

# RULE-BREAKING AND ENTREPRENEURSHIP

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## Keywords

Agency, beliefs, cognition, constitutivism, decision making, democratic values, entrepreneur, entrepreneurial action, entrepreneurship experiment, individual differences, institutions, mental models, paradox mindset, rules, rule-breaking, scale development, social cognitive theory, strategic resources, theory development.

## Abstract

Rule-breaking has been a prominent topic in entrepreneurship research. There are widely held beliefs in society and by researchers that entrepreneurial rule-breaking is dysfunctional and has roots in deviance. Such beliefs and assumptions are problematic, because the resultant fallacy is that the behaviour from which strategic advantages, entrepreneurial innovation, creation of consumer surplus and social welfare, and progressive institutional betterments stem is underlied by nonconformity, risk-taking, self-enhancement, and other traits that are regarded as deviant. This thesis investigates an under-researched aspect of entrepreneurial rule-breaking (entrepreneurial rule-breaking) which is posited to be stemming from rationality and functional traits and can have positive impacts on entrepreneurs and society. It has advanced the knowledge of entrepreneurial rule-breaking in numerous ways. The first paper was a purely conceptual paper whereby a morally neutral definition of entrepreneurial rule-breaking was proposed based on the nature of its functionality (i.e., alleviating the regulating power of formal rules) along with an integrative entrepreneurial rule-breaking theory centring on a novel cognitive construct—constructive rule beliefs .

Based on democratic values stemming from cognitive schemas, constructive rule beliefs denotes peoples' general beliefs about the purpose, legitimacy, and instrumentality of formal rules, and about the self in relation to rules, and was argued to be a cause of rule-breaking, which enhanced the likelihood of rule-breaking in the context of various contextual triggers.

The second paper was a scale development paper which also served to assess various predictions stemming from the first paper. Using exploratory factor analysis, a constructive rule beliefs measure was developed. A two-factor structure emerged and the two factors were

termed rule relativity beliefs (F1) and rule purpose beliefs (F2). Empirical evidence supported that constructive rule beliefs was a meaningful cognitive construct, and rule relativity beliefs was predictive of goal-directed entrepreneurial rule-breaking.

The third paper provided the primary test of the core theoretical proposition from the newly-proposed entrepreneurial rule-breaking theory. Based on a 2x2 between-subjects experimental design, the third paper tested the causal relationships between entrepreneurial rule-breaking and rule breaking behavior related to two hypothetical scenarios (constructive rule beliefs and entrepreneurial status). By experimentally manipulating constructive rule beliefs, it was found that constructive rule beliefs had a casual influence on participant rule-breaking tendencies when rule-breaking was clearly conducive to entrepreneurial goals. No relationship was found between entrepreneurial status and entrepreneurial rule-breaking.

These findings support that constructive rule beliefs has a causal impact on entrepreneurial rule-breaking and can stem from rationality and functional traits—at least in situations whereby rule-breaking may assist with goal attainment. In doing so, they also challenge the widely-held beliefs that entrepreneurial rule-breaking is based on deviance.

Through constructive rule beliefs and the integrative entrepreneurial rule-breaking theory, this thesis provides evidence for a novel potential cognitive driver of entrepreneurial rule-breaking which is functional and can be beneficial to entrepreneurs and society. Future research can build on the initial work and findings in this thesis to provide further insight into the complex and fascinating phenomenon of rule-breaking in entrepreneurship and in other contexts.

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*To my mother and family, who teach me unconditional love and resilience, I love you.*

## List of Statistical Abbreviations

ANCOVA	Analysis of covariance, a statistical analytical technique to test the main and interaction effects of categorical variables on a continuous dependent variable, while controlling for the effects of selected control variables, which co-vary with the dependent variable.
$\alpha$	Cronbach's alpha, a reliability coefficient that measures internal consistency and construct reliability of a latent variable.
BLR	Binary logistic regression analysis, a technique used to estimate the relationship between a dichotomous dependent variable and dichotomous, interval, or ratio independent variables.
$\beta$	Standardised beta coefficient, measuring the degree of change in the dependent variable for one standardised unit change in an independent variable.
CI	Confidence interval, referring to the probability that a population parameter falls between a range of values with a certain degree of confidence.
<i>df</i>	Degrees of freedom, referring to the maximum number of logically independent values, i.e., values in the data which are free to vary.
DV	Dependent variable.
EFA	Exploratory factor analysis, a multivariate technique used to discover the underlying structure of a set of variables.
<i>Exp(B)</i>	The odds ratio, measuring the predicted change in odds of the dependent variable for a unit change in the independent variable.
$H^2$	Eta squared is a measure of association as the ratio of variance in a dependent variable explained by an independent variable, after controlling for covariates.
<i>F-value</i>	An F-value is a statistical measure of the ratio of two mean squares, used in F-tests to identify the model that best fits the population from which the data were sampled.
IV	Independent variable.
<i>M</i>	Mean; or the average value of a given set of values.

<i>N</i>	Sample size; the total number of analytical units included in the final analyses in an empirical study.
PAF	Principal axis factoring, an exploratory factor analysis technique used where a parsimonious representation of correlations between observed variables and the latent factor(s) is desired.
PCA	Principal component analysis, an exploratory factor analysis technique aimed at creating components that maximize interindividual variance; in other words, trying to create an index accounting for maximum variances in the data.
<i>p</i>	<i>p</i> -value, or a probability value, measuring the probability of the null hypothesis being true in a statistical test.
<i>SD</i>	Standard deviation, a statistical measure of the amount of variation or dispersion of a given set of values.
<i>t</i> -test	A statistical technique used to test hypotheses about the mean of a small sample drawn from a normally distributed population when the population standard deviation is unknown.
$\chi^2$	Chi square, a statistic measure to assess the goodness of fit between observed values and those expected theoretically.

## List of Publications

### Chapter 4

Zhang, S., O'Connor, P., Gardiner, E. (under review). Unbreakable: A rule beliefs theory of rule-breaking in the entrepreneurial context. *Journal of Business Ethics*.

### Chapter 5

Zhang, S., O'Connor, P., Gardiner, E. (2023). Some rules should be broken: Developing a measure of constructive rule beliefs. *Personality & Individual Differences*.

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### Chapter 6

Zhang, S., O'Connor, P., Gardiner, E. (under review). Constructive rule beliefs and its causal influence on rule-breaking in the entrepreneurial context: A pre-registered experiment. *Journal of Small Business Management*.

## CHAPTER 1. INTRODUCTION

### 1.1. Chapter overview

This thesis investigates the overarching issue of rule-breaking in the entrepreneurial context. This chapter provides an overview of the thesis, including the purpose of the research, an overview of extant literature on entrepreneurial rule-breaking, identified research gaps, research aims, questions, and scope, and the structure of the thesis.

### 1.2. The purpose of the thesis

The purpose of this thesis is to incrementally advance the knowledge of a complex and fascinating phenomenon—rule-breaking carried out by entrepreneurs—by filling identified research gaps in the extant literature. As the result, the key findings from this thesis will be informative to entrepreneurs, policymakers, and society at large.

### 1.3. Entrepreneurs as rule-breakers: An overview of the extant literature

*“To be an entrepreneur, it is often said, one must break the rules so as to take advantage of opportunities one identifies or can create.”* – Brenkert 2009, p.448

Entrepreneurs are widely regarded as rule-breakers (e.g., Brenkert, 2009; Lidow, 2022). Shocking stories of entrepreneurs breaking rules and causing massive stakeholder and systemic disasters, such as Theranos, Wirecard, Fyre Festival, Ozy Media, Bernie Madoff, regularly occupy headlines in mainstream media (e.g., Fortune Editors, 2020; O’Connell & McVeary, 2023) and incite public anger towards entrepreneurial rule-breaking. Also impactful yet in a more positive way are rule-breaking, boundary-pushing businesses, such as Uber, Airbnb, Wikipedia, Pirate Bay. They establish themselves through new technologies and business models which involve breaking formal and informal rules, create new consumer



and economic value, and shape novel ways of living in modern societies. On par, entrepreneurs' rule-breaking seems to be the common thing found in all these stories, in spite of divergent impacts on shareholders, consumers, and society. It begs the question: are they changing facades of the same idea—entrepreneurs are rule-breakers—or are they stemming from an array of behaviours that have roots in varied drivers and are disparate in nature?

A scoping review of extant studies on entrepreneurial rule-breaking reveals that it is a small yet steadily-growing body of literature, indicating the increased awareness of the importance of this phenomenon. Although small and largely fragmented, the extant literature on entrepreneurial rule-breaking offers several informative insights, details of which follows next.

First of all, researchers agree that entrepreneurial rule-breaking involves both formal rules, such as business regulations and policies, and informal rules, such as social norms, established practices, group expectations (see, for example, Brenkert, 2009; Sottini & Cannatelli, 2022; Welter & Smallbone, 2011). Some authors focused exclusively or primarily on formal rule-breaking (e.g., Elert & Henrekson, 2016; Lucas et al., 2022) while others discuss both formal and informal rule-breaking in their work. Few authors, however, have provided an adequate justification on their focus on informal rules, formal rules, or both.

Second, traditionally, a default position authors take regarding entrepreneurial rule-breaking has been that it is linked to deviant traits and immoral/antisocial traits. For example, conceptually entrepreneurial rule-breaking has been defined or labelled as misbehaviour, antisocial, and misconduct (e.g., Lundmark & Westelius, 2012, 2019; Sottini & Cannatelli, 2022). Empirical studies share this sentiment too. For example, correlational studies show

that entrepreneurial status is predicted by deviant traits, such as illicitness, nonconformity, risk taking, and records of severe rule-breaking and crimes in early stages of life (e.g., Fairlie, 2002; Levine & Rubinstein, 2017; Obschonka et al., 2013). Similarly, qualitative studies associate entrepreneurial rule-breaking with deviance, unruly practice, and corruption (e.g., Alonso et al., 2020; Cieslik et al., 2019; Ufere et al., 2012). Some recent studies, however, challenge this default position and suggest that entrepreneurial rule-breaking can have a positive potential in certain instances. They argue that, if utilised correctly, entrepreneurial rule-breaking also has a potential to benefit entrepreneurs and enhance social welfare (e.g., Brenkert, 2009; Dey, 2016; Elert & Henrekson, 2016; Rindova et al., 2009). Nevertheless, little is known about functional rule-breaking in the entrepreneurial context and its key drivers, particularly at the individual level.

Third, the labels that authors use to represent entrepreneurial rule-breaking are enormously different, for example, rule-breaking (Obschonka et al., 2013; Zhang & Arvey, 2009), rule-breaking entrepreneurial action (Lucas et al., 2022), institutional divergence (Sottini & Cannatelli, 2022), evasive entrepreneurship (Elert & Henrekson, 2016), misbehaviour (Lundmark & Westelius, 2012), entrepreneurial deviance (Alonso et al., 2020), unruly practice (Cieslik et al., 2019), antisocial entrepreneurship (Lundmark & Westelius, 2012), and entrepreneurial rule-breaking (Brenkert, 2009). Similarly, while many authors left entrepreneurial rule-breaking undefined in their study (e.g., Brenkert, 2009; Obschonka et al., 2013; Warren & Smith, 2015), those who did provide a definition conceptualised entrepreneurial rule-breaking in differing ways. For example, Zhang and Arvey's (2009) study adopts Kaplan's definition of rule-breaking: "*fail to conform to the applicable*

*normative expectations of the group*” (p.436); Lucas et al.’s (2022) study defines rule breaking entrepreneurial action as *“behavior aimed at launching and growing new ventures in a manner inconsistent law, regulation, or other state policies”* (p.2); and Elert and Henrekson (2016) define evasive entrepreneurship as *“profit driven business activity in the market aimed at circumventing the existing institutional framework by using innovations to exploit contradictions in that framework”* (p.95). While these labels and definitions denote the largely same concept—rule-breaking in the entrepreneurial context—they impose great confusions and indicate the fragmented nature of the extant entrepreneurial rule-breaking literature. For the present thesis, I adopted the term “entrepreneurial rule-breaking” from Brenkert’s (2009) paper and other studies, because it is simple yet captures the essence of the phenomenon well.

Fourth, collectively, extant studies show that individual and environmental factors both can lead to entrepreneurial rule-breaking. However, more attention has been paid to the environmental and contextual drivers of entrepreneurial rule-breaking, such as institutional deficiencies, societal unrests, weak legal system, predatory state actors, and so on (Dey, 2016; Elert & Henrekson, 2016; Lucas et al., 2022; Sydow et al., 2022; Ufere et al., 2012). Individual-level drivers of entrepreneurial rule-breaking, however, have been sparsely investigated, and in a fragmented way.

Finally, there are other similarities and divergences in extant entrepreneurial rule-breaking literature. For example, some studies found that entrepreneurial rule-breaking is likely to occur where formal rules are at odds with informal rules (e.g., Cieslik et al., 2019; Ufere et al., 2012). Methodologically, the role of entrepreneurial rule-breaking in predictive

relationships and its measures differ from one study to another; for example, in Fairlie's (2002) study, drug dealing was used as the proxy for entrepreneurial traits to predict self-employment, while in Zhang and Arvey's (2009) study, adolescent rule-breaking was used as a mediator between risk propensity and entrepreneurial status.

#### 1.4. Complications and unanswered questions

Even though the extant literature is informative in some ways, several complications exist. As the result, important questions concerning the nature and underlying mechanisms of entrepreneurial rule-breaking remain unanswered. In this section, I discuss these complications and unanswered questions.

Schumpeterian entrepreneurs engage in creative destruction to facilitate equitable wealth redistribution and create socioeconomic value. Such creative destruction eventuates via disrupting established practices, breaking rules and institutions, and changing social structures (e.g., Hall & Rosson, 2006; Landström, 2004; Spencer et al., 2008).

While researchers agree on the notion that creative destruction involving rule-breaking creates value for entrepreneurs and society at large, the extant literature, as discussed earlier, suggests that entrepreneurial rule-breaking has roots in deviance and morally compromised traits. This may sound plausible in certain instances (e.g., in criminal entrepreneurship, see Gottschalk & Smith, 2011; Smith, 2009). However, if entrepreneurial rule-breaking is mostly deviant and immoral, how is it possible, according to some authors, that the same behaviour has a potential to benefit both entrepreneurs and society? In other words, the prevalent assumption of entrepreneurial rule-breaking as a deviant and immoral behaviour does not add up with the suggestion that entrepreneurial rule-breaking can be functional and create social

value in certain instances.

For entrepreneurs and society to benefit from entrepreneurial rule-breaking, an important prerequisite is that *entrepreneurial rule-breaking can be and should be rational and selective and it is based on functional traits and precursors*, as opposed to having roots in dysfunctional deviance and morally compromised traits. This prerequisite is based on two underlying assumptions. The first is that entrepreneurial action is mostly guided by entrepreneurial goals. Literature supports that entrepreneurs take actions in order to achieve their goals, which can be both overarching and specific, short-term and long-term goals (e.g., Frese, 2020; Furlotti et al., 2020; McMullen, 2015; Shaver, 2012). The second assumption underlying this condition is that entrepreneurs are rational economic actors and they do not break rules habitually but only break rules when it is justifiable, feasible, and desirable to do so. *If* these assumptions are plausible, then a few questions follow: “what is at the centre of functional entrepreneurial rule-breaking?”, “how should it be defined?”, “what drives functional entrepreneurial rule-breaking which assists entrepreneurs to attain their goals and create value for themselves and for society?”; and “what makes entrepreneurs effective in entrepreneurial rule-breaking?”

### 1.5. Conceptualisation of ‘entrepreneurial rule-breaking’

As discussed, the extant literature mostly focuses on entrepreneurs’ rule-breaking in terms of deviance and dysfunctional traits such as nonconformity, self-enhancement and risk-taking. To address the above questions which are not answered by the extant literature, this thesis introduces a nuanced concept of ‘entrepreneurial rule-breaking’ that is anchored in justifiable circumstances, has roots in functional traits, and can be beneficial to both entrepreneurs and society.

Brenkert (2009) argued that contexts should be accounted for when evaluating the justifiability and virtue of entrepreneurial rule-breaking, and outlined several circumstances in which rule-breaking fitted the broader commercial contexts, was inevitable and tolerable, and could be forgiven (see a detailed account of justifiable contexts for entrepreneurial rule-breaking in Brenkert, 2009). He further argued that not only is rule-breaking a justifiable response to the commercial contexts, but rules and rule-based morality themselves were limited for several reasons and could be at odds with building a flourish society. Brenkert's (2009) work challenges the assumption underlying the prevalent sentiments in the extant literature that entrepreneurial rule-breaking is deviance-based and mostly dysfunctional. It provides an ethical foundation for entrepreneurial rule-breaking in certain circumstances, which centres on contextual justifiability and virtue. While useful and boundary-pushing, Brenkert's work focuses on exogenous factors (i.e., contexts) and downstream effects (i.e., virtue which is based on contribution to a flourishing society) to justify entrepreneurial rule-breaking in certain circumstances. It, however, leaves room for further discoveries in endogenous factors, for example, traits and cognition in individual entrepreneurs, which may vary across individuals and drive entrepreneurial rule-breaking alongside contextual and virtue-based considerations.

Drawing on the work of Brenkert as well as of other authors' (e.g., Bandura, 1991; Elert & Henrekson, 2016; Kohlberg, 1958, 1984; Konty, 2005; Oliver 1991; Tyler 1997, 2006), the present thesis takes on this identified opportunity and conceptualises entrepreneurial rule-breaking as *a purposeful, discrete behaviour carried out by entrepreneurs, that aims at alleviating the regulating power of formal rules*. It can be driven by functional traits—for example, constructive rule beliefs (the novel and central construct introduced in this thesis)—

and triggered by contextually problematic rules, such as high compliance costs and institutional deficiencies (discussed in detail in Chapter 4). The discussion of boundary conditions of this nuanced concept of ‘entrepreneurial rule-breaking’ follows the overarching research aims and research questions in the next section.

#### 1.6. Research aims and research questions

Based on the above discussion, the overall research aims of the present thesis are to explore, theorise, and understand functional entrepreneurial rule-breaking and its key drivers, and how it may benefit concerned parties—entrepreneurs, policymakers, and society at large—in certain instances. Specifically, these overarching research aims translate into the following research questions:

Table 1. Research questions

<b>Number</b>	<b>Research question</b>
1	What is known and unknown about entrepreneurial rule-breaking?
2	Can entrepreneurial rule-breaking be a functional entrepreneurial action? If so, how can it be beneficial to the entrepreneur?
3	If entrepreneurial rule-breaking can be functional, how should it be defined and what is its nature?
4	What are the key drivers of functional entrepreneurial rule-breaking?

#### 1.7. Research scope and boundaries

The scope of the present thesis is to understand entrepreneurial rule-breaking with a few select focuses: (1) on rule-breaking as a rational and functional entrepreneurial action, (2) on formal rule-breaking, and (3) primarily on individual-level drivers of entrepreneurial rule-

breaking and how they interact with contextual factors to influence entrepreneurial rule-breaking. These select focuses are based on careful considerations that I detail below, and constitute the boundary conditions for this thesis. This thesis does not concern the following issues which will not form key parts of the investigation: (1) impulsive or irrational rule-breaking constituting a dysfunctional entrepreneurial action; (2) rule-breaking outside the traditional entrepreneurial context, for example, rule-breaking in intrapreneurial contexts; (3) informal rule-breaking carried out by entrepreneurs, such as breaking established business practices or social norms; and (4) collective rule-breaking at group or organisational levels.

#### 1.7.1. The focus on functional rule-breaking

This thesis focuses on entrepreneurial rule-breaking as a rational and functional behaviour in entrepreneurs. This focus is consistent with the widely-accepted notion that entrepreneurial action is goal-directed in nature and the result of rationality (e.g., Frese, 2020; Furlotti et al., 2020; McMullen, 2015). Most extant entrepreneurial rule-breaking studies, nevertheless, focused on deviance-based rule-breaking and unproductive/destructive forms of entrepreneurial action and activity (e.g., black market and grey market ventures, self-enhancement, and corruption in Lucas et al., 2022; Sottini & Cannatelli, 2022; Ufere et al., 2012). However, some authors recently discussed concepts which demonstrate the positive potential of entrepreneurial rule-breaking, for example, virtue-based ethics of entrepreneurial rule-breaking, entrepreneurship as emancipation, destituent entrepreneurship (Brenkert, 2009; Dey, 2016; Rindova et al., 2009). These authors implicitly challenge the conventional assumption of entrepreneurial rule-breaking as a dysfunctional entrepreneurial action in attempts to draw greater attention to functional entrepreneurial rule-breaking. In doing so, they



open up an important research avenue—one that sees fascinating opportunities for future researchers to add new and nuanced knowledge of the phenomenon. Albeit great in potential, theoretically and empirically little is known about how entrepreneurial rule-breaking can benefit entrepreneurs. Clearly, functional entrepreneurial rule-breaking is an under-researched area. By focusing on the functional entrepreneurial rule-breaking, this thesis aims to fill this research gap and advance the knowledge of entrepreneurial rule-breaking in an incremental way.

#### 1.7.2. The focus on formal rule-breaking

The present thesis focuses on formal rule-breaking carried out by entrepreneurs. In focusing on formal rules, this thesis does not focus on related but distinct concepts that have been studied in the literature, such as breaking informal rules, challenging social norms, being innovative, defying conventional wisdom, and defying stakeholder expectations (e.g., Brenkert, 2009; Petrou et al., 2020). Formal rule-breaking differs from informal rule-breaking in several ways, which I will discuss next.

*Rules.* Rules are behaviour-regulating instruments used by a person, an organisation, or a community to coordinate expectations and relationships (North, 1990; Rescher, 2013), and, in doing so, to establish and maintain intended structures between or among involved entities. In institutional theories, rules and institutions, often *used interchangeably*, are a meso-level instrument fundamental in the linkage between macro-level and micro-level actors and interests, which are interdependent and mutually influential (Archer, 2021).

*Formal versus informal rules.* Rules can be categorised into formal rules and informal rules (Morrison, 2006; North, 1990; Welter & Smallbone, 2011) based on the means through

which the intended structure is established and maintained. Formal rules are those with explicit requirement for compliance, usually in writing and with enforceability. As formal rules are explicit and often rigid, compliance of formal rules is more resource-demanding. For example, it was estimated that compliance with U.S. federal regulations in 2008 amounted to \$1.75 trillion (Crain & Crain, 2010). Consequences of noncompliance with formal rules are more immediate and detrimental, which can involve huge fines or imprisonment. In contrast, informal rules reflect local conditions and preferences, and are more flexible. Compliance with informal rules is voluntary and self-enforced (see, Boettke et al., 2008; Scott, 2013; Williamson, 2000 for detailed accounts of formal versus informal rules).

*Justifying the focus on formal rule-breaking.* The decision for this thesis to focus on formal rule-breaking was the outcome of an iterative process involving analyses and re-analyses of literature, and continuous refinements of research scope. Among these, two factors provided key rationale for this decision. First, as resource is central to entrepreneurial success (e.g., Alvarez & Busenitz, 2001; Kor et al., 2007), this focus reflects the entrepreneurial context where formal rules are more salient than informal rules in affecting organisational resource allocation. Compliance with formal rules has sure implications for entrepreneurs in terms of costs and resource allocations. In contrast, informal rules are more flexible, hence are less resource-demanding.

Second, society has differing expectations on entrepreneurs with regards to informal and formal rule-breaking. People generally view informal rule-breaking as a legitimate behaviour for entrepreneurs to create new products and business model, and even expects them to break informal rules (e.g., Brenkert, 2009; Hall & Rosson, 2006). However, people's perception of

entrepreneurs' formal rule-breaking is often associated with deviance, criminality, and anti-sociality (e.g., Lundmark & Westelius, 2012, 2019; Warren & Smith, 2015). In sum, formal and informal rules have different working mechanisms, and formal rule-breaking is less tolerated in society. The focus on formal rule-breaking will produce insights that are more pertinent to the entrepreneurial context for the above reasons, and it is not uncommon in the literature to focus on formal rule-breaking.

