



Rule breaking in adolescence and entrepreneurial status: An empirical investigation [☆]

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ABSTRACT

Entrepreneurship researchers contend that many entrepreneurs are rule breakers in order to succeed in their venturing processes. Few studies have examined the longitudinal relationship between negative forms of rule breaking in adolescence and entrepreneurial status in adulthood. Drawing upon Willis' [Willis, R.H. 1963. Two dimensions of conformity–nonconformity. *Sociometry* 26: 499–513.] theory on nonconformity, this study hypothesizes a positive relationship between an individual's modest rule breaking in adolescence and entrepreneurial status. Results ($N = 165$) support this hypothesis and also show that modest rule breaking serves as a mediator in the relationship between risk propensity and entrepreneurial status. These results have important implications for entrepreneurs' ethical decision making.

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1. Executive summary

Entrepreneurs are often characterized by traits such as autonomy, innovation, and high risk taking. Almost by definition, an entrepreneur should be a rule breaker in order to be innovative and successful in the venturing process. Rule breaking refers to individual behaviors that “fail to conform to the applicable normative expectations of the group” (Kaplan, 1980, p. 5). This definition reveals that rule breaking can be either positive or negative. Researchers and practitioners in entrepreneurship have paid extensive attention to the positive forms of rule breaking in adulthood (e.g., challenging accepted standards and practices, bypassing obsolete norms to improve efficiency, etc.). Numerous anecdotal stories have emerged with regard to the importance of positive forms of rule breaking for the invention of a new product or new production method, the generation of new markets, and the establishment of new ventures.

In contrast, negative forms of rule breaking have seldom been discussed in the entrepreneurship literature. Few studies have examined the long-term consequences of negative forms of rule breaking that occurred in one's earlier life. This study attempts to fill this research gap by investigating the associations among rule breaking in adolescence, risk propensity, and entrepreneurial status (ES; i.e., whether an individual becomes an entrepreneur or a corporate manager). Rule breaking in adolescence is operationalized as negative forms of deviance that a person engaged in before graduating from high school. Various rule-breaking behaviors (e.g., delinquency, family and school offenses, drug use, etc.) were measured retrospectively in order to predict entrepreneurial status assessed six years apart. Previous studies only showed posterior differences between identified samples of

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entrepreneurs and managers. The current study, utilizing a longitudinal design, has the potential to overcome the weakness of cross-sectional analyses and to draw stronger inferences.

Our primary research question is, “Will rule breaking in adolescence be positively associated with entrepreneurial status in adulthood?” Drawing upon Willis' (1963) theory on nonconformity, this study hypothesizes a positive relationship. Based on a sample of 60 entrepreneurs and 105 managers, this study provides a positive answer to the research question. Specifically, after controlling for the personality traits of achievement and social potency (two traits associated with ES and leadership), modest rule breaking (a composite of delinquency and family/school offenses) is significantly related to ES in adulthood.

Extending the literature on dispositional influences on ES, this study also showed that modest rule breaking serves as a mediator in the risk propensity–ES relationship. This mediating mechanism is aligned with the argument that the influence of a personality trait on individual outcomes is carried out through explicit individual behaviors. We contend that one of the underlying processes linking risk propensity and ES may be that people high in risk propensity are more likely to exhibit behavioral patterns of challenging the status quo and breaking established rules/metal frames in social contexts. This behavioral pattern, in turn, may result in a higher probability of successfully grasping business opportunities and starting new ventures.

These results have significant ethical implications for entrepreneurs and other stakeholders in the venturing process. We found that entrepreneurs, as opposed to corporate managers, engaged in more modest rule-breaking behaviors in adolescence (which are negative in nature). A critical question then arises: Will this tendency to engage in negative rule breaking persist in their adulthood in terms of neglecting or bypassing social codes and ethical standards? This is a question worthy of future empirical investigation. Although the current study cannot provide an answer to this question, we should be aware of the possibility that tendencies toward rule breaking may influence subsequent ethical recognition and decision making in critical ethical choices. Entrepreneurs should pay close attention to the fine line between rule-breaking behaviors that lead to innovation and behaviors that result in incarceration.

2. Introduction

Orville Wright did not have a pilot's license: Don't be afraid to bend, or break the rules.

Richard Tait, Cranium Inc.

Rule breaking refers to individual behaviors that “fail to conform to the applicable normative expectations of the group” (Kaplan, 1980, p. 5). Entrepreneurship researchers often consider rule breaking as synonymous with innovation and creativeness, two personal characteristics that are indispensable for becoming a successful entrepreneur. By definition, rule breaking can be either positive or negative (Warren, 2003). In the entrepreneurship literature, more attention has been paid to the positive forms of rule breaking of adult entrepreneurs (e.g., bypassing obsolete norms to improve efficiency) than negative ones (e.g., violating explicitly defined regulations). Anecdotal evidence has shown the importance of positive rule breaking and “out-of-the-box” thinking for the invention of a new product or new production method, the generation of new markets, and the establishment of new ventures. In contrast, negative forms of rule breaking have received little research attention. Few studies have examined the question of whether negative forms of rule breaking in adolescence are associated with entrepreneurial status (ES; i.e., whether an individual becomes an entrepreneur vs. a corporate manager in adulthood).

Rule breaking has been an important topic in other disciplines. In the youth development literature, rule breaking has been depicted in a largely negative light because of its emphasis on negative forms of behaviors. Willis and his colleagues (Hollander & Willis, 1967; Willis, 1963), however, argue that two different motives underlie the negative forms of rule breaking in adolescence. Rule breaking could reflect true independence and autonomy from the norms of a group (referred to as *independence* by Willis). Or it might reflect a reactant and rebellious posture and antisociality (referred to as *anticonformity*). According to this theory on nonconformity, the components of independence and autonomy in adolescent rule breaking leave room for creativity and innovation in future behavior. Consequently, although rule breaking in adolescence manifests itself in mostly negative forms, a positive association between rule breaking and ES could form in later life.

