr & Gachter, 2000). In order for this to be a viable behavioral measure of altruistic punishment, however, participants may need to play multiple rounds of this game with at least one confederate cooperating and at least one confederate defecting in every round of the game[12]. The study's design should also ensure that the cooperating confederate never punishes the defecting confederate, making the participant the only possible source of retaliation against the defector. It may be that individuals who have adopted a prosocial interpersonal orientation will take it upon themselves to punish the defecting confederate in these games, whereas those who are less inclined to behave prosocially may conform to the non-punitive norm espoused by the cooperating confederate.

General Discussion

It was anticipated that the findings of Studies 1-3 would provide support for the notion that there are two ways faster life history strategists might interact with members of their social networks: (1) A *dependent* strategy among fast life history strategists who live in residentially stable environments that provides immediate, on-demand resources from members of narrower and deeper social networks, and (2) an *opportunistic* strategy among fast life history strategists who live in residentially unstable environments that

[12] Research on these games suggests that they often result in a state or almost universal cooperation rather quickly (Fehr & Gachter, 2000). The use of confederates in this game would ensure that at least one player defected throughout the course of the game.

allows them to maximize the resources they can extract from their environments in the absence of narrower and deeper social ties. These opportunistic fast life history strategists were expected to respond to experimentally induced economic threat in each study in ways consistent with the responses of slower life history strategists (i.e., higher-SES participants) who live in either residentially stable or unstable environments.

The results of these studies provided very limited support for the overarching hypothesis that unites these three studies: That individuals who were reared by lower-SES families, and who have more social network/residential stability, would be more inclined to behave in a more prosocial manner than would higher-SES individuals or lower-SES individuals who have less social network/residential stability, especially under conditions of economic threat. Although economic threat, SES, and social network/residential stability did predict prosocial behavior, these variables predicted different types of prosocial behavior (morality, altruism, and altruistic punishment) in inconsistent ways, sometimes in ways that ran contrary to the primary hypotheses. In addition, none of the studies documented a significant three-way interaction involving all of the focal variables (i.e., the experimental condition variable, either of the two SES variables, and any of the seven stability variables).

Certain findings did lend partial support to some of the primary hypotheses. For example, tests of Model 2 of Study 1 revealed that greater residential stability was associated with less cheating during the dice-rolling game, but only in the control condition. Model 9 of Study 1, which was exploratory in nature, revealed a similar pattern of results. Moreover, although Models 9 and 13 of Study 2 were only exploratory in nature, both documented main effects of greater residential stability, such that those

who had more residentially stable backgrounds behaved more altruistically, suggesting that residential stability is related to prosocial behavior, at least in non-threatening (control) situations. Although these findings converge with prior research, which also indicates that stability in social networks results in a more prosocial interpersonal orientation (e.g., Oishi et al., 2007), they provide rather weak, partial support for the overarching hypothesis that united these three studies.

Furthermore, the findings of Model 7 of Study 1 indicated that lower-SES women who lived in residentially stable zip codes behaved more morally (cheated less) than their higher-SES counterparts did. Of all the findings in all three studies, this one most closely adhered to the hypothesized pattern of results. However, the simple slope analyses revealed a pattern of results that contradicted Hypothesis 1g of Study 1 for men and for women who lived in less residentially stable zip codes.

Although the models and results described above provide some support for the notion that social stability, especially during childhood, might foster more prosocial behavior later in life, this effect was found in only a minority of the analyses that were conducted across the three studies. Moreover, three simple slopes in Model 7 of Study 1 found patterns that contradicted the hypothesized results. Furthermore, Model 2 of Study 1 failed to detect this effect for either women or men. In fact, the results of this model suggest that more wealthy individuals who had more stable backgrounds behaved most morally.

Finally, the significant two-way interactions found in Models 1 and 8 of Study 3 detected a pattern of results suggesting that *low* childhood social-network stability was

associated *more* altruistic punishment, at least in the control condition. This finding, too, contradicts the hypothesized results.

Although the current studies failed to provide support for the prediction that faster life history strategists (i.e., lower-SES individuals) who possess more social network/residential stability would behave more prosocially than slower life history strategists (higher-SES individuals) or faster life history strategists who lack social network/residential stability, it may be premature to dismiss this hypothesis. Researchers who take a life history approach to formulating and testing their hypotheses often assume that faster life history strategists behave more opportunistically than slower life history strategists. The benevolence found among lower-SES participants and the miserliness found among higher-SES participants in studies conducted by researchers who do not adopt a life history approach to understanding prosocial behavior should be somewhat troubling to researchers who take a life history approach. It is difficult to reconcile the selfish, live-for-the-moment nature that is often presumed to be a hallmark of those who tend toward a fast life history strategy with the charity prior researchers have found among those who, according to some conceptions of LHT, should have the fastest life history strategies.

The current set of studies was conducted in the hopes of identifying a moderator—the stability of one's social networks—that might resolve this paradox. Although these studies failed to provide convincing support for this moderator, the search should not end here. Until the contradiction described above is resolved, it may be unwise for researchers to invariably assume that SES is a good marker of life history strategy, at least among those who study how people's life history strategies influence their prosocial

behavior and/or social interactions. The following sections will provide possible explanations for the failure of these studies to detect the expected patterns of results.

Interpretation of Null Results

One explanation for the failure of the current research to detect the expected effects may lie in the affluence of the participants. The three studies described in this report either recruited participants from a university student population or recruited participants online. Thus, those who participated in all three studies had access to formal education and/or the Internet. By virtue of this, it is possible that even the lowest status participants recruited for these studies may not have been exposed to sufficiently harsh or unpredictable past or current environments to affect their prosociality[13]. It may be that the effects these studies were designed to detect would more readily emerge had participants been recruited from more economically diverse or lower-SES populations.

Alternatively, it is possible that the paradox these studies were designed to resolve (i.e., the selflessness of lower-status individuals) could be addressed more effectively with the inclusion of other environmental moderator variables. Two candidates that might effectively resolve this paradox are: 1) cultural orientation (individualism versus collectivism), and/or 2) community type (rural versus urban).

Researchers have identified a variety of ways in which people from individualistic and collectivistic cultures differ from one another. Importantly, much of this work has identified differences that are relevant to the interpersonal orientations that people adopt. For example, individualism has been shown to be associated with a preoccupation with

[13] Piff et al.'s (2012) success with this measure may have stemmed from their data analysis approach. These authors controlled for a variety of factors that were not thought to be central to the biologically-based hypothesis formulated for Study 1 (i.e., religiosity, political orientation, and ethnicity).

one's own self-interest rather than group interests (e.g., Earley, 1989; Gelfand, Triandis, & Chan, 1996). In addition, individualists tend to be less community-oriented than collectivists (see Lukes, 1973, for an overview). Conversely, collectivist cultures tend to foster in their members a sense of obligation to behave in comparatively prosocial ways. In these cultures, prosocial behavior may result from cultural norms dictating that individuals should support members of their group to the best of their ability (e.g., Eckstein, 2001; Freeberg & Stein, 1996). Thus, prior findings suggesting that lower-SES individuals tend to behave in a more prosocial manner than their higher-SES counterparts could be driven by lower-status collectivists, with lower-status individualists being just as selfish as higher-status individuals.

Another potential moderator that might be better suited to resolving the paradox that the current research was designed to address is the type of community to which individuals belong. Stanley Milgram (1969) suggests that individuals who live in more rural areas might be more inclined to engage in prosocial behavior than those from urban areas. He developed his information overload theory to describe why this might be. According to Milgram, people who live in urban environments are exposed to much more environmental stimulation than people who live in more rural areas. They are also more familiar with emergencies than people who live in more rural areas, treating emergency situations as common occurrences. To cope with the level of environmental stimulation to which they are exposed, urban individuals ignore events that are not personally relevant to them, which results in a tendency to be more indifferent to the needs of others. Several researchers have provided evidence suggesting that individuals who live in more rural areas do tend to behave in a more prosocial manner than more urban individuals

(Steblay, 1987; Yousif & Korte, 1995; Christensen & Fierst, 1998). Thus, it is possible that findings suggesting that lower-SES individuals behave in a more prosocial manner than their higher-SES counterparts are driven by lower-status individuals who live in more rural communities, and that lower-status individuals who live in more urban areas are just as selfish as higher-status individuals.

Methodological Limitations of the Current Studies

There are methodological limitations in each of the current studies that might have hampered their ability to detect the predicted effects. Chief among these limitations is the fact that none of these studies included a self-reported measure of *current* social-network stability. Instead, all of these studies relied on retrospective self-reports of social-network stability across a variety of stages of development. The only useful measure of current residential/network stability included in these studies was the zip code stability variable. This variable might have been less sensitive to participants' current psychological states. For example, many people from less stable zip codes might have had perfectly stable social networks, and many of those from more stable zip codes might have had unstable social networks. In other words, the zip code stability variable that was relied on to assess current residential/network stability may have been too far removed from participants' own psychological assessments of their social-network stability.

In addition, the artificial (laboratory) nature of these studies might have affected their ability to detect meaningful results. Although measures were taken to conceal the deception used in all three studies, some participants might have remained skeptical of the veracity of the cover stories used to introduce them. Indeed, many participants in Study 1 correctly identified the purpose of the dice-rolling game (i.e., to detect

immorality). Although suspicion was apparently not a problem in Studies 2 and 3, and participants who correctly identified the purpose of Study 1 were eliminated for the dataset, it is impossible to determine how many participants who were included in these analyses were less candid about their suspicions.

It is also possible that the stakes of the games used as behavioral outcome measures need to be higher to distinguish individuals with a more prosocial interpersonal orientation from less prosocial individuals. In all three games, participants' decisions were guided by the number of credits they had toward drawing for a $50 prize (or a $100 prize in Study 1). These modest stakes may have led individuals who were comparatively less prosocial to disregard the value of raffle entries. This might, in turn, have led these individuals to appear more moral than they would have been if they had more to gain by cheating in Study 1's dice-rolling game, and to appear more altruistic and punitive than they would have if they stood to lose more from making prosocial decisions in Study 2's dictator game and Study 3's third-party dictator game.

A final limitation of these studies was the fact that none of the participants in any of the studies actually met or interacted with the individuals about whom they ostensibly made their economic decisions. It may be that the effects these studies were designed to detect would have been brought into sharper relief if participants actually interacted face-to-face with those about whom they made their economic decisions, or if they were confronted with the opportunity to cheat another person instead of a computer program. That is, participants might not have felt particularly obliged to behave prosocially toward faceless "others" whose presence may have felt ambiguous.

Future Directions

First, future researchers should use better and more refined measures of current social network durability,[14] irrespective of their progression through their various stages of development. One example of a measure that may effectively gauge social network durability might be short-answer items such as: *I have known my current circle of best friends for _____ years*; or *I have _____ friends whom I have known for more than 5 years*. However, future researchers should be aware that measures such as this one might be sensitive to age differences among participants.

In future studies, it might also prove advantageous to introduce participants to the people about whom they will make decisions. This could be done rather easily using experimental confederates. Not only would this improve the believability of the cover stories, but being introduced to a living, breathing target of altruism/punishment might more effectively activate evolved mental modules that are relevant to interpersonal orientations.

Finally, future researchers should consider increasing the stakes of the economic games they use in their studies. It is possible that differences between more prosocial individuals and less prosocial individuals emerge only when less prosocial individuals have more to lose by behaving prosocially. Future researchers might more effectively entice less prosocial participants to behave badly by offering them immediate monetary rewards for immoral or selfish behavior.

[14] I depart from the term "social-network stability" here intentionally. "Stability," at least as it relates to the social-network stability measures created for the current studies, implies change over time. Thus, measuring stability in the way it was measured in these studies necessitated retrospective accounts of social-network stability across various stages of development. This made it impossible to, for example, ask 20-year-olds about their social-network stability during young adulthood (i.e., between the ages of 19 and 25). Thus, the closest the measures used in these studies could come to gauging "current" social-network stability was to define "current" social-network stability as participants' social-network stability at the end of their most recently completed stage of development.

Conclusion

The ubiquitous finding that lower-SES individuals (who presumably adopt faster life history strategies) behave more prosocially than higher-SES individuals (who presumably adopt slower life history strategies) is somewhat problematic for the popular view that faster life history strategists ought to behave more opportunistically than slower life history strategists. Although the current studies provided very limited support for the hypothesis that faster life history strategists (lower-SES individuals) who possess more social network/residential stability would behave more prosocially than slower life history strategists (higher-SES individuals) or faster life history strategists who lack social network/residential stability, some of the current findings suggest that this hypothesis should not be abandoned out of hand. In the future, researchers should conduct more externally valid studies using more sensitive social-network stability measures.

Table 1

	Full Sample		Males		Females		
	M	*SD*	*M*	*SD*	*M*	*SD*	Gender Difference (*t*)
Age	34.89	12.38	32.60	11.57	36.44	12.68	3.28***
Childhood SES	3.77	1.43	3.82	1.32	3.74	1.50	-0.61
Current SES	3.32	1.58	3.49	1.52	3.20	1.61	-1.96*
Childhood SNS	4.47	1.71	4.38	1.61	4.53	1.77	0.90
Adolescent SNS	4.47	1.63	4.47	1.56	4.47	1.67	-0.05
SNS Prior to Age 18	4.47	1.42	4.42	1.38	4.50	1.45	0.55
Childhood RS	0.60	0.98	0.48	0.77	0.68	1.10	2.15*
Adolescent RS	0.49	0.74	0.36	0.56	0.58	0.82	3.30***
RS Prior to Age 18	1.09	1.49	0.83	1.14	1.26	1.67	3.05**
Zip Code Stability	19.14	8.10	19.59	8.06	18.83	8.13	-0.98
Cheating in Game	0.38	1.07	0.54	1.32	0.26	0.85	-2.71**

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Correlations Among All Predictor and Outcome Measures (Study 1)

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Childhood SES	-.01	-								
3. Current SES	.03	.23***	-							
4. Childhood SNS	.17***	.14**	.07	-						
5. Adolescent SNS	.07	.10*	.02	.46***	-					
6. SNS Prior to Age 18	.14**	.14**	.05	.86***	.85***	-				
7. Childhood RS	.07	-.19***	-.09*	-.42***	-.09	-.30***	-			
8. Adolescent RS	.09†	-.03	-.05	-.22***	-.22***	-.26***	.50***	-		
9. RS Prior to Age 18	.09†	-.14**	-.09†	-.38***	-.17***	-.33***	.90***	.82***	-	
10. Zip Code Stability	-.09†	-.01	-.03	-.01	.04	.02	-.05	-.01	-.04	-
11. Cheating in Game	-.17***	-.02	.01	-.06	-.07	-.08†	-.01	-.02	-.02	.08

† $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Predicting Cheating During the Dice-Rolling Game (Model 2)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	.282	.080		.000	.275	.081		.001	.288	.082		.001
Gender	.227	.103	.104	.028	.256	.104	.117	.014	.221	.106	.101	.037
Age	-.013	.004	-.152	.001	-.013	.004	-.144	.003	-.013	.004	-.146	.003
Condition	.005	.100	.002	.961	.007	.100	.003	.941	.004	.102	.002	.965
Childhood SES	-.018	.035	-.024	.605	-.012	.058	-.015	.842	-.010	.059	-.013	.869
Childhood RS	.002	.052	.002	.970	-.196	.089	-.179	.028	-.157	.098	-.143	.111
Gender x SES					.028	.076	.022	.712	-.013	.080	-.010	.873
Gender x RS					.230	.125	.105	.066	.149	.137	.068	.277
Age x SES					.001	.003	.016	.746	.001	.003	.012	.800
Age x RS					.002	.004	.022	.647	.001	.005	.007	.896
Condition x SES					-.041	.072	-.039	.565	-.039	.073	-.036	.594
Condition x RS					.229	.105	.151	.029	.216	.122	.143	.076
SES x RS					-.022	.041	-.030	.598	.040	.069	.055	.564
Gender x SES x RS									-.200	.111	-.105	.074
Age x SES x RS									<.001	.003	-.004	.939
Condition x SES x RS									-.043	.081	-.048	.594
Adjusted R^2	0.03				0.03				0.03			
F for model	3.65**				2.28**				2.07*			

Note. $^{*}p < .05$. $^{**}p < .01$.

SES = Childhood Social Economic Status. RS = Childhood Residential Stability.

Table 4

Simple slope significance tests for Study 1, Model 2 by childhood SES, childhood residential stability and gender, evaluated at +/- 1 SD from mean of childhood SES.