### 1.7.3. The focus on individual and contextual factors

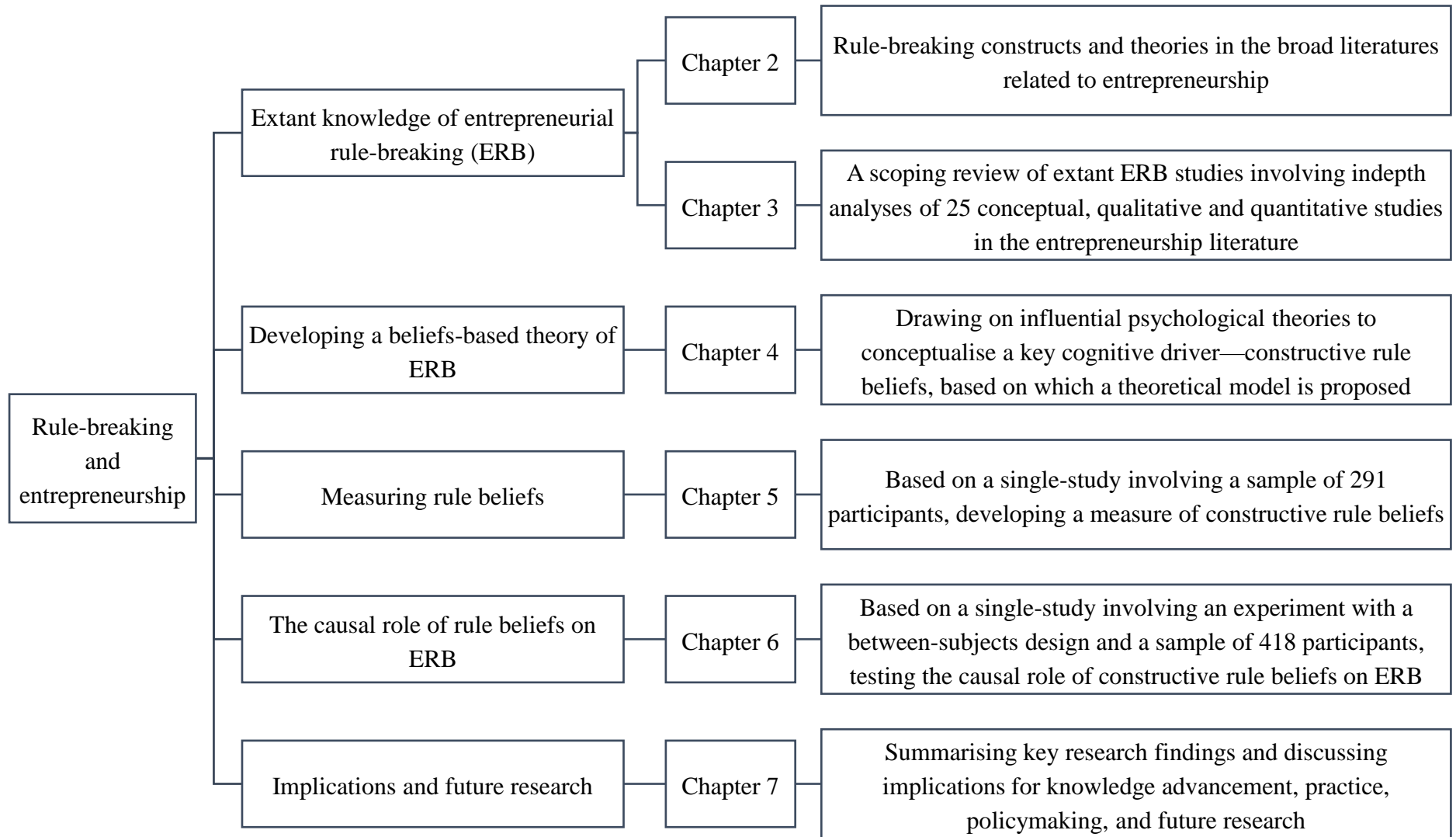
This thesis has a focus on individual-level drivers of entrepreneurial rule-breaking and the interplay between individual and contextual factors leading to functional entrepreneurial rule-breaking. As noted, while extant studies have provided comprehensive insights on environmental/contextual drivers of entrepreneurial rule-breaking, they fall short on insights in individual-level drivers of functional entrepreneurial rule-breaking. To fill the gap, this thesis focuses on key individual drivers of functional entrepreneurial rule-breaking and their interplay with contextual factors.

### 1.8. Structure of the following chapters and their respective contributions

The rest of the thesis is structured as follows: Chapter 2 reviews influential rule-breaking constructs and theories in the select literatures related to entrepreneurship, Chapter 3 focuses on a scoping review of entrepreneurial rule-breaking in the literature. In addressing research questions 1 and 2, Chapter 2 and 3 together contribute to the knowledge of entrepreneurial rule-breaking through careful examinations of what is known and unknown about entrepreneurial rule-breaking. Chapter 4 fills the identified research gaps by proposing a definition of functional entrepreneurial rule-breaking underlied by its agentic nature, and developing an

integrative theory of entrepreneurial rule-breaking. In addressing research question 3 and 4 from theoretical perspectives, Chapter 4 contributes to the knowledge of entrepreneurial rule-breaking by introducing a novel cognitive construct—constructive rule belief—and providing a theoretical account focusing on functional entrepreneurial rule-breaking. Chapter 5 develops a measure of constructive rule beliefs and examines its construct validity. In addressing research question 4 methodologically, Chapter 5 contributes to the knowledge of entrepreneurial rule-breaking by clarifying the factor structure of constructive rule beliefs and providing a tool for future empirical investigations of a potential driver of rule-breaking in varied contexts. Chapter 6 details an online experiment in which the causal relationship between constructive rule beliefs and entrepreneurial rule-breaking was empirically tested in hypothetical entrepreneurial scenarios. In empirically addressing research question 4, Chapter 6 contributes to the knowledge of entrepreneurial rule-breaking by providing initial empirical evidence of the causal relationship between constructive rule beliefs and functional entrepreneurial rule-breaking. Chapter 7 summarises key research findings and discusses implications for knowledge advancement and practice. See Figure 1 below for the thesis structure.

Figure 1. The thesis structure



## CHAPTER 2. RULE-BREAKING IN THE BROAD LITERATURES

### 2.1. Chapter overview

This chapter indirectly addresses research questions 1 and 2 by reviewing the broad literatures related to rule-breaking. Given that there are only a small number of extant studies on entrepreneurial rule-breaking, constructs and theories of rule-breaking in related literatures may provide useful insights to assist the understanding of this behaviour in the entrepreneurial context. Considering limited space and relevance, in this chapter I will only review the most influential constructs and theories of rule-breaking in the selected literatures that are linked to entrepreneurship, that is, the organisational behaviour and sociology literatures.

### 2.2. Rule-breaking in the organisational behaviour literature

In organisational behaviour, the body of literature on rule-breaking is vast. There are a number of constructs which are related to rule-breaking in the workplace. Among them are workplace deviance, organisational misbehaviour, counterproductive work behaviour, workplace aggression, workplace violence, antisocial behaviour, unethical behaviour, constructive deviance, prosocial rule-breaking, and positive deviance (e.g., Götz et al., 2019; Griffin & Lopez, 2005; Omotayot et al., 2015). Although with nuanced differences, these constructs can all be described as rule-breaking in the workplace. I will use the term “workplace rule-breaking” to describe the collection of these constructs in the organisational behaviour literature hereinafter.

Some of the abovementioned constructs have attracted greater research attention than other ones and have become an established and prolific research area. Given the limited space, I will discuss in this chapter three most well-researched workplace rule-breaking constructs:

workplace deviance, constructive deviance, and prosocial rule-breaking. These constructs have been chosen based on a few considerations: (1) They represent rule-breaking constructs with a focus on either negative or positive impact or intentions, (2) they represent rule-breaking constructs focusing on either informal rules or formal rules, (3) there are both similarities and contrasts among these constructs, and (4) there are some conceptual overlaps between these constructs and the entrepreneurial rule-breaking in the current thesis. A brief description of each construct, antecedents and outcomes will be provided, followed by a discussion of similarities and differences between these constructs.

### 2.2.1. Workplace deviance

Workplace deviance is a well-researched construct in the organisational behaviour literature. Robinson and Bennett (1995) defined workplace deviance as “*voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both*” (p.556). A typology of workplace deviance was introduced in the same study, based on two dimensions—the direct victims of deviant behaviour and the magnitude of deviance—which resulted in four types of workplace deviance: production deviance, property deviance, political deviance, and personal aggression (Robinson & Bennett, 1995). Depending on the target of the deviant behaviour, workplace deviance is divided into organisational workplace deviance (where the behaviour is directly targeted at the organisation) and interpersonal workplace deviance (where others in the organisation are the direct target of the deviant behaviour). Common individual and organisational predictors of workplace deviance in empirical studies are given in Table 2 below.

Like related terms, such as counterproductive workplace behaviour and organisational

misbehaviour, workplace deviance focuses on the behaviour that has a dysfunctional, negative, or destructive impact on organisations and their members. However, deviant behaviour at work can also have positive impacts. The two most well-researched positive workplace rule-breaking constructs are constructive deviance and prosocial rule-breaking.

Table 2. Workplace Deviance, its predictors, measurement, and outcomes<sup>1</sup>

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<b>Predictors</b>	<p><i>Individual-level predictors:</i></p> <p>Big-five &amp; HEXACO factors: Agreeableness, Neuroticism, Conscientiousness, Honesty, Humility (e.g., Mackey et al., 2019; Pletzer et al., 2019)</p> <p>Facet-level trait predictors: Excitement seeking, Morality, Altruism, Anger (Hastings &amp; O’Neill, 2009)</p> <p><i>Organisation-level predictors:</i></p> <p>Abusive supervision, Organisational injustice, Unethical climate, Job dissatisfaction (e.g., Hussain et al., 2014; Mackey et al., 2019; O’Neill et al., 2011)</p>
<b>Outcomes</b>	<p>Negative employee job performance (Howladar et al., 2018)</p> <p>Negative organisational performance (Omotayo et al., 2015)</p>

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### 2.2.2. Constructive deviance

Galperin’s (2003) book chapter was one of the seminal papers on constructive deviance. Similar to Bennet and Robinson’s (2000) definition of workplace deviance but with a positive

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<sup>1</sup> Not based on a systematic review.



stance, Galperin (2003) defined ‘constructive deviance’ as “*voluntary behavior that violates significant organizational norms and in so doing contributes to the well-being of an organization, its members, or both*” (p.158). Vadera, Pratt, and Mishra (2013) reviewed studies on constructive deviance and identified three categories of drivers: intrinsic motivation, felt obligation, and psychological empowerment. These three categories captured drivers at employee, supervisor, group, and organisational levels. Specific drivers under the three categories are listed in Table 3 below. Vadera et al. (2013) also suggested that constructive deviance was an umbrella term covering several other positive workplace rule-breaking constructs, such as prosocial rule-breaking, taking charge, extra-role behaviour, and others. Most of the extant empirical studies on constructive deviance focused more on the antecedents and drivers of constructive deviance than on its outcomes (i.e., how constructive deviance affects organisations and their members). See detail in Table 3 below.

Table 3. Constructive Deviance, its predictors, measurement, and outcomes<sup>2</sup>

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<b>Predictors</b>	<i>Intrinsic motivation:</i>
(Vadera et al., 2013, p.1249-50)	Employee predictor: Innovative cognitive style
	Supervisor predictor: Transformational leadership
	<i>Felt obligation:</i>
	Employee predictor: Positive job attitudes
	Supervisor predictors: Support and openness, Non-controlling supervision, Leader-member exchange
	Group predictors: Attachment to group, Group culture and norms, Coworker

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<sup>2</sup> Not based on a systematic review.

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support

Organisational predictors: Organisational culture and climate, Organisational support, Procedural justice

*Psychological empowerment:*

Employee predictors: Self-worth, Efficacy of action, Extraversion, Proactive personality

Supervisor predictor: Transformational leadership

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**Outcomes** *Employee wellbeing:*

Employee's improved self-perceptions (Mortimer et al., 2020)

Reduced stress (Garg & Saxena, 2020)

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### 2.2.3. Prosocial rule-breaking

Prosocial rule-breaking is another well-researched construct of positive workplace rule-breaking. Morrison (2006) defined prosocial rule-breaking as “*any instance where an employee intentionally violates a formal organizational policy, regulation, or prohibition with the primary intention of promoting the welfare of the organization or one of its stakeholders*” (p.6).

A typology of prosocial rule-breaking was also provided in the same study, based on the direct beneficiary of the behaviour: efficiency-oriented prosocial rule-breaking benefiting the organisation, customer-oriented prosocial rule-breaking benefiting the customer, and coworker-oriented prosocial rule-breaking benefiting the coworker. Antecedents and outcomes of prosocial rule-breaking are given in Table 4 below.

Table 4. Prosocial rule-breaking, its predictors, measurement, and outcomes<sup>3</sup>

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**Predictors** *Morrison (2006):*

Autonomy (+), Risk propensity (+), Coworkers' prosocial rule-breaking (+)

*Mayer et al. (2007):*

Quality of supervisor-subordinate relationship (customer-oriented prosocial rule-breaking ) (+)

*Dahling et al. (2012):*

Perceived job demands (efficiency-oriented prosocial rule-breaking) (+), Counterproductive work behaviour (+), Conscientiousness (efficiency- and customer-oriented prosocial rule-breaking) (-)

*Borry & Henderson (2020):*

Ethical climate (-), Conformity (-), Risk (+), Perceived expertise (+)

*Other predictors:*

Leadership styles: e.g., ethical (+), inclusive (+), empowering leadership (+, joint effects) (e.g., Chen et al., 2019; Wang & Shi, 2020; Zhu et al., 2018)

Bureaucracy factors: Formalisation of rules (-), Social support (+ with customer-oriented prosocial rule-breaking, - with efficiency- and coworker-oriented prosocial rule-breaking), Participation in decision making (+ with efficiency- and customer-oriented prosocial rule-breaking), Hierarchy of authority (+ with customer- and efficiency-oriented prosocial rule-breaking),

Job codification (+), Rule enforcement (- with customer- and coworker-

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<sup>3</sup> Not based on a systematic review.

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oriented prosocial rule-breaking) (Fleming, 2020; John & Shafi, 2020)

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**Outcomes** *Shum et al. (2019)*

Reduced service performance (coworker-oriented prosocial rule-breaking)

*Majeed et al. (2018)*

Increased employee turnover intention

*Dahling et al. (2012)*

Reduced task performance (coworker- and customer-oriented prosocial rule-breaking)

*Lv et al. (2020)*

Increased sustainable organisational identification perceptions

Reduced procedural justice perceptions

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#### 2.2.4. Patterns and implications

These workplace rule-breaking constructs are often intertwined but also nuanced. Workplace deviance and constructive deviance are similar in their definitions. In terms of the type of rules broken, they both focus primarily on organisational norms. In terms of outcomes, they both focus on the wellbeing of an organisation, its members, or both. The key difference lies in the outcomes of the behaviour: workplace deviance threatens the wellbeing of an organisation and/or its members, while constructive deviance contributes to the wellbeing of them.

Morrison's (2006) conceptualisation of prosocial rule-breaking emerged circa three years after Galperin's (2003) conceptualisation of constructive deviance. Although prosocial rule-

breaking may be regarded an extension of workplace deviance and constructive deviance in studying workplace rule-breaking, it is significantly divergent from workplace deviance and constructive deviance in a few ways. Different from both workplace deviance and constructive deviance, which are norm-based deviant behaviour, prosocial rule-breaking has an explicit focus on formal organisational rules. Also different from workplace deviance and constructive deviance, which focus on the impact of the behaviour on the wellbeing of an organisation and/or its members, prosocial rule-breaking is concerned with the impact on both those inside and outside the organisation (e.g., coworkers and customers). What further discerns prosocial rule-breaking from the other two constructs is their different focuses on intentions versus outcomes. prosocial rule-breaking seems to be more concerned with intention (e.g., to help coworkers, customers, or for the sake of work efficiency). In contrast, the other two constructs are more concerned with outcomes than intentions (i.e., “in doing so threatens/contributes to the wellbeing of an organisation and/or its members”). These differences have an impact on the selection of measurement instruments.

In addition to workplace deviance, constructive deviance, and prosocial rule-breaking, there are other constructs used in the organisational behaviour literature to describe the rule-breaking behaviour within organisations, which have been researched to a lesser extent. They are not reviewed in this thesis due to limited space.

#### 2.2.5. Why do people break rules at work?

To explain why people break rules at work, researchers have drawn from a range of psychology and organisational behaviour theories, such as, personality theory (e.g., Ashton et al., 2014; Berry et al., 2007), affect theory (Amabile et al., 2005), cognitive style theory (e.g.,

Tierney et al., 1999), leadership theories (Chen et al., 2019; Gumusluoglu & Ilsev, 2009; Wang & Shi, 2020; Zhu et al., 2018), job demands theory (e.g., Dahling et al., 2012), organisational justice theory (e.g., O'Neill et al., 2011), and so on.

Based on the comprehensive review of the extant literature, empirical evidence suggests that workplace rule-breaking is a result of factors in three broad categories: (1) intrinsic factors pertaining to the actor, (2) environmental factors, and (3) perceptual and attitudinal factors. They will be discussed in detail next.

*Intrinsic factors pertaining to the actor:* The first category contains trait predictors of workplace rule-breaking, which are mostly intrinsic to the actor. These trait predictors include both broad, higher-order personality traits and more specific, facet-level traits. Some scholars found that the facet-level traits are more efficient than the broad trait factors in these predictive relationships (Hastings & O'Neill, 2009).

Big-five and HEXACO factors, such as agreeableness, neuroticism, conscientiousness, and honesty-humility have been found to predict negative deviant behaviour at work (Mackey et al., 2019; Pletzer et al., 2019), while conscientiousness and extraversion have been found to predict positive deviant behaviour at work (e.g., Vadera et al., 2013; Dahling et al., 2012). Conscientiousness is the only broad factor found to predict both negative deviant behaviour (negative correlation) and positive deviant behaviour (positive correlation).

The specific and facet-level trait predictors of negative workplace rule-breaking include excitement-seeking, morality, altruism, and anger (Hastings & O'Neill, 2019), while positive rule-breaking at work is predicted by innovative cognitive style, self-worth, self-efficacy, autonomy, risk propensity, empathy, and conformity (e.g., Borry & Henderson, 2020; Morrison,

2006; Vadera et al., 2013).

Trait theory holds that traits are relatively more stable across situations (i.e., with relative ‘invariance’), which differentiates them from states, the latter often embedded in and varying with context (Roberts, 2009). Although these trait factors predict workplace rule-breaking, they can be transcendent of organisational boundaries thus relevant to entrepreneurial rule-breaking.

*Environmental factors:* The second category of workplace rule-breaking predictors have been found in the organisational environment. These environmental factors can be proximal or distal to an employee. Proximal environment factors predicting workplace rule-breaking include factors often taking forms of supervisory factors and group norms in one’s work unit. For example, abusive supervision has been found to predict negative workplace rule-breaking (Mackey et al., 2019; Hussain et al., 2014), while good quality supervisor-subordinate relationships, positive leadership styles, supportive group-level culture and norms have been found to predict positive workplace rule-breaking (e.g., Wang & Shi, 2020; Vadera et al., 2013; Dahling et al., 2012). In addition, peer reference, such as a coworker’s prosocial rule-breaking, has also been found to be a strong predictor of one’s tendency in prosocial rule-breaking (e.g., Morrison, 2006). These proximal environmental factors form an enclosed ‘universe’ of daily operating orbits for working individuals. To some extent, these proximal environmental factors have a greater influence on individuals at work than the broader environmental factors.

Distal environmental predictors of workplace rule-breaking are factors at the organisational level. For example, organisational injustice and unethical climate have been found to predict negative workplace deviance (e.g., Hussain et al., 2014; Mackey et al., 2019), and positive perceptions of organisational justice, culture, and climate have been found to

predict positive workplace deviance (e.g., Borry & Henderson, 2020; Vadera et al., 2013). In addition, bureaucracy factors such as centralisation of the organisational structure, formalisation of rules, rule consistency, and deterrence factors have also been found to be related to prosocial rule-breaking (Fleming, 2020).

*Perceptual and attitudinal factors:* The third category of workplace rule-breaking predictors are perceptual and attitudinal factors. Perceptual and attitudinal factors are not primarily intrinsic to individuals. They do not entirely fall under environmental factors either. The perceptual and attitudinal factors are often in the person-organisation intersection. For example, poor job satisfaction has been found to be related to negative workplace deviance (e.g., Mackey et al., 2019), and positive job attitudes and attachment to group have been found to be related to positive workplace deviance (Vadera et al., 2013). One other such predictor is perception of job demands, which has been found to positively predict the efficiency-oriented prosocial rule-breaking (Dahling et al., 2012).

Formal and informal organisational rules provide a complex net of norms, expectations, and routines in social settings. Breaking these rules often entails some level of reasoning and balancing between self-needs and desires, and the social environment in which one operates. It would be interesting to see more investigations in future studies on how cognitive mechanisms work in rule-breaking; for example, how the differences in selective attention to diverse stimuli (MacLeod & Clarke, 2015; McIntyre & Graziano, 2016) may lead to variations in rule-breaking, the relationship between cognitive biases and rule-breaking, and how trait anxiety might mediate the relationships (Wells & Matthews, 2014) between cognition and rule-breaking.

Although workplace rule-breaking constructs and predictors are nested in organisational



boundaries, some aspects of them can be useful to the understanding of entrepreneurial rule-breaking, as rule-breaking in the entrepreneurial context is still rule-breaking, but in a context different from those within organisations. Some fundamental structure or aspects in the underlying working mechanisms of rule-breaking can be common across contexts. Indeed, some trait predictors of workplace rule-breaking discussed above, for example, cognitive style, self-efficacy, autonomy, risk propensity, and nonconformity, are either attributed to entrepreneurial characteristics or empirically found to predict entrepreneurial rule-breaking. Although there is a lack of an influential rule-breaking construct in entrepreneurship, the knowledge of rule-breaking in related fields can play an important role to assist the understanding of rule-breaking by entrepreneurs.

While the above rule-breaking constructs in the organisational behaviour literature collectively provide a typology of rule-breaking within organisations, several theories of rule-breaking exist in the institutions and sociology literatures, a brief review and discussion of which is provided next.

### 2.3. Rule-breaking in the sociology literature

In this section, I will review three most influential theories of rule-breaking in the related literatures of institutions and sociology: (1) strategic responses to institutional processes (Oliver, 1991), (2) microanomie (Konty, 2005), and (3) legitimacy of authorities and legal rules (Tyler, 1997, 2006). These theories provided useful insights for the present thesis, as they explicate why and how business organisations and individuals break rules.

#### 2.3.1. Strategic responses to institutional processes

In the institutions literature, extensive research has been conducted on how organisations

behave under institutional pressures and in turn reshape them (e.g., North, 1990; Scott, 2013; Scott & Davis, 2015; Williamson, 1996). Among this literature, Oliver's (1991) typology of strategic responses to institutional processes is a seminal paper on rule-breaking strategies that organisations employ to pursue their enterprising goals. Oliver built the typology of strategic responses on resource dependence theory and the attribution of a greater degree of discretion to organisations in the face of institutional constraints. The agentic perspective contrasts the traditional perspective in institutional theories, which heavily focused on institutional environments and those shaping beliefs and institutional rules as causal factors (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Oliver, 1991). In contrast, Oliver adopted the agentic position by focusing on organisations' task environment and those who control scarce resources. The typology consists of five types of organisational behaviour (i.e., acquiescence, compromise, avoidance, defiance, and manipulation). These strategic responses represent varied forms of organisational rule-breaking under the paradoxical tensions between enterprising goals and institutional constraints. It was further posited that an organisation's willingness and ability to comply with institutional rules were bounded by its resource adequacy and predicted by a range of endogenous and exogenous factors (see Oliver, 1991). Accordingly, for an organization, whether and when to follow or break an institutional rule, and which form of rule-breaking to engage in, are a matter of contextually-embedded agentic choice, and rule-breaking is a strategic option that organisations use to address paradoxical tensions.

This agency-based theory of strategic responses has an extensive influence on the research of organisational behaviour, strategic management, and entrepreneurship. Google Scholar reports 12,579 citations of the study in total (accessed November 24, 2022). In entrepreneurship,

for example, Welter and Smallbone (2011) extended Oliver's work by providing an institutional perspective of entrepreneurial behaviour in transitioning economies, where entrepreneurs face extreme levels of uncertainty and ambiguity exacerbated by turbulent institutional frameworks. Oliver's (1991) theory of strategic responses has several implications for the present thesis. First, it suggests that rule-breaking is common in businesses and organisations. Second, it abandons the dichotomous notion of rule-following versus rule-breaking and demonstrates that rule-breaking is a continuum of varied forms. Third, agency is a key driver of rule-breaking in organisations and business venturing.