In addition, various personality traits have been shown to be associated with ES. Creating a new venture is a risky behavior, and risk taking has been the core feature of entrepreneurial behaviors. The personality trait of risk propensity has been extensively examined as a key predictor of ES. Following Simon et al. (2000), we define risk propensity as the extent to which a person is willing to knowingly take risks. A recent meta-analysis reveals an effect size of $d = .31$ on risk propensity between groups of different entrepreneurial status (Stewart & Roth, 2004). As research in personality psychology suggests, personality reflects the consistent pattern of a person's behavior (e.g., Funder, 2001). Consequently, the influence of personality traits on organizational and individual outcomes is carried out through explicit individual behaviors. We argue that one of the underlying processes linking risk propensity and ES is that people high in risk propensity are more likely to exhibit behavioral patterns of challenging the status quo and breaking established rules/metal frames in social contexts. This behavioral pattern, in turn, can result in a higher probability of successfully grasping business opportunities and starting new ventures.

Although theoretically appealing, this mediation mechanism through rule breaking has not been empirically examined in previous research. The current study investigates whether rule breaking in adolescence serves as a mediator in the relationship between risk propensity and ES. Although the majority of prior research simply utilized *t*-tests to compare the entrepreneur group vs. non-entrepreneur group based on cross-sectional data, this study utilized a longitudinal design and can thus reduce the common method bias and strengthen the conclusions.

This study contributes to the entrepreneurship literature by examining negative forms of rule breaking in adolescence and their linkage with adulthood ES. This study also expands the theoretical discussions on destructive vs. constructive deviance in the management literature (e.g., Warren, 2003). Researchers on deviance in organizations have drawn a clear boundary between different forms of deviant behaviors (i.e., negative vs. positive and destructive vs. constructive). This study argues that certain seemingly negative rule-breaking behaviors in adolescence may have components of autonomy and independence, which have constructive connotations and could be beneficial in the long term.

This study can have important implications for ethical decision making in the venturing context. Rule breaking is a double-edged sword, and the line between behaviors leading to innovation and those resulting in incarceration is blurry. In simple terms, ethical behaviors are those that conform to generally accepted standards in business and other organizational contexts. Neglecting or bypassing established codes can sometimes be unethical and even illegal. Entrepreneurs should be cognizant of their behavioral tendencies to break rules and should be highly aware of the ethical components in making business decisions. Organizational ethics cannot be achieved until leaders proactively foster an ethical culture (Ferrell, 2005), and the impacts of entrepreneurs' rule breaking in cultivating an ethical culture in the venture could be profound.

This paper proceeds in the following manner. First, previous research that examines the relationship between risk propensity and ES is reviewed. Second, drawing upon Willis' (1963) theory on nonconformity, we propose a mediation model in which rule breaking in adolescence partially mediates the risk propensity–ES relationship. Specific hypotheses are then developed. Third, our research method and results are articulated. The implications for research and practices on entrepreneurship and business ethics are discussed in the last section.

3. Risk propensity and entrepreneurial status

In classic decision-making literature, risk is conceptualized as a function of the variation in the distribution of possible outcomes, their associated likelihood, and the subjective values given to these various possible outcomes (MacCrimmon & Wehrung, 1986). However, people do not always make decisions based on a rational calculation of these factors; rather, personal predispositions toward risk (i.e., risk propensity) have been shown to affect decisions under different risk situations (e.g., Bromiley & Curley, 1992; Brown, 1970). Although some researchers have argued that risk propensity is a compound trait representing a combination of all five dimensions of the Five Factor Personality Model (e.g., Nicholson et al., 2005), others (as well as the current study) contend that risk propensity is an independent sixth dimension of personality (e.g., Jackson, 1994; Paunonen & Jackson, 1996).

A core part of entrepreneurial behavior is risk taking (Carland et al., 1984), and risk propensity is a stable individual difference factor that has been linked to entrepreneurial decision making (Mullins & Forlani, 2005) and venture performance (e.g., Begley & Boyd, 1987; Brockhaus, 1980, 1982). For example, Sitkin and Weingart (1995) found that risk propensity impacts the effects of situational factors on risky decision-making behavior. Many studies suggested a strong risk-taking-venture performance relationship, especially in hostile and/or technologically sophisticated environments (e.g., Covin & Slevin, 1998; Naman & Slevin, 1993).

Both theoretical and empirical studies show the influence of risk propensity on an individual's ES. The general belief is that there is an inherent riskiness in business ownership not present in managerial roles. Managers work within an established business organization; their work processes are supported by formal procedures and practices. In contrast, entrepreneurs work in relatively unstructured environments. As argued by Stewart and Roth (2001), entrepreneurs deal with more business risks than managers because of the highly unstructured, uncertain situations that entrepreneurs face and the ultimate personal responsibility for their decisions. The entrepreneurs' risk propensity influences their choices on whether to start and continue a risky entrepreneurial venture. Gasse (1982, p. 60) has long asserted that the "distinction between creating risk and risk-bearing fundamentally distinguishes between entrepreneurs and managers."

Schneider's (1987) Attraction-Selection-Attrition (ASA) model has been used to explain the homogeneity of personality scores within jobs and the heterogeneity across jobs. It can also explain the gravitation process of entrepreneurs. Specifically, individuals low in risk propensity are more likely to gravitate toward contractual employment careers, whereas individuals high in risk propensity, with similar capability and managerial skills, tend to self-select into entrepreneurial roles because they could derive more satisfaction from the entrepreneurial form of employment. On the other hand, venture capitalists and suppliers who work as selection agents may favor individuals who enjoy taking risks. Shane and Venkataraman (2000) have suggested that venture capitalists consider the individual characteristics of an entrepreneur to be critical to the venture's success. Thus, a positive relationship can be expected between risk propensity and entrepreneurial status: risk propensity should distinguish entrepreneurs from other groups, with entrepreneurs demonstrating higher risk propensity (Stewart et al., 1999).