		Gradient of slope	*t*	*p*
Low Childhood Residential Stability, Men	Evaluated at -.5 SD from mean of Childhood Residential Stability	.173	2.275	.023
	Evaluated at -.75 SD from mean of Childhood Residential Stability	.272	2.999	.003
	Evaluated at -1 SD from mean of Childhood Residential Stability	.37	3.387	.001
High Childhood Residential Stability, Men	Evaluated at .5 SD from mean of Childhood Residential Stability	-.219	-2.251	.025
	Evaluated at .75 SD from mean of Childhood Residential Stability	-.318	-2.71	.007
	Evaluated at 1 SD from mean of Childhood Residential Stability	-.416	-2.993	.003
Low Childhood Residential Stability, Women	Evaluated at -.5 SD from mean of Childhood Residential Stability	.088	1.225	.221
	Evaluated at -.75 SD from mean of Childhood Residential Stability	.137	1.620	.106
	Evaluated at -1 SD from mean of Childhood Residential Stability	.186	1.884	.06
High Childhood Residential Stability, Women	Evaluated at .5 SD from mean of Childhood Residential Stability	-.108	-1.906	.057
	Evaluated at .75 SD from mean of Childhood Residential Stability	-.157	-2.416	.016
	Evaluated at 1 SD from mean of Childhood Residential Stability	-.206	-2.697	.007

Table 5

Predicting Cheating During the Dice-Rolling Game (Model 3)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	.285	.080		<.001	.279	.081		.001	.263	.081		.001
Gender	.229	.103	.104	.027	.223	.105	.102	.035	.255	.106	.116	.016
Age	-.013	.004	-.147	.002	-.013	.004	-.147	.003	-.012	.004	-.140	.004
Condition	.001	.100	.001	.990	.007	.101	.003	.941	.010	.101	.005	.921
Childhood SES	-.013	.035	-.018	.705	.019	.058	.025	.746	.022	.059	.029	.707
Adolescent SNS	-.041	.031	-.061	.190	-.100	.132	-.151	.449	-.098	.133	-.148	.464
Gender x SES					.011	.076	.009	.881	.018	.076	.014	.811
Gender x SNS					-.010	.066	-.026	.881	.018	.068	.045	.796
Age x SES					<.001	.003	<.001	.998	<.001	.003	.004	.928
Age x SNS					.002	.002	.118	.402	.001	.003	.052	.717
Condition x SES					-.073	.071	-.068	.305	-.085	.072	-.079	.241
Condition x SNS					.005	.062	.005	.937	.006	.063	.006	.927
SES x SNS					.011	.021	.024	.606	-.093	.086	-.212	.279
Gender x SES x SNS									.106	.046	.414	.022
Age x SES x SNS									- .002	.002	-.170	.263
Condition x SES x SNS									.006	.029	.010	.830
Adjusted R^2	0.03				0.02				0.03			
F for model	3.99**				1.83*				1.85*			

Note. $^{*}p < .05$. $^{**}p < .01$.

SES = Childhood Social Economic Status. SNS = Adolescent Social-network stability.

Table 6

Simple slope significance tests for Study 1, Model 3 by childhood SES, adolescent social-network stability and gender, evaluated at +/- 1 SD from mean of childhood SES.

		Gradient of slope	*t*	*p*
Low Social-network stability, Men	Evaluated at -.5 SD from mean of adolescent social-network stability	.029	.413	.68
	Evaluated at -.75 SD from mean of adolescent social-network stability	.024	.297	.766
	Evaluated at -1 SD from mean of adolescent social-network stability	.019	.198	.843
High Social Network, Men	Evaluated at .5 SD from mean of Childhood Residential Stability	.051	.536	.592
	Evaluated at .75 SD from mean of adolescent social-network stability	.056	.503	.615
	Evaluated at 1 SD from mean of adolescent social-network stability	.061	.472	.637
Low Social Network, Women	Evaluated at -.5 SD from mean of adolescent social-network stability	.098	1.26	.208
	Evaluated at -.75 SD from mean of adolescent social-network stability	.135	1.293	.197
	Evaluated at -1 SD from mean of Childhood Residential Stability	.173	1.282	.2
High Social Network, Women	Evaluated at .5 SD from mean of adolescent social-network stability	-.054	-.557	.578
	Evaluated at .75 SD from mean of adolescent social-network stability	-.091	-.726	.468
	Evaluated at 1 SD from mean of adolescent social-network stability	-.129	-.821	.412

Table 7

Predicting Cheating During the Dice-Rolling Game (Model 7)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	.721	.181		<.001	.734	.183		<.001	.766	.181		<.001
Gender	-.212	.103	-.097	.040	-.225	.105	-.104	.032	-.239	.103	-.110	.021
Age	-.013	.004	-.151	.002	-.013	.004	-.147	.003	-.014	.004	-.160	.001
Condition	-.022	.100	-.010	.827	-.025	.100	-.012	.803	-.034	.099	-.016	.734
Childhood SES	-.016	.035	-.021	.653	.106	.132	.143	.423	.107	.131	.145	.414
Zip Code Stability	.008	.006	.063	.177	-.002	.023	-.015	.930	-.009	.023	-.069	.690
Gender x SES					-.049	.076	-.114	.518	-.050	.075	-.117	.501
Gender x Zip					.004	.013	.047	.778	.008	.013	.098	.557
Age x SES					<.001	.003	-.005	.921	.001	.003	.012	.820
Age x Zip					-.001	.001	-.083	.087	-.001	.001	-.083	.090
Condition x SES					-.085	.071	-.080	.232	-.105	.070	-.099	.135
Condition x Zip					.010	.012	.051	.420	.004	.012	.021	.735
SES x Zip					-.006	.005	-.061	.218	.062	.018	.604	.001
Gender x SES x Zip									-.039	.010	-.649	<.001
Age x SES x Zip									<.001	<.001	.059	.253
Condition x SES x Zip									-.008	.010	-.051	.411
Adjusted R^2	0.03				0.03				0.06			
F for model	3.97**				2.23**				2.85***			

Note. $^{**}p < .01$. $^{***}p < .001$.

SES = Childhood Social Economic Status. Zip = Percentage of residents living in zip code who moved to zip code after 2009.

Table 8

Predicting Cheating During the Dice-Rolling Game (Model 9)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	.283	.080		<.001	.276	.081		.001	.281	.081		.001
Gender	.226	.103	.104	.029	.254	.104	.116	.014	.245	.104	.112	.019
Age	-.013	.004	-.152	.001	-.013	.004	-.149	.002	-.013	.004	-.152	.002
Condition	.004	.100	.002	.964	.014	.100	.007	.887	.014	.101	.007	.887
Current SES	.002	.032	.003	.956	.029	.050	.043	.556	.033	.050	.049	.509
Childhood RS	.007	.051	.007	.886	-.184	.084	-.169	.028	-.163	.088	-.149	.063
Gender x SES					-.058	.067	-.052	.385	-.066	.067	-.060	.325
Gender x RS					.207	.121	.095	.089	.190	.122	.087	.121
Age x SES					.002	.003	.031	.527	.002	.003	.034	.485
Age x RS					.002	.004	.017	.714	.001	.005	.014	.780
Condition x SES					-.020	.064	-.020	.755	-.022	.065	-.023	.728
Condition x RS					.250	.102	.165	.015	.234	.109	.154	.032
SES x RS					-.029	.037	-.038	.443	-.185	.154	-.243	.232
Gender x SES x RS									.095	.086	.225	.271
Age x SES x RS									-.002	.003	-.034	.521
Condition x SES x RS									-.001	.077	-.001	.989
Adjusted R^2	.028				.034				.031			
F for model	3.59**				2.34**				1.96*			

Note. $^{*}p < .05$. $^{**}p < .01$.

SES = Current Social Economic Status. RS = Childhood Residential Stability.

Table 9

Means, Standard Deviations, and Tests for Gender Differences Among All Predictor and Outcome Measures (Study 2)

	Full Sample		Males		Females		
	M	*SD*	*M*	*SD*	*M*	*SD*	Gender Difference (*t*)
Age	20.12	3.09	20.52	3.11	19.93	3.08	-1.25
Childhood SES	4.93	1.22	5.13	1.06	4.84	1.28	-1.59
Current SES	4.02	1.39	4.46	1.29	3.80	1.39	-3.17**
Childhood SNS	4.71	1.49	4.54	1.45	4.79	1.50	1.08
Adolescent SNS	4.60	1.33	4.68	1.20	4.56	1.39	-0.58
SNS Prior to Age 18	4.65	1.09	4.61	1.04	4.68	1.11	0.39
Childhood RS	0.53	0.96	0.49	0.82	0.55	1.02	0.42
Adolescent RS	0.54	0.67	0.43	0.53	0.59	0.72	1.60
RS Prior to Age 18	1.07	1.28	0.92	0.97	1.15	1.40	1.15
Zip Code Stability	28.38	12.81	26.29	13.19	29.45	12.54	1.44
Amount Allocated to Receiver	4.62	2.21	4.68	2.65	4.59	1.96	-0.27

Note. *Ns* range from 151 to 193, depending on the variable. SNS = Social-network stability. RS = Residential Stability. Zip Code Stability represents the percentage of residents living within a zip code who moved to the zip code after 2009.

** $p < .01$.

Table 10

Correlations Among All Predictor and Outcome Measures (Study 2)

Variable	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
1. Age	-									
2. Childhood SES	-.08	-								
3. Current SES	.04	.38***	-							
4. Childhood SNS	-.03	.18*	.10	-						
5. Adolescent SNS	-.11	.05	.14†	.19**	-					
6. SNS Prior to Age 18	-.09	.15*	.15*	.80***	.74***	-				
7. Childhood RS	.24***	-.31***	-.10	-.25***	-.01	-.17*	-			
8. Adolescent RS	.08	-.15*	-.12†	-.10	-.05	-.10	.22**	-		
9. RS Prior to Age 18	.22**	-.31***	-.14†	-.24***	-.03	-.18*	.87***	.68***	-	
10. Zip Code Stability	.06	.18*	-.11	-.01	-.13	-.08	-.04	.22**	.09	-
11. Amount Allocated to Receiver	.16*	-.11	.02	.02	.07	.05	.25***	.03	.20**	-.01

*Note. N*s Range from 151 to 193. SNS = Social-network stability. RS = Residential Stability. Zip Code Stability represents the percentage of residents living within a zip code who moved to the zip code after 2009.

† $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 11

Predicting Amount Allocated to Receiver (Model 1)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	4.55	.244		<.001	4.545	.248		<.001	4.614	.252		<.001
Gender	.089	.343	.019	.796	.240	.349	.051	.493	.188	.358	.040	.600
Age	.111	.052	.156	.033	.127	.057	.178	.026	.126	.058	.176	.031
Condition	.092	.317	.021	.772	.128	.319	.029	.688	.094	.320	.021	.769
Childhood SES	-.197	.133	-.109	.141	-1.61	.596	-.892	.007	-1.61	.601	-.890	.008
Childhood SNS	.064	.109	.043	.557	-.088	.437	-.059	.841	-.234	.440	-.158	.595
Gender x SES					.860	.318	.857	.008	.851	.321	.847	.009
Gender x SNS					.059	.243	.070	.807	.131	.245	.155	.592
Age x SES					.046	.042	.089	.271	.041	.041	.079	.328
Age x SNS					-.051	.037	-.110	.169	-.039	.041	-.086	.335
Condition x SES					-.280	.280	-.093	.319	-.315	.279	-.105	.262
Condition x SNS					.121	.220	.056	.582	.153	.221	.071	.489
SES x SNS					-.006	.086	-.005	.944	-.368	.354	-.322	.300
Gender x SES x SNS									.132	.191	.207	.491
Age x SES x SNS									.021	.031	.062	.499
Condition x SES x SNS									.385	.187	.186	.040
Adjusted R^2	0.01				0.04				0.05			
F for model	1.51				1.64†				1.65†			

Note. $^{\dagger}p < .10$.

SES = Childhood Social Economic Status. SNS = Childhood Social-network stability.

Table 12

Simple slope significance tests for Study 2, Model 1 by childhood social-network stability, childhood SES, and condition, evaluated at +/- 1 SD from mean of childhood SES and +/- 1 SD from the mean of childhood social-network stability.

	Gradient of slope	*t*	*p*
Low Social-network stability, Control Condition	-1.062	-1.495	.136
High Social-network stability, Control Condition	-2.156	-3.274	.001
Low Social-network stability, Threat Condition	-1.949	-2.597	.01
High Social-network stability, Threat Condition	-1.899	-2.585	.011

Table 13

Predicting Amount Allocated to Receiver (Model 2)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	4.548	.239		<.001	4.555	.250		<.001	4.559	.250		<.001
Gender	.086	.335	.018	.798	.223	.337	.047	.510	.018	.344	.004	.958
Age	.077	.052	.109	.138	.075	.061	.105	.224	.082	.061	.115	.182
Condition	.091	.311	.021	.771	.128	.312	.029	.681	.184	.318	.042	.563
Childhood SES	-.071	.135	-.039	.601	-1.57	.577	-.867	.007	-1.69	.574	-.932	.004
Childhood RS	.487	.175	.212	.006	-.194	.751	-.084	.797	-.941	.827	-.408	.257
Gender x SES					.926	.308	.922	.003	.971	.307	.967	.002
Gender x RS					.473	.410	.372	.250	.865	.443	.681	.053
Age x SES					.042	.042	.082	.316	.045	.042	.088	.286
Age x RS					.027	.032	.077	.402	.049	.057	.139	.393
Condition x SES					-.355	.277	-.119	.202	-.317	.276	-.106	.252
Condition x RS					-.168	.362	-.049	.643	-.027	.419	-.008	.950
SES x RS					.052	.121	.042	.666	-1.65	.709	-1.34	.021
Gender x SES x RS									.885	.362	1.40	.016
Age x SES x RS									.013	.040	.050	.746
Condition x SES x RS									.149	.295	.046	.616
Adjusted R^2	0.05				0.08				0.10			
F for model	3.05*				2.47**				2.38**			

Note. $^{*}p < .05$. $^{**}p < .01$.

SES = Childhood Social Economic Status. RS = Childhood Residential Stability.

Table 14

Simple slope significance tests for Study 2, Model 2 by childhood SES, childhood residential stability, and condition, evaluated at +/- 1 SD from mean of childhood SES.

		Gradient of slope	*t*	*p*
Low Residential Stability, Control Condition	Evaluated at +/- .5 SD from mean of adolescent social-network stability	-.895	-1.4	.163
	Evaluated at +/- .75 SD from mean of adolescent social-network stability	-.499	-.684	.495
	Evaluated at +/- 1 SD from mean of adolescent social-network stability	-.104	-.123	.902
High Residential Stability, Control Condition	Evaluated at +/- .5 SD from mean of Childhood Residential Stability	-2.475	-3.563	<.001
	Evaluated at +/- .75 SD from mean of adolescent social-network stability	-2.871	-3.573	<.001
	Evaluated at +/- 1 SD from mean of adolescent social-network stability	-3.266	-3.51	.001
Low Residential Stability, Threat Condition	Evaluated at +/- .5 SD from mean of adolescent social-network stability	-1.283	-2.038	.043
	Evaluated at +/- .75 SD from mean of adolescent social-network stability	-.923	-1.281	.202
	Evaluated at +/- 1 SD from mean of Childhood Residential Stability	-.564	-.675	.5
High Residential Stability, Threat Condition	Evaluated at +/- .5 SD from mean of adolescent social-network stability	-2.721	-4.057	<.001
	Evaluated at +/- .75 SD from mean of adolescent social-network stability	-3.081	-3.978	<.001
	Evaluated at +/- 1 SD from mean of adolescent social-network stability	-3.44	-3.837	<.001

Table 15

Predicting Amount Allocated to Receiver (Model 3)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*P*	B	SE(B)	*β*	*p*
Intercept	4.585	.244		<.001	4.621	.248		<.001	4.633	.247		<.001
Gender	.055	.341	.012	.871	.124	.347	.026	.722	.021	.347	.004	.952
Age	.117	.052	.164	.025	.164	.062	.230	.009	.163	.064	.228	.011
Condition	.036	.320	.008	.911	.044	.319	.010	.890	.023	.318	.005	.941
Childhood SES	-.187	.131	-.104	.154	-1.54	.575	-.853	.008	-1.48	.575	-.818	.011
Adolescent SNS	.146	.121	.087	.231	.213	1.150	.128	.853	.539	1.174	.324	.647
Gender x SES					.842	.307	.838	.007	.801	.307	.797	.010
Gender x SNS					-.203	.272	-.063	.457	-.163	.274	-.050	.554
Age x SES					.042	.042	.082	.321	.043	.044	.083	.328
Age x SNS					<.001	.057	.003	.996	-.015	.059	-.180	.800
Condition x SES					-.316	.276	-.105	.253	-.286	.276	-.095	.301
Condition x SNS					.091	.243	.036	.709	-.004	.254	-.002	.986
SES x SNS					.091	.090	.076	.317	-.396	.781	-.334	.612
Gender x SES x SNS									.578	.254	.185	.024
Age x SES x SNS									.019	.037	.333	.614
Condition x SES x SNS									.029	.159	.014	.857
Adjusted R^2	0.02				0.04				0.06			
F for model	1.74				1.71†				1.77*			

Note. $^{\dagger}p < .10$. $^{*}p < .05$.