### 2.3.2. Anomie and microanomie

An influential theory of rule-breaking in sociology is the well-travelled anomie theory (Cullen et al., 2014; Durkheim, 1893, 1897). Introduced by Durkheim, anomie theory explains social unrests (e.g., high rates of crime and suicide) caused by predominant conditions of rapid social change, deregulation, and normlessness (Cullen et al., 2014; Konty, 2005). Building on anomie theory, Konty (2005) furthered the concept of anomie by developing an individual-level factor—microanomie—that is posited to lead individuals to deviance and crimes. Microanomie was defined as “*a cognitive state where an individual is not regulated by values that call for behavior aligned more with social than with self-interests*” (Konty, 2005, p.108). It describes the imbalance in individuals between social-interest and self-interest values, which is posited to cause deviant behaviour. Konty argues that self-interest, by and in itself, is not necessarily criminogenic, and only becomes so if the pursuits of self-interest enlist antisocial means. Konty's microanomie explores an intrinsic factor (i.e., personal values in individuals), and in doing so, supplements his predecessors' extrinsic perspective (i.e., anomie as a social

condition to behaviour). Given that anomie theory focuses on macro-level environmental factors and explains social unrests and individual-level drivers of rule-breaking, which is an under-researched aspect of entrepreneurial rule-breaking, the rest of this section will be focused on Konty's microanomie as an individual-level theory of rule-breaking.

The effect of microanomie on deviant behaviour is empirically supported; for example, Morris and Higgins (2009) found that an increase in microanomie in undergraduate students increased their willingness to engage in digital piracy. Ganon and Donegan (2010) found that people with excessive self-enhancing values over social values were most likely to commit tax fraud by concealing off-the-book incomes. Microanomie theory provides a plausible explanation of deviance across varied contexts, particularly where there is an obvious divide between self-interests and social interests, such as in many criminological contexts.

The microanomie theory, however, is limited by its applicability in complex circumstances, such as in entrepreneurship. The microanomie theory is founded on a key assumption which treats self-interests and social interests as oppositional and binary (i.e., either/or). In the entrepreneurial context, however, these values are not always oppositional or binary. They can even be congruent in certain instances. For example, innovatively exploiting institutional deficiencies for the benefits of consumers (e.g., the cases of music file sharing platform or internet pharmacy, see Hall & Rosson, 2006) certainly served self-interests of the entrepreneurs while, in the meantime, social value and welfare for consumers and vulnerable groups were also created via rule-breaking. In addition, in the entrepreneurial context, self-interests and social interests are rarely in a binary relationship (i.e., the only two classes of interests concerned) either. Clearly, the relationship between entrepreneurs' self-interests and social

interests can be and often is further complicated by third party interests, such as the interests of business partners, competitors, and state actors, as entrepreneurs operate in a network consisting of multiple stakeholder groups, often with competing interests and demands. The usefulness of the microeconomic theory, in sum, is limited in the entrepreneurial context. Finally, one other implicit assumption underlying the microeconomic theory is that rules are legitimate and flawless hence should be followed. Yet this is a problematic assumption in the real world, as rules and institutions can be illegitimate and/or flawed for many reasons.

### 2.3.3. Legitimacy of rules and authorities

Another prominent theory related to rule-breaking is legitimacy of authorities and legal rules. The concept of legitimacy has a long history, and modern thoughts on legitimacy date back to Weber's three types of legitimate rule (Tyler, 2006; Weber, 1958). Legitimacy is defined as the self-generated obligation to defer to authorities and rules by appeals to internalised values (French et al., 1959) or "*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definition*" (Suchman, 1995, p.574). Different legitimacy theories and constructs exist in multiple disciplines, including political sciences, legal studies, criminology, institutions and organisations. Two influential legitimacy theories are legitimacy of authorities and rules, and organisational legitimacy. The former involves a psychological construct explaining people's felt obligations to obey (Tyler, 2006) and the latter is a construct and theory involving types and sources of legitimacy as well as strategies organisations utilise to acquire sociopolitical legitimacy (Dowling & Pfeffer, 1975; Suchman, 1995). To be clear, this section focuses on the former, as it is most relevant to the present thesis.

Rules are behavioural-regulating instruments designed to achieve intended social order and structure (North, 1990; Rescher, 2013). To actualise the intended regulating power of rules, rule-makers employ coercive and/or cooperative measures; coercive measures are based on power possession, while cooperative measures heavily rely on legitimacy (Tyler, 2006). The psychology of legitimacy is a theory that Tyler introduced to explain the effects of procedural justice and trust/confidence in authorities on people's rule behaviour (see, for example, Tyler, 1997; Tyler, 2006; Tyler & Jackson, 2014). It posits that people's belief of rules and rule-makers as legitimate is an important intrinsic precursor to their self-enforced compliance, as opposed to coerced compliance. People defer to authorities and follow rules because they believe rules and authorities are legitimate. When people believe authorities or rules are illegitimate, they defy authorities and break rules. Tyler argues that the psychology of rule legitimacy is inadequately accounted for by resource-based theories that focus on instrumental elements (e.g., resource distribution, instrumental connections). Drawing on social identification theories, Tyler posits that relational elements (e.g., self-definition, group identification, values similarity) have important roles in informing people's self-enforcement of rules in the absence of extrinsic rewards and/or punishments (Tyler, 1997). Legitimacy beliefs involve both rules (e.g., procedural justice) and authorities (e.g., the right to make rules). Both play a distinct yet connected part in perceived legitimacy (Murphy et al., 2009; Tyler, 2006). Empirical studies support the influence of perceived legitimacy. For example, Katsaros and colleagues (2022) studied rule-breaking on Twitter and found that rule violators who felt fairly treated in their enforcement (i.e., perceived procedural justice) were less likely to violate rules again.

The legitimacy theory of rules is informative in terms of why people voluntarily defer to

authorities and follow rules in the absence of coercive measures. However, as legitimacy is an abstract and multifaceted psychological construct (Tyler & Jackson, 2014), it begs two questions: what provides foundation to this felt obligation to obey, and how is it measured? Conceptually, legitimacy is embedded in a socially-constructed system of values and beliefs (Suchman, 1995). This socially-constructed system is also referred to as the cultural-cognitive pillar of institutions embedded in societally shared values and schemas (Scott, 2008). Empirically, legitimacy is measured largely by two classes of indicators: cognitive and behavioural. Specifically, authors measure legitimacy with indicators such as confidence in/trustworthiness of authorities, perceived procedural justice, willingness to obey, engagement, cooperation, and compliance, (e.g., Levi et al., 2009; Tyler & Jackson, 2014). Clearly, there is a disconnect between the conceptual foundations of legitimacy—the socially constructed system of values and beliefs—and how legitimacy is empirically measured, as the cognitive measures of legitimacy largely rely on perceptions and attitudes that revolve around specific rules and contexts instead of deep-seated cognitions independent of context.

#### 2.3.4. Patterns and implications

These influential theories of rule-breaking in the institutions and sociology literatures are divergent in several ways. First of all, the levels of analysis are different: strategic responses theory focuses on organisational-level responses; anomie theory focus on societal-level drivers of deviance; microanomie and legitimacy theories focus on the individual-level precursors. Secondly, different domains are involved concerning where key drivers of rule-breaking lie. Anomie theory exclusively focuses on the macro-level conditions that are exogenous to actors; microanomie and legitimacy theories mostly investigate the cognitive factors endogenous to

actors; while strategic responses theory examines both endogenous and exogenous factors which lead to varied organisational responses to rules and institutions. Thirdly, the nature of rule-breaking and default positions in these theories vary. Anomie and microanomie theories are concerned with antisocial and deviance-based rule-breaking; theories of strategic responses and legitimacy of rules adopt a morally-neutral position on rule-breaking by acknowledging the problematic potential of rules themselves.

Although divergent in several ways, some informative commonalities and congruence exist among these influential theories of rule-breaking. First, collectively, they answer the question: why and how individuals and organisations follow or break rules. Second, consistent with Bandura's (1989) social cognitive theory, they all demonstrate that peoples' rule behaviour is the result of the dynamic interaction of cognition, environment, and behaviour.

#### 2.4. Discussion

These patterns among the rule-breaking constructs and theories in the broad literature have important implications for the theorisation of rule-breaking in the entrepreneurial contextual for this thesis. Nevertheless, individually, none of these theories provides an integrative framework that can adequately account for the individual-level drivers of entrepreneurial rule-breaking and interactions between cognition, environment, and behaviour. For example, while perceived legitimacy of rules and authorities is an informative and influential theory, there is a disconnect between its theoretical foundation and its empirical measures. This identified gap will be filled by a novel cognitive construct—constructive rule beliefs—introduced in Chapter 4. To avoid unnecessary repetition, implications of these rule-breaking theories and constructs will be discussed in detail in Chapter 4.



## CHAPTER 3. A SCOPING REVIEW OF ENTREPRENEURIAL RULE-BREAKING

### 3.1. Chapter overview

This chapter directly addresses research questions 1 and 2 in a scoping review of the entrepreneurship literature. The limited literature on entrepreneurial rule-breaking does not seek to answer a coherent set of questions. Instead, studies on entrepreneurial rule-breaking are somewhat fragmented and come from a range of literatures. The purpose of this chapter therefore is to conduct a scoping review examining the relationship between rule-breaking and entrepreneurship in the literature. This chapter contributes to the overarching research aims by providing a comprehensive review and synthesis of the literature on entrepreneurial rule-breaking. Building on the previous chapters, which provided a detailed discussion of rules and rule-breaking, the current chapter focuses specifically on rule-breaking in the entrepreneurial context. More specifically, this chapter details the results of a literature review of 25 papers (10 conceptual, 6 qualitative, and 9 quantitative) published between 2002 and 2022, which conceptually discussed or empirically investigated entrepreneurial rule-breaking.

### 3.2. Why a scoping review?

A scoping literature review was deemed appropriate in the current case due to the fragmented nature of extant entrepreneurial rule-breaking studies and the absence of a consistent research question required for systematic literature reviews (Peters et al., 2015; Pham et al., 2014). Findings from the scoping review will be informative regarding: (1) methods, definitions, and research questions that researchers have used for researching entrepreneurial rule-breaking, and (2) what is known and not known about the relationship between rule-breaking, its key drivers, and outcomes.

### 3.3. Method

#### 3.3.1. Data collection

Data collection was conducted in 2 stages, the first in April/May 2020 which focused on quantitative studies only, the second stage in May/June 2022 which complemented the first with conceptual and qualitative studies.

The searches involved 18 search terms. After several iterations of trials, the search terms listed in Table 1 were used. The key search terms (i.e., entrepreneur and rule-breaking) were included in the search, as well as synonyms and related terms. A librarian at QUT was consulted when conducting this search and provided advice with respect to search terms and databases to target for the review. Variations of spelling (American and British), part of speech (noun, adjective, and ventreneurial rule-breaking), and form (singular and plural) were applied in the searches to ensure that maximal results were captured. These search terms were applied to the fields of title, abstract and keywords.

Table 5. Search terms

<b>Key search term</b>	<b>Related search term</b>
Entrepreneur	‘Self-employed’, ‘founder’, ‘business owner’, and ‘owner-manager’
AND	
Rule-breaking	‘Unruly’, ‘deviant’, ‘rebel’, ‘subversion’, ‘destruction’, ‘misbehaviour’, ‘evasion’, ‘violation’, ‘nonconformity’, ‘workaround’, ‘cutting corners’, and ‘crime’

The searches were conducted in Scopus, ScienceDirect, and EBSCOhost. Searches in Google Scholar were also conducted as an additional check, to ensure that relevant studies were not missed due the limitations of the three databases. Google Scholar was not used in the main searches alongside the other three databases because Google Scholar does not support Boolean syntax or complex search term combinations.

### 3.3.2. Inclusion/exclusion criteria

Studies were included if they met the following criteria: (1) conceptual or empirical original research, (2) rule-breaking being either the focus of the study or a key concept/construct in the paper, (3) rule-breaking involved in the entrepreneurial context, (4) rule-breaking having occurred at the individual level by the entrepreneur (instead of by the firm, by employees, or by students proxied as ‘future entrepreneurs’, for example).

## 3.4. Results

### 3.4.1. Data selection

The search process returned more than 2000 papers. To identify appropriate articles, returned items were screened by reading the title and abstract. Duplicates, approximately 1000, were also removed. Among the remaining items, articles not meeting the above inclusion criteria were excluded. A total of 25 studies met all the inclusion criteria and were retained for full review. Of these 25 studies, ten are conceptual papers, six are qualitative studies, and nine are quantitative studies. Whilst the sample size is small, it reveals that this is an emerging research area which has a great potential for future researchers to add value to.

### 3.4.2. Data abstraction and descriptives

A quick glance at the search results suggests that entrepreneurial rule-breaking is an important phenomenon and an emerging research area. The resultant 25 studies were found in journals of several domains, including entrepreneurship, management, economics, and social sciences. Even though the sample size is small, publication outlets of the entrepreneurial rule-breaking studies are relatively widely distributed. In addition, among the 25 studies, 18 (72%) were published in the past decade (i.e., 2013 – 2022), and the earliest study was published in 2002. These indicate that entrepreneurial rule-breaking is a phenomenon of importance and attracting growing scholarly attention in multiple disciplines. The overall quality of these studies is good, as 21 (84%) studies were published in Scimago Q1 journals (2021). However, the Scimago Impact Factors (2021) of these publication outlets suggest that the impacts of these studies are mixed—some are prestige journals such as *The Quarterly Journal of Economics* (SJR impact factor 2021 = 31.35) and *Academy of Management Review* (SJR impact factor 2021 = 7.62) while a few journals have an SJR impact factor around or below .50. In sum, it is evident that entrepreneurial rule-breaking is a fascinating and important phenomenon that has been attracting growing scholarly attention. The quality and impacts of extant studies are mixed based on various measures, indicating a big potential for future researchers to add value to the comprehensive and nuanced understanding of this complex phenomenon.

See Table 6 below for an overview of the 25 studies. A synopsis of each of the 25 studies is provided in Appendix 1.

Table 6. Description of the 25 studies in the review<sup>4</sup>

<b>Study #</b>	<b>Year</b>	<b>First Author</b>	<b>Type of Paper</b>	<b>Country</b>	<b>Research Purpose</b>	<b>Journal</b>	<b>SJR impact factor 2021</b>	<b>SJR rank 2021</b>
1	2022	Lucas, D.S.	Conceptual – theory with model	Not identified	To theorise on why entrepreneurs are only sometimes constrained by law, regulation, and other formal constraints.	Journal of Business Venturing	5.83	Q1
2	2022	Sottini, A.	Conceptual – theory with model	Not identified	To contribute to the knowledge of entrepreneurial rule-breaking by theorising the motives and the dynamics underlying entrepreneurs' deliberate divergence from laws and social norms	The International Journal of Entrepreneurship and Innovation	0.63	Q2
3	2019	Lundmark, E.	Conceptual – without theory	Not identified	To fill a gap by conceptualising and exploring the under-researched antipode of social entrepreneurship, i.e., antisocial entrepreneurship	Journal of Business Venturing Insights	1.72	Q1
4	2018	Corbett, A.	Conceptual – without theory or model	Not identified	To facilitate a special issue on when and how distinctive characteristics of entrepreneurial attitudes, behaviors, and cognition lead to pervasive change	International Journal of Entrepreneurial Behavior & Research	1.21	Q1
5	2016	Dey, P.	Conceptual – theoretical	Argentina	To illustrate through a case study and cultivate sensitivity the more radical	Entrepreneurship & Regional	1.77	Q1

<sup>4</sup> The order of the 25 studies is based on a 2-level ordering mechanism. Level 1 relates to the nature of the studies, with the conceptual papers listed first, followed by the qualitative studies, then the quantitative studies. Level 2 relates to the time of publication, with the most recent papers/studies in each category listed first.

<b>Study #</b>	<b>Year</b>	<b>First Author</b>	<b>Type of Paper</b>	<b>Country</b>	<b>Research Purpose</b>	<b>Journal</b>	<b>SJR impact factor 2021</b>	<b>SJR rank 2021</b>
			framework		possibilities of entrepreneurship as they emanate from the free-floating conflictual energy at the heart of society	Development		
6	2016	Elert, N.	Conceptual – theory w/ propositions	Not identified	To theorise why and how entrepreneurs go beyond adjusting to prevailing institutions by using innovations to circumvent them	Small Business Economics	2.63	Q1
7	2014	Bureau, S.	Conceptual – theoretical framework	Not identified	To capture “the drama of entrepreneurship” (Hjorth, 2007) by exploring subversive nature in arts and entrepreneurship	Scandinavian Journal of Management	0.97	Q1
8	2012	Lundmark, E.	Conceptual – theoretical framework	Not identified	To explore the links between entrepreneurship and misbehaviour	Book Chapter	N.A.	N.A.
9	2009	Brenkert, G.	Conceptual – without theory	Not identified	MISSING THE PRECIS	Journal of Business Venturing	5.83	Q1
10	2009	Rindova, V.	Conceptual – without theory or model	Not applicable	To broaden entrepreneurship research by going beyond the focus on wealth creation and drawing attention to the emancipatory aspects of entrepreneuring	Academy of Management Review	7.62	Q1
11	2022	Sydow, A.	Qualitative	Kenya	To understand how entrepreneurs in emerging markets navigate institutional voids	Entrepreneurship Theory & Practice	3.35	Q1
12	2020	Alonso, A.D.	Qualitative	New Zealand	To examine entrepreneurial deviance from the perspective of New Zealand’s	European Business Review	2.39	Q1

<b>Study #</b>	<b>Year</b>	<b>First Author</b>	<b>Type of Paper</b>	<b>Country</b>	<b>Research Purpose</b>	<b>Journal</b>	<b>SJR impact factor 2021</b>	<b>SJR rank 2021</b>
					commercial honey producers			
13	2019	Cieslik, K.	Qualitative	Burundi	To explore the entrepreneurial potential of the rule-breaking practices of rural Burundi farmer entrepreneurs (i.e., microfinance program's beneficiaries)	Oxford Development Studies	0.49	Q2
14	2016	Breslin, D.	Qualitative	United Kingdom	To understand the interplay between rule-breaking and informal norms via a case study of the rule-breaking practices in a newly formed UK domiciliary care provider	Work, Employment and Society	2.41	Q1
15	2015	Warren, L.	Qualitative	United Kingdom	To critically examine the tension between rule-breaking and legitimacy for entrepreneurs through a case study	International Journal of Entrepreneurial Behavior & Research	1.21	Q1
16	2012	Ufere, N.	Qualitative	Nigeria	To address the research gap by exploring how entrepreneurs experience and respond to corruption	World Development	2.30	Q1
17	2019	Onu, D.	Quantitative	United Kingdom	To investigate the psychological underpinnings of "creative compliance" in tax behaviour	Games	0.4	Q3
18	2017	Levine, R.	Quantitative	United States	To understand who becomes an entrepreneur, and whether they earn more than salaried workers, based on a nuanced	The Quarterly Journal of Economics	31.35	Q1

<b>Study #</b>	<b>Year</b>	<b>First Author</b>	<b>Type of Paper</b>	<b>Country</b>	<b>Research Purpose</b>	<b>Journal</b>	<b>SJR impact factor 2021</b>	<b>SJR rank 2021</b>
					definition of “entrepreneurs”			
19	2017	Cantner, U.	Quantitative	Germany	To investigate how entrepreneurs challenge conventional wisdom to overcome social resistance and scepticism	Journal of Evolutionary Economics	0.95	Q1
20	2017	Bhat, V.N.	Quantitative	United States	To examine whether attitudes toward tax evasion has any influence on the choice of self-employment	Book Chapter		Q1
21	2016	Arend, R.J.	Quantitative	United States	To investigate the relationship between rule-breaking by entrepreneurs and realised advantage	Journal of Small Business Management	1.36	Q1
22	2013	Obschonka, M.	Quantitative	Sweden	Building on Zhang & Arvey’s (2009) study, to test in empirical data the relationship between entrepreneurial status and antisocial tendencies	Journal of Vocational Behavior	2.81	Q1
23	2009	Zhang, Z.	Quantitative	United States	To fill a research gap by examining the longitudinal relationship between negative forms of rule-breaking in adolescence and entrepreneurial status in adulthood	Journal of Business Venturing	5.83	Q1
24	2007	Aidis, R.	Quantitative	Lithuania	To explore whether illegal entrepreneurship experience (IEE), an unconventional form of human capital, is related to the performance and motivation of entrepreneurs operating legal businesses in	Journal of Business Venturing	5.83	Q1



<b>Study #</b>	<b>Year</b>	<b>First Author</b>	<b>Type of Paper</b>	<b>Country</b>	<b>Research Purpose</b>	<b>Journal</b>	<b>SJR impact factor 2021</b>	<b>SJR rank 2021</b>
25	2002	Fairlie, R.W.	Quantitative	United States	To examine the relationship between attitudes toward risk, entrepreneurial ability, and preferences for autonomy (proxied by youth drug dealing in this study) and the decision between self-employment and salary work a transition context	Journal of Labor Economics	5.39	Q1

### 3.5. Main analyses

#### 3.5.1. Conceptual papers

Ten conceptual articles related to entrepreneurial rule-breaking were found. Some attempted to directly conceptualise entrepreneurial rule-breaking with formal theorisation (e.g., Elert & Henrekson, 2016; Lucas et al., 2022; Sottini & Cannatelli, 2022). Some tried to combine certain forms of rule-breaking with entrepreneurship to create an intersectional scholarship (Bureau & Zander, 2014; Lundmark & Westelius, 2012; 2019). Some explored an unusual type of rule-breaking in a particular historical context (Dey, 2016), yet other ones envisioned future entrepreneurship research which will attract greater contributions from rule-breaking related concepts (e.g., Rindova et al., 2009). The rest of this section will discuss the patterns and implications having emerged from these conceptual papers, followed by a summary table of the ten conceptual articles.

##### 3.5.1.1. Patterns and implications

In general, there is a lack of coherence in the attempts of entrepreneurial rule-breaking conceptualisation. These conceptualisations approached entrepreneurial rule-breaking from largely different angles; for example, institutional divergence, misbehaviour, antisocial, destituent social forces, or emancipation. In addition, with some exceptions, most of them are exploratory and tentative in nature.

Despite the lack of coherence, some early patterns in these conceptual papers are informative. First of all, well-rationalised and documented boundary conditions seem missing between formal and informal rule-breaking in the entrepreneurial context. As an example, Sottini and Cannatelli's (2022) institutional divergence proposed two separate mechanisms of

rule-breaking under informal institutions (driven by self-enhancement and moderated by locus of control) versus formal institutions (driven by risk-taking and moderated by deregulation). The plausibility of such separation, however, is unclear as the authors did not offer any insight into why self-enhancement was not used to explain formal rule-breaking. Other well received theories suggest otherwise—that is, self-enhancement indeed can be used in explaining breaking formal rules. For example, Konty's (2005) microeconomic theory posits that people's emphasis of self-interests over social interests leads them towards deviance and legal rule breaking. Similarly, it is unclear why risk-taking was not used to explain informal rule-breaking, as informal rule-breaking also involves risk of social ostracization. In contrast, some conceptual papers have an implicit focus on formal rules; for example, evasive entrepreneurship, rule-breaking entrepreneurial action, and destituent entrepreneurship. Yet other conceptual papers did not discern between formal and informal rule-breaking.

Secondly, although entrepreneurial rule-breaking has been traditionally associated with dysfunctional traits and deviance, an emergent pattern is encouraging that some scholars recently have begun to explore the positive potential of entrepreneurial rule-breaking.

Thirdly, congruence was also found in other aspects. For example, Lucas et al.'s (2022) theory of rule-breaking entrepreneurial action is similar to Elert and Henrekson's (2016) evasive entrepreneurship in that (1) although termed differently, both involve exploitation of institutional deficiencies (an environmental driver of entrepreneurial rule-breaking); and (2) both focus on venturing opportunities spurred by institutional deficiencies.

These patterns suggest that, although several entrepreneurial rule-breaking concepts and theories already exist, a coherent theory that is built on well-rationalised boundary conditions

and integrates individual and environmental drivers of functional entrepreneurial rule-breaking is yet to emerge. Table 7 summarises the ten conceptual papers on rule-breaking in the extant entrepreneurship literature reviewed here.