Empirical studies and meta-analyses on entrepreneurs' personality have confirmed this reasoning and have shown that entrepreneurs have a significantly higher level of risk propensity as compared with corporate managers. For example, based on a sample of 767 entrepreneurs and corporate managers, Stewart et al. (1999) found that entrepreneurs differ from corporate managers in terms of risk propensity. In addition, Miner and Raju's (2004) meta-analysis, based on 14 studies, found that risk propensity was positively related to entrepreneurial status. Similar results were found by Stewart and Roth (2004), who obtained a mean effect size of $d = .31$ (corrected for internal consistency reliability) between the two groups. It should be noted that most prior studies used cross-sectional designs and only examined posterior differences between identified samples of entrepreneurs and managers.

The current study uses a longitudinal design to improve causal influences on the roles of risk propensity and rule breaking in determining entrepreneurial status in later life. Following previous studies on ES, we use managers in traditional employment contexts as a comparison. Alternative groups have been used in prior research, such as unemployed workers, students, or the general population. However, these samples may not be comparable because of confounding factors such as differential education and ability. We used managers because they are similar to entrepreneurs in terms of general ability, general business knowledge, and exposure to business opportunities. Based on the empirical evidence on risk propensity and ES, we hypothesize the following:

Hypothesis 1. Risk propensity is positively related to entrepreneurial status in adulthood.

4. Rule breaking in adolescence as a mediator

Due to the inconsistent findings of research focusing solely on personality traits of entrepreneurs, researchers have urged that future research should focus on the behaviors of entrepreneurs in order to overcome the limitations associated with traits studies (e.g., Carter et al., 2003; Gartner, 1989; Sandberg & Hofer, 1987). The current study measures individuals' rule breaking in adolescence as explicit behaviors in predicting entrepreneurial status in adulthood.

According to Argyle et al. (1981), rules are defined as formally shared beliefs about the behaviors that should or should not be exhibited in particular situations. As a related concept, norms are the ranges of behavior that are tolerated or expected by a particular social group (Jackson, 1966). Compared with rules, norms are emergent and enforced informally (Feldman, 1984), although there is only a blurry line between them. The violation of rules and norms typically leads to social punishment and/or formal sanctions. In the management literature, however, there has been a discussion on the distinctions between constructive (i.e., positive or pro-social) rule breaking and destructive (i.e., negative or antisocial) rule breaking (Morrison, 2006; Warren, 2003). For example, Morrison (2006) defined employees' pro-social rule breaking as an intentional violation of rules "with the primary intention of promoting the welfare of the organization or one of its stakeholders" (p. 6). This type of rule breaking reflects innovative initiatives that can positively impact organizational efficiency, responsiveness, adaptability, and innovation (Nemeth, 1997). Both the constructive and destructive forms of rule breaking prevail in the context of business venturing. Breaking obsolete rules that work against responsiveness and innovation and thinking out of the box are two exemplars of constructive rule breaking. In contrast, ignoring or disobeying tax regulations and violating intellectual property codes with the intention of preserving self-interests are instances of destructive rule breaking. Researchers in entrepreneurship have been focusing on the constructive forms of rule breaking as their independent variables.

The current study investigates rule breaking in adolescence, i.e., rule breaking before graduating from high school, which by nature are negative forms of rule breaking. In the youth development literature, various negative forms of rule breaking have received extensive research attention. In this study, we are interested in the negative forms of rule breaking in adolescence, such as delinquency (e.g., group fights, deliberately damaging school property, etc.), family and school offenses (e.g., being placed on school probation or expelled), official contact (e.g., being picked up by the police), drug use, and crime (e.g., taking something valuable but not belonging to you). Based on the level of severity, these forms of rule breaking are typically grouped into two categories: modest rule breaking and severe rule breaking (Kaplan, 1980). Modest rule breaking consists of delinquency and family and school offenses, whereas severe rule breaking typically includes official contact, drug use, and crime.

Previous research has found that rule breaking in adolescence can be predicted by personality traits, and in particular, the trait of risk propensity. For example, in a sample of 125 adolescents, Lejuez et al. (2005) found that risk propensity significantly predicts smoking behaviors (as a form of rule breaking), above and beyond demographic variables. Theoretical arguments have also been provided to support the influence of risk propensity on rule breaking in adolescence. The argument is that choices concerning behaviors in particular situations are based on expectations of appropriate and inappropriate behaviors in those contexts. A person high in risk propensity may perceive rule breaking as less inappropriate than others would who are low in risk propensity (Kogan & Wallach, 1964). Individuals high in risk propensity may overestimate the likelihood of success associated with risky actions and underestimate the likelihood of failure and associated negative consequences, whereas individuals low in risk propensity may amplify the potential negative outcomes associated with risk-taking behaviors and hence pursue less risky activities (Brockhaus, 1980; Sitkin & Pablo, 1992). In fact, Sitkin and Weingart (1995) have empirically shown that individuals high in risk propensity perceive less risk in a given situation. Thus, we hypothesize positive linkages between individuals' risk propensity and their exhibition of two forms of rule-breaking behaviors in adolescence:

Hypothesis 2a. Risk propensity is positively related to modest rule breaking in adolescence.

Hypothesis 2b. Risk propensity is positively related to severe rule breaking in adolescence.