SES = Childhood Social Economic Status. SNS = Adolescent Social-network stability.

Table 16

Predicting Amount Allocated to Receiver (Model 5)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	4.563	.243		<.001	4.544	.245		<.001	4.603	.247		<.001
Gender	.087	.341	.019	.798	.218	.349	.047	.533	.097	.360	.021	.788
Age	.115	.052	.161	.027	.134	.061	.189	.028	.144	.061	.202	.020
Condition	.060	.318	.014	.851	.080	.316	.018	.800	.049	.318	.011	.877
Childhood SES	-.204	.132	-.113	.123	-1.57	.591	-.867	.009	-1.49	.599	-.821	.014
Pre-Adult SNS	.168	.148	.083	.257	-.235	.602	-.115	.697	-.360	.611	-.177	.556
Gender x SES					.833	.315	.829	.009	.784	.319	.780	.015
Gender x SNS					.231	.336	.201	.492	.307	.345	.266	.376
Age x SES					.041	.041	.079	.318	.049	.041	.094	.240
Age x SNS					-.058	.059	-.082	.328	-.035	.067	-.050	.600
Condition x SES					-.282	.278	-.094	.311	-.282	.279	-.094	.314
Condition x SNS					.124	.299	.041	.679	.140	.305	.047	.646
SES x RS					.053	.110	.039	.630	-.091	.140	-.067	.516
Gender x SES x SNS									.209	.273	.065	.444
Age x SES x SNS									.044	.047	.091	.349
Condition x SES x SNS									.271	.232	.105	.246
Adjusted R^2	0.02				0.05				0.05			
F for model	1.71				1.78†				1.61†			

Note. $^{\dagger}p < .10$.

SES = Childhood Social Economic Status. SNS = Residential Stability prior to age 18.

Table 17

Predicting Amount Allocated to Receiver (Model 6)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	4.544	.241		<.001	4.602	.253		<.001	4.595	.257		<.001
Gender	.123	.339	.026	.717	.223	.341	.048	.515	.172	.350	.037	.624
Age	.087	.052	.122	.098	.096	.060	.134	.112	.096	.061	.135	.115
Condition	.074	.314	.017	.813	.069	.317	.016	.828	.104	.323	.024	.748
Childhood SES	-.099	.135	-.055	.468	-1.55	.567	-.857	.007	-1.52	.573	-.838	.009
Pre-Adult RS	.278	.132	.162	.036	-.018	.601	-.010	.977	-.210	.660	-.122	.751
Gender x SES					.917	.305	.913	.003	.902	.308	.898	.004
Gender x RS					.297	.326	.319	.364	.379	.355	.407	.287
Age x SES					.034	.042	.065	.429	.040	.043	.078	.353
Age x RS					.011	.026	.038	.671	-.010	.046	-.034	.829
Condition x SES					-.370	.280	-.124	.188	-.376	.282	-.126	.184
Condition x RS					-.189	.279	-.071	.500	-.073	.320	-.027	.820
SES x RS					.075	.085	.091	.378	.056	.104	.067	.595
Gender x SES x RS									-.243	.283	-.073	.393
Age x SES x RS									-.019	.032	-.094	.544
Condition x SES x RS									.139	.216	.057	.521
Adjusted R^2	0.03				0.07				0.06			
F for model	2.37*				2.16*				1.82*			

Note. $^{*}p < .05$.

SES = Childhood Social Economic Status. RS = Residential Stability prior to age 18.

Table 18

Predicting Amount Allocated to Receiver (Model 7)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	4.936	.276		<.001	4.939	.278		<.001	4.932	.280		<.001
Gender	.237	.386	.052	.540	.219	.385	.048	.570	.253	.417	.055	.544
Age	-.012	.065	-.015	.853	-.019	.072	-.024	.792	-.012	.085	-.015	.892
Condition	-.281	.359	-.065	.435	-.183	.357	-.042	.609	-.130	.376	-.030	.730
Childhood SES	-.282	.148	-.160	.059	-1.50	.661	-.852	.025	-1.51	.704	-.858	.033
Zip Code Stability	.005	.014	.031	.715	.016	.022	.094	.466	.011	.022	.067	.613
Gender x SES					.719	.353	.728	.044	.670	.371	.679	.073
Gender x Zip					-.025	.033	-.088	.449	-.014	.034	-.049	.680
Age x SES					.113	.052	.208	.031	.121	.067	.224	.070
Age x Zip					-.010	.007	-.153	.147	-.010	.007	-.147	.180
Condition x SES					-.289	.310	-.102	.352	-.156	.324	-.055	.630
Condition x Zip					.001	.030	.005	.970	.002	.030	.010	.938
SES x Zip					.004	.013	.031	.724	.028	.019	.191	.139
Gender x SES x Zip									-.026	.030	-.099	.391
Age x SES x Zip									-.001	.006	-.019	.882
Condition x SES x Zip									-.038	.027	-.161	.170
Adjusted R^2	<.001				0.05				0.05			
F for model	0.85				1.66†				1.54†			

Note. $^{\dagger}p < .10$.

SES = Childhood Social Economic Status. Zip = Percentage of residents living in zip code who moved there after 2009.

Table 19

Means, Standard Deviations, and Tests for Gender Differences Among All Predictor and Outcome Measures (Study 3)

	Full Sample		Males		Females		
	M	*SD*	*M*	*SD*	*M*	*SD*	Gender Difference (*t*)
Age	19.76	3.58	20.22	4.09	19.49	3.23	-1.25
Childhood SES	4.84	1.06	5.02	1.00	4.73	1.08	-1.71†
Current SES	3.91	1.45	4.20	1.45	3.74	1.44	-1.94†
Childhood SNS	4.48	1.43	4.44	1.42	4.51	1.45	0.30
Adolescent SNS	4.50	1.34	4.77	1.49	4.35	1.23	-1.93†
SNS Prior to Age 18	4.49	1.09	4.60	1.10	4.43	1.09	0.92
Childhood RS	0.45	0.85	0.41	0.81	0.48	0.87	0.62
Adolescent RS	0.40	0.55	0.36	0.55	0.42	0.55	0.42
RS Prior to Age 18	0.85	1.08	0.76	1.01	0.90	1.12	0.94
Amount Spent to Punish Allocator	3.45	2.55	3.51	2.76	3.42	2.43	0.46

Table 20

Correlations Among all Predictor and Outcome Measures (Study 3)

Variable	1	2	3	4	5	6	7	8	9
1. Age	-								
2. Childhood SES	-.01	-							
3. Current SES	-.03	.43***	-						
4. Childhood SNS	.09	.15†	.02	-					
5. Adolescent SNS	.07	.17*	.20**	.23**	-				
6. SNS Prior to Age 18	.10	.20**	.14†	.80***	.80***	-			
7. Childhood RS	.01	-.02	.07	-.32***	-.09	-.27***	-		
8. Adolescent RS	.01	.02	.03	-.15†	-.07	-.14†	.16*	-	
9. RS Prior to Age 18	.01	-.01	.07	-.33***	-.10	-.28***	.86***	.63***	-
10. Amount Spent to Punish Allocator	-.11	.02	.08	-.17*	-.06	-.15†	-.02	-.08	-.06

† $p < .01$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 21

Predicting Amount Spent to Punish the Allocator (Model 1)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	3.762	.333		<.001	3.690	.353		<.001	3.792	.364		<.001
Gender	.072	.422	.014	.864	.180	.438	.034	.681	.145	.442	.028	.742
Age	-.071	.057	-.100	.211	-.183	.081	-.257	.026	-.194	.093	-.272	.038
Condition	-.676	.405	-.133	.097	-.744	.415	-.146	.075	-.823	.422	-.161	.053
Childhood SES	.138	.195	.057	.479	.266	.325	.110	.416	.190	.334	.079	.570
Childhood SNS	-.311	.143	-.174	.031	-.578	.264	-.324	.030	-.594	.266	-.333	.027
Gender x SES					.335	.417	.080	.423	.449	.435	.108	.304
Gender x SNS					-.060	.312	-.020	.847	-.134	.325	-.045	.681
Age x SES					-.096	.060	-.159	.112	-.105	.078	-.175	.180
Age x SNS					.113	.056	.262	.048	.118	.058	.274	.044
Condition x SES					-.358	.402	-.097	.374	-.294	.411	-.080	.475
Condition x SNS					.588	.297	.241	.050	.594	.308	.243	.055
SES x SNS					.091	.146	.054	.536	-.098	.213	-.059	.645
Gender x SES x SNS									.367	.327	.123	.264
Age x SES x SNS									-.002	.043	-.005	.969
Condition x SES x SNS									.177	.293	.068	.548
Adjusted R^2	0.03				0.05				0.04			
F for model	1.87†				1.64†				1.43			

Note. $^{\dagger}p < .10$.

SES = Childhood Social Economic Status. RS = Childhood Social-network stability.

Table 22

Predicting Amount Spent to Punish the Allocator (Model 7)

	Step 1				Step 2				Step 3			
Variable	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*	B	SE(B)	*β*	*p*
Intercept	3.758	.331		<.001	3.661	.336		<.001	3.683	.338		<.001
Gender	.052	.422	.010	.902	.108	.433	.020	.804	.129	.436	.025	.767
Age	-.070	.057	-.098	.222	-.167	.080	-.234	.039	-.154	.081	-.216	.059
Condition	-.654	.402	-.128	.106	-.642	.402	-.126	.112	-.695	.404	-.136	.087
Current SES	.134	.140	.076	.340	.156	.235	.089	.507	.137	.237	.078	.564
Childhood SNS	-.299	.141	-.167	.036	-.487	.240	-.273	.044	-.510	.241	-.286	.036
Gender x SES					.358	.297	.125	.229	.377	.299	.131	.209
Gender x SNS					-.060	.306	-.020	.844	.014	.309	.005	.964
Age x SES					-.034	.040	-.073	.390	.009	.046	.019	.844
Age x SNS					.075	.049	.175	.130	.085	.050	.198	.091
Condition x SES					-.269	.281	-.109	.341	-.212	.287	-.086	.462
Condition x SNS					.499	.283	.204	.081	.500	.283	.205	.080
SES x SNS					.119	.095	.102	.213	.177	.152	.151	.246
Gender x SES x SNS									-.039	.214	-.018	.854
Age x SES x SNS									-.052	.030	-.179	.080
Condition x SES x SNS									-.092	.192	-.057	.633
Adjusted R^2	0.03				0.05				0.05			
F for model	1.95†				1.64†				1.53			

Note. $^{\dagger}p < .10$.

SES = Current Social Economic Status. RS = Childhood Social-network stability.

Figure 1.

Amount of cheating in dice-rolling game by childhood residential stability and condition (Step 2)

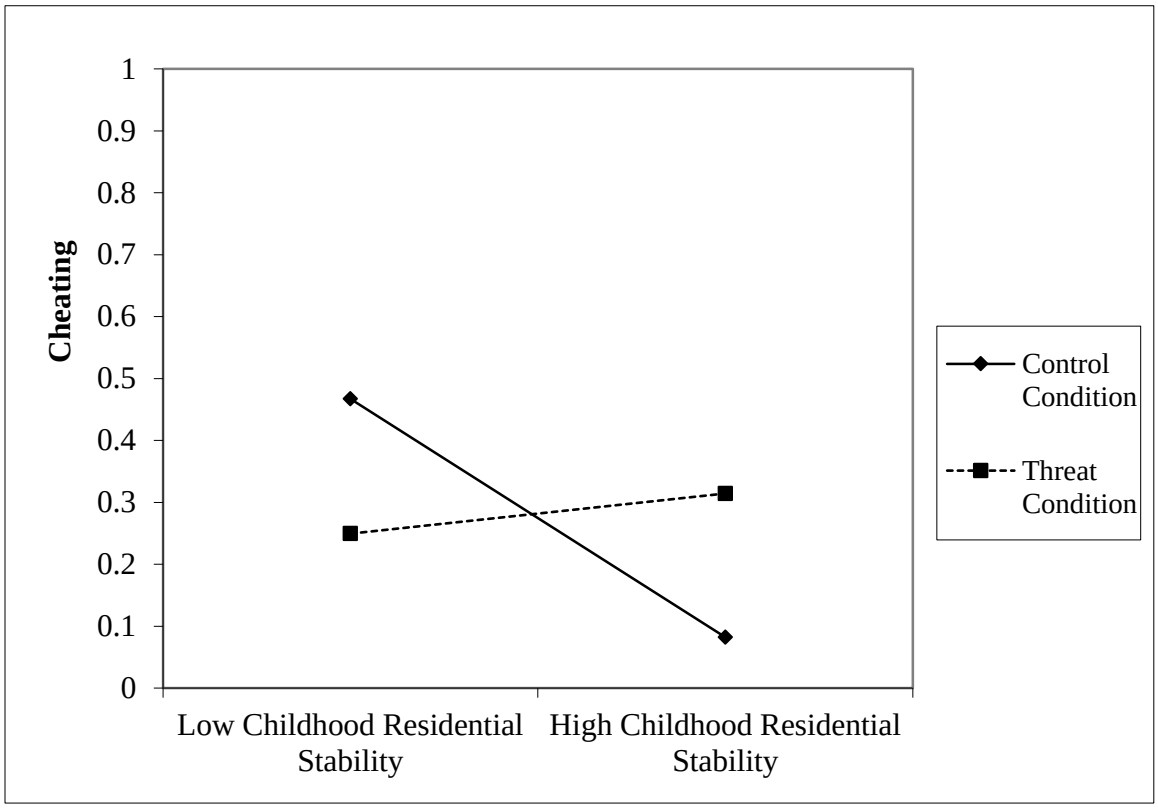


Figure 2.

Amount of cheating in dice-rolling game by childhood residential stability and condition (Step 3).

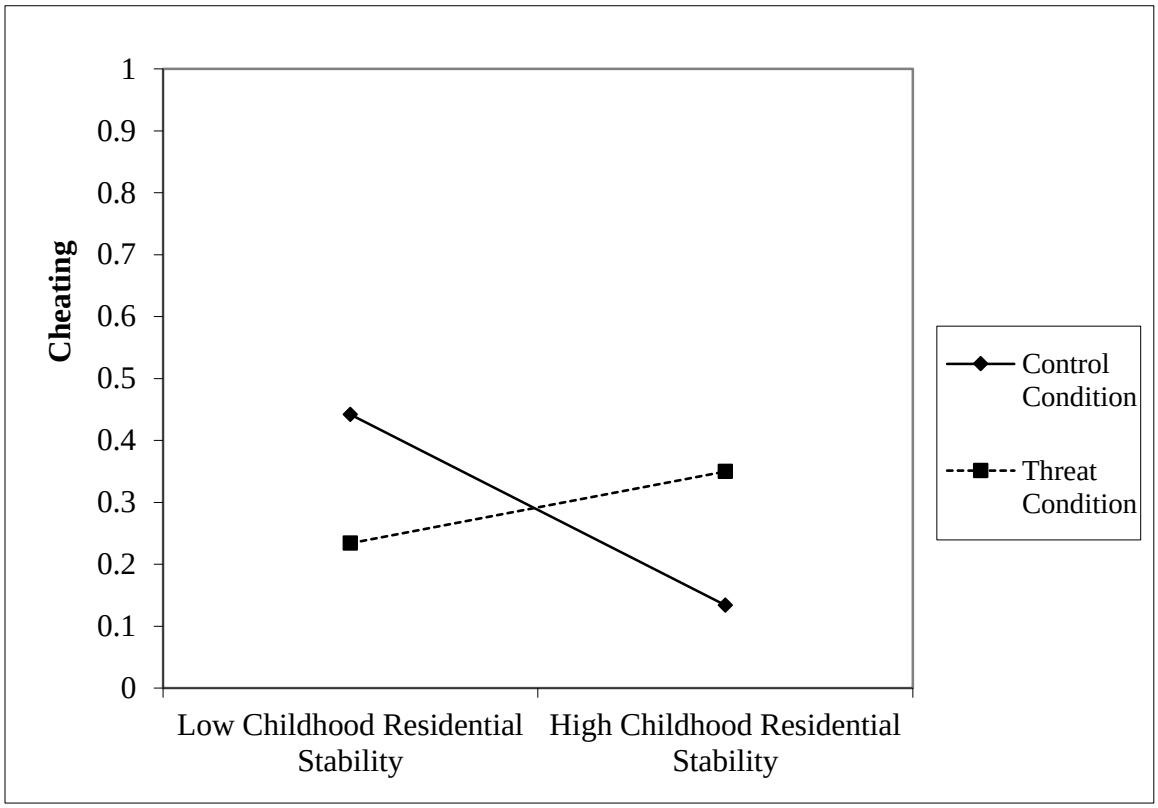


Figure 3a.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- 1 SD from mean of childhood residential stability).