Table 7. The conceptualisations of rule-breaking in entrepreneurship literature

	<b>Evasive entrepreneurship (Elert &amp; Henrekson, 2016)</b>	<b>Regulatory governance and rule-breaking entrepreneurial action (Lucas et al., 2022)</b>
Type	Theory paper with definition and propositions	Theory paper with definition and model
Motivation	To challenge the assumption that entrepreneurs generally abide by institutions.	Rule-breaking has been notably under-theorised in entrepreneurial action theory.
Definition	<i>“...profit driven business activity in the market aimed at circumventing the existing institutional framework by using innovations to exploit contradictions in that framework”</i> (p.96).	<i>“...rule-breaking entrepreneurial action, defined as behavior aimed at launching and growing new ventures in a manner inconsistent with law, regulation, or other state provided policies”</i> (p.2).
Anchor of the theory	The theory is anchored in institutional contradictions, including inconsistencies, voids, and lack of enforceability.	The theory is anchored in institutional deficiencies (i.e., varying interpretation and imperfect enforcement of rules).
Type of RB	Implicitly focusing on formal institutions	Formal rules (regulatory institutions)
Underlying assumptions	<ol style="list-style-type: none"> <li>1. Entrepreneurs are profit driven.</li> <li>2. Institutional changes are primarily influenced by economic needs.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regulatory rules are socially constructed artifacts.</li> <li>2. The formal rule-breaking action is based on economic (calculative) rationality.</li> </ol>
Theoretical foundation	<ol style="list-style-type: none"> <li>1. Entrepreneurial opportunity theory (Kirzner, 1999)</li> <li>2. Baumol’s (1990) typology of entrepreneurship</li> </ol>	<ol style="list-style-type: none"> <li>1. Entrepreneurial action theory</li> <li>2. Sociology of law</li> </ol>
Theory: framework, propositions, and typology	<p><i>P1</i>: Evasive entrepreneurship is profit driven business activity that introduces innovations in order to evade institutional rules.</p> <p><i>P2</i>: Institutional contradictions induce evasive entrepreneurship</p> <p><i>P3</i>: The relationship between evasive entrepreneurship and social welfare is negatively moderated by the welfare enhancement effect of the exploited institutions.</p> <p><i>P4</i>: Financially successful evasive entrepreneurship is likely to provide feedback and consequently inform institutional changes.</p> <p>(Note: Propositions are simplified, to save space.)</p>	<ol style="list-style-type: none"> <li>1. Black market rule-breaking arises from imperfect enforcement of rules.</li> <li>2. Grey market rule-breaking exploits interpretative ambiguity to skirt rules.</li> <li>3. Rule-breaking venture plans are based on actors’ relevant knowledge, motivations, and beliefs about the formal rules concerned.</li> </ol> <p>See p.9 of article for the full model.</p>

	<b>Institutional divergence (Sottini &amp; Cannatelli, 2022)</b>	<b>Rule-breaking and ethics of entrepreneurship (Brenkert, 2009)</b>
Type	Theory paper with model and propositions	Conceptual paper without model or specific propositions
Motivation	The motives/dynamics of why and how entrepreneurs deliberately break formal and informal rules have been overlooked in the literature.	To develop an ethics of entrepreneurship and better understanding of the nature and role of moral change in morality, which is under-researched by ethicists.
Definition	N.A.	N.A.
Anchor of the theory	This theory is anchored in deviant behaviour (misconduct) in entrepreneurs.	This theory of ethics of entrepreneurship is anchored in entrepreneurial rule-breaking.
Type of RB	Both formal and informal institutions	Both legal and moral rules
Underlying assumptions	1. entrepreneurial rule-breaking is a behaviour of misconduct. 2. entrepreneurial rule-breaking is driven by self-enhancement and risk propensity.	1. Rules and principles are imperfect and contextually embedded. 2. Rule-breaking can have both moral and societal implications.
Theoretical foundation	Baumol's (1990) typology of entrepreneurship	Virtue theory (Hursthouse, 1999)
Theory: framework, propositions, and typology	<p><i>P1</i>: Entrepreneurs with high (low) level of self-enhancement are more (less) likely to diverge from informal institutions.</p> <p><i>P2</i>: The relationship between self-enhancement and institutional divergence is moderated by entrepreneur's external locus of control.</p> <p><i>P3</i>: Entrepreneurs with high (low) level of risk propensity are more (less) likely to diverge from formal institutions.</p> <p><i>P4</i>: The relationship between risk-propensity and institutional divergence is moderated by the extent of legal deregulation of the business opportunity.</p> <p>Please refer to the model on p.5 in the article.</p>	N.A.

	<b>Entrepreneurship as misbehaviour (Lundmark &amp; Westelius, 2012)</b>	<b>Antisocial entrepreneurship (Lundmark &amp; Westelius, 2019)</b>
Type of paper	Typology-based theory paper	Conceptual paper without model or specific propositions
Motivation	1. To explore the link between entrepreneurship and misbehaviour in both negative (i.e., the dark side of entrepreneurship) and positive (constructive deviance) ways. 2. Current literature's discerning desirable from undesirable deviance based on intentions/outcomes is inadequate in entrepreneurial context.	Entrepreneurship research has been predominantly focusing on the " <i>flattering and desirable</i> " facets, " <i>leaving the dark sides unexplored</i> " (p.1).
Definition	"... <i>misbehavior is seen as the conscious breaking of institutional constraints such as norms and rules</i> " (p.216).	" <i>Antisocial entrepreneurship would thus signify the appropriation or destruction of social value, e.g., by taking advantage of the resource-poor, the infirm, the socially unconnected, or by damaging the social fabric</i> " (p.2).
Anchor of the theory	The misbehaviour in the entrepreneurship is anchored in the pursuit of entrepreneurial opportunity.	The conceptualisation is anchored in the dark sides of entrepreneurship.
Types of RB	Both formal and informal institutions	Moral rules
Underlying assumptions	1. The judgment of misbehaviour is subjective. 2. Institutions change over time.	Social value is predominantly represented by the welfare of vulnerable groups, based on the definition of "antisocial entrepreneurship".
Theoretical foundation	N.A.	Social entrepreneurship; social value
Theory: framework, propositions, and typology	A typology of misbehaviour-based entrepreneurship: formal (legal, legitimate), informal (illegal, legitimate), offensive (legal, illegitimate), renegade (illegal, illegitimate).	N.A.

	<b>Destituent entrepreneurship (Dey, 2016)</b>	<b>Entrepreneurship as emancipation (Rindova et al., 2009)</b>
Type	Conceptual paper	Conceptual paper (AMR editorial)
Motivation	The current literature on entrepreneurship under crisis conditions <i>“presents a one-sided view which does not lead to an adequate understanding of the crisis of neoliberal capitalism, nor the political role entrepreneurship can play therein”</i> (p.565).	The narrow focus in literature on wealth creation as the fundamental goal of entrepreneuring leaves other goals, such as entrepreneurs’ desire for autonomy and change creation, underexplored. This conceptualisation aims to broaden the scope of entrepreneurship research.
Definition	<i>“The two concepts destituent power and prefigurative praxis are used to offer a conceptual framework attentive to issues related to disobedience, resistance, self-organized work, democratic decision-making and the commons”</i> (p.568).	<i>“We define entrepreneuring, ... as efforts to bring about new economic, social, institutional, and cultural environments through the actions of an individual or group of individuals”</i> (p.477). <i>“Autonomy is a goal of emancipation, which we defined earlier as breaking free from the authority of another”</i> (p.481).
Anchor of the theory	The conceptualisation is anchored in the conditions of social crisis as the result of dysfunctional neoliberal capitalism.	The conceptualisation is anchored in the role that entrepreneurs play in creating social changes.
Types of RB	Mostly concerned with formal institutions (political, legal) as the immediate rules being broken, but also having downstream effects on profound informal institutions (e.g., social structure and ideology)	N.A.
Underlying assumptions	N.A.	Entrepreneurial goals can go beyond wealth creation and involve entrepreneurs’ seeking for autonomy and change creation.
Theoretical foundation	1. Destituent power (Agamben, 2013, 2014, 2015). 2. Theories of prefigurative praxis.	N.A.
Theory: framework, propositions, and typology	Occupations as political disobedience; Right to work; Need for new identities; Prefigurative praxis of post-capitalist realities; Prefiguring emancipatory working conditions; Commoning enterprises and the prefiguration of a common people	Entrepreneur emancipation involves: 1) <i>Seek for autonomy</i> : via breaking free from authority; 2) <i>Authoring</i> : taking ownership, defining rules of engagement; 3) <i>Making declarations</i> : regarding the actor’s intentions to create change.



	<b>Entrepreneurship as an art of subversion (Bureau &amp; Zander, 2014)</b>	<b>Rebels with a cause (Corbett et al., 2018)</b>
Type	Conceptual paper	Conceptual paper (editorial)
Motivation	<i>"...to highlight how the two concepts offer broad opportunities for better understanding, conceptualizing, and empirically exploring hitherto marginalized aspects of the entrepreneurial process"</i> (p.125).	Written for the special issue of International Journal of Entrepreneurial Behavior & Research, focussing on <i>"how, when and why these distinctions lead to pervasive change"</i> (p.2). (Note: distinctions refer to distinctive characteristics of entrepreneurial attitudes, behaviors, and cognition.)
Definition	Subversion <i>"defined as the literal and figurative destruction of the established order"</i> (p.125). Resistance <i>"may be defined as 'a force that opposes another'"</i> (p.129).	N.A.
Anchor of the theory	The conceptualisation is anchored in the similarities of two fundamental aspects (subversion and resistance) of two seemingly parallel domains (art and entrepreneurship).	The conceptualisation is anchored in the role entrepreneurs play in creating pervasive changes in society through introducing novelty.
Types of RB	N.A.	N.A.
Underlying assumptions	N.A.	N.A.
Theoretical foundation	N.A.	N.A.
Theory: framework, propositions, and typology	Three necessary conditions for art/entrepreneurship to be subversive: 1) should not be totally autonomous but connected to society, 2) should produce new representations and emotional perceptions, and 3) should have a broad behavioural impact. One sufficient condition: <i>"Whenever there is subversive activity it is bound to be accompanied by resistance"</i> (p.129).	Ingenuity of enterprising individuals. Rebels with a cause: 1) revolutionary thinking, 2) transformative action.

### 3.5.2. Qualitative studies

Six qualitative studies on entrepreneurial rule-breaking were reviewed. Consistent with the conceptual papers, qualitative studies exploring individual-level factors of entrepreneurial rule-breaking are also sparse in the literature. Many studies on rule-breaking in the entrepreneurial context focused on the firm-level behaviour and environmental/ contextual factors. In addition to the small number of studies, little congruence was found. They are dispersed in different industries and contexts, ranging from commercial honey production, social care, to microfinance, from developing economies to developed ones. This lack of congruence, however, suggests that rule-breaking, although contextually dispersed, is commonplace in the entrepreneurial context. Patterns and implications are discussed next, followed by a summary table of the six qualitative studies.

#### 3.5.2.1. Patterns and implications

The six qualitative studies were based on divergent contexts in which entrepreneurial rule-breaking took place. They also diverge on the theoretical lens through which entrepreneurial rule-breaking was analysed and interpreted; for example, some researchers built their study upon more explicit and formal theories, such as social learning, entrepreneurial action, and structuration (e.g., Alonso et al., 2020; Ufere et al., 2012) while others informally relate entrepreneurship concepts to their findings (e.g., Cieslik et al., 2019). Although sparse and dispersed, these qualitative studies on entrepreneurial rule-breaking do offer some interesting patterns that are informative. One commonality among three of the six studies is that their findings all suggest, explicitly or implicitly, that when formal institutions and rules depart from or contradict informal institutions, actors are more likely to break

formal rules while adhering to informal ones (Breslin & Wood, 2016; Cieslik et al., 2019; Ufere et al., 2012). This relates to the cultural-cognitive legitimacy of formal rules and institutions in local contexts (see Boettke et al., 2008; Scott, 2013; Williamson, 2000). As informal rules and institutions are rooted in shared values and common schemas, they tend to be internalised by local actors and are “stickier” than formal rules. Another commonality among these studies is that more attention was paid to environmental drivers than to individual drivers of entrepreneurial rule-breaking. While knowledge of environmental drivers is important, it has little to say about why, under similar circumstances, some entrepreneurs are more likely to break rules than their peers.

To sum up, these qualitative studies, using exploratory techniques, did contribute to the understanding of entrepreneurial rule-breaking individually and collectively. However, they are limited by two things: first, as the contexts of these studies differ significantly, the application of their findings in other contexts is limited; second, the lack of focus on individual-level drivers of entrepreneurial rule-breaking leaves a gap to be filled. Table 8 provides a conceptual summary of the six qualitative papers reviewed.

Table 8. The qualitative studies of entrepreneurial rule-breaking

	<b>Entrepreneurial workaroud (Sydow, et al, 2022)</b>	<b>Entrepreneurial Deviance (Alonso et al., 2020)</b>
Motivation of the study	To advance research on entrepreneurship in developing economies by investigating how African entrepreneurs effectively cope with severe institutional voids.	To address an important and under-researched dimension of entrepreneurship, i.e., the “dark” side of entrepreneurs, through the lens of entrepreneurial deviance.
entrepreneurial rule-breaking-related definition	Entrepreneurial workarounds, which involves practices such as political networking and utilising personal network, to compensate for the absence of or weak formal institutions.	“... entrepreneurial (negative) deviance as actions related to the discovery, evaluation and maximisation of opportunities through the violation of norms and rules” (p.644).
Focus (positive vs. negative)	Positive because entrepreneurs’ workaroud practices identified in the study contributed to institutional scaffolding.	Negative rule-breaking (impact on peers, consumer, industry, and environment).
Type of entrepreneurial rule-breaking	Hybridising commercial and social goals; Carefully orchestrating business relationships; Scaffolding for institutional changes.	Rule-breaking targeting peers and consumers, e.g., unfair competition, overstocking of beehives, sabotage, product adulteration, theft, etc.
Precursors	<i>Contextual</i> : severe institutional voids.	<i>Individual</i> : Greed, vandalism, and illicitness.
Country	Kenya	New Zealand
Theoretical foundation	Theory of institutional voids and venture workarounds.	Social learning theory. Entrepreneurial action theory.
Sample, instrument, data, and analysis	Mixed methods: interviews + documents analysis. Purposeful sampling: $N = 47$ (entrepreneurs based in Kenya) Indepth interviews (37-97min). Data collected in two waves: 37 interviews in 2016 and 10 follow-up interviews in 2019. 3-step analysis procedure: (1) Decision-event analysis and open coding, (2) Axial coding, (3) Building a grounded model.	Purposeful sampling; $N = 52$ (commercial honey producers self-reported as victims of deviance behaviour of their peers). Online survey (with 2 open ended questions). Content analysis, NVivo, 14 nodes (each representing a negative impact).

Theoretical framework	A framework of entrepreneurial workaround involving practices intended for institutional scaffolding (p.351)	A framework of entrepreneurial deviance built upon social learning and entrepreneurial action theories (p.655)
	<b>Cieslik et al. (2019): “Unruly Entrepreneurs”</b>	<b>Ufere et al. (2012): “Merchants of Corruption”</b>
Motivation of the study	The wide spread of unruly practices in microfinance leads to the enquiry of why impoverished populations turn against the institutions that had been tailored to cater to their needs.	To understand how corruption is experienced by entrepreneurs and how and to what extent they engage in it.
entrepreneurial rule-breaking-related definition	“We understand rule-breaking, or unruly behavior, as a refusal to conform to the normative expectations of institutions (Zhang & Avery, 2009)” (p.373).	N.A.
Focus (positive vs. negative)	Potentially positive rule-breaking which indicates entrepreneurial potential and value creation.	A negative form of rule-breaking: bribery.
Type of entrepreneurial rule-breaking	Rule-breaking targeting microfinance institutions’ lending rules, e.g., consumption spending, illegitimate investment, loan juggling, loan aggregation	Bribery
Precursors	<i>Individual:</i> Unmet necessity needs. <i>Contextual:</i> microfinance institutions’ lack of incorporation of local context into the design of microfinance products and model/rules.	<i>Environmental:</i> weak legal system, political norms, abusive rulers, over-powered government, “get rich quick” culture. <i>Individual:</i> agency motivated by acquisition of strategic resources and firm competitiveness.
Country	Burundi/ Microfinance industry	Nigeria
Theoretical foundation	Rule-breaking in the framework of risk propensity, path-breaking, and value creation as entrepreneurial outputs. <i>Implicitly:</i> institutional theory (e.g., institutional stickiness).	State capture theory (Hellman et al., 2003); institutional theory; Giddens’ (1984) agency and structuration theory; Granovetter’s (1985) social embeddedness theory.
Sample, instrument,	Purposeful sampling. <i>N</i> = 66 (smallholder farmers in 7 rural or semi-rural provinces of Burundi).	Theoretical sampling. <i>N</i> = 32 (indigenous and diasporic Nigerian entrepreneurs). Interviews (approx. 75min on average).

data, and analysis	Storyboard interviews, resulting in short narratives, elicited as responses to the storyboard material.	
Theoretical framework	Rule-breaking practices embedded in microloan decision processes.	Typology of bribery practice, bribery process, and working mechanisms.
	<b>Breslin &amp; Wood (2016): “Rule-breaking in Social Care”</b>	<b>Warren &amp; Smith (2015): “Rule-breaking and Legitimacy”</b>
Motivation of the study	To add to conceptualization of formal rule-breaking by highlighting the role played by informal rules.	To examine the tension between rule-breaking and legitimacy for entrepreneurs.
entrepreneurial rule-breaking-related definition	<i>“...rule-breaking is conceptualized here as a phenomenon which occurs as a result of the tension between competing formal and informal rules, at multiple levels throughout the organizational hierarchy”</i> (p.752).	N.A.
Focus (positive vs. negative)	The focus is on competing formal and informal rules rather than on the moral/ethical judgment of rule-breaking (ethical vs unethical, or positive vs negative).	Negative forms of rule-breaking, such as alleged criminality and unethical behaviour, and how they affected the narration of the entrepreneur in the media.
Type of entrepreneurial rule-breaking	A mixture of employee rule-breaking (e.g., not wearing a uniform, not completing service logs) and entrepreneurial rule-breaking (e.g., decoupling local behaviour from external regulations by allowing staff to break rules to be more effective and efficient).	Varied, e.g., kidnapping, supplying shoddy goods, alleged organised crimes, suspicion of illegal income, etc.
Precursors	<i>Contextual:</i> The tension between formal rules and informal rules, such as subscribed social values, interests of client, efficiency.	Not discussed
Country	United Kingdom	United Kingdom
Theoretical foundation	Martin et al.’s (2013) typology of bureaucratic rule-breaking along hierarchy and contentiousness dimensions.	Legitimacy theory (Suchman, 1995).
Sample, instrument,	Purposeful sampling. N = 1 (an entrepreneurial firm in domiciliary care sector).	Case study, extreme case sampling. N = 1 (Vance Miller, a controversial English entrepreneur).

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data, and analysis	A two-stage longitudinal case study.	Documentary analysis (media reports, biography, etc.).
Theoretical framework	Rule-breaking at different organisational levels, and the interplay between formal and informal rules.	N.A.

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### 3.5.3. Quantitative studies

Most of the quantitative studies on entrepreneurial rule-breaking (6 out of 9) investigated rule-breaking using a time-lagged design, such that predictors were measured at time 1 and outcomes were measured sometime later (e.g., months, years). Amongst these studies, investigated outcome variables included: intentions to become an entrepreneur, actual entrepreneurial status, intentions to legally continue and grow business in an economic transition, business performance, and income from entrepreneurial activities. The design of the time-lagged studies allows for answering the question: ‘are people with a tendency to break rules at one point in time likely to become or aspire to become entrepreneurs at a later point in time?’ The three non-time-lagged studies included one experimental study and two cross-sectional studies on entrepreneur’s tax compliance attitudes and behaviour. The experimental study explored how entrepreneur’s active engagement in rational rule-breaking led to realised advantage in a well-known game. The experimental design allows answering of the question ‘do entrepreneurs strategically use rule-breaking in achieving their goals compared to non- entrepreneurs?’ One tax evasion study investigated how tax evasion attitudes are associated with self-employment and therefore addressed a similar question to the time-lagged studies. The other tax compliance study examined how micro-business owners’ knowledge, perceptions of, and attitudes towards their tax system affected their tax compliance attitudes and then actual compliance behaviour. This study can answer the question ‘what drives entrepreneurs’ rule-breaking attitudes and behaviour?’



### 3.5.3.1. Patterns and implications

The aim of the current section was to understand how rule-breaking is related to entrepreneurs and entrepreneurial variables using quantitative empirical evidence. Several key findings have been identified, including some commonalities and points of divergence.

A key finding is that there are mixed and inconsistent findings in terms of whether earlier crimes or severe forms of rule-breaking are predictive of entrepreneurial intentions, status, or performance in one's later life. Both Zhang and Arvey's (2007) and Obschonka et al.'s (2013) studies found that only modest rule-breaking in adolescence predicts entrepreneurial status, and severe rule-breaking behaviour does not. In contrast, Fairlie (2002) found youth drug dealing, a severe form of rule-breaking, did predict self-employment as a career choice in adulthood. This aligns with the results of Levine and Rubinstein's (2017) study in which youth illicitness—covering both modest and severe forms of rule-breaking—was found to predict entrepreneurial status in adulthood. Further, Aidis and Van Praag's (2007) study revealed that former illegal entrepreneurship experiences, a severe form of rule-breaking, predicted an entrepreneur's motivation and business performance following an economic transition. These mixed and inconsistent research findings may or may not result from the differences in constructs and measures, but certainly confused the knowledge of which forms of youth rule-breaking predicted entrepreneurial status.

Another key finding is that longitudinal studies on entrepreneurial rule-breaking tend to (4 out of 9) focus on whether youth rule-breaking tendencies are associated with the choice of an entrepreneurial career later in life. These studies are based on the theory that human capital, as associated with rule-breaking propensity, predicts the choice of an entrepreneurial

career. The methodology used in such studies tends to be time-lagged in nature; that is, predictors and outcome variables are separated by a significant time period, often years. In addition to the time-lagged relationships, a prevalent proportion of these studies (7 out of 9) were conducted in the contexts of Western countries, with only one in the context of an emerging economy and another one unspecified. One other key convergence (6 out of 9) relates to the use of entrepreneurial status or intentions as outcomes variables.

Methodologically, sourcing empirical evidence from extant longitudinal datasets is an approach shared among more than half (5 out of 9) of the nine studies. In terms of predictors, risk propensity constitutes an important trait predictor of rule-breaking in some of these studies. This is unsurprising, though, since rule-breaking is likely to involve risk. Lastly, it seems that the relationship between an entrepreneur's rule-breaking and entrepreneurial outcomes are more relevant to males than to females, as found by some studies (e.g., Levine & Rubinstein 2019, Obschonka et al., 2013). Even though these commonalities across these nine studies in theories, methods, context, dependent variables, and research findings demonstrate some consistency, there still lacks an overarching theoretical model to explain the relationship between rule-breaking *in* the entrepreneurial context and entrepreneurial outcomes in a more systematic manner.

Besides the abovementioned key findings, some divergence and patterns have also been observed among the nine studies. A point of difference across the data is how entrepreneurs and rule-breaking are defined and measured. This divergence is multi-fold. The first aspect of this divergence lies in how researchers defined and operationalised the term 'entrepreneur'. Fairlie's (2002) study did not explicitly point to the term 'entrepreneur' but focused on the

self-employed. Nevertheless, in many entrepreneurship studies, 'self-employed' has the same meaning as 'entrepreneur'. For example, Bhat's (2017) study equated self-employment to entrepreneurship. Similarly, other researchers (Onu et al. 2019; Arend, 2016; Obschonka et al., 2013; Zhang & Arvey, 2009; Aidis & Van Praag, 2007), operationalised the term 'entrepreneur' as business owners or owner-managers, despite of the differences in specific measures of eligibility. Cantner et al. (2017) also regarded an entrepreneur as one who founds a new business, stressing the processes of founding as a defining feature of an entrepreneur. Levine and Rubinstein (2017) took a more nuanced step in operationalising the concept of 'entrepreneur' as those who are self-employed in the incorporated form, adding commitment onto the defining lines. The divergent approach to defining the term 'entrepreneur' gives rise to challenges for making 'apple-to-apple' comparisons across these rule-breaking studies, as the types of routines and rule-breaking prompts may be vastly different between a self-employed person and a business owner running an incorporated company.