Although the general belief is that the negative type of rule breaking produces a certain level of negative sanctions for the actor, according to Willis and his colleagues (Hollander & Willis, 1967; Willis, 1963), rule breaking in adolescence might result in positive/constructive outcomes for the individual. Willis (1963) contends that two different motives might underlie rule breaking in adolescence: independence and anticonformity. Any given rule-breaking behaviors that are negative in nature could reflect true independence and autonomy from the norms of the reference group, and these two characteristics are essential traits for an individual to become an entrepreneur (Schumpeter, 1934). Other theories also provide support for a linkage between destructive rule breaking and innovation. For example, in the sociology literature, Merton's Strain theory (1938) discussed how deviance in

society can lead to innovation at the society level. In addition, Becker (1963) argued that individuals who are labeled as deviant can be either a detriment (e.g., a criminal) or a benefit (e.g., a moral entrepreneur) to society.

Empirical results have supported Willis' theory on nonconformity. For example, among a sample of adolescent girls, Piergrossi (1968) found that delinquent girls outperformed non-delinquent girls in originality and creativity. Anderson and Stoffer (1979) found a high level of creative thinking in delinquent adolescent males in comparison with non-delinquents. In addition, Cunningham et al. (1974) reported that undergraduate marijuana users were more independent and creative than their peers who were nonusers. Chassin et al. (1988) found that among a sample of 10th to 12th graders ($N=2442$), higher levels of smoking were associated with higher levels of independence, creativity, and adventurousness.

In the context of entrepreneurship, the ability to question socially accepted norms and challenge the status quo is just what is needed to become a successful entrepreneur. Developmental psychologists suggest that experience and behaviors in adolescence may have profound impacts on an individual's adult life and career. The autonomy and independence underlying modest rule breaking can help the individual to form a habit of thinking "out of the box" and behaving in an innovative way. These experiences may trigger individuals' development along the entrepreneurial route and facilitate their subsequent entrepreneurial endeavors. Similar logic was provided by Gould (1969), who believes that entrepreneurs are something close to juvenile delinquents. On the demand side, venture capitalists and suppliers tend to favor those individuals who have demonstrated a track record of innovative behaviors. A positive relationship between modest rule breaking and entrepreneurial status can be expected. Consequently, we argue for a mediating role of modest rule breaking in the relationship between risk propensity and entrepreneurial status. In particular, the underlying process linking risk propensity and entrepreneurial status may be that people high in risk propensity are more likely to exhibit rule-breaking behavior in adolescence by challenging the status quo and breaking established rules/expectations from school and parents. The modest rule breaking in adolescence, in turn, can help to form a behavioral pattern that provides them with a higher probability of successfully grasping a business opportunity and starting a new venture.

Because the personality trait of risk propensity could affect a broad range of variables that may in turn influence entrepreneurial status (e.g., opportunity recognition, entrepreneurial role motivation, etc.), we recognize that rule breaking is only one of the various potential mediators. Risk propensity may exert its direct influence on entrepreneurial status, and thus, a partial mediation relationship is hypothesized:

Hypothesis 3. Modest rule breaking in adolescence partially mediates the relationship between risk propensity and entrepreneurial status.

Willis' (1963) theory on nonconformity may also apply to severe rule breaking in adolescence in terms of its underlying components of independence and autonomy. However, as opposed to modest rule breaking, severe rule breaking is more likely to be associated with societal sanctions. Research indicates that engaging in severely risky behaviors during childhood or adolescence negatively impacts an individual's psychological well-being, academic achievement, and future success (e.g., Clark, 2004; Gerard & Buehler, 2004). Juvonen (1991) found that severe rule breaking among sixth grade students results in lack of social support and peers' rejection. Severe rule-breaking experiences in earlier life could shape the way individuals develop their moral values and ethical codes, which in turn can impair adult functioning. Furthermore, severe rule breaking can impede subsequent educational attainment, which is likely to affect future occupational and life opportunities (Capaldi & Stoolmiller, 1999). On the demand side, severe rule breaking can have negative impacts on venture capitalists' funding decisions and corporate management's promotion decisions. We expect that these negative impacts of severe rule breaking on life outcomes are similar in magnitude to both potential entrepreneurs and potential corporate managers. Thus, a non-significant relationship is expected between severe rule breaking in adolescence and entrepreneurial status. However, we do not offer a formal hypothesis on this relationship; rather, we consider this part of analysis to be exploratory in nature.

5. Methods

5.1. Sample and procedures

Data were collected by a longitudinal survey administered to a sample of 1116 white male twins in the Minnesota Twin Registry. Time 1 survey measured their personality traits using the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, 2001) in year 1998 when the participants were, on average, 31 years old. Time 2 survey retrospectively measured their self-reported rule breaking before graduating from high school, and it was administered in year 1999. The survey measuring entrepreneurial status was administered in 2004 (Time 3), when the participants were, on average, 37 years old ($S.D.=1.5$). The overall response rate was 57% with 636 individuals completing all three surveys. Among these 636 individuals, 109 were categorized as managers and 63 were entrepreneurs, based on judgments of five subject matter experts. A detailed coding procedure is described in the following section. To ensure the independence of observations, we randomly eliminated one twin from a twin pair if they were both in the final sample, resulting in a total of 165 independent individual participants (105 managers and 60 entrepreneurs). The effective response rate was 14.8%. The results remained the same when the other twin of the pair was used and thus will not be reported here. Among the final sample of 165 individuals, all were white males with a mean age of 37 years in 2004 ($S.D.=1.7$). Approximately 80% of them were married or living with a partner, and 6% were divorced or widowed. About 44% had a high school degree or less, and 36% had a two-year or four-year college degree.

5.2. Measures

5.2.1. Entrepreneurial status

Entrepreneurial status was derived based on participants' written answers to three different items: 1) their current job title, 2) the nature of their current occupation, and 3) a written explanation of their leadership roles, if any, in their work. Entrepreneurial status was coded as 1 if participants explicitly indicated that they owned their business or were functioning partners of the business. It was coded as 0 if participants had a job title of "Manager," "Director," or "President" in a company but they did not bear the risk of the business. We acknowledge the limitation of our definition of entrepreneurs because conceptual distinctions between entrepreneurs and small business owners have long been made. Our current definition reflects a trade-off between the conceptual distinction and practical considerations (Carland et al., 1984).