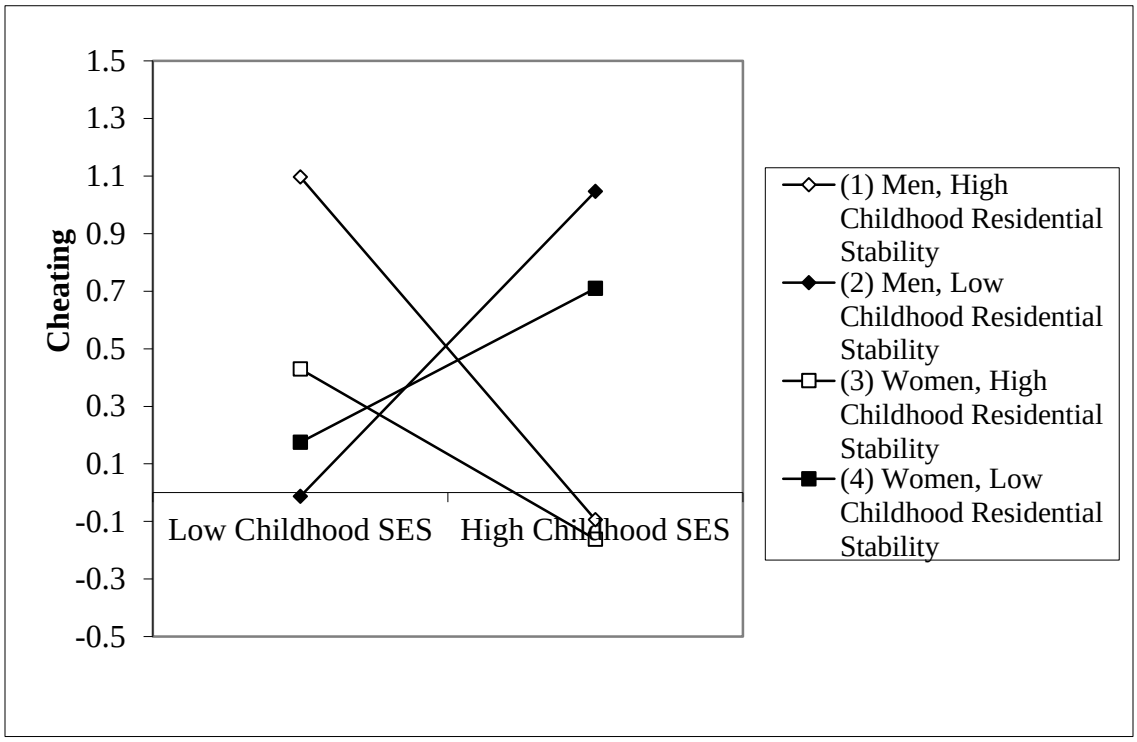


Figure 3b.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .75 SD from mean of childhood residential stability).

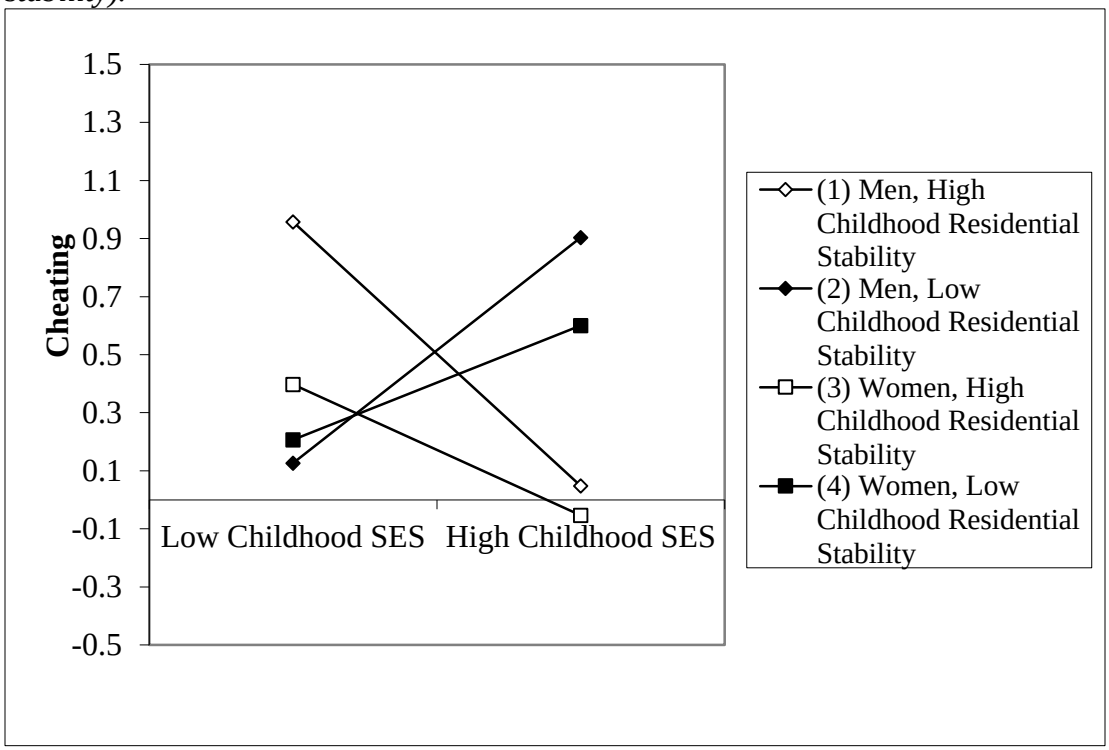


Figure 3c.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .5 SD from mean of childhood residential stability).

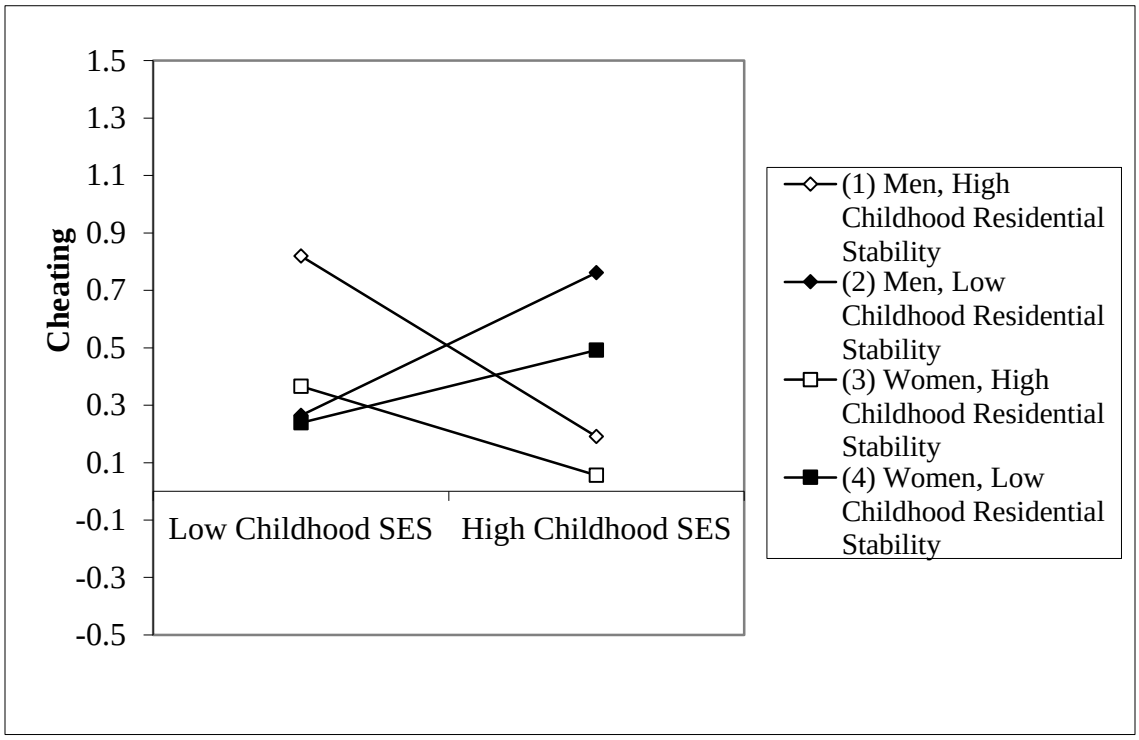


Figure 4a.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- 1 SD from mean of childhood residential stability).

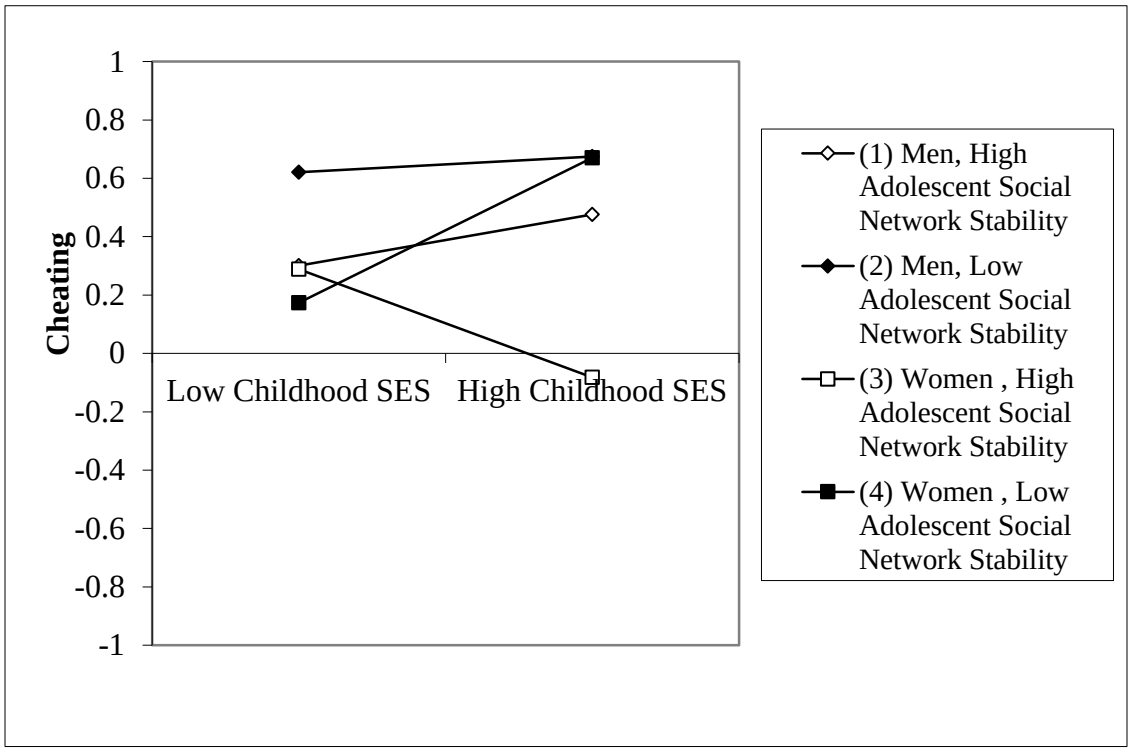


Figure 4b.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .75 SD from mean of childhood residential stability).

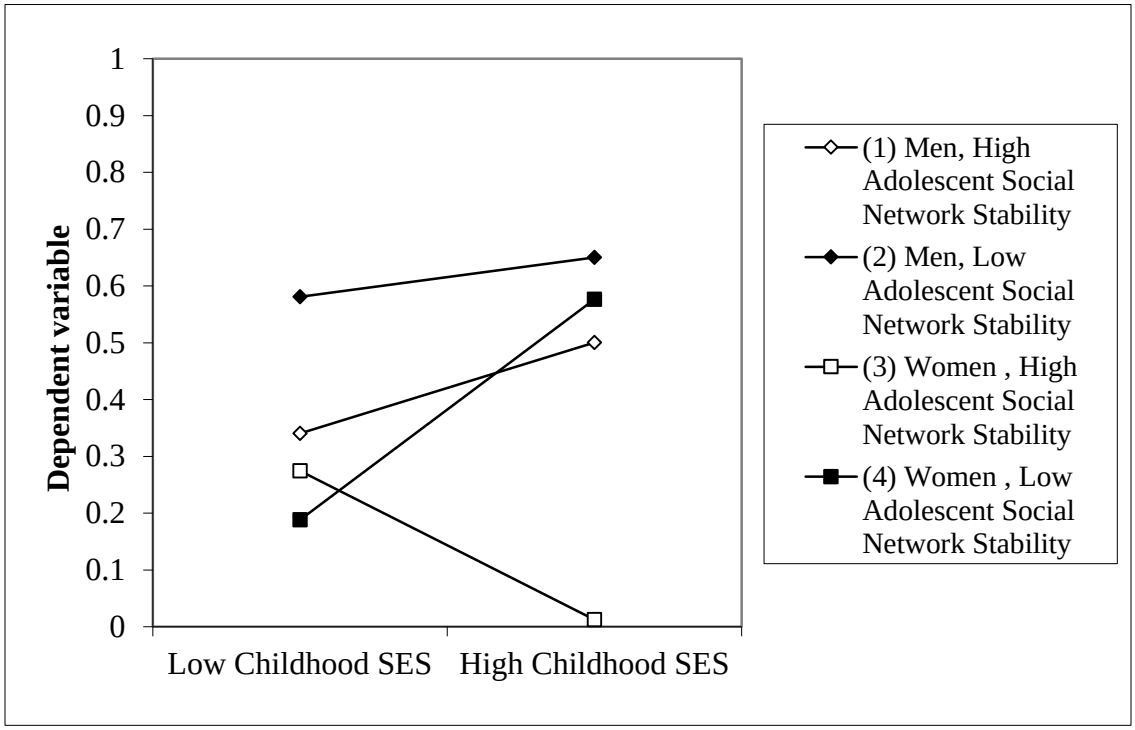


Figure 4c.

Amount of cheating in dice-rolling game by childhood SES, childhood residential stability and gender (evaluated at +/- .5 SD from mean of childhood residential stability).

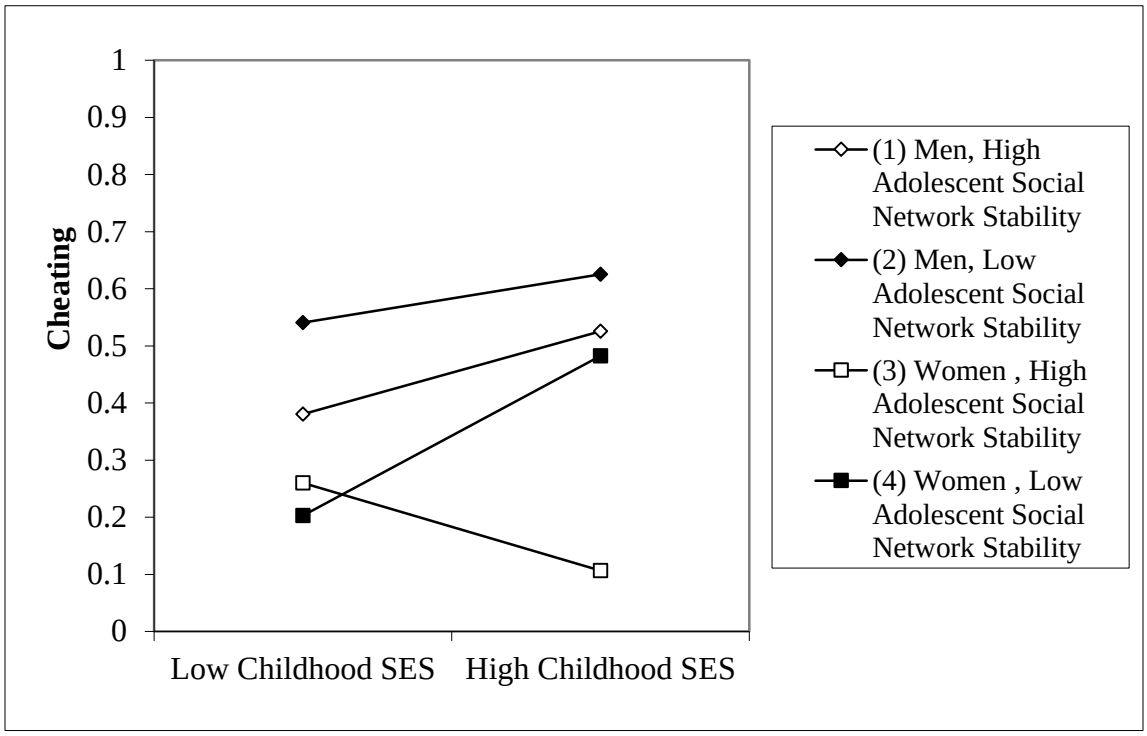


Figure 5.