Another divergence relates to where rule-breaking is positioned in the theoretical model, hence its role in prediction. Four studies treated rule-breaking as a proxy for a latent and underlying predictor. For example, Fairlie's (2002) study used drug dealing, a form of rule-breaking, as the proxy for risk attitude, entrepreneurial ability, and autonomy, which predict self-employment. In Aidis and Van Praag's (2007) study, business owners' illegal entrepreneurship experience (IEE) was employed as a proxy for human capital, which was hypothesised to predict their intention to legally continue and grow businesses and business performance following an economic transition in Lithuania. Adolescent rule-breaking behaviour was treated as a mediator between risk propensity and entrepreneurial status in

Zhang and Arvey's (2009) study. In Levine and Rubinstein's (2017) study, illicitness—a factor involving rule-breaking behaviour—constituting the human capital dimension together with other variables, was hypothesised to predict entrepreneurial status and income level. Other studies, however, suggest that rule-breaking, in and of itself, is a predictor of entrepreneurial intention, status, or performance (Bhat, 2017; Cantner et al., 2017; Arend, 2016; Obschonka et al., 2013). This divergence in theoretical modelling suggests that it is theoretically uncertain whether rule-breaking predicted those entrepreneurial outcomes or whether it was the latent factors underlying rule-breaking that influenced the outcomes.

In addition, the theoretical foundations vary across these studies, including: human capital theory and intentionality (used in Aidis & Van Praag, 2007); nonconformity theory (Zhang & Arvey, 2013); entrepreneurial opportunity discovery, experimental learning, and entrepreneurial personality theories (Arend, 2016); theories of risk venturing and human capital (Levine & Rubinstein, 2017); and the theory of planned behaviour, social identity and self-categorisation theories (Cantner et al., 2017). Other studies did not explicitly discuss the theoretical foundations underlying their investigations. Little convergence in the theoretical foundations may suggest that either researchers were not building their empirical studies upon extant work, or they simply did not agree with theories in extant studies.

Furthermore, most of these studies seem to have looked for explanations in, or partially involving, traits in their models, but limited convergence is seen in the choices of trait factors besides risk propensity. A wide range of traits were examined by different researchers, including need for autonomy, conformity to social norms, self-esteem, locus of control, illicitness, attitudes, beliefs, and the five-factor personality traits (e.g., Bhat, 2017; Levine &

Rubinstein; Onu, et al, 2019; Zhang & Arvey, 2009). This seems to suggest that a core set of trait predictors of rule-breaking in the entrepreneurial context is yet to emerge which can explain a good portion of the observed effects.

Finally, the types of rules under investigation come in all forms, as specific as youth drug dealing (Fairlie 2002) and tax evasion (Bhat, 2017; Onu et al. 2019), and as general as social norms (Cantner et al., 2017), youth rule-breaking (Levine & Rubinstein, 2017; Obschonka et al., 2013; Zhang & Arvey, 2009), and illegal entrepreneurial experience (Aidis & Van Praag, 2007) as well as rules in experimental games (Arend, 2016). While the diversity of rules under investigation reflects what is happening in the real world, it is difficult to synthesise data across these studies; hence, they are not enhancing each other in building the empirical evidence. In addition, the lack of similarities in theoretical foundations and modelling makes across-study generalisability even more challenging.

Despite the significant divergences, some strengths have been seen in these pioneering studies. For the term ‘entrepreneur’, an evolution is detected towards a more nuanced conceptualisation of ‘entrepreneur’, from the self-employed, to business owners, owner-managers, then self-employed in an incorporated form. This trend reflects the recognition of ‘entrepreneur’ from non-differentiating occupational perspectives to perspectives involving more dynamic and contextual considerations.

With regards to methodology, among these studies there is a good variation of research methods, including surveys, longitudinal datasets, and experiments. As discussed earlier, pre-existing longitudinal datasets for other research purposes seem to have attracted much scholarly attention for understanding this topic. Unsurprisingly, experimentation as a research

method has gained momentum in behavioural sciences, which opens a new avenue for studying the entrepreneur and entrepreneurship (Audretsch, 2012; Williams et al., 2019). Understanding individual-level rule-breaking in entrepreneurship fits well in this trend. Experiments also add robustness and rigour to the traditional methods such as survey and secondary data sources. Further, there is also a replication study (Obschonka et al., 2013). Replications play an important role in enhancing or questioning a theory or a model by empirically testing it in a range of varied samples and contexts. Table 9 provides a conceptual summary of the six longitudinal papers reviewed on entrepreneurial rule-breaking, while Table 10 provides a summary of the three point-in-time papers.

Table 9. The six time-lagged studies of entrepreneurial rule-breaking

	<b>1. Fairlie, 2002</b>	<b>2. Aidis &amp; Van Praag, 2007</b>	<b>3. Zhang &amp; Arvey, 2009</b>
Definition of 'entrepreneur'	Self-employed	Private business owners	Current owner-manager
Type of RB	Legal rules, crime	Legal rules but not organised crimes	Laws, organisational rules, social norms
Country	United States	Lithuania	United States
Theoretical foundations	Youth drug dealing as a proxy of risk attitude, autonomy, and entre ability, is central to self-employment decisions.	1. Human capital theories. 2. Intentionality as a proximal predictor of behaviour.	1. Theory of nonconformity (Willis, 1963); 2. Entrepreneur's risk propensity
Method	Longitudinal dataset, interview, survey	Survey	Longitudinal dataset; survey.
Dependent variable(s)	Self-employment (SE)	1. Motivation to continue and grow business (MOV). 2. Business performance (BP).	Entrepreneurial status in adulthood
Independent variables	Drug dealing as a youth (YDD)	Human capital (HC): experience of startup, industry, mgmt., education, illegal entrep. experience (IEE) as a proxy	1. IV: Risk propensity (RP); 2. MO: Adolescent rule-breaking (ARB).
Sample	Male youth in the United States. $N = 4,924$ .	Business owners from entrepreneurship organisations. $N = 399$ .	White male twins in the Minnesota Twin Registry. $N = 165$ .
Measures	1. YDD: self-reported. 2. SE: survey, self-reported.	1. MOV. 2. BP: firm size, turnover, earnings. 3. HC: see above.	1. Entrepreneurial status: self-report. 2. ARB: 33-item, 5 forms of RB. 3. RP: Multidimensional Personality Questionnaire (MPQ).
Results/ conclusions	Drug dealers are more likely to choose self-employment than non-drug-dealers.	IEE is significantly and positively associated w/ MOV. A positive IEE/BP correlation in younger entrepreneurs.	Results support a positive ARB/entrepreneurial status relationship; modest ARB moderates RP and entrepreneurial status.

	<b>4. Obschonka et al., 2013</b>	<b>5. Levine &amp; Rubinstein, 2017</b>	<b>6. Cantner et al., 2017</b>
Definition of 'entrepreneur'	Current or past owner-manager	Incorporated self-employed	Scientists with entrepreneurial intentions
Type of RB	Laws, organisational rules, social norms	Laws, organisational rules, social norms	Social and group norms
Country	Sweden	United States	Germany
Theoretical foundations	Not mentioned	1. Risk venturing by entrepreneur; 2. Human capital theory;	1. Theory of planned behaviour; 2. Social identity & self-categorisation.
Method	Longitudinal dataset; survey.	Longitudinal dataset; survey.	Online survey
Dependent variable(s)	Entrepreneurial status in adulthood.	1. Incorporated self-employment (ISE). 2. Income level (IL).	Entrepreneurial intention (EI).
Independent variables	1. Crime in adolescence and adulthood (CRM). 2. Adolescent rule-breaking behaviour (ARBB). 3. Adolescent rule-breaking attitude (ARBA).	1. Learning aptitude (LA). 2. Self-esteem (SE). 3. Locus of control (LOC). 4. Illicitness (ILC). 5. Family traits (FT). 6. Demographics.	1. Personality (PT). 2. TPB: 5-factor. 3. Group identification (GI).
Sample	From the longitudinal research program Individual Development & Adaptation. $N = 285$	Current Population Survey: $N = 1,225,886$ . National Longitudinal Survey of Youth: $N = 12,686$ .	Scientists in research institutes in Germany. $N = 400$ .
Measures	1. Entrepreneurial status: 6m+ entre experience. 2. CRM: official records.	1. DVs: ISE & IL: CPS data via survey. 2. IVs: LA: AFQT score; SE: Rosenberg score; LOC: Rotter score;	1. EI: Ajzen 2002. 2. PT: Ostendorf 1990.



	3. ARBB: Stemmed from Norm Inventory (Magnusson et al., 1975; Stattin et al., 2010). 4. ARBA: ditto.	ILC: Illicit Activity Index. FT: income; parents' education and composition.	3. TPB: CA: Ajzen & Fishbein 1980; Ajzen et al. 2004; DN: Conner & McMillan 1999; AA & IN: Ajzen 2002; PBC: Ajzen & Madden 1986. 4. GI: Terry & Hogg 1996.
Results/ conclusions	Entrep. show modest ARBB more often than others. RB behaviour matters more than attitude. The prediction applies only to men.	Entrep. tend to be male, white, better educated, smarter, with higher esteem, more illicit in youth, and earn more than others.	A low, but non-negligible share expressing EI is based on RB attitude. Social & cognitive factors better predict EI than PT.

Table 10. The three non-time-lagged studies of entrepreneurial rule-breaking

	<b>1. Arend, 2016</b>	<b>2. Bhat, 2017</b>	<b>3. Onu et al., 2019</b>
Definition of 'entrepreneur'	Individuals with experience starting and running a business for over two years.	Self-employed.	Micro-business owners incl. self-employed.
Type of RB	Game rules as a proxy for business rules	Tax rules	Tax rules
Contexts	Not mentioned	United States	United Kingdom
Theoretical foundations	1. Opportunity discovery theory. 2. Experimental learning. 3. Entrepreneurial personality.	Tax evasion opportunities can distort decision making relating to career choice (p.43).	1. Deterrence; 2. Tax morale; 3. Social norm; 4. Fairness perception; 5. Beliefs, knowledge; 6. Crime perception.
Research method	Experiment: game	Longitudinal dataset (2004 section)	Survey
Dependent variable(s)	Realised advantage (RA)	1. Self-employment. 2. Income level.	1. Attitudes towards 3 categories of tax behaviour (TAT); 2. Self-reported tax compliance (STC).
Independent variables	1. Entrepreneurial status. 2. Entrepreneurial orientation (EO). 3. Rule-breaking (RB) and related parameters: rationality, timing, prediction of rival moves, reaction to feedback.	1. Demographics. 2. Hours worked per week. 3. Attitudes towards tax evasion (ATE).	1. Personal norms & social norms (NOM); 2. Fairness perception (FP); 3. Deterrence factors (DF); 4. Beliefs tax system (BTS); 5. Tax knowledge (TK); 6. Attitudes, seriousness of evasion (ASE); 7. Demographics.
Sample	Students attending a strategy course (40 businesspeople; 20 entrepreneurs). <i>N</i> = 60.	General Social Survey (2004), United States; <i>N</i> = not mentioned.	Micro business owners including sole traders (self-employed) and limited companies, with less than 10 employees and £1.6m turnover in UK. <i>N</i> = 330.
Measures	1. Entrepreneurial status: having started and run a business for 2+ years.	1. ATE: one-item dichotomous scale <i>“Do you feel it is wrong or not wrong if a taxpayer does not report all of his</i>	1. TAT: Kirchler & Wahl, 2010, adapted. 2. STC: 2-item scale (p.8).

	<p>2. EO: 7-item (Bateman &amp; Crant, 1993; Gomez-Mejia &amp; Balkin, 1989; Singh &amp; DeNoble, 2003).</p> <p>3. RB IVs: observations of participants' behaviour.</p>	<p><i>income to pay less income taxes?"</i></p> <p>Based on a 4-point Likert scale grouped in two categories: pro-evasion attitudes (not wrong, a bit wrong) and against-evasion attitudes (wrong, seriously wrong).</p> <p>2. Demographics: gender, race, age, and education.</p>	<p>3. NOM: 1-item scales, both personal and social norms (p.8).</p> <p>4. FP: 2-item scale, procedural &amp; distributive justices (p.8).</p> <p>5. DF: 2-item scale, perceived penalties &amp; likelihood of audits (p.8-9).</p> <p>6. BTS: 1-item scale (p.9).</p> <p>7. TK: 1-item, one's confidence on tax knowledge (p.9).</p> <p>8.ASE: 3-item scale (p.9).</p> <p>7. Demographics: gender, age, education.</p>
Results/ conclusions	<p>Entrep. break rules more often and realise greater benefits as they break rules in a smarter way.</p>	<p>1. An individual with pro-evasion attitudes is more likely to be self-employed than one with against-evasion attitudes.</p> <p>2. Self-employed individuals tend to earn more than waged workers.</p> <p>3. An individual with pro-evasion attitudes is likely to have a lower income than than one with against-evasion attitudes.</p>	<p>Tax planning, avoidance, &amp; evasion are three distinct types of behaviour on a compliance-noncompliance continuum. Micro-business owners' personal tax morale, including perceptions of tax system's fairness and efficiency, predict their attitudes towards different compliance behaviours, which then predict their actual compliance behaviour.</p>

### 3.6. Discussion

The most notable pattern across all these studies is how entrepreneurial rule-breaking has been approached with moral perspectives. Conventionally, entrepreneurial rule-breaking has been treated as dysfunctional and immoral, sometimes linked with criminality (e.g., Aidis & Van Praag, 2007; Fairlie, 2002). This is evident in both conceptual papers and empirical studies. This biased attention to the dysfunctional and immoral aspects of entrepreneurial rule-breaking is based on some assumptions, a key one being that rules are always legitimate and should be unconditionally followed, which in itself is problematic (see, e.g., Brenkert, 2009; Lucas et al., 2022; Murphy et al., 2009; Tyler, 1997; 2006). Such an assumption limited the usefulness of their theoretical frames and empirical findings in the extent to which rules are legitimate and efficient. Some recent studies, however, challenge this problematic bias with refreshed concepts of entrepreneurial rule-breaking. Conceptualisations such as evasive entrepreneurship (Elert & Henrekson, 2016), take a neutral stance on of the potential impact of entrepreneurial rule-breaking on social welfare. Other authors advocate a more positive potential of entrepreneurial rule-breaking in creating value and promoting social welfare (e.g., Dey, 2016; Rindova et al., 2009). Recent empirical evidence also supports this sentiment. For example, Cieslik et al.'s (2019) study concluded that unruly behaviour in the Burundian farmer entrepreneurs was indeed entrepreneurial as it created value for both families and community. Breslin and Wood (2016), in their study of rule-breaking behaviours in a social care firm, argued that formal rule-breaking by the entrepreneur allowed field flexibility of her employees and was in best interests of clients and those concerned. Moreover, Arend's (2016) experiment study demonstrated that rational rule-breaking in entrepreneurs could help them gain

advantages in competitive markets. Therefore, to reconcile the opposing views in the literature, entrepreneurial rule-breaking, by and in itself, can be either moral or immoral, depending on how it is utilised, for what purpose, and in what context.

*The conceptual papers related to entrepreneurial rule-breaking.* Although the conceptualisations of entrepreneurial rule-breaking are divergent in general, some convergence and promising patterns were found. They differ on moral position on entrepreneurial rule-breaking, fundamental assumptions of rules, and theoretical foundations. The two most informative findings are: (1) conceptual papers suggest that entrepreneurial rule-breaking entails different mechanisms under formal institutions versus under informal institutions, and (2) both individual-level factors and environmental factors can lead to the occurrence of entrepreneurial rule-breaking. Although some extant theories of entrepreneurial rule-breaking are insightful and have nicely contributed to the knowledge on this topic, there is still room for an integrative entrepreneurial rule-breaking theory which captures both individual and environmental drivers of the behaviour and the interplay between them.

*The qualitative studies on entrepreneurial rule-breaking.* Six qualitative studies on entrepreneurial rule-breaking were found, which at least have some exploration of individual drivers of entrepreneurial rule-breaking. Despite the small number, one revealing similarity is that entrepreneurial rule-breaking occurred when formal institutions were at odds with informal institutions (Breslin & Wood, 2016; Cieslik et al., 2019; Ufere et al., 2012), the latter often rooted in shared values, common schema, and local practices. This is consistent with theoretical perspectives such as Williamson's (2000) institutional hierarchy and Boettke et al.'s (2008) institutional stickiness. It provides insights into a particular type of contingency which spurs

entrepreneurial rule-breaking; that is, the presence of misalignments or conflicts between formal and informal institutions. Nevertheless, while it is useful to explain the occurrence of rule-breaking at group or community levels, little is still known about individual-level mechanisms. Put differently, they do not explain why some entrepreneurs are more likely to break formal rules than others, where such conflicts exist. Another similarity among these qualitative studies is that, in search for what drives rule-breaking, much was focused on environmental and contextual factors. Collectively, these qualitative studies provided evidence-based early insights into entrepreneurial rule-breaking, yet they are limited by the unique contexts of their findings and could benefit from greater attention to the roles of individual differences in entrepreneurs leading to entrepreneurial rule-breaking.

*The quantitative studies on entrepreneurial rule-breaking.* The systematic searches resulted in nine quantitative studies on entrepreneurial rule-breaking. Consistent with the conceptual papers and qualitative studies, quantitative studies on entrepreneurial rule-breaking are also limited in number and largely divergent. They diverge on, for example, how entrepreneurial rule-breaking is defined and measured, theoretical foundations, choice of trait factors as the drivers of entrepreneurial rule-breaking, and whether entrepreneurial rule-breaking, in and of itself, is a predictor of entrepreneurial intentions, status, or outcomes. A major pattern among these quantitative entrepreneurial rule-breaking studies is that entrepreneurial intention or status has been associated with one's rule-breaking history in earlier life. Surprisingly, however, few have something to say about when and how entrepreneurs' rule-breaking "*in*" entrepreneurial activity has an impact on their business outcomes.

### 3.7. Conclusion

To this point, I have provided a detailed account of the literature on entrepreneurial rule-breaking, as well as influential rule-breaking theories and constructs in related literatures.

Collectively, the entrepreneurial rule-breaking literature is sparse, divergent, and largely fragmented. These patterns are evident in the moral positions on entrepreneurial rule-breaking, how entrepreneurial rule-breaking was defined and measured, types of rule-breaking investigated, context and drivers of its occurrence, theoretical foundations, choice of predictors, and so on. Future research on this topic could benefit from a carefully crafted definition of entrepreneurial rule-breaking that has the capacity to travel across varied entrepreneurial contexts. In addition, context matters, and entrepreneurial context is characterised by high levels of complexity, uncertainty, and volatility. This more likely accounts for the uniqueness of entrepreneurial rule-breaking than rule-breaking in other social contexts.

However, context alone is accounted for at the environmental level. A comprehensive understanding of the phenomenon needs investigation of precursors and outcomes at various levels. Current understanding of individual drivers of entrepreneurial rule-breaking is limited to factors such as self-enhancement, illicitness, nonconformity, and risk-taking, which are largely associated with deviance and immorality. In addition, nuanced approaches between broader environmental factors (such as societal unrests), more immediate context (such as industry conditions or venturing stage), and contingency could result in richer knowledge of entrepreneurial rule-breaking. Drawing on insights from the reviewed literatures, future research could benefit from more integrative and coherent theories or models of

entrepreneurial rule-breaking (e.g., borrowing idea from the Person-Environment-Correspondence framework).

Lastly, theories and evidence in both institutions and entrepreneurial rule-breaking literatures suggest that formal rules and informal rules are intertwined in a hierarchical relationship (see, e.g., Boettke et al., 2008; Williamson, 2000) and entail different working mechanisms; individuals respond to and interact with formal and informal rules in varied capacities. Therefore, careful consideration should be given to the theorisation of entrepreneurial rule-breaking in terms of whether to combine formal and informal rule-breaking under a unifying framework or to investigate them with separate theoretical frameworks.



## CHAPTER 4. UNBREAKABLE: A RULE BELIEFS THEORY OF RULE-BREAKING IN THE ENTREPRENEURIAL CONTEXT

### 4.1. Chapter overview

Building on the identified research gaps outlined in Chapter 2 and 3, this chapter theoretically addresses research question 3 and 4 by introducing a beliefs-based theory of entrepreneurial rule-breaking which centres on a novel cognitive construct termed *constructive rule beliefs*. This theory has several contributions by filling the identified research gaps: (1) a proposed definition of entrepreneurial rule-breaking which highlights the agentic nature of this entrepreneurial action; (2) the introduction of a novel cognitive construct which is not based on contingencies and is relative stable, and (3) an integrative model that explicates the interactive relationships between cognition, context, and behaviour leading to functional entrepreneurial rule-breaking and its outcome. This theory provides theoretical foundation to the subsequent empirical studies in the following chapters.

*Note:* The main content in this chapter—from Abstract to Conclusion—has been submitted to *Journal of Business Ethics* for consideration of publishing. To be consistent with the rest of the thesis, the abbreviations of general terms (e.g., CRB for ‘constructive rule beliefs’) in the submitted manuscript have been converted into full spellings.

### 4.2. Statement of contribution of co-authors

The authors listed below have certified that:

1. they meet the criteria for authorship and that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;

2. they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
3. there are no other authors of the publication according to these criteria;
4. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit, and
5. they agree to the use of the publication in the student's thesis and its publication on the QUT's ePrints site consistent with any limitations set by publisher requirements.

In the case of this chapter:

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Contributor	Statement of contribution
Senlin Zhang	Senlin Zhang was the chief investigator of this study who proposed the conceptualization of the research topic, question and aims, developed the construct of "constructive rule beliefs" and the theoretical model, wrote the original draft, and incorporated feedback and suggestions made by the two co-authors.
Peter O'Connor	Peter O'Connor jointly assisted with the conceptualization of the research topic, question and aims and contributed to writing, reading, proofing and providing feedback and edits on drafts of the manuscript.
Ellirioma Gardiner	Ellirioma Gardiner jointly assisted with the conceptualization of the research question and aims and contributed to the research design, and jointly contributed to reading, proofing, and providing feedback and edits on drafts of the manuscript.

### 4.3. Abstract

Academic research largely supports the popular notion that successful entrepreneurs are rule-breakers. However, despite an abundance of research on “rule-breakers”, little is known about rule-breaking in the entrepreneurial context. What, for example, is rule-breaking in the entrepreneurial context, what causes it, and how does it benefit entrepreneurs? Drawing on cognitive and moral psychology theories, we develop a conceptual model of rule-breaking in the entrepreneurial context that centres around a novel psychological cognitive construct that we term constructive rule beliefs. We argue that individuals high in constructive rule beliefs are more open than those low in constructive rule beliefs to breaking rules in the presence of various contextual rule-breaking triggers. We also argue that rule-breaking can benefit entrepreneurs and suggest that entrepreneurs with a paradox mindset will benefit from rule-breaking. We discuss the necessity for rule-breaking in the entrepreneurial context and the implications of our model for practice.

### 4.4 Introduction

Entrepreneurs are widely regarded as rule-breakers (e.g., Brenkert, 2009; Lidow, 2019). Numerous studies have reported associations between various forms of rule-breaking and entrepreneurial status and/or performance outcomes. Some researchers have shown that rule-breaking early in life is predictive of later entrepreneurial status (e.g., Fairlie, 2002; Levine & Rubinstein, 2017; Obschonka et al., 2013; Zhang & Arvey, 2009) whereas others suggest that rule-breaking can provide entrepreneurs with unconventional advantages in competitive markets (e.g., Arend, 2016; Lucas et al., 2022). Indeed, the established associations between rule-breaking and entrepreneurial outcomes make sense: it is difficult to comprehend how

entrepreneurs could resolve the tensions between complex and dynamic external conditions and their company's need for survival and growth with limited resources if they complied with all the formal rules constraining their behavior.