Five subject matter experts (SMEs) who were PhD students in management or related business fields independently coded this variable. SMEs achieved consensus on 92% of the cases. Discrepancies among raters in the remaining cases were carefully examined and final agreements were reached. The reliability of this variable was set as 1.0 in the following structural equation modeling analysis.

5.2.2. Rule breaking in adolescence

Rule breaking in adolescence was measured by 33 items representing five forms of rule-breaking behaviors that the participants engaged in before high school graduation. Participants were asked to respond on a four-point Likert scale, ranging from 0 ("never") to 3 ("very often") on each item. The five forms of rule-breaking behaviors include delinquency (e.g., taking part in group fights, deliberately damaging school property, and accepting stolen merchandise; $\alpha = .89$), family and school offenses (e.g., defying parents' authority to their face and being placed on school probation or expelled; $\alpha = .63$), official contact (e.g., being picked up by the police; $\alpha = .82$), drug use (e.g., driving a car when drunk or high on drugs and buying illegal drugs; $\alpha = .84$), and serious crime (e.g., taking something valuable but not belonging to you; $\alpha = .83$). Results of confirmatory factor analysis confirmed the existence of two higher-order factors with a satisfactory model fit (CFI = .99, NFI = .98, SRMR = .01, RMSEA = .02). Delinquency and family/school offenses were indicators of modest rule breaking ($\alpha = .86$), whereas official contact, drug use, and serious crime were indicators of severe rule breaking ($\alpha = .85$). Scores of individual items were averaged to obtain the scores for the two higher-order factors.

There is a possibility that being an entrepreneur may affect a person's memory retrieval such that an entrepreneur may recall more adolescent rule-breaking behaviors than he/she actually engaged in. We conducted ad hoc analyses to examine this possibility using available data, and the results alleviated some concerns about this biased retrieval of memory. In particular, we found that both the manager group and the entrepreneur group had similar variances in terms of rule breaking in adolescence. Tests of equal variance between the two groups were not rejected for all five sub-dimensions: delinquency ($F = .21$, $p > .65$), family and school offenses ($F = 1.50$, $p > .22$), official contact ($F = 1.92$, $p > .11$), drug use ($F = .03$, $p > .86$), and serious crime ($F = .39$, $p > .53$). This similar magnitude of variance indicates that the participants' current ES may not severely affect their retrieval of memory on rule-breaking behaviors in adolescence. In addition, if memory retrieval bias is associated with current entrepreneurial status, one could expect that managers with different hierarchical levels in their firms would also show similar biases in memory retrieval. We conducted analysis within the manager's group and found that their level of leadership positions did not correlate with their self-reported rule breaking in adolescence (for the five forms of rule breaking, r 's range from .01 to .08, $p > .42$). Based on these analyses, we expect that our measure of rule breaking was not significantly contaminated by the participants' current ES.

5.2.3. Risk propensity

In prior studies, risk propensity has been operationalized in a variety of measures such as Risk-Taking Scale of the Jackson Personality Inventory (JPI; Jackson 1976), which focuses on social, physical, monetary, and ethical risk-taking propensities, and Schneider and Lopes' (1986) Risk Style Scale (focusing on financial risk taking). In the current study, risk propensity was measured using the Harm Avoidance scale in Multidimensional Personality Questionnaire (MPQ). The MPQ is a self-reported personality instrument designed to assess a broad range of individual differences. It has 11 primary trait scales. The reverse-coded Harm Avoidance scale was used to represent individuals' generalized propensity for risk taking. Participants were asked to answer true (=1) or false (0) to 18 items. Two example items are "It might be fun learning to walk a tightrope" and "It might be fun and exciting to experience an earthquake." See Appendix A for brief descriptions of high and low scorers on the three MPQ traits used in this study. The internal consistency estimate is .79 and T -score transformation was used in the following analyses.

Although risk propensity was measured when the participants were, on average, 31 years old, we expect this measure to be a good proxy of their risk propensity in adolescence. Previous research has found that personality traits are generally stable over time (McCrae et al., 1999). Roberts et al. (2001) have shown that risk propensity has relatively high rank-order consistency ($r = .62$) and negligible changes of mean level from adolescence to young adulthood ($d = .01$, $\eta^2 = .00$). Roberts et al. (2001) also found that, in terms of the individual-level change from age 18 to age 26, a vast majority of participants (89%) remained at the same level of risk propensity; only 5.0% had decreased and 5.9% had increased in risk propensity. Using a separate sample, Donnellan et al. (2007) found highly similar results as Roberts's et al. (2001) study. Based on these empirical findings on the stability of risk propensity from adolescence to young adulthood, we believe that our measure of risk propensity is a reliable proxy of risk propensity in adolescence. Consequently, it can be used as an antecedent of rule breaking in adolescence.

Table 1
Means, standard deviations, correlations,^a reliabilities of variables, and group means.

Variables	Overall Mean (S.D.)	Correlations						Group Mean (S.D.)	
		1	2	3	4	5	6	Entrepreneurs (N=60)	Managers (N=105)
1. Social potency	52.59 (9.35)	(.78)						49.94 (10.34)	52.97 (8.98)
2. Achievement	51.15 (9.50)	.25**	(.75)					51.20 (10.83)	50.23 (8.97)
3. Risk propensity	50.06 (9.42)	.15**	.11*	(.79)				50.77 (9.37)	49.54 (9.79)
4. Modest rule breaking	0.56 (.30)	.08†	.10*	.12	(.86)			.61 (.33)	.52 (.27)
5. Severe rule breaking	0.60 (.41)	.09†	.09†	.13**	.68**	(.85)		.56 (.42)	.65 (.40)
6. Entrepreneurial status ^b	–	–.18**	.06	.10*	.09*	–.07	(1.0)		

Notes: N=165 with 105 managers and 60 entrepreneurs. Internal reliability estimates are in parentheses.