Amount of cheating on dice-rolling game by childhood SES, zip code residential stability, and gender (Model 7).

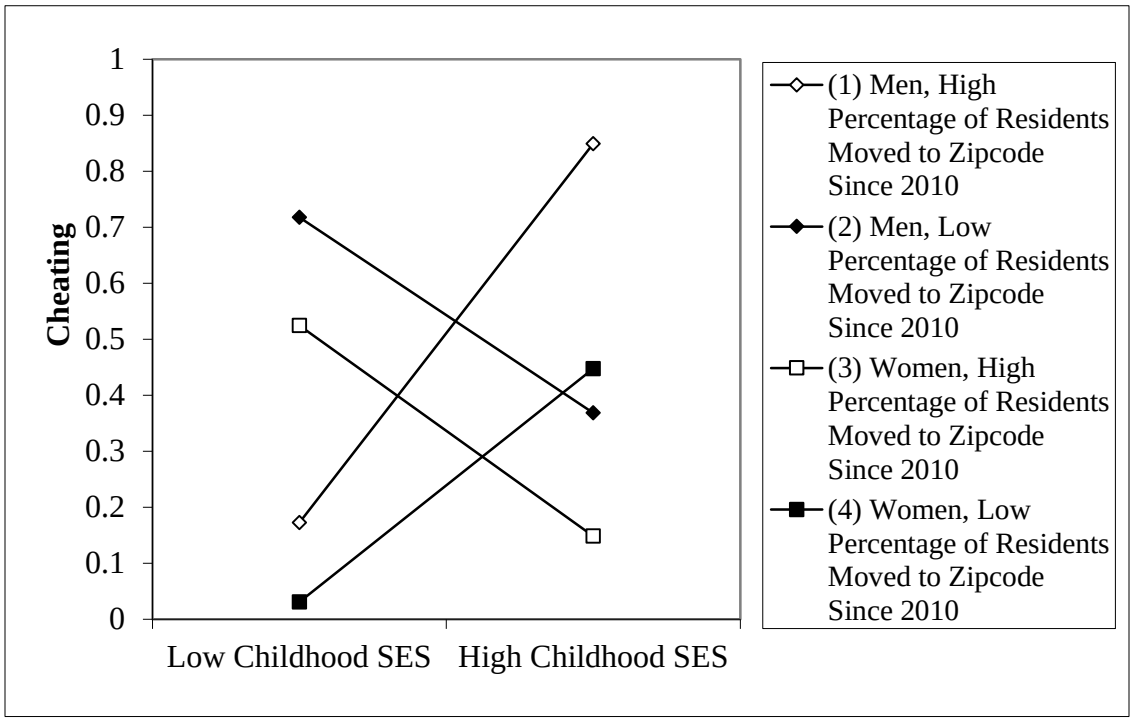


Figure 6.

Amount of cheating in dice-rolling game by childhood residential stability and condition (Model 9)

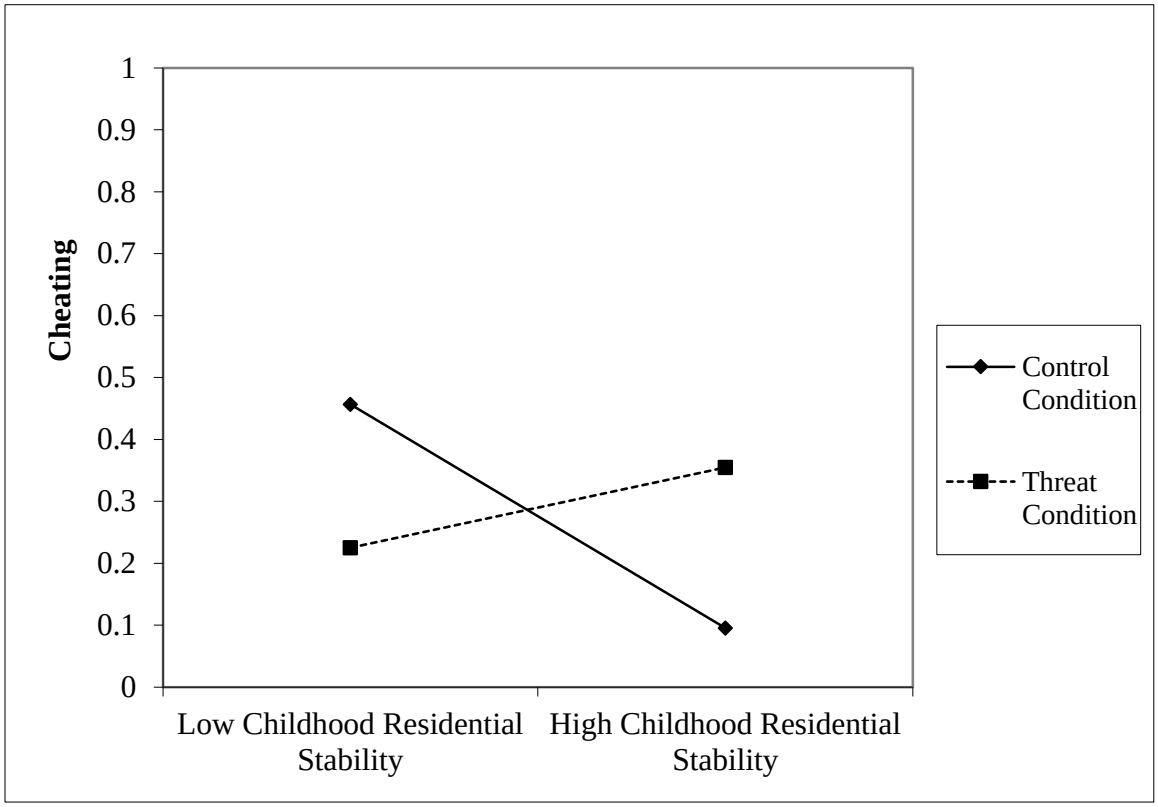


Figure 7.

Amount donated by participants to "second participant" by childhood SES and gender (Model 1)

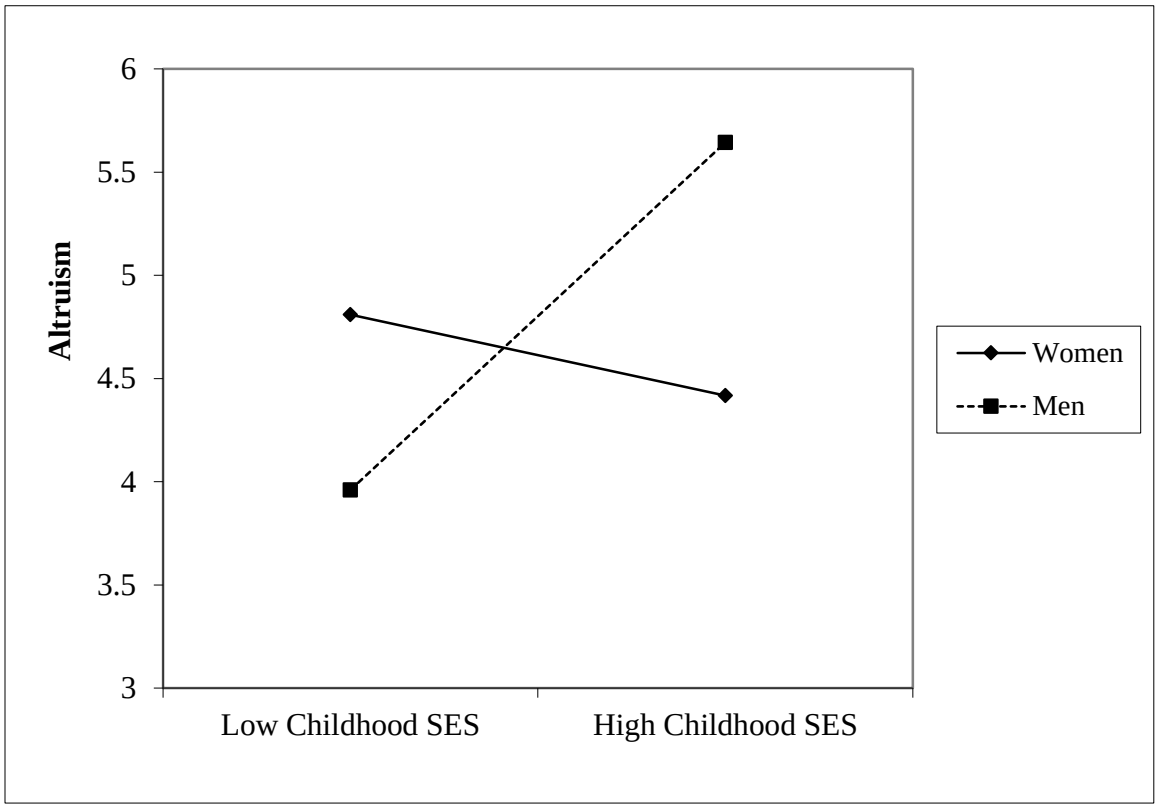


Figure 8.

Amount donated by participants to "second participant" by childhood SES, childhood social-network stability, and gender (Model 1)

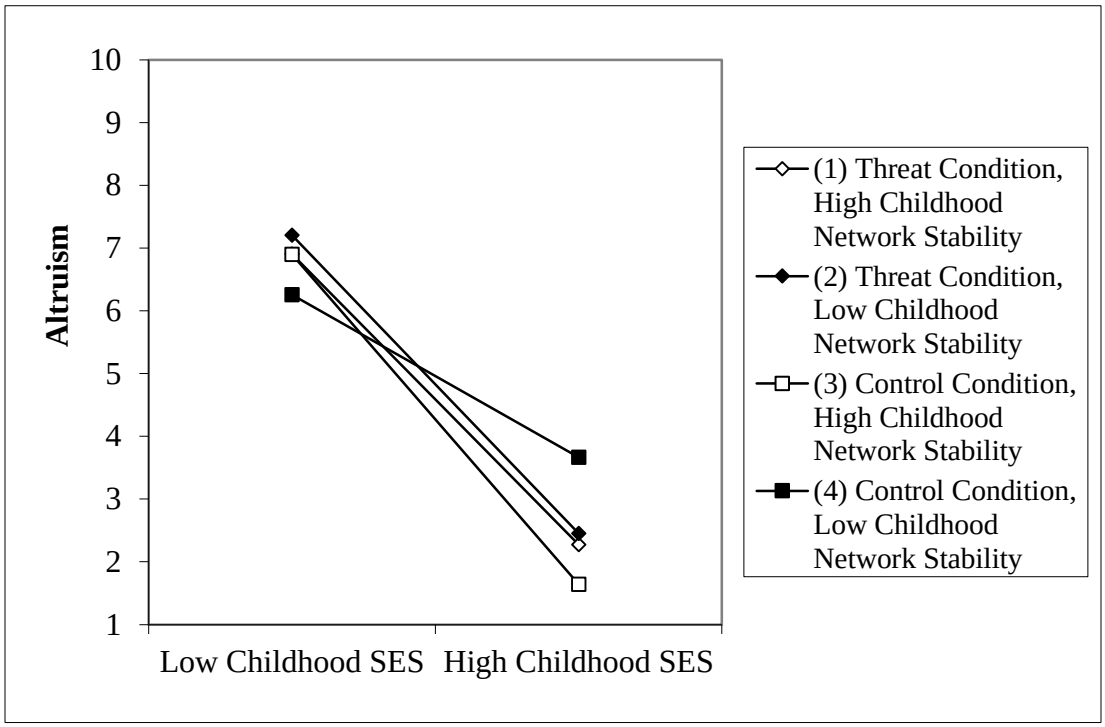


Figure 9a.

Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- 1 SD from the mean of childhood residential stability (Model 2)

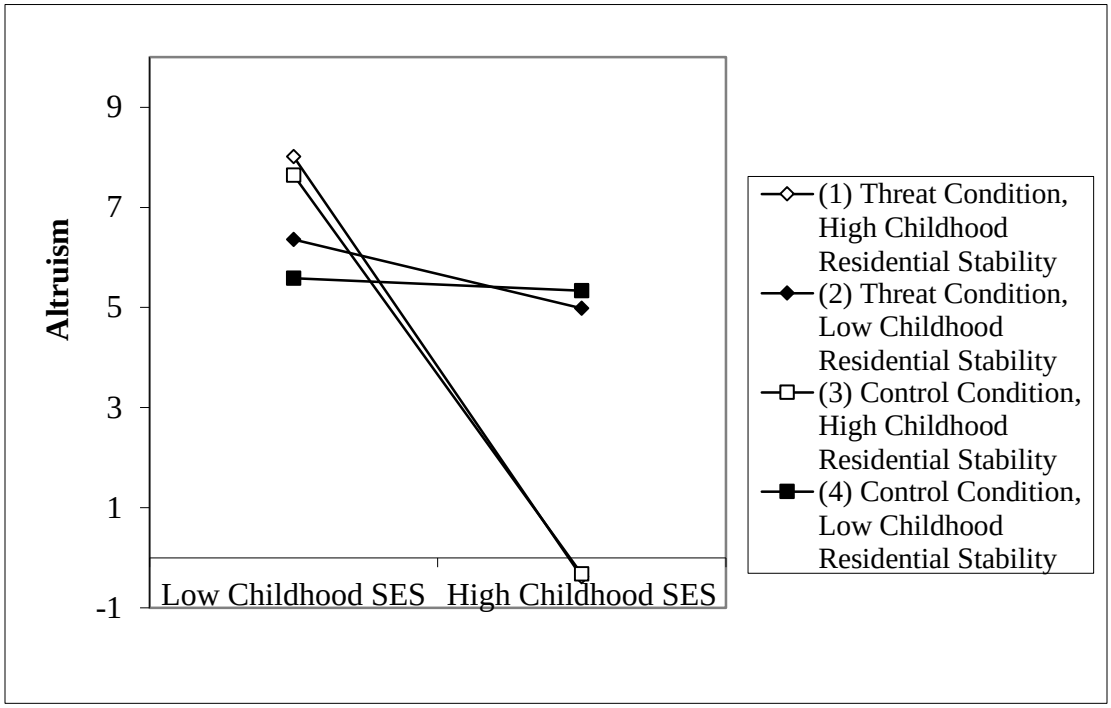


Figure 9b.

Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- .75 SD from the mean of childhood residential stability (Model 2)

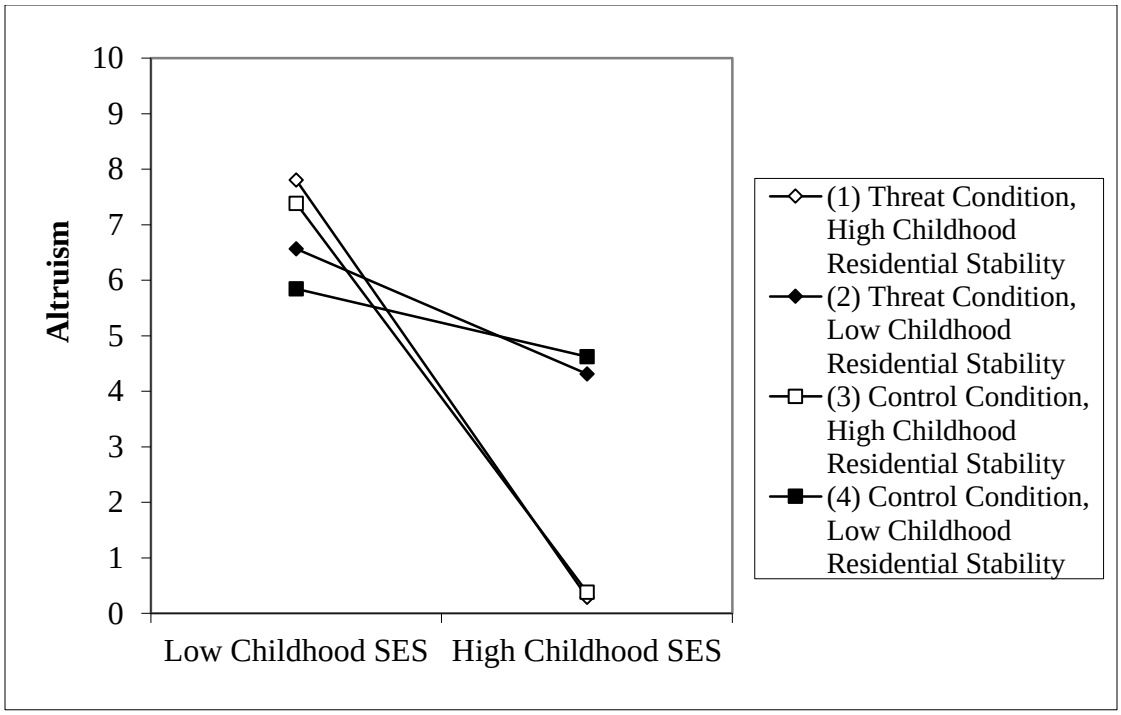


Figure 9c.