However, it remains unclear what rule-breaking essentially is in the entrepreneurial context and how it can benefit entrepreneurs. Is rule-breaking best conceptualized as a stable trait (e.g., illicit tendencies; Levine & Rubinstein, 2017), a strategic behavior (Arend, 2016; Lucas et al., 2022), an occupational necessity, or some combination of these things? This vagueness stems from the absence of an accepted definition of rule-breaking in the entrepreneurial context, which in turn impedes further understanding of (1) why some entrepreneurs have a propensity to break rules, (2) what causes rule-breaking in discrete situations, and (3) when and how rule-breaking leads to outcomes that align with broader entrepreneurial goals. As a result, the current literature on rule-breaking in entrepreneurship provides only a piecemeal understanding of entrepreneurial rule-breaking at the individual level, rather than a coherent picture regarding the role of traits, environmental conditions, and cognitions on rule-breaking behaviors and outcomes in the entrepreneurial context. Without a coherent theory to piece together these fragments of knowledge, researchers are limited in the extent to which they can contribute meaningfully to knowledge on rule-breaking by entrepreneurs, and practitioners are limited in the extent to which they can draw from and ultimately benefit from this knowledge.

The purpose of this paper is to address these gaps by firstly defining entrepreneurial rule-breaking, and then developing a theoretical model of its causes, working mechanisms, and outcomes. At the core of our theoretical model, is a novel cognitive construct that we introduce, termed "constructive rule beliefs" which we posit explains a fundamental cause for the

tendency in entrepreneurs—particularly effective entrepreneurs—to be more open to rule-breaking than others. We believe this new construct, not previously discussed in existing research on entrepreneurial rule-breaking, adds substantively to how the phenomenon of rule-breaking is understood at the individual level. We describe constructive rule beliefs as a cognitive construct differentiating between low constructive rule beliefs at one end (i.e., conventional beliefs that rules are fixed and should be followed) and high constructive rule beliefs at the other (i.e., the tendency to view rules as contextual, flexible, and imperfect). Drawing from the social cognitive theory, along with theories of moral and psychosocial development, we posit that people low in constructive rule beliefs have a mental model (“schema”) of rules as static, vertical, and fixed, whereas those high in constructive rule beliefs have a more morally evolved schema of rules as dynamic, horizontal, and context dependent. We argue that constructive rule beliefs in entrepreneurs provide them with a unique behavioral option – or behavioral resource – that will tend to assist entrepreneurial goal attainment over time. In addition, we posit that the generally positive impacts of rule-breaking behavior on entrepreneurial performance are moderated by a paradox mindset, such that this cognitive construct has a causal impact on whether rule-breaking behavior supports (rather than hinders) entrepreneurial goal attainment.

In this article therefore, we challenge the view of rule-breakers—particularly entrepreneurial rule-breakers—as necessarily individuals with a propensity to partake in morally questionable behavior. Indeed, we believe that labelling rule-breaking behavior as morally questionable by default is a problematic position, given that following rules does not automatically lead to more moral outcomes (see also Brenkert, 2009). Based on the set of

propositions we develop later, we conclude that not only is it “ok” for entrepreneurs to break some formal rules, but that entrepreneurs should break rules in some contexts. We also suggest that in challenging problematic rules and—consequently—in holding accountable those who create and enforce rules, entrepreneurs high in constructive rule beliefs also push for positive institutional changes that will benefit the wider community (see, for example, Beckert, 1999; Corbett et al., 2018; Li et al., 2006 for a related discussion on entrepreneurs’ role in driving institutional changes).

The remainder of this article is structured as follows. Relevant literature is first reviewed, whereby we provide a basis for three core claims that underlie the motivation for this paper. A proposed definition of entrepreneurial rule-breaking is then provided, followed by an overview of our philosophical and theoretical foundations. The proposed conceptual model is then presented, and derived propositions are discussed in detail. The contributions and implications for future research are then discussed, followed by the conclusion.

#### 4.5. Literature review

##### 4.5.1. Entrepreneurial rule-breaking

Despite being widely regarded as “rule-breakers”, only limited academic research has explored the nature and causes of rule-breaking in entrepreneurs. A literature search<sup>5</sup> we conducted on the topic identified only 24 studies focusing on rule-breaking in the entrepreneurial context, with only a minority of these studies offering an explicit definition of entrepreneurial rule-breaking. While some researchers defined rule-breaking as nonconformity

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<sup>5</sup> This was a systematic literature search which involved 18 search terms including various combinations and variations of the words “entrepreneur” and “rule-breaking” and revealed approximately 1000 individual articles that we assessed for relevance.

to normative group expectations (e.g., Cieslik et al., 2019; Zhang & Arvey, 2009), others defined it as a Schumpeterian pattern of behavior, that is, acting against all odds (Cantner et al., 2017), or as breaking institutional arrangements, for example, regulations, normative rules, and cultural-cognitive beliefs (Wallin & Fuglsang, 2017). Only a minority of researchers have differentiated between informal and formal rule-breaking; Elert and Henrekson (2016) focussed on a form of rule-breaking characterised by innovatively exploiting institutional contradictions to circumvent constraining formal rules, and more recently, Lucas et al. (2022) defined rule-breaking as entrepreneurial action inconsistent with law and regulatory rules. Most authors, however, did not explicitly define rule-breaking, but rather used the term “rule-breakers” to describe individuals with a history of rule-breaking, such as the presence of a criminal record (e.g., Aidis & Van Praag, 2007; Fairlie, 2002; Obschonka et al., 2013), or describe individuals with traits thought to cause rule-breaking (e.g., “illicitness”, Levine & Rubinstein, 2017).

Despite the relatively few studies on entrepreneurial rule-breaking and their lack of a consistent emphasis, there are nevertheless several noteworthy findings from this literature. First, longitudinal studies indicate that rule-breaking behavior in early stages of life positively predicts entrepreneurial intentions (Cantner et al., 2017), entrepreneurial status (Fairlie, 2002; Levine & Rubinstein, 2017; Obschonka et al., 2013; Zhang & Arvey, 2009) and entrepreneurial income later in life (Levine & Rubinstein, 2017). Similarly, correlational and experimental studies indicate that entrepreneurs tend to have greater rule-breaking tendencies than non-entrepreneurs (Levine & Rubinstein, 2017), and are more strategic in their rule-breaking behavior than non-entrepreneurs (Arend, 2016). Conceptual work on the topic proposes that

deficiencies in rules and rule-systems can often spur rule-breaking behavior. Specifically, it has been suggested that institutional contradictions, imperfect enforcement, and rules open to subjective interpretation allow alert entrepreneurs to seize venturing opportunities by leveraging their knowledge of rules or innovation to exploit formal rules (Elert & Henrekson, 2016; Lucas et al., 2022). Overall, however, we note that while these articles are consistent with the idea that entrepreneurs have rule-breaking tendencies, there remains a lack of focus on discrete rule-breaking behavior in entrepreneurs, and whether discrete rule-breaking behaviors in entrepreneurs has a causal impact on entrepreneurial goal attainment<sup>6</sup>.

#### 4.5.2. Other theories of rule-breaking

Rules are relevant to multiple phenomena across the social sciences and, not surprisingly, multiple theoretical accounts of rule-breaking and associated constructs exist. In this section, we review a subset of these theoretical accounts that we believe have some relevance to entrepreneurial rule-breaking. Given that we focus on rule-breaking by individuals in the entrepreneurial context, we limit our review to those theoretical accounts relating to individual rule-breaking and/or rule-breaking in a professional or occupational context. These include anomie and microanomie, workplace deviance, prosocial rule-breaking, and organizational rule-breaking.

An early yet influential theory relevant to deviant behavior and rule-breaking is Durkheim's (1893, 1897) theory of anomie. Originally developed to explain forms of social

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<sup>6</sup> In this article we use the term "entrepreneurial goal attainment" to refer to important short-, medium- and long-term goals that collectively enable entrepreneurs to achieve business success. Some examples of short to medium term entrepreneurial goals include securing angel investment, launching a product in a new market, taking a company to IPO, making a profit within 12 months, pilot testing a prototype, obtaining accreditation for a product or service etc.



unrest (e.g., high rates of crime and suicide), the theory argues that members in a society are more likely to experience negative affective states when social systems are in a state of “anomie”, or conditions characterised by rapid social change, lack of resources, deregulation and normlessness (Cullen et al., 2014; Konty, 2005). Konty (2005) furthered the idea of social anomie, by proposing that anomie produces a cognitive state in individuals, termed microanomie, whereby individuals prioritize self-enhancing values above self-transcending values and are therefore more likely to engage in deviant behavior (Konty, 2005). Konty’s focus on the role of an intrinsic factor (i.e., values) supplements his predecessors’ extrinsic perspective (i.e., anomie as a social driver of human behavior) and provides a more detailed account of deviance across varied contexts, particularly where there is a clear distinction between self-interests and social interests, as in criminological contexts.

More recently, influential perspectives on deviance and rule-breaking have emerged within the organizational behavior literature. In particular, researchers have sought to clarify the nature of workplace deviance (Robinson & Bennett, 1995) and/or identify the various predictors and antecedents to this form of rule-breaking. Studies have found that workplace deviance can manifest as deviance directed at other individuals (interpersonal deviance) or deviance directed at organizations (Robinson & Bennett, 1995). Studies have also identified multiple predictors of workplace deviance including various personality traits (Pletzer et al., 2019), abusive supervision, injustice, and job dissatisfaction (Hussain et al., 2014; Mackey et al., 2019; O’Neill et al., 2011).

Also located within the organizational behavior literature are numerous studies on prosocial rule-breaking. In contrast to workplace deviance, prosocial rule-breaking refers to an

individual's intentional violation of formal rules for the purpose of promoting the welfare of the organization (Morrison, 2006). Like workplace deviance, prosocial rule-breaking can be oriented towards the welfare of different entities such as customers, organizations, and co-workers (Morrison, 2006). Studies have also confirmed that various factors internal and external to individuals can predict prosocial rule-breaking; these include such factors as autonomy and risk propensity (Morrison, 2006), and ethical climate (Borry & Henderson, 2020).

Another influential perspective on rule-breaking is Oliver's (1991) typology of organizational strategic responses to institutional pressures. In contrast to the approaches discussed so far, Oliver's framework is primarily relevant to rule-breaking conducted by organizations as entities, rather than individuals. In formulating her typology, Oliver (1991) drew from both institutional (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977) and agency (e.g., Pfeffer, 1982; Pfeffer & Salancik, 1978) perspectives to propose that nonconformity to institutional pressures depend on both institutional factors (i.e., institutional norms and rules) and resource dependencies (i.e., institutional constraints and the capacity for agency in strategic choice). Specifically, Oliver (1991) proposed a set of five strategic responses to institutional pressures, including: (1) acquiescence (i.e., compliance and/or rule following), (2) compromise (i.e., accommodating or negotiating), (3) avoidance (i.e., disguising nonconformity or changing activities), (4) defiance (i.e., ignoring or contesting rules), and (5) manipulation (i.e., attempts to influence or control institutional constituents). Oliver (1991) further posited that whether an organization opted to conform or resist organizational pressures, depended on several institutional and resource factors (e.g., the

economic and social legitimacy cost of conforming, consistency of institutional norms, the degree of discretionary constraints imposed on organizations, and environmental uncertainty).

Collectively, these theoretical accounts of rule-breaking offer two important insights for rule-breaking in the entrepreneurial context. First, they all concur that both internal and external factors play a role in enhancing the likelihood of rule-breaking behavior. While external factors (e.g., anomie, injustice, ethical climate, uncertainty) theoretically make rule-breaking more likely in individuals and/or organizations, it seems that internal factors also play a fundamental role in rule-breaking (e.g., self-enhancing values, personality traits, individual characteristics). Second, all of the theoretical accounts we reviewed in this section offer a nuanced perspective in conceptualizing rule-breaking behavior. These perspectives specify either multiple targets of rule-breaking (as in workplace deviance and prosocial rule-breaking) or a multifaceted definition of rule-breaking. The latter is most evident in Oliver's (1991) typology of strategic responses to institutional pressures, which details a continuum of rule-breaking behavior ranging from acquiescence to manipulation.

Nevertheless, we argue that existing theories on rule-breaking are not adequate to meaningfully account for the causes and outcomes of entrepreneurial rule-breaking. First, most theoretical approaches towards rule-breaking regard it as an inherently negative, deviant form of behavior. Theories of anomie and microanomie, for example, seek to explain only deviant forms of rule-breaking which are attributed to either negative affective states or self-enhancing values respectively. Similarly, the literature on workplace deviance is primarily focused on behaviors that threaten the wellbeing of an organization or its members (Robinson & Bennett, 1995). We argue that a conceptualization of rule-breaking that is inherently negative is

inconsistent with entrepreneurial rule-breaking, which can, and often has, benefit for both individual entrepreneurs and society more broadly (e.g., the case of internet pharmacy companies, see Hall & Rosson, 2006). Similarly, such approaches do not seek to provide an account of rule-breaking when the causes and outcomes of rule-breaking are more complex, for example, when a rule is problematic and there are valid reasons for breaking the rule. Second, existing theories are either too context specific to adequately account for entrepreneurial rule-breaking, or do not focus on rule-breaking at the individual level of analysis. Prosocial rule-breaking and workplace deviance, for example, focus on a range of employee-centric constructs that are of little relevance to entrepreneurs (e.g., job satisfaction and abusive supervision), and Oliver's (1991) typology focuses on the behavior of organizations rather than individuals, meaning that it does not consider individual drivers of behavior (e.g., cognitions, traits), and not all posited causes of organizational rule-breaking in Oliver's (1991) typology are relevant to individual entrepreneurial behavior.

#### 4.5.3. Summary of existing work and motivation for current paper

While there has been substantial academic attention on entrepreneurial rule-breaking and rule-breaking in general, we believe that existing work is insufficient to provide a meaningful account of key drivers and outcomes of rule-breaking in individual entrepreneurs. This belief is based on three claims we make based on existing literature. First, we suggest that existing studies on entrepreneurial rule-breaking are either inconsistent or ambiguous in terms of how they define entrepreneurial rule-breaking. As noted earlier, the majority of studies investigating entrepreneurial rule-breaking either do not define rule-breaking or differ substantially in how they define it. We argue that without a broadly accepted definition of entrepreneurial rule-

breaking, researchers will be unable to meaningfully add to knowledge in this area. A primary objective of our paper therefore is to propose a definition of entrepreneurial rule-breaking, and we do this in the next section.

Second, we suggest that existing theories on rule-breaking – both within and external to entrepreneurship - are inadequate to sufficiently explain the key causes and outcomes of discrete rule-breaking by entrepreneurs. While existing approaches have some relevance to entrepreneurial rule-breaking (as we outline later in the context of theory development), they are currently inadequate for the current focus, based either on (1) level of analysis (i.e., institutional theories) and subsequent neglect of psychological drivers, (2) the view of rule-breaking as largely equivalent to deviant and/or self-enhancing values (i.e., microeconomic, organizational deviance), or (3) the conceptualization of rule-breaking as a trait or disposition similar to impulsivity, rather than as a discrete behavior in the context of entrepreneurial activity. Given that our focus is on understanding rule-breaking at the individual level in the largely unique context of entrepreneurial activity, we again suggest that existing approaches towards rule-breaking are insufficient for our purpose.

Third, we suggest that a common assumption amongst entrepreneurial scholars, professional authors, and the general public is that entrepreneurs are dispositional rule-breakers, with an underlying tendency towards deviance (e.g., Levine & Rubinstein, 2017; Zhang & Arvey, 2009). A major purpose of our paper is to challenge this assumption and propose that rule-breaking in entrepreneurs does not necessarily stem from immoral, or deviant tendencies, but that rule-breaking can also stem from highly evolved moral reasoning about rules. Specifically, we argue that rule-breaking in entrepreneurs largely stems from beliefs that rules

are flexible, contextual, and less important than overarching rule principles (i.e., higher-order purposes that are designed to be achieved through formal rules). While entrepreneurs can break rules due to morally unevolved reasoning, we contend that such forms of rule-breaking are less likely to result in positive outcomes for entrepreneurs (in terms of assisting with entrepreneurial goal attainment).

#### 4.6. Entrepreneurial rule-breaking: a proposed definition

In the context of entrepreneurship, we suggest that the most appropriate definition of rule-breaking—both in terms of theory development and ultimate practical utility—relates to discrete behavior in entrepreneurs. While traits conducive to rule-breaking have received dominant attention in the entrepreneurship and applied psychology literature (e.g., Levine & Rubinstein, 2017; Zhang & Arvey, 2009), we emphasise that such traits are distinct from rule-breaking behavior. Put differently, we are not developing theory to explain rule-breakers, but rather we are seeking to explain discrete instances of rule-breaking behavior. In focusing on rule-breaking behavior, our theorizing can go beyond the inquiry of “who becomes an entrepreneur?” to the more useful question of “what do effective entrepreneurs do?”. Similarly, this perspective allows us to propose theory regarding drivers of rule-breaking behavior because behaviors, unlike traits, are more likely to vary across time and situations and therefore can be caused by factors beyond individual dispositional preferences (see Jayawickreme et al., 2019).

Drawing from established definitions of rules (e.g., North, 1990; Rescher, 2013) and rule-breaking (e.g., Morrison, 2016), we define entrepreneurial rule-breaking as a purposeful, discrete behavior carried out by entrepreneurs, that serves to remove the regulating power of

one or more formal rules. Consistent with existing accounts of rule-breaking outside of entrepreneurship, we posit that entrepreneurial rule-breaking can occur along a continuum, in terms of the extent to which it alleviates a rule's constraining power. Such behavior can be relatively minor, such as ignoring rules or bending rules (Oliver, 1991), or relatively major such as overtly violating or subverting rules (Oliver, 1991). Based on our definition, rule-breaking includes a range of concepts that have been documented in the management literature, including workarounds (also labelled as "circumvention" or "evasion", e.g., Elert & Henrekson, 2016), rule-bending (also labelled as "manipulation", e.g., Oliver, 1991; Welter & Smallbone, 2011), creative compliance (e.g., Batory, 2016), symbolic compliance (e.g., Durand et al., 2019), and covert violation (also labelled as "concealment" in Oliver, 1991) or overt violation (e.g., Teupe, 2019). We outline several explicit examples of entrepreneurial rule-breaking later when illustrating how rule-breaking can assist with the attainment of strategic entrepreneurial goals.

An important feature of our definition, and one that serves as a boundary condition for our model, is our exclusive focus on formal rules. Rules can be categorized into formal rules and informal rules based on the means through which the intended structure is established and maintained (Morrison, 2006; North, 1990; Welter & Smallbone, 2011). Formal rules are those with explicit requirements for compliance, usually in writing and with enforceability (Morrison, 2006; North, 1990; Welter & Smallbone, 2011). Formal rules can take multiple forms, such as regulations, organizational rules, or contractual terms. In focusing on formal rules, our definition and subsequent theorizing therefore do not involve related but distinct concepts that have been studied in the strategy and innovation literature, such as breaking informal rules,

challenging social norms, being innovative, defying conventional wisdom, and defying stakeholder expectations (e.g., Brenkert, 2009; Ng & Yam, 2019; Petrou et al., 2020). We note that our focus on formal rules is consistent with other scholars in the area (e.g., Elert & Henrekson, 2016; Lucas et al., 2022; Martin et al., 2013; Morrison, 2006; Oliver, 1991) and argue that compliance and noncompliance with formal and informal rules represent fundamentally different phenomena, due to such factors as their inherent flexibility (i.e., informal rules are more flexible), their method of enforcement (i.e. informal rules are enforced by the self, based on social-norms, formal rules are enforced by authorities), and the benefits and consequences of noncompliance with informal vs formal rules.

#### 4.7. A belief-based model of entrepreneurial rule-breaking

As noted earlier, most existing studies on rule-breaking in the entrepreneurial context have focused on the phenomenon of rule-breaking from the perspective of rule-breakers; that is, individuals with the dispositional tendency to break rules. While these studies are informative in identifying those likely to be successful as entrepreneurs, they have little say regarding discrete instances of rule-breaking behavior. They do not tell us, for example, what causes discrete rule-breaking behavior across the varied contexts entrepreneurs might find themselves in. They also do not specify the circumstances whereby rule-breaking is likely to assist with entrepreneurial goals or the situations where it is likely to be harmful. Our theoretical model of entrepreneurial rule-breaking is illustrated in Figure 1. Our theoretical model seeks to clarify (1) why some entrepreneurs have a propensity to break rules, (2) what causes rule-breaking in specific situations, and (3) when and how rule-breaking leads to positive entrepreneurial outcomes. The following sections describe each element of this model in detail, starting with



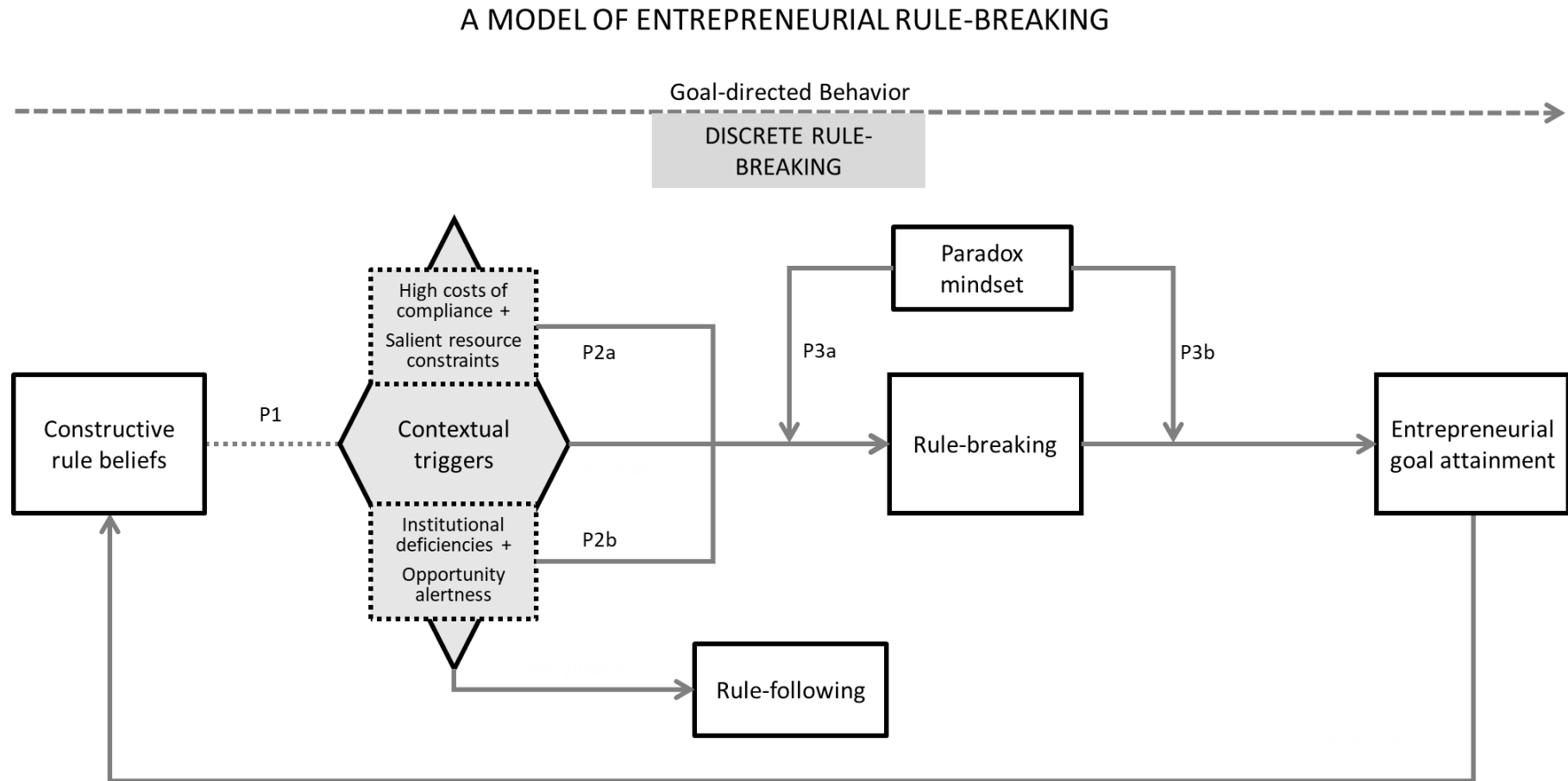
the core assumptions and theoretical foundations, followed by a set of theoretical arguments underlying the formal propositions in our model. Overall, our model clarifies the explicit role of cognitive factors and situational factors in discrete rule-breaking behavior in entrepreneurs.