† $p < .10$ * $p < .05$. ** $p < .01$.

^a Point-biserial correlations were calculated between entrepreneurial status and other variables.

^b Entrepreneurial status was coded 1 for entrepreneurs and 0 for managers in conventional firms.

5.2.4. Control variables

Because the participants were all white males with relatively small variation in their ages, we did not control for gender, race, or age in our analysis. Two personality traits that have been shown to relate to entrepreneurial status and leadership (i.e., need for achievement and social potency) were controlled in the analyses (Ciavarella et al., 2004; Collins et al., 2004; Zhao & Seibert, 2006).

Need for achievement and social potency were measured by two scales in MPQ. Each of these two scales had 18 items, and all items were answered “true/false” (1/0). Internal consistency estimates were .75 and .78, respectively. Means and standard deviations of the scales are presented in Table 1. The sample mean scores and standard deviations of the three personality traits used in this study were close to population averages as indicated in the MPQ manual (Tellegen, 1982), showing some evidence about the representativeness of the current sample.

5.3. Analysis

We conducted structural equation modeling (SEM) using LISREL 8 (Jöreskog & Sörbom, 1993). In order to optimize sample size relative to the parameter estimates and to correct for measurement errors, we used single-item indicators to measure the latent variables of the SEM model. Correction for measurement errors was made by fixing the error variance of an indicator to (1-reliability) times its observed variance and also by fixing the factor loading equal to 1. This is the typical treatment of single-indicator models in structural equation modeling. The reliability of entrepreneurial status was conservatively set at 1.0. That is, we assumed that entrepreneurial status was measured without error, and thus we did not correct the path coefficient estimates for measurement errors.

Since entrepreneurial status was measured as a 0/1 variable, point-biserial correlations between it and the other variables were calculated. Model parameters were estimated using the Asymptotically Distribution Free (ADF) method, which is suitable for analyzing point-biserial correlations. We also compared our hypothesized model with an alternative model that adds the paths from the two control variables to both modest and severe rule breaking.

6. Results

Means, standard deviations, reliability estimates, correlations, and group means for all variables are shown in Table 1. As expected, modest rule breaking positively correlated with whether one becomes an entrepreneur vs. a manager (point-biserial $r = .09$, $p < .05$, one-tailed). In addition, risk propensity significantly correlated with entrepreneurial status (point-biserial $r = .10$, $p < .05$), providing support for Hypothesis 1. Severe rule breaking did not show a significant direct relationship with entrepreneur status. Interestingly, social potency was negatively related to entrepreneurial status (point-biserial $r = -.18$, $p < .01$).

The results of the structural equation modeling analyses are presented in Table 2. Our hypothesized model fit the data well, χ^2 (5, $N = 165$) = 2.48, $p > .50$, with a comparative fit index of 1.00, a standardized root-mean-square residual of .034, and a root-mean-square error of approximately .00. They met the generally accepted goodness-of-fit criteria.

Table 2
Goodness-of-fit indexes for structural equation models.

Model	χ^2 (df)	$\Delta\chi^2$ (df)	AGFI	CFI	NFI	SRMR	RMSEA (90% CI)
Hypothesized model	2.48 (5)	–	.98	1.00	.99	.034	.00 (.00, .07)
Alternative model (paths from achievement and social potency to two rule-breaking variables)	1.47 (1)	1.01 (4)	.98	1.00	.99	.022	.00 (.00, .09)

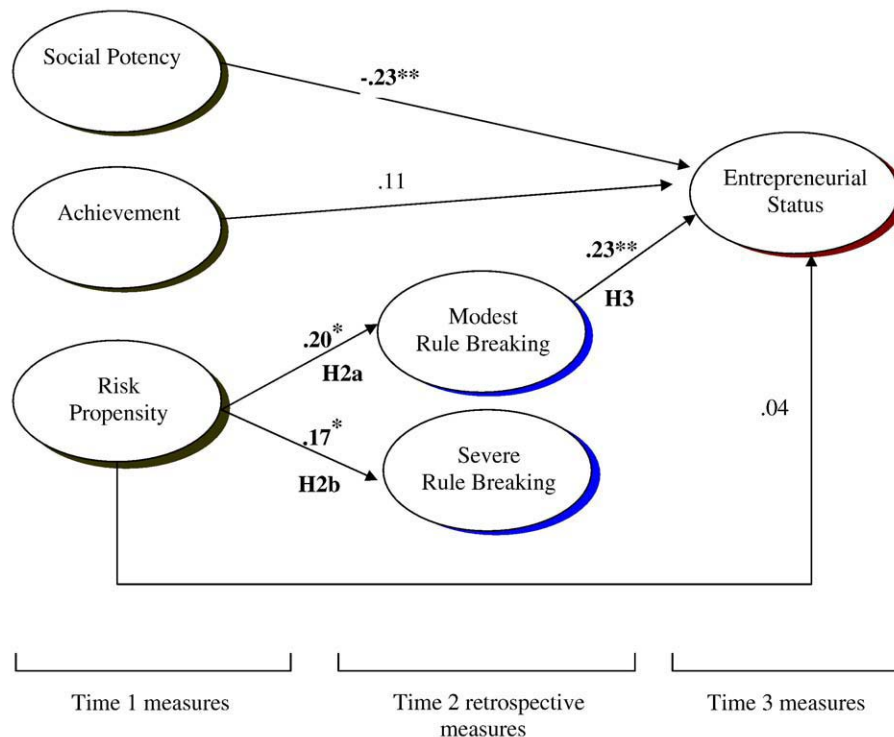


Fig. 1. Standardized path coefficient of structural equation model. Note: $*p < .05$, $**p < .01$.