Amount donated by participants to "second participant" by childhood SES, childhood residential stability, and condition evaluated at +/- .5 SD from the mean of childhood residential stability (Model 2)

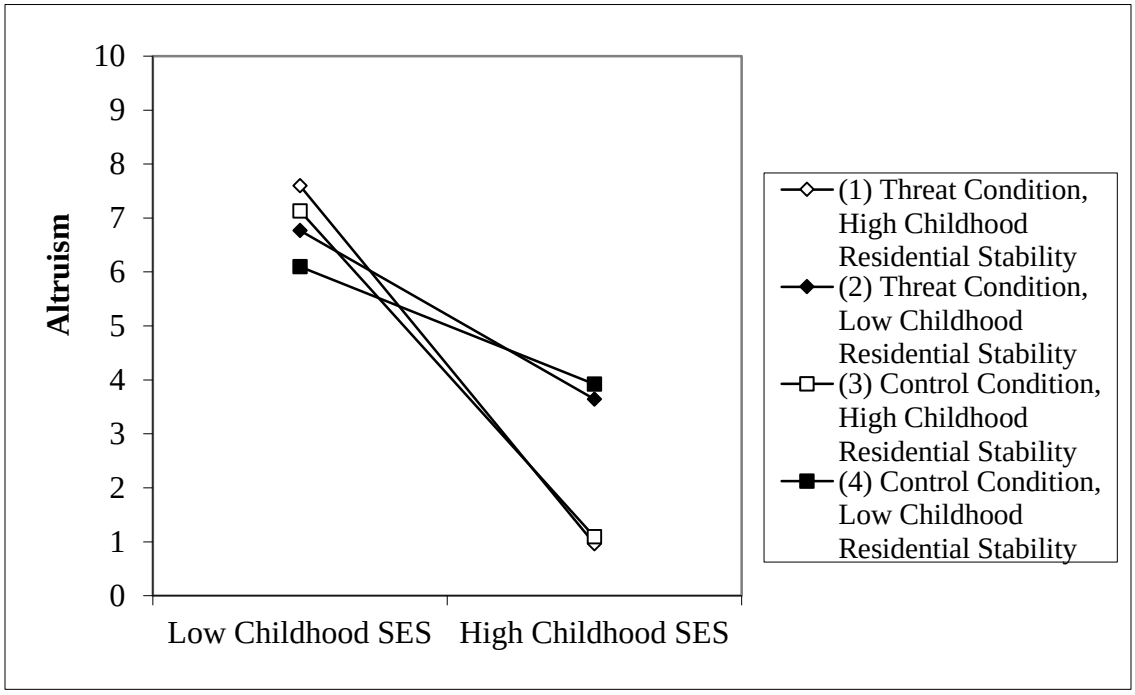


Figure 10.

Amount donated by participants to "second participant" by childhood SES, adolescent social-network stability, and condition (Model 3)

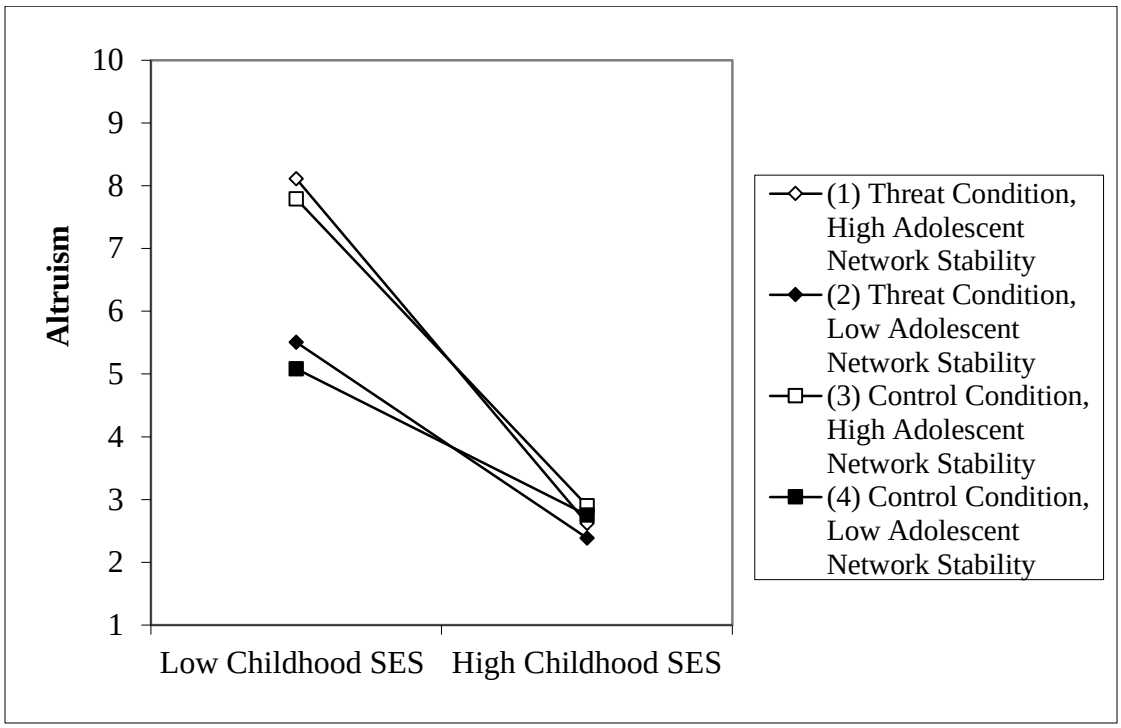


Figure 11.

Amount donated by participants to "second participant" by childhood SES and gender (Model 5)

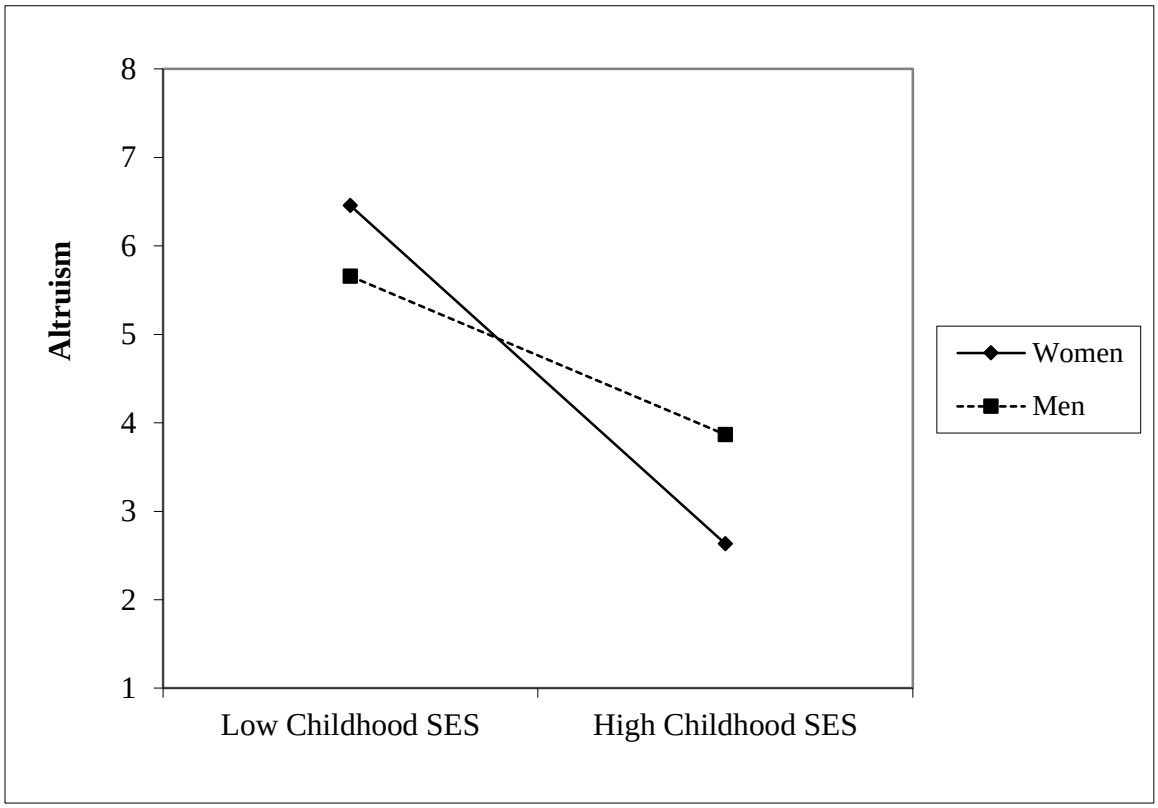


Figure 12.

Amount donated by participants to "second participant" by childhood SES and gender (Model 6)

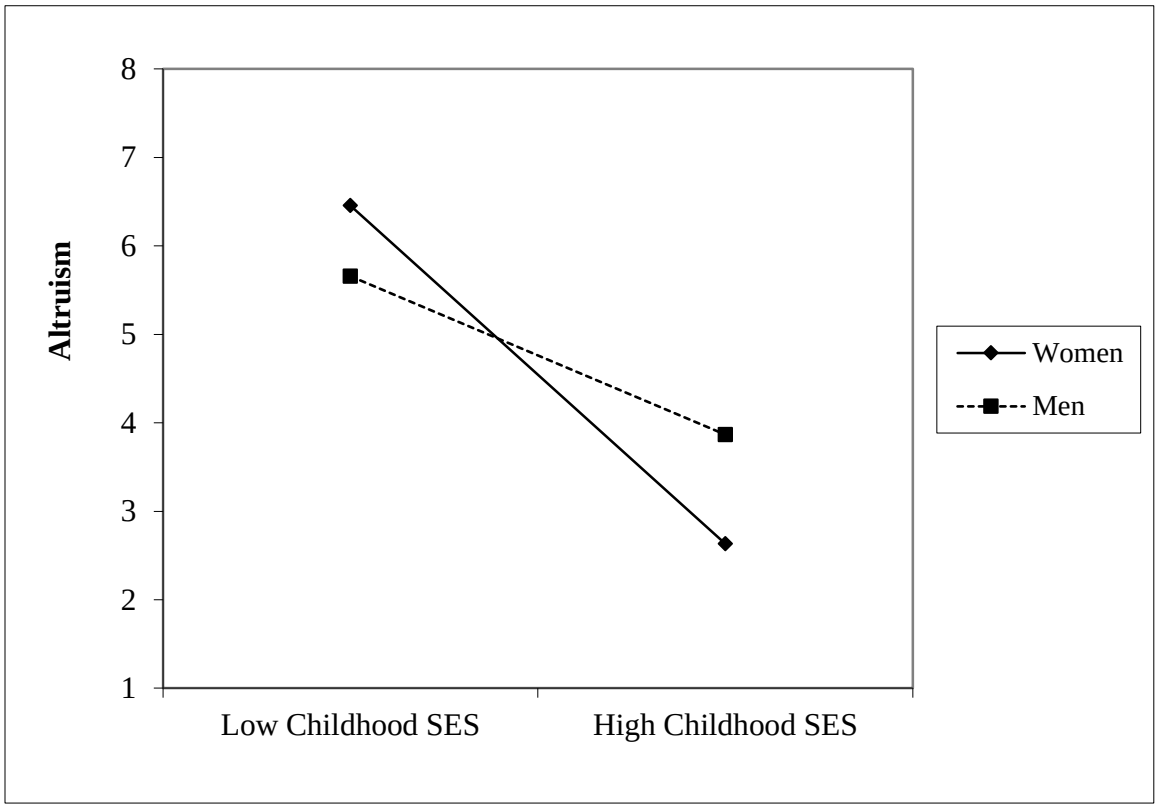


Figure 13.

Amount donated by participants to "second participant" by childhood SES and gender (Model 7)

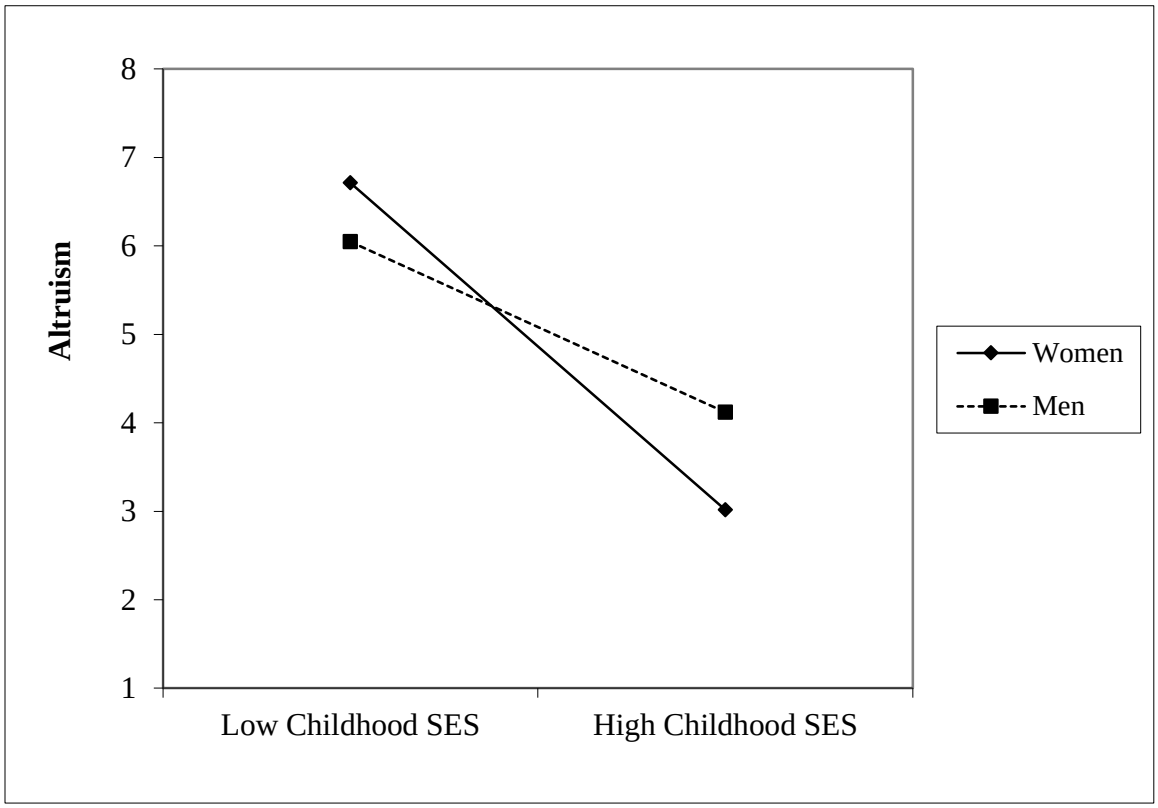


Figure 14.

Amount donated by participants to "second participant" by childhood SES and age (Model 7)

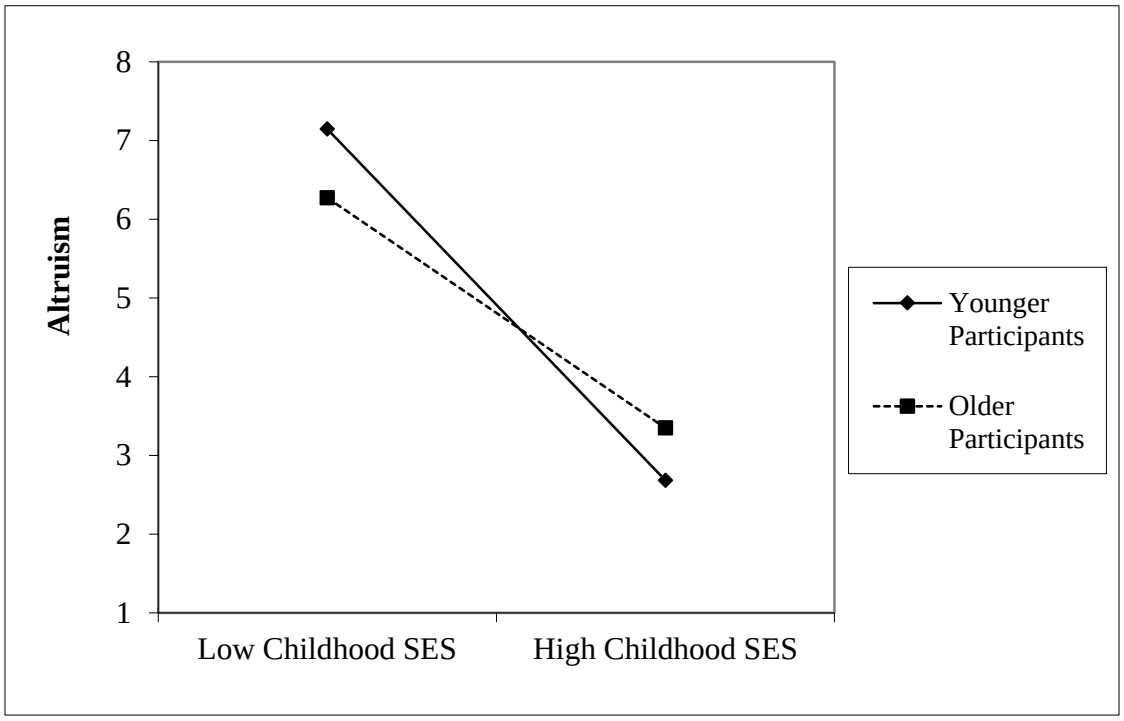


Figure 15.

Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and age (Model 1)

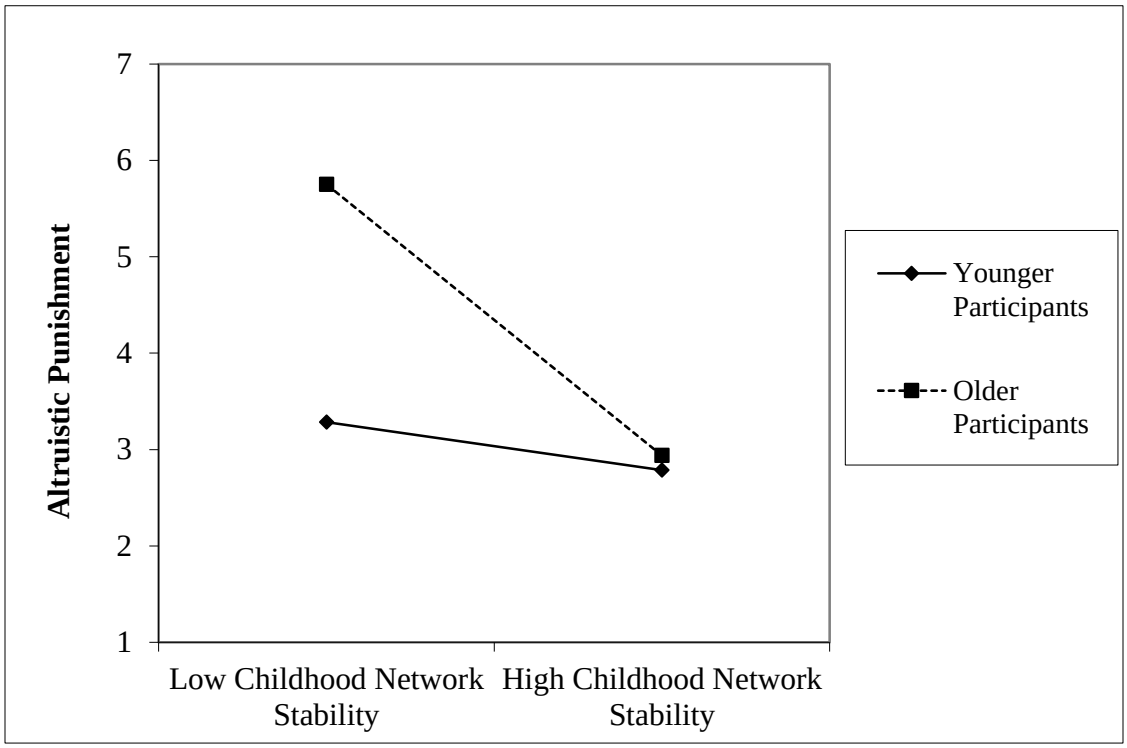


Figure 16.

Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and condition (Model 1)

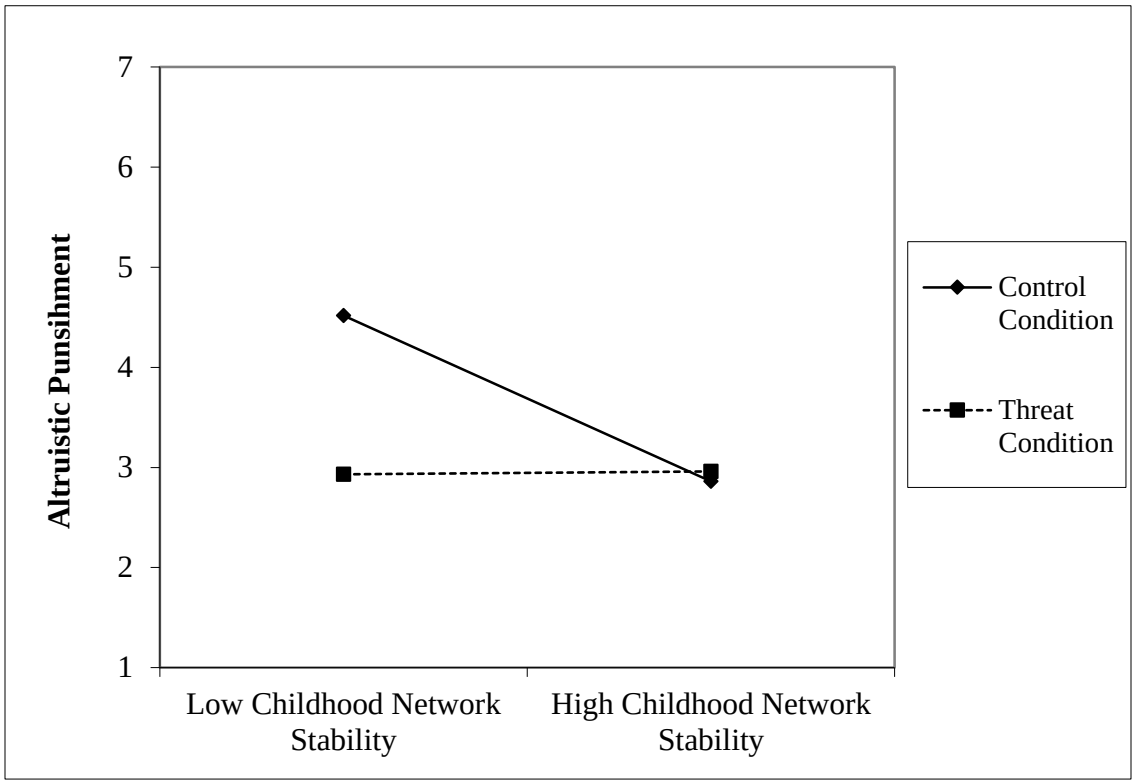
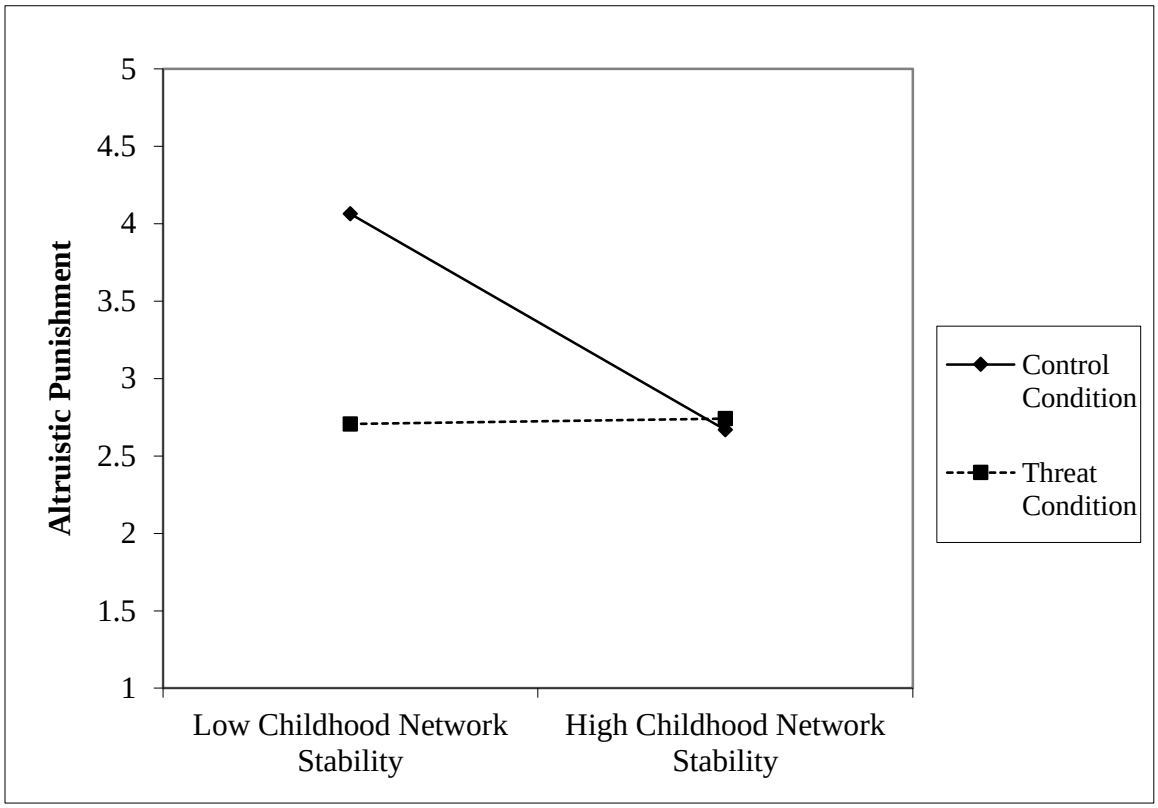


Figure 17.

Amount spent to punish unfair allocations made by "the allocator" by childhood social-network stability and condition (Model 7)



References

Ackerman, J., Shapiro, J.R., Neuberg, S.L., Kenrick, D.T., Schaller, M., Becker, D.V., et al. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to outgroup heterogeneity. *Psychological Science, 17,* 836-840.

Adler, N., Boyce, T., Chesney, M., Folkman, S., & Syme, S. (1993). Socioeconomic inequalities in health: No easy solution. *Journal of the American Medical Association, 269,* 3140–3145.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, London, Sage.

Alexander, R.D. (1987). The Biology of Moral Systems. New York: De Gruyter.

Antonucci, T. C. (1986). Hierarchical mapping technique. *Generations, 10,* 10-12.

Axelrod, R. (1984). *The Evolution of Cooperation*. New York: Basic Books.

Axelrod, R., & Hamilton, W.D. (1981). The evolution of cooperation. *Science, 211,* 1390-1396.

Barclay. P. (2006). Reputational benefits for altruistic punishment. *Evolution and Human Behavior, 27,* 325-344.

Baumeister, R.F., & Leary, M.R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117,* 497-529.

Beadle, J.N., Sheehan, H.H., Dahlben, B., & Gutchess, A.H. (2015). Aging, empathy, and prosociality. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences, 70B*, 215-224.

Belsky, J., Houts, R.M., & Fearon, R.M.P. (2010). Infant attachment security and the timing of puberty: Testing an evolutionary hypothesis. *Psychological Science, 21*, 1195-1201.

Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*, 647–670.

Boyd, R., Gintis, H., & Bowles, S. (2010). Coordinated punishment of defectors sustains cooperation and can proliferate when rare. *Science, 328*, 617-620.

Brown, W.M., & Moore, C.M. (2000). Is prospective altruist-detection an evolved solution to the adaptive problem of subtle cheating in cooperative ventures? Supportive evidence using the Wason selection task. *Evolution and Human Behavior, 21*, 25-37.

Chen, E., Matthews, K.A., & Boyse, W.T. (2002). Socioeconomic differences in children's health: How and why do these relationships change with age? *Psychological Bulletin, 128*, 295-329.

Chisholm, J.S. (1999) Attachment and Time Preference: Relations between Early Stress and Sexual Behavior in a Sample of American University Women. *Human Nature* 10:51–83.

Chisholm, J.S., Quinlivan, J.A., Peterson, R.W., & Coall, D.A. (2005). Early stress predicts age at menarche and first birth, adult attachment and expected life span. *Human Nature, 16,* 233-265.

Choudhury, P., Blakemore, S., & Charman, T. (2006). Social cognitive development during adolescence. *Social Cognitive and Affective Neuroscience, 1,* 165-174.

Christensen, C. & Fierst, D. (1998). Answering the call for prosocial behavior. *Journal of Social Psychology, 138,* 564-573.

Cosmides, L. & Tooby, J. (1992). Cognitive adaptations for social exchange. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture.* New York: Oxford University Press.

Cosmides, L. & Tooby, J. (2005). Neurocognitive adaptations designed for social exchange**.** In D. M. Buss (Ed.), *The Handbook of Evolutionary Psychology* (pp. 584-627). Hoboken, NJ: Wiley.

Dawson, J. F. (2014). Moderation in management research: What, why, when and how. *Journal of Business and Psychology, 29,* 1-19.

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology, 91,* 917-926.

Eagly, A.H. (2009). The his and hers of prosocial behavior: An examination of the social psychology of gender. *American Psychologist, 64,* 644-658.

Earley, C. (1989). Social loafing and collectivism: A comparison of the United States and the People's Republic of China. *Administrative Science Quarterly, 34*, 565-581

Eckstein, S. (2001). Community as gift-giving: Collectivistic roots of volunteerism. *American Sociological Review, 66*, 829-851.

Eisenberg, N., Fabes, R.A., & Spinrad, T.L. (2007). Prosocial development. In R.M. Lerner, & W. Damon (Eds.), *The Handbook of Child Psychology, 6th Edition. III*:11.

Ellis, B.J. (2004). Timing of pubertal maturation in girls: An integrated life history approach. *Psychological Bulletin, 130*, 920-958.

Ellis, B.J., Figueredo, A.J., Brumbach, B.H., & Scholmer, G.L. (2009). Fundamental dimensions of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human Nature, 20,* 204-268.

Fehr, E., & Fischbacher, U. (2004). Third-party punishment and social norms. *Evolution and Human Behavior, 25,* 63-87.

Fehr, E., & Gachter, S. (2000). Cooperation and punishment in public goods experiments. *American Economic Review, 90,* 980-994.

Fehr, E., & Gachter, S. (2002). Altruistic punishment in humans. *Nature, 415,* 137-140.

Figueredo, A.J., Vasquez, G., Brumback, B.H., Schneider, S.M.R., Sefeck, J.A., Tal, I.R., Hill, D., Wenner, C.J., & Jacobs, W.J. (2006). Consilience and life history theory:

From genes to brain to reproductive strategy. *Developmental Review, 26,* 243-275.

Freeberg, A. L., & Stein, C. H. (1996). Felt obligations towards parents in Mexican-American and Anglo-American young adults. *Journal of Social and Personal Relationships, 13,* 457-471.

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology, 41,* 625-635.

Gelfand, M., Triandis, H. C., & Chan, D. K.-S. (1996). Individualism versus collectivism or versus authoritarianism? *European Journal of Social Psychology, 26,* 397-410.

Granovetter, M.S. (1973). The strength of weak ties. *American Journal of Sociology, 78,* 1360-1380.

Griskevicius, V., Ackerman, J.M., Cantu, S.M., Delton, A.W., Robertson, T.E., Simson, J.A., Thompson, M.E., & Tybur, J.M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environment. *Psychological Science, 24,* 197-205.

Griskevicius, V., Cialdini, R.B., & Kenrick, D.T. (2006). Peacocks, Picasso and parental investment: The effects of romantic motives on creativity. *Journal of Personality and Social Psychology, 91,* 63-76.

Griskevicius, V., Delton, A.W., Robertson, T.E., & Tybur, J.M. (2011). Interpersonal relations and group processes-environmental contingency in life history strategies:

The influence of mortality and socioeconomic status on reproductive timing. *Journal of Personality and Social Psychology, 100,* 241-254.

Griskevicius, V., Goldstein, N.J., Mortensen, C.R., Cialdini, R.B., & Kenrick, D.T. (2006). Going along versus going alone: When fundamental motives facilitate strategic (non)conformity. *Journal of Personality and Social Psychology, 91,* 281-294.

Griskevicius, V., Tybur, J.M., Gangestad, S.W., Perea, E.F., Shapiro, J.R., & Kenrick, D.T. (2009). Aggress to impress: Hostility as an evolved context-dependent strategy. *Journal of Personality and Social Psychology, 95,* 980-994.

Griskevicius, V., Tybur, J.M., Delton, A.W., & Robertson, T.E. (2011). The influence of mortality and socioeconomic status on risk and delayed rewards: A life history theory approach. *Journal of Personality and Social Psychology, 100,* 1015-1026.

Griskevicius, V., Tybur, J.M., Sundie, J.M., Cialdini, R.B., Miller, G.F., & Kenrick, D.T. (2007). Blatant benevolence and conspicuous consumption: When romantic motives elicit strategic costly signals. *Journal of Personality and Social Psychology, 93,* 85-102.