#### 4.7.1. Philosophical and theoretical foundations

*Philosophical foundations.* Prior to specifying our theoretical model, we summarize several key assumptions about reality upon which our model is founded. Ultimately, we adopt a set of philosophical assumptions that align with realism, and more specifically, critical realism (see Archer, 2021; Ramoglou & Tsang 2016), such that in formulating our model, we assume the presence of an external reality independent of subjective experience. From this perspective, our theorizing is based on the assumptions that (1) rules and social structures exist externally to entrepreneurs and (2) rule-breaking opportunities also exist independent to entrepreneurs regardless of their subjective awareness. In adopting a realist ontology, we note that our view aligns with mainstream social-psychological theories that also adopt a realist ontological approach (e.g., Social Cognitive Theory, Bandura, 1991). Consistent with realism, such theories assume the presence of an objective reality, but focus heavily on the causal role of subjective and contextual factors in impacting reality. In the present case, we argue that rules and rule-breaking opportunities exist independently from entrepreneurs (with the latter existing as a propensity, see Ramoglou & Tsang 2016), but that subjective, psychological factors along with environmental factors play a causal role in impacting entrepreneurial behavior in situations whereby rules are salient. Additionally, we suggest that while rules exist independently from entrepreneurs, rules are nevertheless the products of complex social, environmental, and political factors and, as such, change over time. Indeed, our view of rules

as being ‘real’ yet also being the products of time-based social, political, and environmental factors, underlies our claim that rules will not always cause the behaviors they were designed to regulate. On the contrary, as we discuss in more detail later, rules can be outdated, contextually inappropriate, or poorly articulated and hence serve to regulate behavior that, all things considered, should not necessarily be regulated.

Figure 1. A beliefs-based model of entrepreneurial rule-breaking



*Theoretical foundations.* Our objective in this paper is to develop a model of individual-level causes, and key outcomes of discrete rule-breaking behavior in entrepreneurs. We seek to provide an explanation for why some entrepreneurs are open to rule-breaking, what triggers rule-breaking in those with such an openness, and what determines whether rule-breaking in entrepreneurs will lead to outcomes aligned with entrepreneurial goals. Given our focus is on the causes and outcomes of discrete human behavior at the individual level, our theorising is largely founded on a well-established and well supported psychological theory, Bandura's (1989, 1991, 2001) social cognitive theory, that provides a broad framework for understanding human behavior when both internal psychological factors and external contextual factors are pertinent. Essentially, Bandura's (1989, 1991, 2001) social cognitive theory posits that personal and environment factors are interactive determinants of human motivation, action, and cognition. Specifically, social cognitive theory argues that the acquisition and maintenance of human behavior occurs as the result of the dynamic interaction of cognitions, the environment, and behavior. Fundamental to social cognitive theory is the view that individuals have "agency" which is said to encompass intentionality, forethought, self-reactiveness, and self-reflectiveness. Accordingly, individuals can independently and effectively manage their own behavior (or "self-regulate") by setting themselves important goals, considering potential actions for achieving their goals, reflecting on the outcomes of their actions, and regularly reassessing their goals, actions, and overall functioning (Bandura, 1991, 2001).

Social cognitive theory therefore provides the basis for our conceptualization of entrepreneurs as individuals with agency, who engage in repeated cycles of goal-oriented behavior in their entrepreneurial activity. Social cognitive theory also provides the basis for our

selection and conceptualization of the three core constructs in our proposed model. First, in proposing the construct we term “constructive rule beliefs”, we draw from Bandura’s (1989, 1991) claim that cognitive structures or “schemas” and self-beliefs influence people’s motivation and actions by impacting how people perceive, attend to, and organise information from memories. Second, in proposing that certain environmental contingencies (“contextual triggers”) impact rule-breaking, we draw from Bandura’s central view of human behavior and psychosocial functioning as being caused by the reciprocal relationships between the environment, cognitions, and behavior (Bandura, 1991, 2001). And third, in proposing that rule-breaking is most effective when performed by those with a paradox mindset, we draw from Bandura’s (1991) argument that various cognitive abilities underlie effective self-regulation (i.e., abilities to anticipate consequences of actions, plan actions likely to achieve outcomes, and reflect and react following actions).

#### 4.7.2. Constructive rule beliefs: a cognitive driver of entrepreneurial rule-breaking

Our theoretical model of rule-breaking behavior is largely centred around a novel cognitive construct that we introduce in this paper, that we suggest is fundamental to understanding rule-breaking behavior in entrepreneurs: constructive rule beliefs. For clarity, we begin this section with a brief definition of constructive rule beliefs and follow this with a detailed theoretical account of the construct. In simple terms, we define constructive rule beliefs as an individual-level cognitive construct that reflects a person’s understanding of the nature, purpose, and core properties of rules. We propose that constructive rule beliefs vary predominately between people, such that individuals can be low in constructive rule beliefs (i.e., have the tendency to view rules as primarily static, universal, and fixed) or be high in constructive rule beliefs (i.e.,

have the tendency to view rules as contextual, flexible, and imperfect), or fall somewhere in-between. We regard constructive rule beliefs as being relatively stable and therefore useful for understanding entrepreneurs' behavior across time and situations.

Our claim that a cognitive construct has a causal impact on discrete behavior at the individual level is founded on Bandura's well supported social cognitive theory (1991). Accordingly, the way someone behaves in any given situation will be guided by how the individual perceives, interprets, and understands the salient cues in that situation (Bandura 1989, 1991). However, social cognitive theory alone is insufficient to explain entrepreneurial rule-breaking because, while it emphasizes the importance of cognitions in causing behavior, as a general theory of cognition and self-regulation, it does not seek to provide an account of the specific cognitions relevant to specific behaviors. Therefore, in developing the constructive rule beliefs construct in this paper, we additionally draw heavily from two further psychological theories that complement the social cognitive theory and allow for more specific theorising; these include cognitive schema theory (Derry, 1996) and Kohlberg's theory of moral reasoning and development (Kohlberg, 1958, 1984). Regarding our focus on moral reasoning, we note that while we are the first to focus on moral reasoning as a driver of entrepreneurial rule breaking, we are not the first to recognize the potential congruence between entrepreneurial qualities and moral decision-making (Buchholz & Rosenthal, 2005).

Cognitive schema theory posits that people organize knowledge around subjects or events in terms of "schemas" or "mental structures" which ultimately impact how people process information and behave (Derry, 1996; Gilboa & Marlatt, 2017; Mathieu et al., 2000; Rumelhart, 2017). Cognitive schemas are said to impact learning and information processing

in individuals by providing them with information from memories and creating internal models about various aspects of the world which become activated when individuals are exposed to schema-relevant situations (Derry, 1996; Piaget, 1970). Based on cognitive schema theory, people can form different schemas about the same subjects/events, and the specific schema someone forms will reflect their unique set of experiences. Accordingly, when a person encounters a situation whereby a schema is relevant, the schema will be activated, directly impact their thinking with regards to that situation, impact how they respond to the situation, and provide a context for assimilating new knowledge and updating the schema (Derry, 1996).

While cognitive schema theory focuses on how mental models of phenomena are formed, and how such models impact behavior in general, Kohlberg's theory of moral development is relevant to how people think explicitly about rules. Specifically, Kohlberg's theory seeks to explain moral behavior—such as rule-breaking—in terms of the adequacy with which individuals engage in moral reasoning (Kohlberg, 1958, 1984). Kohlberg specified three levels of moral development that theoretically reflect progressively more advanced moral-reasoning capabilities. At the lower level, termed preconventional morality, individuals base moral reasoning around obedience (i.e., doing what one is told) and individualism (i.e., doing what one desires). Individuals at this stage of moral development tend to make decisions about “right versus wrong” behavior in terms of the likely consequences of a behavior, such that a behavior will be considered “wrong” if it is likely to result in punishment. At the mid-level, termed conventional morality, individuals accept and internalize social rules and largely base moral reasoning around formal rules and laws. Judgments of “right versus wrong” in those at this stage of moral development are largely based on whether rules are broken and/or relationships

are damaged. At the highest level, termed postconventional morality, individuals base moral reasoning around abstract principles of morality, including individuals' rights, social contracts, and justice. Notably, Kohlberg argued that at the highest stages, people are likely to behave in accordance with internalized abstract principles even if they do not align with laws and rules (Kohlberg & Hersh, 1977).

Drawing upon cognitive schema theory and Kohlberg's theory of moral development, we posit that entrepreneurs form schemas regarding the nature, purpose and self-relevance of rules that impact their behavior in the context of rules. Consistent with cognitive schema theory, the mental models of rule beliefs that entrepreneurs hold at any point in time theoretically stem from (1) their explicit memories of rule-relevant events; and (2) how they integrate information from such events with their knowledge, values, and other mental schemas to create and update their mental model of rules. From this perspective, an individual might be expected to have strict or flexible attitudes toward rules, depending on the nature of rule-relevant memories (which may, for example, depict rules as necessary or burdensome) and how they integrate such memories into their broader mental models of the world (which may depict the world as inherently unfair or fair) and their mental models of how the world should be (e.g., egalitarian values). We argue that those who form constructive rule schemas will tend to have broad mental models of the world characterized by egalitarianism and democracy and are capable of postconventional moral reasoning (as defined by Kohlberg, 1958; 1984). Due to their unique memories of rule-salient events, combined with other drivers of postconventional reasoning (e.g., family, culture, personal values, cognitive development), we posit that such individuals will tend to have rule schemas that recognize the limitations of rules, and view formal rules as



an insufficient guide as to what constitutes appropriate behavior in a given context. Instead, those high in constructive rule beliefs are likely to view rules as but one of many operating conditions upon which to base their decisions.

Ultimately, we suggest that constructive rule beliefs in entrepreneurs vary along a continuum. Individuals low in constructive rule beliefs are likely to take the view that “rules should be followed”. In contrast, individuals high in constructive rule beliefs are likely to take the view that “rules can be broken”. The low constructive end describes the mental schema tendencies in which one tends to regard the self as a rule-receiver and believes that rules are instrumental to their behavior, while the high constructive end describes the mental schema tendencies in which one tends to see the self as a rule-agent and believes that rules are simply an operating condition to one’s behavior. Consistent with Kohlberg’s theory, we suggest that those low in constructive rule beliefs perceive themselves in relation to rules and institutions as often static and vertical. They subscribe to what is given to them to perform their duty as a good citizen without examining the principles underlying formal rules. They tend to reside at the conventional level (level two) in Kohlberg’s three levels of moral development and have a “law and order” orientation (i.e., right vs wrong as defined by whether rules are followed or broken).

On the contrary, an individual high in constructive rule beliefs is likely to have a perception of the self in relation to rules where rules are constructive, dynamic, and horizontal. These individuals consider rules in conjunction with other operating conditions present in a given situation to make sense of the environment and inform their behavior. They believe that social rules are not context-free and should be legitimized by the demands of specific situations. They

observe formal rules in the context of higher-order principles. As individuals who reside in Kohlberg's postconventional level of moral reasoning (level three), they tend to believe that rules are the result of dynamic processes of social construction, and rule-breaking is an inevitable and necessary mechanism of such processes. In sum, given that those high in constructive rule beliefs view rules as flexible and are open to breaking rules, we suggest that such individuals will break rules more often than those low in constructive rule beliefs. This leads to our first proposition:

*Proposition 1: An entrepreneur high in constructive rule beliefs is more likely to engage in entrepreneurial rule-breaking than an entrepreneur low in constructive rule beliefs.*

We note that, while an individual's specific rule beliefs can take many forms, we argue that "constructive" rule beliefs are those beliefs that drive the form of rule-breaking most likely to lead to positive outcomes for entrepreneurs. We suggest that other types of rule beliefs are less likely to offer competitive advantages for entrepreneurs, regardless of whether they underlie rule-breaking behavior. For example, some individuals may reliably break rules because they reject the notion of rules and institutions completely (e.g., people who identify as anarchists). Others may break rules due to a dispositional tendency toward nonconformity and/or a dislike to follow instructions, while others may break rules as a morally questionable means of cutting corners (see Jonason & O'Connor, 2017). Again, we suggest that rule-breaking behavior stemming from these "non-constructive" rule beliefs will not drive effective rule-breaking in entrepreneurs to the same degree as constructive rule beliefs. This is because those high in constructive rule beliefs will not break rules by default, but, as we discuss further later, these individuals are open to breaking rules in situations whereby such behavior is likely

to produce positive outcomes for them.

#### 4.7.3. Contextual triggers of rule-breaking behavior

Although we model rule beliefs as an important causal precursor to rule-breaking behavior in entrepreneurs, we suggest that rule beliefs will only cause rule-breaking in the context of what we refer to as “contextual triggers”. That is, those high in constructive rule beliefs will not break rules by default but rather be open to rule-breaking when it is deemed socially and contextually appropriate, based on their mental model (schema) of rules. We propose that two contextual variables operate as triggers of rule-breaking behavior in entrepreneurs high in constructive rule beliefs: (1) high compliance costs of rule-following, and (2) institutional deficiencies. In the context of either one of these triggers, we posit that those high in constructive rule beliefs would consider behaving in a manner that removes the regulating power of one or more formal rules, when such behavior is deemed as more appropriate, all things considered, than following the rule/s in question. In this section, we outline these triggers and specify conditions that may further magnify their causal impact on discrete rule-breaking behaviors.

**High costs of rule-compliance.** For early-stage entrepreneurial firms with a shallow and unguaranteed pool of finance, survival is a simple function of costs and revenues, other complexities put aside. Small firms tend to have higher transaction costs than large firms due to economies of scale and smaller firms also have fewer opportunities to mitigate costs through external networks (Calcagno & Sobel, 2014; Nooteboom, 1993). Early-stage entrepreneurial firms also have to contend with proportionately higher regulatory and administrative costs (Klapper et al., 2006). Past research suggests that entry regulations limit the number of new

ventures entering a market, that higher levels of regulation lead to less entrepreneurial activity, and that regulatory burdens may redirect entrepreneurship into unproductive channels (Calcagno & Sobel, 2014; Sobel, 2008; Van Stel et al., 2007). While difficult to quantify, the US Small Business Administration has published estimates that compliance with federal regulations in 2008 amounted to \$1.75 trillion (Crain & Crain, 2010), providing some real-world evidence of the high costs of rule compliance faced by entrepreneurs.

We therefore propose that one trigger of rule-breaking behavior for those high in constructive rule beliefs, is situations or scenarios where there are high costs of rule-compliance. As noted earlier, high costs of rule compliance is a contextual factor thought to drive various forms of organizational rule-breaking (Oliver, 1991) and we argue that it is particularly relevant for entrepreneurs. Costs of compliance can be monetary, or it can take the form of intangible resources such as time and human capital, though usually both are involved. When the costs of compliance are high enough, and the perceived legitimacy of rule-following is questionable, we propose that an entrepreneur high in constructive rule beliefs may choose to engage in behavior that alleviates the constraining power of a formal rule (e.g., ignore, challenge, negotiate, circumvent, manipulate, or violate a rule). Rule-breaking in this context may therefore serve to reduce compliance costs for entrepreneurs and provide them with a competitive advantage over those low in constructive rule beliefs (i.e., it may serve to facilitate the entrepreneur in obtaining important goals).

We further suggest that the triggering effect of compliance costs on rule-breaking will be magnified in situations where entrepreneurs are operating in the context of salient resource constraints. Resources are precious currencies during all stages of the entrepreneurial process,

but particularly in the early stages of building a new business. To cope with the tensions between high costs of compliance and salient resource constraints, we suggest that entrepreneurs high in constructive rule beliefs will be more inclined (compared to those low in constructive rule beliefs) to engage in various forms of rule-breaking to achieve their goals. Whether entrepreneurs high in constructive rule beliefs ultimately use rule-breaking will depend, in part, on how badly an entrepreneurial firm is impacted by limited resources and, consequently, the overall importance of the goal that the specific instance of rule-breaking relates to. We therefore suggest that the likelihood of rule-breaking will be increased in situations where there are high resource costs of rule-compliance, and this effect will be magnified for entrepreneurs who have salient resource constraints. This leads to the following proposition:

*Proposition 2a: In entrepreneurs high in constructive rule beliefs, rule-breaking behavior is triggered when there are high costs of rule-compliance. The triggering effect of rule-compliance is then magnified in conditions whereby entrepreneurs operate under salient resource constraints.*

Institutional deficiencies. Institutional deficiencies include structural gaps, contradictions, inconsistencies, and loopholes in rule systems that govern societies (see Welter & Smallbone, 2011). Institutional deficiencies arise when rule systems become outdated, excessively complex, redundant or corrupt (e.g., Aguilera & Vadera, 2008; Rodgers et al., 2022), or when socioeconomic structures are hit by catastrophic and/or “black swan” events (which may result in sudden shifts in social values, orders, and norms). Institutional deficiencies may also occur when institutions are outpaced by technological, economic, and social developments and no

longer represent the context and conditions of the time current rules were made (largely because institutions are interwoven and so complex that institutional change is overwhelmingly incremental, see Van de Ven & Hargrave, 2004; also North, 1990). One common class of institutional deficiencies is what Elert and Henrekson (2016) called “institutional contradictions”. The authors identified three categories of contradictions in institutional frameworks: (1) institutional inconsistencies resulting from ambiguities within and between institutional rules or from geographical differences, (2) institutional voids (i.e., the lack of institutions to make it clear whether certain activities are lawful or not), and (3) the high costs of monitoring and enforcement resulting in the unenforceability of certain institutions (Elert & Henrekson, 2016). Several other types of deficiencies exist in institutions and rule systems, for example, the inability of formal rules to cover every eventuality, the vagueness and/or subjectivity of general rules, and the interpretation of a rule requiring tacit knowledge and awareness of cultural factors (Brenkert, 2009).

While the various forms of institutional deficiencies can be sources of frustration for entrepreneurs, we propose that some institutional deficiencies may serve as a trigger of rule-breaking behavior in those high in constructive rule beliefs. Specifically, we propose that alert entrepreneurs—that is, those who are alert to entrepreneurial opportunities based on sensitivity to market discrepancies and disequilibrium signals (Alvarez & Barney, 2010, Gaglio & Katz, 2001; Kirzner, 1999)—high in constructive rule beliefs, will have the capacity to exploit institutional deficiencies for positive entrepreneurial outcomes with varied forms of rule-breaking behavior (see Table 1). This form of entrepreneurial activity has been described as a form of rule-breaking previously (e.g., Elert & Henrekson, 2016) and also fits our definition of

rule-breaking, as it generally has the effect of alleviating the regulating power of either (1) one or more contradictory rules, or (2) of vague rules, or rules that are difficult to enforce. We therefore suggest that those high in constructive rule beliefs will be more open to opportunities for exploiting institutional deficiencies, particularly when doing so is deemed as more legitimate than not doing so, all things considered.

One example of alert entrepreneurs capitalizing on institutional deficiencies is sharing economy companies, such as Uber, which voids employment levies applicable to traditional market players by on-boarding drivers as gig workers and circumvents liabilities (Elert & Henrekson, 2016). Another example is Wikipedia cleverly constructing its business model and using the copyleft licence to invert the logic of copyright law, such that copyright law was exploited in the opposite way to which it was intended (see Safner, 2016). A further example, in the context of predatory state actors in transitioning economies, is that entrepreneurs hide their firm assets and business activities from predatory state actors and pay insiders in the regulatory bodies to stay ahead of new tax regulations by rearranging their books and assets (Rodgers et al., 2022). While it is the alertness and the ability to see patterns between seemingly unrelated things that allow alert entrepreneurs to see opportunities where others do not (Kuratko et al., 2021) we argue that constructive rule beliefs represent a cognitive cause of whether entrepreneurs ultimately act on the opportunity they have identified. As such, we propose:

*Proposition 2b: Rule-breaking behavior is triggered in opportunity-alert entrepreneurs high in constructive rule beliefs when they identify an opportunity to exploit institutional deficiencies.*

#### 4.7.4. The efficacy of rule-breaking and paradox mindset as a moderator

Up to this point, we have focused on factors that cause discrete rule-breaking behaviors in entrepreneurs. In this section, we focus on outcomes of discrete rule-breaking behavior in entrepreneurs and ultimately posit that constructive rule beliefs will tend to result in positive outcomes for entrepreneurs. As outlined earlier, we argue that those high in constructive rule beliefs are more open to breaking rules than those low in constructive rule beliefs, and that high constructive rule beliefs in entrepreneurs provide them with a unique behavioral option - or resource - unavailable to those low in constructive rule beliefs. Given that rule-breaking can assist entrepreneurs in their goal attainment, the presence of this behavioral resource in entrepreneurs will tend to be beneficial over time.

However, we suggest that rule-breaking behavior in entrepreneurs—even when based on constructive rule beliefs—will not automatically be beneficial for entrepreneurs. We argue that while rule-breaking will have some inherent benefits for entrepreneurs, we draw from social cognitive theory (Bandura, 1991) to propose that rule-breaking will be most beneficial when practiced in the context of setting and pursuing goals and enabled by cognitive processes related to intentionality, forethought, self-reflectiveness, and self-reactiveness (which aligns with Bandura' 1991, 2001 account of effective self-regulation). We further argue that in the context of entrepreneurship, having a paradox mindset, in particular, serves to increase the likelihood that rule-breaking behavior in entrepreneurs will enhance the likelihood of goal attainment for entrepreneurs. Consistent with recent calls for contextual and dynamic approaches to entrepreneurial cognition (see Mitchell et al., 2011; Randolph-Seng & Atinc, 2020), we overview the paradox mindset and outline how those with paradox mindsets can



maximise the efficacy of entrepreneurial rule-breaking over time.

A paradox mindset can be defined as “a tendency to value, accept, and feel comfortable with tensions” (Miron-Spektor et al., 2018, pp.34). Those with a paradox mindset are energized by paradoxical tensions (Miron-Spektor et al., 2018) with research demonstrating that the adoption of paradoxical frames in individuals serves to increase creativity (Miron-Spektor et al., 2011). An entrepreneur’s job is filled with paradoxical tensions, for example, between long-term and short-term demands, between internal and external constraints, between opportunity exploration and exploitation, and between stability and dynamic viability needs (Volery & Mueller, 2018). Similarly, entrepreneurs, particularly those in the early venturing stages, are often required to juggle different rule-related behaviors. On the one hand, they are expected to follow existing norms and rules to earn sociopolitical legitimacy for their business (Aldrich & Fiol, 1994; Fischer et al., 2018; Hall & Rosson, 2006). On the other hand, entering a market often comes with compliance costs whereby - as we argue in this paper - breaking rules represents a plausible strategy for assisting with goal attainment. We argue that having a paradox mindset enables entrepreneurs to explore and test alternative solutions to contradictory tensions involving rules, and, in concurrently focusing on rules and compliance costs, are more likely to see rule-breaking as a viable solution. We therefore propose that having a paradox mindset will enhance the likelihood that constructive rule beliefs will lead to rule-breaking behavior in the context of contextual triggers.

In addition to recognizing rule-breaking as a plausible strategy to overcome paradoxical tensions, we also suggest that those with a paradox mindset will benefit more from rule-breaking in the long term, compared to those without such a mindset. This is because rule-

breaking can be a high-risk strategy, which may, in some situations, result in outcomes that do not align with entrepreneurial goals (i.e., fines or other punitive measures). We argue that, having a paradox mindset allows entrepreneurs with constructive rule beliefs to make better decisions regarding when to break rules versus when to follow rules, and which rules to break versus which to follow. In other words, we argue that entrepreneurs with a paradox mindset will more effectively decipher when rule-breaking represents a good strategy in response to competing demands and when it does not. Over time therefore, those with a paradox mindset will benefit more from rule-breaking than those without a paradox mindset.