Table 2 also shows the fit statistics for the alternative model testing direct paths from achievement and social potency to modest rule breaking and severe rule breaking. This model failed to display a significant improved fit to the data. Thus, our hypothesized model was retained as the best-fitting solution and used to test hypotheses. The standardized path estimates are presented in Fig. 1.

Hypotheses 2a and 2b suggest significant relationships between risk propensity and modest and severe rule breaking. Examination of the path estimates from the model provides support for both hypotheses. As shown in Fig. 1, risk propensity is positively related to modest rule breaking ($\beta = .20$, $p < .05$, one-tailed) and severe rule breaking ($\beta = .17$, $p < .05$, one-tailed).

Hypothesis 3 suggests a partial mediating effect of modest rule breaking between risk propensity and entrepreneurial status. Fig. 1 shows that modest rule breaking significantly predicts entrepreneurial status ($\beta = .23$, $p < .01$), supporting this hypothesis. Individuals who displayed more modest rule breaking before high school graduation are more likely to become entrepreneurs versus managers. The direct relationship between risk propensity and entrepreneurial status is not significant. As a formal test of the mediation hypothesis of modest rule breaking, we conducted a Sobel test (Sobel, 1982) by using the calculator available at <http://www.unc.edu/~preacher/sobel/sobel.htm> (accessed Jan. 18, 2006). The result confirms a significant indirect effect of risk propensity on entrepreneurial status, carried through by modest rule breaking (Sobel = 2.31, $p < .05$). Note that severe rule breaking is not related to entrepreneurial status, meaning that the negative impacts of severe rule breaking were similar between entrepreneurs and corporate managers.

7. Discussions

Despite decades of research, many questions remain with regard to the factors and processes that lead an individual to become an entrepreneur (Markman et al., 2002). Researchers called for investigation of behavioral and cognitive factors that affect an individual's decision to start a business (e.g., Carter et al., 2003). The current study focuses on one behavioral antecedent of individuals' entrepreneurial status: rule breaking in adolescence. The results show that individuals who demonstrated a higher level of modest rule breaking in adolescence are more likely to become entrepreneurs (vs. corporate managers), after controlling for the direct influences of three personality traits (i.e., risk propensity, achievement, and social potency). Structural equation models show that the significantly positive relationship between risk propensity and entrepreneurial status is partially mediated by modest rule breaking. Individuals high in risk propensity tend to exhibit more modest rule breaking in adolescence, which is, in turn, positively associated with entrepreneurial status in adulthood. Severe rule breaking failed to show a significant relationship with entrepreneurial status, which might suggest that severe rule breaking could impede an individual's career attainment and reduce the likelihood of becoming either an entrepreneur or a manager.

By focusing on entrepreneurs vs. managers, this study provides an opportunity to distinguish between conventionally defined leaders and a special type of innovative business leaders. This study found that behavioral measures of modest rule breaking could carry the dispositional influences of risk propensity through to the entrepreneurial status of these individuals. This result reveals a fruitful avenue of focusing on behavioral measures in entrepreneurship research.

The finding that modest rule breaking in adolescence can distinguish entrepreneurs from their corporate counterparts has significant implications for educators. Some researchers asserted that rebellious behavior could lead to career success if channeled into developmental opportunities. Anecdotal stories reveal that behavioral problems in early life may be an indication of unique endowments. The results of the current study confirmed this notion by showing that modest rule breaking is positively correlated with entrepreneurial status in adulthood.

We identified a behavioral variable in an existing framework of research on entrepreneurial status, which in itself is a theoretical contribution to entrepreneurship research. More valuably, expanding previous research on deviance in organizations, we show how negative forms of rule breaking in adolescence may have positive consequences in adulthood.

However, we note that, although positive valence is typically attached to the term of entrepreneurs, entrepreneurial activities could be destructive with regard to life and societal outcomes. Unsuccessful ventures may result in bankruptcy and are detrimental to the entrepreneurs and their family members. Illegal practices in new ventures can be disastrous to the community and society as a whole.

7.1. Implications for ethical decision making

This study shows a positive correlation between modest rule breaking and entrepreneurial status (point-biserial $r = .09$, $p < .05$, one-tailed). This means that entrepreneurs, as opposed to corporate managers, engaged in more modest rule breaking in adolescence (negative in nature). A critical question may then arise, which is whether the tendency to engage in negative rule breaking persists in their adulthood in terms of neglecting or bypassing social codes of ethical standards. This is an empirical question for which the current study cannot provide an answer. Researchers have argued that past experience in rule breaking can make individuals less cautious to ethical issues when making critical business decisions. [Sitkin and Weingart \(1995\)](#) have shown that individuals high in risk propensity perceive less risk in given situations. In examining the importance of self-deception in unethical decision making, [Tenbrunsel and Messick \(2004\)](#) have discussed a psychological mechanism called “psychic numbing”, which is the numbing that comes from repetition. In the contexts of entrepreneurial rule-breaking, repeated exposure to risk taking and rule breaking situations may produce a form of ethical numbing in which moral awareness is reduced through repeated exposure ([Bandura, 1999](#)). In other words, entrepreneurs who frequently break the rules might perceive less danger in a risky decision-making situation with regard to ethical issues.

Personal factors and individual differences are important in the evaluation and resolution of ethical issues. [Reynolds \(2006\)](#) shows that individual differences play a large role in determining the level of moral awareness or the identification of the moral issue. Some individuals may intentionally act unethically, whereas others simply do not recognize the moral aspects of the situations to begin with. According to [Hunt and Vitell's \(1993\)](#) theory of ethics, individuals' ethical sensitivity plays an important role in ethical decision making. Ethical sensitivity refers to the extent to which people can identify ethical issues when facing a situation that has an ethical component. It is possible that people who engaged more in rule-breaking behaviors may have gradually lowered their threshold level of ethical sensitivity and may thus be more prone to making unethical decisions. Based on this line of reasoning, risk propensity is one measure of the individual predispositions that could influence moral awareness. Higher risk propensity leads to more rule breaking, which in turn could increase the likelihood of engaging in behaviors that are either clearly unethical (e.g., financial misrepresentation; [Harris & Bromiley, 2007](#)) or along the borderline.