Griskevicius, V., Tybur, J.M., & Van den Berg, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology, 98,* 392-404.

Hamilton, W.D. (1964). The genetical evolution of social behavior I. *Journal of Theoretical Biology, 7,* 1-16.

Hamilton, W.D. (1964). The genetical evolution of social behavior II. *Journal of Theoretical Biology, 7,* 16-52.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., & McElreath, R. (2001). In search of Homo Economicus: Behavioral experiments in 15 small-scale societies. *The American Economic Review, 91,* 73-78.

Hine, B., & Leman, P.J. (2014). The developing relationship between gender and prosocial behavior. In Leman, P.J & Tenenbaum, H.R (Eds.), *Gender and Development* (pp. 78-108). New York, New York: Psychology Press.

Kaplan, H.S., & Gangestad, S.W. (2005). Life history theory and evolutionary psychology. In D.M. Buss (Ed.), *The Handbook of Evolutionary Psychology* (pp. 68-95). Hoboken, NJ: Wiley.

Kenrick, D.T., Griskevicius, V., Neuberg, S.L., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science, 5,* 292-314.

Kenrick, D.T., Li, N.P., & Butner, J. (2003). Dynamical evolutionary psychology: Individual decision rules and emergent social norms. *Psychological Review, 110,* 3-28.

Kenrick, D.T., Maner, J.K., Butner, J., Li, N.P., Becker, D.V., & Schaller, M. (2002). Dynamical evolutionary psychology: Mapping the domains of the new interactionist paradigm. *Personality and Social Psychology Review, 6,* 347-356.

Kenrick, D.T., Neuberg, S.L., Griskevicius, V., Becker, D.V., & Schaller, M. (2010). Goal-driven cognition and functional behavior: The fundamental-motives framework. *Current Directions in Psychological Science, 19,* 63-67.

Low, B.S., Hazel, A., Parker, N., & Welch, K.B. (2008). Influences on women's reproductive lives: Unexpected ecological underpinnings. *Cross-Cultural Research, 42,* 201-219.

Lukes, S. (1973). *Individualism*. Oxford, UK: Blackwell.

Marmot, M.G., Rose, G., Shipley, M., & Hamilton, J.S. (1978). Employment grade and coronary heart disease in British civil servant. *Journal of Epidemiological and Community Health, 32,* 244-249.

Maner, J.K., Kenrick, D.T., Becker, D.V., Robertson, T.E., Hofer, B., Neuberg, S.L. et al. (2005). Functional projection: How fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology, 88,* 63-78.

Maslow, A. H. (1968). *Toward a Psychology of Being*. New York: D. Van Nostrand Company.

Nettle, D. (2010). Dying young and living fast: Variation in life history across English neighbourhoods. *Behavioral Ecology, 21,* 387-95.

Nowak, M. (2006). Five rules for the evolution of cooperation. *Science, 314,* 1560-1563.

Nowak, M., & Sigmund, K. (1998). Evolution of indirect reciprocity through image scoring. *Nature, 393,* 572-577.

Oishi, S., & Kesebir, S. (2012). Optimal social-networking strategy is a function is socioeconomic conditions. *Psychological Science, 23,* 1542-1548.

Oishi, S., Rothman, A. J., Snyder, M., Su, J., Zehm, K., Hertel, A.W., Gonzales, M.H., & Sherman, G.D. (2007). The socioecological model of procommunity action: The benefits of residential stability. *Journal of Personality and Social Psychology, 93,* 831-844.

Piff, P.K., Krauss, M.W., Cote, S., Cheng, B.H., & Keltner, D. (2010). Having less, giving more: The influence of social class on prosocial behavior. *Journal of Personality and Social Psychology, 99,* 771-784.

Piff, P.K., Martinez, A.G., Stancato, D.M., Kraus, M.W., & Keltner, D. (2012). Class, chaos, and the construction of community. *Journal of Personality and Social Psychology, 103,* 949-962.

Piff, P.K., Stancato, D.M., Cote, S., Mendoza-Delton, R., & Keltner, D. (2012). Higher social class predicts increased unethical behavior. *PNAS, 109,* 4086-4091.

Promislow, D.E.L, & Harvey, P.H. (1990). Living fast and dying young: A comparative analysis of life history variation among mammals. *Journal of Zoology, 220,* 417-437.

Roff, D.A. (2002) *Life History Evolution.* Sunderland, MA: Sinauer Associates, Inc.

Schaller, M., Park, J.H., & Faulkner, J. (2003). Prehistoric dangers and contemporary prejudices. *European Review of Social Psychology, 14,* 105-137.

Simpson, J. A., Griskevicius, V., & Kim, J. (2011). Evolution, life history theory, and personality. *In L. Horowitz & S. Strack (Eds.), Handbook of interpersonal psychology: Theory, research, assessment, and therapeutic interventions*, (pp. 75-89). New York: Wiley.

Stearns, S. (1992). *The Evolution of Life Histories*. Oxford, England: Oxford University Press.

Tomasello, M., Melis, A., Tennie, C., Wyman, E., & Herrmann, E. (2012). Two key steps in the evolution of human cooperation: The interdependence hypothesis. *Current Anthropology*, *53,* 673-692.

Trivers, R.L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology, 46,* 35-57.

Wilson, M. & Daly, M. (1997). Life expectancy, economic inequality, homicide, and reproductive timing in Chicago neighbourhoods. *British Medical Journal, 314,* 1271-1274.

Yousif, Y., & Korte, C. (1995). Urbanization, culture, and helpfulness: Cross-cultural studies in England and the Sudan. *Journal of Cross-Cultural Psychology*, *26,* 474-489.

Appendix A
Economic threat prime

Tough Times Ahead: The New Economics of the 21st Century

By MORGAN JAMESTON, Senior Times Writer

Less than a year ago Jonathan Pierce had a stable, well-paying job. Having earned a college degree, Jon was doing well at age 25. He even believed he was about to be promoted. Today, however, Jon is yet again standing in the dreary unemployment line downtown. "I didn't think this could happen to me," he mutters while shaking his head. "I have a college degree and I can't even get a job interview, let alone a job. I'm facing foreclosure on my house, and I just don't know where the money is going to come from."

This depressing scene is not unique. Unemployment lines are full across the country. "The numbers are staggering," notes Oliver Windsor, the head of the U.S. Economic Commission. And it's not just blue-collar jobs like construction and food service that are being cut. It's the white-collar jobs like management and office work that are being hit the hardest. According to Windsor, "the worst is not over yet by a long shot." Unfortunately, there is little that the government can do to remedy the situation. As every economist knows, while government bailouts can slow the bleeding, it can't fix the underlying problems.

The economic crisis is only the beginning of the new reality faced by Americans. After decades of economic growth, experts agree that the U.S. is on the verge of an economic shift. "The economy of the 21st century is fundamentally different from that in the past," explains Dr. Patricia Wharton, chair of the panel for U.S. Economic Stability. "The sad truth is that this generation is certain to be the first generation to do worse than their parents. The housing bubbles, bank crises, skyrocketing food and energy prices, and the credit crisis only begin to scratch the surface of our economic problems. Instead of college graduates wondering whether they will be able to afford a flat screen TV, they'll soon be wondering where there next meal is going to come from, how they'll clothe themselves, and how they can possibly afford a place to live."

The fact that younger Americans should expect to have little economic advancement is only part of the imminent economic disaster. Skyrocketing worldwide population growth and scarcity of natural resources are both working together to transform the U.S. economy. To understand how these factors are changing life for Americans, Oliver Windsor, one of 80 leading scientists who contributed to the government report, reminds us of the basics: "There are literally billions of people out there competing with each other. And these people are not just competing for jobs. The truth is that they're competing for food, water, and air."

While it may be difficult for some to imagine that the U.S. might one day be in poverty, the world in the 21st century is highly inter-connected. Things that happen in China, India, and Africa have tremendous consequences for what happens in the rest of the

world. As the people across the globe gain skills and opportunities, competition for scarce jobs and resources will only increase. As necessities such as safe food, drinkable water, and breathable air become scarcer and more expensive, the world as we know it will become a very different place. Instead of walking into a supermarket and buying a gallon of water for under a dollar, consumers may soon be spending as much as $10 for only a small bottle of clean water.

Watching Jonathan Pierce wait in the unemployment line downtown, one can't help but be reminded of the Great Depression—a time in American history that most people only remember from their history classes. The images of the Depression are difficult to erase: Malnourished children begging for food, people standing in line all day to get a slice of bread and a cup of soup, everyone struggling to feed themselves and their families. The sad truth for people like Jonathan Pierce and countless others is that losing a job is only the beginning. Tough times are ahead.

Appendix B

Neutral control prime

Technology in 21st Century More Unreliable Than Most Think

By MORGAN JAMESTON, Senior Times Writer

Jonathan Pierce sat at his home office desk and stared at his blank computer screen in the quiet early morning hours. As part of his job, Jon manages information and statistics for several local businesses and office managers. In his spare time, Jon also listens to music and dabbles in nature photography. Every part of his multifaceted identity – from business logs to blues music to blades of grass – was saved on his personal computer. At least, it was until 5:37 AM this past Tuesday when everything important to Jon was suddenly wiped from the hard drive. The cause—a computer crash.

Just the other night, Jon was surfing the internet. Suddenly, in the middle of skimming over a news article from an online publication that he frequently reads, his internet browser abruptly closed and the monitor went black. Computer customer support teams have no direct cause for the crash, chalking it up to yet another random data loss event.

The staff at technology support centers is worried. They are astonished at the exponential increase in data loss from random computer crashes. "Ten years ago, these kinds of crashes accounted for maybe 30- to 40-percent of data loss each year," Joan Michaels, a technology manager, recalls. "Two years ago we had over 200. This year it's tripled to over 600. The fluctuations are amazing. You just don't know what tomorrow is going to bring."

Michaels is shocked by the uncertainty of many of these crashes. "It seems that at least half of these outages occur for no reason. A young man just happens to be checking his email when the internet browser malfunctions. A young woman is waiting for a picture to upload from her camera when the computer unexpectedly shuts down. What really gets me is the number of potential causes for any such crash—overheated motherboards, minor water damage, or overloading network connections."

The high prevalence of random computer crashes is also being seen in emerging studies from Massachusetts Institute of Technology. Dr. Douglas Kenrick, head of the research project, notes a worrisome pattern: "Comparing computer outages and crashes across the past two decades, we find that it is very difficult to predict how safe and permanent data really is. For example, people today are at a much higher risk of losing precious data and information than people merely a few years ago." The evidence shows that our computers, cell phones, and data storage devices are essentially unreliable. "This has important implications," Dr. Kenrick points out. "Because you never know what's going to happen and whether your storage is permanent, people will need to take this into account when they're deciding how to save important documents."

Patricia Wharton of the National Science and Technology Council points out that people mistakenly believe large mainframe computer crashes, such as those that caused the major power outages along the East Coast, to be the only data threat facing our nation. "It is certainly true that power outages pose a grave threat to Americans' data safety. A short

circuit, network overload, or data configuration incompatibility could destroy, damage, and harm the data of thousands or millions of American cities and corporations with little to no warning. But what people forget is that the vast majority of data loss instances happen on a much smaller scale in the American home. It is our own computers and portable electronic devices that are crashing and causing severe amounts of information and data loss."

The random nature of computer crashes is clearest in schools and universities across the world. Just five years ago, it was almost unheard of that someone would experience a random outage at school or at work. Today, this is part of normal life as the prevalence of technology increases and more and more dorm rooms and offices contain enough technological devices to rival an electronics store. "Power strips to prevent power surges are not enough," notes Joan Michaels. "We know that even frequent back-ups to external hard drives do little because most of these data and information storage devices are susceptible to the same data corruption and loss. More and more, citizens find themselves without important business documents or even cherished family photographs for reasons beyond their control, victims of at-home computer crashes."

As Jonathan Pierce waits to discover the fate of his life's work and memories after being the latest victim of random crash, we can't help but be reminded about the unpredictability of the technology that we have come to expect as reliable and permanent. Whether it is random power outages, network or internet difficulties, or the possibility of physical damage, the ability to protect and safely store our data for next year—or even tomorrow—is impossible. People need to brace themselves for a new reality where technology is unpredictable.

Appendix C
Self-report measures of childhood and current SES

Now, please let us know a little bit about your economic background when you were growing up. Please answer questions 1-5 on a 1 (strongly disagree) to 7 (strongly agree) scale.

1) My family usually had enough money for things when I was growing up
2) I grew up in a relatively wealthy neighborhood.
3) I felt relatively wealthy compared to the other kids in my high school.
4) My family struggled financially when I was growing up.
5) When I was growing up, I felt poor compared to other people.

6) What was your household income when you were growing up?
    a. $15,000 or less
    b. $15,001-$25,000
    c. $25,001-$35,000
    d. $35,001-$50,000
    e. $50,001-$75,000
    f. $75,001-$100,000
    g. $100,001-$150,000
    h. $150,001+

Thank you. Now, please let us know a little about your CURRENT economic background. Please answer questions 1-4 on a 1 (strongly disagree) to 7 (strongly agree) scale.

1) I don't need to worry too much about being able to pay my bills.
2) I have enough money to buy things I want
3) I feel relatively wealthy these days
4) I feel relatively poor these days

5) What is your CURRENT household income?
    a. $15,000 or less
    b. $15,001-$25,000
    c. $25,001-$35,000
    d. $35,001-$50,000
    e. $50,001-$75,000
    f. $75,001-$100,000
    g. $100,001-$150,000
    h. $150,001+

Appendix D

Self-report measures of lifetime changes in residence

Please use the spaces below to describe changes in residence you have experienced throughout your life. For each change in residence, please report the approximate age at which the move occurred and select the option that best describes your experience.

Change in residence 1: Age: _____

A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 2: Age: _____

A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 3:

Age: _____

A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 4:

Age: _____

A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 5:

Age: _____

A) Moved before starting school

B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 6:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 7:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 8:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 9:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 10:

Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 11:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 12:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 13:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 14:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 15:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 16:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 17:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 18:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Change in residence 19:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state

G) Moved to a different country

Change in residence 20:
Age: _____
A) Moved before starting school
B) Moved within the same city, did not change schools,
C) Moved within the same city, changed schools
D) Moved within the same city, no longer in school
E) Moved to a different city within the same state
F) Moved to a different state
G) Moved to a different country

Appendix E

Self-report measures of lifetime social-network stability

Please answer the following questions on a 1 (strongly disagree) to 7 (strongly agree) scale. Make sure to answer these questions honestly and to the best of your ability. For the following questions "childhood" is defined as the period of your life prior to the age of 13 (i.e., before high school).

1) My circle of friends changed very little throughout my childhood.
2) I lost many friends during my childhood.
3) During my childhood, I often changed the circle of friends I spent most time with.
4) The person I considered my best friend often changed throughout my childhood.
5) I had a stable group of friends during my childhood.

Now please answer the questions above again, this time thinking about your adolescence (i.e., the time between 13 to 18 years of age).

1) My circle of friends changed very little throughout my adolescence.
2) I lost many friends during my adolescence.
3) During my adolescence, I often changed the circle of friends I spent most time with.
4) The person I considered my best friend often changed throughout my adolescence.
5) I had a stable group of friends during my adolescence.

Now please answer the questions above again, this time thinking about your young adulthood (i.e., the time between 19 and 25 years of age).

1) My circle of friends changed very little throughout my young adulthood.
2) I lost many friends during my young adulthood.
3) During my young adulthood, I often changed the circle of friends I spent most time with.
4) The person I considered my best friend often changed throughout my young adulthood.
5) I had a stable group of friends during my young adulthood.

Now please answer the questions above again, this time thinking about your adulthood (i.e., any age above 26 years).

1) My circle of friends changed very little throughout my adulthood.
2) I lost many friends during my adulthood.
3) During my adulthood, I often changed the circle of friends I spent most time with.
4) The person I considered my best friend often changed throughout my adulthood.
5) I had a stable group of friends during my adulthood.

Appendix F

Demographics questionnaire

Thank you. Now please answer the following demographic questions.

1) What is your gender?
    a. Male
    b. Female
2) What is your age (in years)? _____
3) What is your ethnicity?
    a. African American
    b. American Indian
    c. Asian
    d. Caucasian
    e. Hispanic
    f. Native Hawaiian/Pacific Islander
    g. Mixed
    h. Other
4) Is English the language you know best?
    a. Yes
    b. No
5) If English is not the language you know best, how long (in years) have you spoken English? _____
6) What is your relationship status?
    a. Single (not dating)
    b. Single (dating)
    c. In a relationship (not cohabitating)
    d. In a relationship (cohabitating)
    e. Engaged
    f. Married
7) How many children do you have? _____
8) What is your current zip code? _____