Being alert to ethical components in decision making is perhaps more crucial for leaders in entrepreneurship and small businesses than for managers in conventional employment settings because entrepreneurs face a highly unstructured environment and more severe pressure for financial performance. Enormous pressure from investors, extremely limited resources, and a highly unstructured competitive environment may make it difficult for entrepreneurs and small business owners to resist the temptation to transgress their personal values to meet financial demands. Compared with corporate managers, entrepreneurs might more easily be drawn into such behaviors as unethical competition for venture capital investment, harsh treatment of employees, use of illegal copies of software for cost cutting, and/or other opportunistic behaviors in accounting and tax filing.

Recently research on intuition and affectivity contends that non-consciousness plays a role in decision making. [Dane and Pratt \(2007\)](#) argue that managerial decision-making is often based on intuitions, which are “affectively charged judgments that arise through rapid, non-conscious, and holistic associations” (p. 40). Because of bounded ethicality ([Chugh et al., 2005](#)), people have limitations or psychological barriers in recognizing the imminent ethical risks in decision making that involve the self. Consequently, it is important that entrepreneurs be alert to their behavioral tendencies and intuitions and take steps to improve ethical decision making in their venturing processes. In this special issue, [Brenkert \(2009–this issue\)](#) has provided a more focused discussion on entrepreneurial rule breaking and the moral complexity of the decision-making situation that entrepreneurs face.

We know that entrepreneurship has become more pervasive in the United States. More adults are currently attempting to start new businesses than at any other time in the past century. Estimates suggest that nearly 8% of the adult population is actively engaged in starting a business ([Reynolds et al., 2002](#)). Given the significance of entrepreneurship to the economy, ethical awareness and rule following are very important for functioning of the whole society. It was fine for Orville Wright to fly without a

license, as Tait points out in the quote at the beginning of this article; but it is not right for millions of entrepreneurs to do business without abiding by social norms and ethical codes.

7.2. Limitations and directions for future research

An important limitation of the current study is the characteristics of the sample. Our sample has only 105 managers and 60 entrepreneurs who are all white males. Although we have a relatively homogeneous sample in terms of age, gender, and ethnicity, the fact that the participants' average MPQ scores and their standard deviations are close to the population average indicates the representativeness of the sample out of the general population. We acknowledge that that path estimates may be unstable based on such a small sample and conclusions may not be generalizable to other gender and ethnic groups. In addition, gender may play a role in decision making regarding entrepreneurial career choice. Future research endeavors should use a larger sample and incorporate both male and female participants. In addition, we operationalized entrepreneurs as owner-managers of their own businesses. Our definition of entrepreneurs may not receive agreement from other researchers. Although conceptual distinctions between entrepreneurs and small business owners have long been made, we recognize that there is still some overlap in empirical studies (Carland et al., 1984). Some ambiguity typically exists in the literature with regard to who qualifies as an entrepreneur, and the current paper reflects a trade-off between conceptual distinctions and empirical and practical considerations.

Second, although several personality variables were controlled for in the analysis, we did not control for situational factors such as industry, business size and age, venture capital density, and venture performance. These situational factors may play important roles in determining entrepreneurs' decision-making processes. Sitkin and Weingart (1995) suggested that risk propensity may be changeable over time due to accumulation of experience. Miner and Raju (2004) also suggested that the development stage of the venture may impact risk propensity. Individuals at the preparation, seed, or start-up stages may display different levels of risk propensity than those at the growth stage of the venture. This situation contingency to some extent resolves the debate on whether an entrepreneur is a hard-headed risk bearer (Mill, 1948) and risk taker (Palmer, 1971) or a "rapacious risk avoider" (Webster, 1976).

Third, the self-reported retrospective measures of rule-breaking behaviors may raise the issue of common method biases. Retrieving information buried so deep in memory could be difficult for participants. We also recognize the possibility that current entrepreneur status may influence the retrieval of memories on adolescent rule-breaking behaviors. As discussed in the method section, based on our post hoc analyses, we expect that our measure of rule breaking in adolescence is not severely contaminated by the participants' current ES. Future research could use parent ratings or peer ratings of adolescent rule-breaking behaviors to reduce the common method bias.

8. Conclusion

This study found that risk propensity is positively related to whether an individual becomes an entrepreneur versus a corporate manager. More importantly, individuals' modest rule breaking in adolescence mediates this relationship. These results highlight the importance of ethical components in the venturing process given entrepreneurs' behavioral tendency to engage in modest rule breaking. For an individual entrepreneur, his/her personal moral philosophy plays a critical role in shaping values and ethics in the new venture. It is crucial for entrepreneurs to be aware of this rule-breaking tendency and to enhance ethical decision making in their entrepreneurial endeavors.

Appendix A

Content summary of the MPQ personality traits used in this study.

Scale name	Description of high scorers	Description of low scorers
Social potency	Is forceful and decisive; is persuasive and likes to influence others; enjoys or would enjoy leadership roles; takes charge of and likes to be noticed at social events	Prefers others to take charge and make decisions; does not like to persuade others; does not aspire to leadership; does not enjoy being the center of attention
Achievement	Works hard; likes long hours; enjoys demanding projects; persists where others give up; puts work and accomplishment before many other things; is a perfectionist	Does not like to work harder than is strictly necessary; avoids very demanding projects; sees no point in persisting when success is unlikely; is not terribly ambitious or a perfectionist
Risk propensity (reverse-coded Harm Avoidance)	Feels excited to experience dangerous events such as earthquake, flood, or emergency airplane landing; enjoys skydiving or learning to walk a tightrope	Avoids excitement and danger; prefers safe activities even if they are tedious

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