Empirical evidence supports the idea that a paradox mindset leads to positive performance outcomes and increased effectiveness in entrepreneurial and established firms alike. For example, Miller and Sardais (2015) found that entrepreneurs with paradox mindsets were able to sustain confidence about future challenges while responding to problems in the present. In the broader management literature, research has demonstrated that leaders with a paradox mindset (i.e., paradoxical leadership) foster a firm's strategic agility through creative and constructive conflicts (Lewis et al., 2014) and that paradoxical leadership is positively related to follower innovation (Ishaq et al., 2021). Drawing insights from both theoretical perspectives and empirical evidence on the benefits of paradox mindsets in contexts characterized by paradoxical tensions, we propose that entrepreneurs' paradox mindset moderates the relationship between both constructive beliefs and rule-breaking behavior, and between rule-breaking behavior and entrepreneurial goal attainment. This leads to the following propositions:

*Proposition 3a: The effect of constructive rule beliefs on rule-breaking in the presence of contextual triggers is moderated by a paradox mindset, such that constructive rule beliefs*

*will more likely lead to rule-breaking in entrepreneurs with a paradox mindset.*

*Proposition 3b: The effect of rule-breaking behavior on entrepreneurial goal- attainment is moderated by a paradox mindset such that rule-breaking will more frequently lead to goal-attainment in entrepreneurs with a paradox mindset.*

#### 4.8. Discussion

Extant studies on rule-breaking both within, and external to the entrepreneurial context provide only a piecemeal understanding of entrepreneurial rule-breaking and have not clearly established the causes of entrepreneurial rule-breaking and how rule-breaking itself may drive adaptive outcomes in entrepreneurs. The purpose of this paper was to propose an individual-level theory of the working mechanisms, causes, and pertinent outcomes of rule-breaking in entrepreneurs and how these relate to one another. In developing our theoretical model and conceptual definitions, we primarily drew from social cognitive theory (Bandura, 1989, 1991, 2001), Oliver's typology of organizational strategic responses to institutional pressures (Oliver, 1991), and Kohlberg's (1958, 1984) theory of moral development, to argue that entrepreneurs high in constructive rule beliefs will be more open to breaking formal rules in the context of environmental triggers, and have the capacity to benefit from such rule-breaking, particularly when they have a paradox mindset. In the following sections, we summarize the theoretical contributions of our model, and then cover a set of implications of our model for entrepreneurs and discuss how entrepreneurs could benefit from adopting a set of rule beliefs more conducive to constructive rule-breaking.

##### 4.8.1. Theoretical contributions

We would like to highlight four theoretical contributions from the current work that we

believe will be particularly useful for the rule-breaking literature going forward. First is our definition of “entrepreneurial rule-breaking”. By articulating the nature of entrepreneurial rule-breaking, we anchor the traditionally elusory concept in terms of deliberate behavior that interferes with the application of one or more formal rules resulting in the alleviation of the rule’s regulating power. By focusing on breaking formal rules, we clarify what is meant by entrepreneurial rule-breaking and move beyond the extant literature, which tends to bundle formal and informal rule-breaking and limits the search for explanations to traits such as nonconformity, creativity, and risk-taking. Second, is our introduction of a novel theoretical construct (see Thatcher & Fisher, 2022) which we termed “constructive rule beliefs”. We believe this new construct, not mentioned in previous work on entrepreneurial rule-breaking (or rule-breaking more broadly), adds substantively to how the phenomenon is understood. Furthermore, as a construct not inherently bound to entrepreneurial cognition, we believe it has the potential to be informative in other contexts. Third, is our theoretical model of entrepreneurial rule-breaking. In integrating existing literature on entrepreneurial rule-breaking, with relevant individual-level theories of cognition, behavior, and moral development, we have proposed a model that explicates the nature and underlying working mechanisms of entrepreneurial rule-breaking, including when and how rule beliefs are activated by behavioral triggers and the conditions that enhance the likelihood that rule-breaking will result in beneficial outcomes for entrepreneurs. Finally, we believe our work challenges two existing assumptions about entrepreneurial rule-breaking seemingly shared by scholars and the broader public. First, we challenge the common assumption that rule-breaking primarily has a basis in deviance; contrary to this, we suggest that rule-breaking in entrepreneurs – particularly the

form that leads to positive outcomes – has a basis in morally complex thinking. And second, we challenge the assumption that entrepreneurial rule-breaking is best thought of a behavior carried out by “rule-breakers”. On the contrary, we argue that rule-breaking in entrepreneurs reflects an integrated set of contingencies as summarized in our theoretical model. In this sense we argue that entrepreneurs should not be categorized as either “rule-breakers” or “rule-followers” but rather as entrepreneurs who are open to breaking rules versus those who are not.

#### 4.8.2. Some rules should be broken

In mainstream business media outlets, the description of entrepreneurs as “rule-breakers” is not always used in a morally complimentary way. Even in academic articles there is a tendency for researchers to bundle rule-breaking in entrepreneurs with antisocial, illegal, or undesirable behavior (e.g., Aidis & Van Praag, 2007; Fairlie, 2002). In this article, we have challenged the view that entrepreneurial rule-breakers are necessarily individuals who partake in morally questionable behavior. When judged by applying principles of postconventional moral reasoning (which we argue is one of the drivers of constructive rule beliefs), rule-breaking cannot be regarded as inherently wrong but, on the contrary, morally right when rule-breaking is conducted in the context of outdated, inappropriate, or illegitimate rules.

While our focus here is on the possibly contentious claim that entrepreneurs should consider breaking formal rules, we would be remiss to ignore the potential dark side of entrepreneurial rule-breaking. In other words, while we contend that some rules are problematic and should be broken, we also recognize that some – and arguably most - rules should not be broken. We therefore clarify that our advice is not that entrepreneurs adopt a default “rule-breaking” strategy in the context of highly constraining formal rules. We also

clarify that we do not regard deviant, or dispositional rule-breakers as budding entrepreneurs. On the contrary, we advocate that entrepreneurs should only consider rule-breaking when it is deemed appropriate based on morally competent thinking about rules (as in those high in constructive rule beliefs). We provide more practical guidance about such morally competent thinking in the next section.

#### 4.8.3. Implications

In addition to making several contributions to theory, we suggest that our proposed theoretical model may be informative for entrepreneurs seeking to be more effective. As noted in the previous section, “rule-breaking” is often judged as a morally undesirable behavior. In many societies, there are strong cultural norms against rule-breaking. People are taught from a young age to follow the rules where possible (Stueber, 2005) and are either threatened with punishment or social ostracization if they fail to do so. Therefore, a potential problem – or paradox - for both individual entrepreneurs and societies seeking to boost entrepreneurship is that a behavior plausibly driving entrepreneurial success (i.e., rule-breaking) is also a behavior generally regarded as unethical and discouraged. Consistent with this logic, countries with weak cultural norms related to rule-following (e.g., countries high in what has been termed cultural “masculinity”) tend to have more positive entrepreneurial outcomes (Bogatyreva et al., 2019), possibly indicating that a weak commitment to rule-following in such countries enhances entrepreneurial success.

One strategy that entrepreneurs can adopt to resolve the tensions between the necessity for rule-breaking in the process of goal attainment and the discomfort they may have in breaking rules is to target their rule beliefs. While we argue that rule beliefs are the product of rule-

related schema development over many years, as a higher-order cognitive construct, rule beliefs are amenable to change. As a first step, therefore, we suggest entrepreneurs who hold low constructive rule beliefs challenge some of their assumptions about rule-breaking. We suggest entrepreneurs attempt to apply postconventional moral reasoning to instances whereby rules might be impeding their goal achievement to consider whether rule-breaking represents an appropriate option in such instances. We suggest they think not only about rules as formal and absolute, but also think about rules in the context of higher-order principles —both the principles of the rule itself as well as competing higher-order principles.

To more explicitly assist entrepreneurs in evaluating the appropriateness of rule-breaking in rule-salient situations, we developed a short set of questions that entrepreneurs might consider asking themselves when in such situations. These are as follows: (1) what purpose does the formal rule in question serve? (2) will following the formal rule contradict its underlying purpose or intent, when other contingencies are taken into account? (3) does the rule assume contextual features that are irrelevant in the present situation (e.g., temporal validity, geographic/ cultural/ individual relevance)? (4) are there any other issues that might make following the rule more problematic, all things considered, than not following the rule (e.g., overall harm caused by following the rule)? (5) If following the rule is deemed problematic (morally and/or economically), how can I most effectively seek to alleviate the rule in question? (6) What might be some deeper level (social, systemic) benefits that my rule-breaking behavior might offer more broadly (e.g., benefits to other entrepreneurs)? We suggest that considering these questions will help entrepreneurs approach rule-salient situations from a morally evolved mindset and ultimately assist them in making better decisions in such

situations.

Finally, our theoretical model also has implications for government and policymakers. As noted earlier, rules and institutions provide the context and conditions under which entrepreneurs operate and are necessitated by the order, structure, predictability and efficacy created through them (Beckert, 1999). However, we have also discussed that rule-breaking is also necessary and inevitable in some circumstances. By acknowledging the important role that formal rule-breaking plays in entrepreneurial activity and responding to this necessity in constructive ways, architects and curators of social systems and institutions can seek to create a more dialogical, flexible, and agile rule culture to support an entrepreneurial society.

#### 4.9. Conclusion

In this paper we developed a theory of rule-breaking behavior in the entrepreneurial context. We proposed that entrepreneurial rule-breaking occurs when entrepreneurs high in constructive rule beliefs encounter contextual rule-breaking “triggers” (i.e., high compliance costs and/or institutional deficiencies) and that positive entrepreneurial outcomes occur for entrepreneurs with a paradox mindset. By emphasizing the drivers and outcomes of constructive rule beliefs within entrepreneurs, our work goes beyond identifying individuals likely to be effective entrepreneurs, to explaining why and how entrepreneurs use rule-breaking to bring about positive outcomes. Given that breaking problematic rules is something that entrepreneurs should do in some situations, we argue that entrepreneurs may benefit from adopting constructive rule beliefs.



## CHAPTER 5. SOME RULES SHOULD BE BROKEN: DEVELOPING A MEASURE OF CONSTRUCTIVE RULE BELIEFS

### 5.1. Chapter overview

Building on the conceptualisation of constructive rule beliefs and the proposed entrepreneurial rule-breaking theory in Chapter 4, this chapter methodologically addresses research question 4 by developing a measure of constructive rule beliefs. With a U.S. sample ( $N = 291$ ), a constructive rule beliefs measure was developed through exploratory factor analysis to provide a tool for future empirical studies of constructive rule beliefs, its antecedents, and outcomes. Constructive rule beliefs was found to be a meaningful cognitive construct and a clarity was provided to the factor structure of the constructive rule beliefs measure. The first factor (rule relativity beliefs) was found predictive of goal-directed rule-breaking behaviour in the hypothetical entrepreneurial context.

*Note:* The main content in this chapter—from Abstract to Conclusion—was published *Personality and Individual Differences* in 2023. To be consistent with the rest of the thesis, the abbreviations of general terms (e.g., CRB for ‘constructive rule beliefs’) in the published article have been converted into full spellings. The abbreviations of statistical terms are retained.

### 5.2. Statement of contribution of co-authors

The authors listed below have certified that:

1. they meet the criteria for authorship and that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
2. they take public responsibility for their part of the publication, except for the

responsible author who accepts overall responsibility for the publication;

3. there are no other authors of the publication according to these criteria;
4. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit, and
5. they agree to the use of the publication in the student's thesis and its publication on the QUT's ePrints site consistent with any limitations set by publisher requirements.

In the case of this chapter:

Zhang, S., O'Connor, P., Gardiner, E. (2023). Some rules should be broken: Developing a measure of constructive rule beliefs. *Personality & Individual Differences*.

Contributor	Statement of contribution
Senlin Zhang	Senlin Zhang was the chief investigator of this study who proposed the conceptualization of the research topic, question and aims, conducted the research design, data collection and management, statistical analysis and interpretation, wrote the original draft, and incorporated feedback and suggestions made by the two co-authors.
Peter O'Connor	Peter O'Connor jointly assisted with the conceptualization of the research topic, question and aims and contributed to the research design, statistical analysis and interpretation as well as writing, reading, proofing and providing feedback and edits on drafts of the manuscript.
Ellirioma Gardiner	Ellirioma Gardiner jointly assisted with the conceptualization of the research question and aims and contributed to the research design, and jointly contributed to the drafting and refinement of study materials, as well as reading, proofing, and providing feedback and edits on drafts of the manuscript.

### 5.3. Abstract

In this study we developed a scale to measure individual differences in *constructive rule beliefs*; a newly defined construct that is thought to underlie morally justifiable forms of rule-breaking behavior. To develop and validate the scale, we recruited a sample of workers ( $N = 291$ ) who completed an online survey comprised of demographic questions, a large pool of newly developed questions assessing constructive rule beliefs, and a set of questions measuring hypothetical rule-breaking behavior. Using an exploratory factor analysis, we found support for a two-dimensional factor structure, with the first factor reflecting rule relativity beliefs (i.e. the belief that rules should guide rather than dictate behavior) and the second reflecting beliefs about the purpose and idealized nature of rules. Construct validity was tested by exploring whether the two factors correlate with hypothetical rule-breaking behavior. We found that only the first dimension (rule relativity beliefs) was strongly associated with rule-breaking. We discuss the importance of constructive rule beliefs in understanding a range of rule-related behaviors.

### 5.4. Introduction

Existing research on formal rule-breaking has tended to focus on two broad categories of causes: personality traits (e.g., agreeableness, conscientiousness, honesty-humility, excitement seeking, see Hastings & O'Neill, 2009; Mackey, McAllister, Ellen, & Carson, 2021; Pletzer, Bentvelzen, Oostrom, & de Vries, 2019) and context (e.g., abusive supervision, organizational injustice, unethical climate, see Hussain, Sia, & Mishra, 2014; Mackey et al., 2021; O'Neill, Lewis, & Carswell, 2011). To date however, there has been limited research on cognitive drivers of rule-breaking, and consequently it is unclear whether, and how

cognitive processes impact rule-breaking in individuals. To fill this gap, a novel, individual-differences cognitive construct—constructive rule beliefs—has been recently introduced (see, Zhang, O'Connor, & Gardiner, 2022). However as yet, no measurement scale of constructive rule beliefs has been developed. The purpose of the current study is to develop a new measurement scale of constructive rule beliefs and conduct an initial test of construct validity. The new measurement scale will allow researchers to conduct research on constructive rule beliefs and/or investigate phenomena that might be caused or predicted by constructive rule beliefs (e.g. various forms of rule-breaking).

*Constructive rule beliefs.* In simple terms, constructive rule beliefs can be defined as a set of beliefs regarding the nature, purpose, and core properties of rules. Constructive rule beliefs is thought to vary between people, such that an individual's level of constructive rule beliefs can range from low (i.e., having the tendency to view rules as primarily static, vertical, and fixed) to high (i.e., having the tendency to view rules as dynamic, horizontal, and flexible) (Zhang et al., 2022). Those high in constructive rule beliefs tend to see rules as less important than the principles upon which they are based (Zhang et al., 2022) and, therefore, are open to breaking a rule when doing so achieves better outcomes than following a rule (e.g., speeding to save a life; or breaking an organization's rule to prevent a potential harm to the community). Accordingly, those high in constructive rule beliefs do not break rules by default, but rather apply complex moral reasoning to rule salient situations and, unlike those low in constructive rule beliefs, consider rule-breaking as a legitimate strategy for goal attainment when rules are contextually problematic.

Compared with perceptions and attitudes, which are commonly researched discrete

cognitive causes of rule-breaking, constructive rule beliefs is relatively stable, focuses on rules explicitly, and is not bounded by context or contingencies. Theoretically, constructive rule beliefs adds to the knowledge of rule-breaking by providing an explanation of why some individuals, based on their beliefs about rules in general, are more or less likely to break rules overall. Therefore, constructive rule beliefs is useful for understanding people's rule-related behavior across time and situations. A measure of constructive rule beliefs is needed in order to empirically investigate phenomena whereby constructive rule beliefs might play a causal or predictive role. Up until now however, no scale has been developed to measure this construct.

We note that while there have been some studies on cognitive drivers of rule-breaking, they have been highly contextual, i.e., they have tended to focus on cognitions relevant to specific rule-breaking situations. These studies have typically explored whether a discrete cognition (e.g., perceived fairness of managerial decisions) impact some form of rule-breaking in a narrow context (e.g., workplace deviance, Berry, Ones, & Sackett, 2007; O'Neil et al., 2011). In contrast to focusing on discrete, contextually specific cognitions, constructive rule beliefs represents a set of stable cognitions about rules in general, that theoretically manifest as individual differences between people. Consistent with Zhang et al., (2022) we argue that the value of focussing on individual differences in stable cognitions about rules, lies in the potential for such individual differences to provide insight into why people might (or might not) engage in varied forms of rule-breaking across different situations.

*The current study.* The purpose of the current study is to develop a measurement scale of constructive rule beliefs and conduct an initial test of validity. We investigated the

appropriateness of adapting a conceptually related measure in the literature, such as prosocial rule-breaking (e.g., Dahling, Chau, Mayer, & Gregory, 2012; Morrison, 2006), or constructive deviance (e.g., Galperin, 2012), however, we concluded that doing so would be inappropriate for two reasons. First, most of these scales are exclusively measures of behavior rather than measures of beliefs and second, these extant rule-related scales are used within narrow organizational boundaries and not readily adaptable to rule-breaking external to organizations. We therefore decided to develop a pool of items pertinent to the conceptualization of the constructive rule beliefs construct, to measure people's general beliefs about formal rules underlying their rule-related thinking and behavior without involving any specific contextual information. We then explored the factor structure and refined the measure using exploratory factor analysis. To provide an initial test of construct validity, we then examined whether high scorers on constructive rule beliefs were more likely to break contextually problematic rules as the theory underlying constructive rule beliefs would predict (Zhang et al., 2022).

## 5.5. Method

### 5.5.1. Participants and procedure

Participants were a US sample of 147 salaried professionals and 144 entrepreneurs ( $N = 291$ ) aged between 18 and 72 ( $M = 34.88$ ;  $SD = 11.73$ ). One participant did not provide demographic data. Of the participants who did report demographic data, 156 participants self-reported as male (54%), 122 as female (42%), 11 as non-binary/ third gender (4%), and 1 preferred not to disclose. Most participants had some form of tertiary education (74%) with approximately half (54%) having a formal tertiary degree.

Participants were recruited via *Prolific*, an online panel. Participants saw a recruitment vignette for the current study on their *Prolific* interface and accessed the survey hosted on *Qualtrics* by clicking on the hyperlink in the recruitment vignette. After giving their consent, participants were asked two screening questions (i.e., to ensure that participants were at least 18 years old and currently working either as a salaried professional or an entrepreneur at the time of participation). Having passed the screening questions, participants then completed the online survey which contained a 50-item questionnaire and four demographic questions (i.e., age, gender, education, and country of residence). They then completed two rule-breaking questions based on two detailed scenarios (described below). Participants were each paid £2.67 via *Prolific* for their participation, and the rate of reward was in line with *Prolific*'s payment guidelines.

#### 5.5.2. Measures

An initial pool of 50 items for measuring constructive rule beliefs based on its conceptual definition were developed by the research team (i.e., the authors of this paper). Each item was a belief-related statement about formal rules. The questionnaire was administered online, and participants were asked to rate their agreement to a series of statements using a 7-point Likert scale, where 1 = Totally Disagree and 7 = Totally Agree. A straightforward definition of formal rules, namely that, 'Formal rules, simply put, are codified laws and regulations usually written and enforceable by some relevant authority', was provided in the instructions. Example items include: "Formal rules should be followed, no matter what."; "It is justifiable to break some formal rules."; "Everyone who is or will be affected by the formal rules should have a say in how rules are formed."; and "Formal rules should serve a purpose."

To identify inattentive respondents and improve data quality, we included one attention check item within the constructive rule beliefs questions (i.e., “This is an attention check. Please select the ‘Extremely likely’ option here”) (Abbey & Meloy, 2017).

### 5.5.3. Rule-breaking scenarios

Two detailed scenarios were developed to assess whether constructive rule beliefs was associated with rule-breaking behavior. Both scenarios asked participants to take the role of an entrepreneur (a role typically associated with high levels of rule-breaking) and make a decision as to whether they would follow or break a formal rule. Both scenarios were designed to capture the type of rule-breaking that individuals high in constructive rule beliefs would be theoretically expected to engage in (i.e., breaking contextually problematic rules).

Scenario 1 involved a start-up business which provided insurance companies with outsourced expert reviews for dental surgeries. Participants needed to choose whether to follow or break a rule regarding the suppliers of these expert reviews. Specifically, they had to decide whether to only use the reviewers they agreed to in advance with the insurance companies (but could not adequately source), or supplement with an alternative source of reviewers who were equally qualified but had not been formally approved prior.

Scenario 2 detailed the case of a smart-wear health start-up which was launching a flagship product to EU markets. It was undergoing final procedures of product certification which had been informally granted. Participants were asked to decide whether they would refer to the product as “certified” at an upcoming health expo, despite the technical requirement to wait for formal certification. They were told that following this formal rule would come at a cost in terms of revenue, and that breaking the rule would cause no harm to



anyone (given that official certification was a formality).

In both scenarios, participants were also asked a yes/no question, “All things considered, will you break the rule?” to determine whether they would break the rule or not.

## 5.6. Results

### 5.6.1. Data cleaning and exploratory factor analysis

Prior to the main analyses, preliminary analysis was first conducted to clean the data. Five participants failed the embedded attention check. However, initial analyses indicated that removing inattentive respondents caused no substantive differences to the results or conclusions stemming from them (i.e. did not change the factor structure, meaningfully affect loadings, or impact outcomes of significance tests), hence they were not removed from the final analyses.

We conducted an exploratory factor analysis (EFA), using SPSS (version 27), to explore the factor structure of the 50 items developed to measure constructive rule beliefs. We conducted an initial analysis (PAF, oblique rotation) to assess the factorability of the covariance matrix and get an initial idea of total factors. We first applied oblique rotation when running the initial factor analyses because factors are often correlated in social sciences (Matsunaga, 2010). Based on this initial analysis, Kaiser-Meyer-Olkin measure result (KMO = .897) indicated good sampling adequacy and results of Bartlett’s Test of Sphericity ( $\chi^2(1225) = 7868.047, p < .001$ ) suggested that the correlations between items was adequate and appropriate for factor analysis. The initial analysis also indicated possible 2-factor and 3-factor solutions, based on the 3<sup>rd</sup> eigenvalue being only slightly above 1. As per best practice recommendations (e.g., Tabachnick, Fidell, & Ullman, 2007; Yong & Pearce, 2013), we also

performed initial analyses using multiple well-established extraction models (i.e., PCA, PAF) and then compared the factor solutions produced by these different extraction methods.

Results from the PCA and PAF were largely similar in our case.

Inspection of the loading matrices from initial analyses revealed only two interpretable factors, with the 3<sup>rd</sup> factor being either uninterpretable, being a methods factor (i.e. including only reverse scored items) or being clearly unrelated constructive rule beliefs<sup>7</sup>. The factor correlation matrices indicated that the two factors were not correlated.

Consequently, we conducted an orthogonal (varimax) exploratory factor analysis with two extracted factors. Contrary to the 3-factor solution, the two extracted factors in this solution were clearly meaningful and conceptually distinct from each other, hence retained as the final solution. Following well established guidelines (e.g., Hair, Anderson, Tatham, & Black, 2002; DeVellis, 2017), final items were selected based on item clarity and item mean score and variance.

For the final constructive rule beliefs two-factor solution, we retained a total of 20 items, with 10 items in each factor and all but one item having a loading of .5 or above on its respective factor. The item list and factor loadings are summarized in Table 1. The first factor captured attitudes about whether it is justifiable to break problematic rules; it was labelled “rule relativity beliefs” and reflects the belief that rules should guide rather than dictate behavior in individuals. We note that in forming this interpretation of factor 1, we reversed the meaning of all items such that high scores on the factor would align with high scores on

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<sup>7</sup> We note that the presence of irrelevant factors in our initial solution was expected due to the over sampling approach we took, that is, we developed 50 items and planned to only retain 15-25 items for the final scale.

constructive rule beliefs (and vice-versa). The second factor captured attitudes about the purpose, and idealized nature of rules; it was labelled “rule purpose beliefs”. The total variance accounted for by the 20-item final solution was 49.30%, with factor 1 accounting for 27.88% of the variance in the data and factor 2 accounting for 21.42% of the variance.

Following the EFA, facet scores were calculated for each factor, based on calculating the mean score from the 10 reversed-scored items loading on factor 1, and the mean score from the 10 items loading on factor 2. The mean score on the first facet (rule relativity beliefs) was 3.80 (S.D. = 1.02) and the mean score on the second facet (rule purpose beliefs) was 5.53 (S.D. = .780). The reliability of the first ( $\alpha = .912$ ) and second ( $\alpha = .862$ ) facets were adequate. The facets were uncorrelated.

Table 11. Factor loadings in final, two-factor solution

Item	Loading	
	Factor 1	Factor 2
	Rule relativity beliefs	Rule purpose beliefs
Some rules should be broken.	<b>-.807</b>	.120
People should always follow formal rules.	<b>.805</b>	.141
It is justifiable to break some formal rules.	<b>-.798</b>	-.045
Formal rules should be followed regardless of the context.	<b>.775</b>	-.188
Formal rules should be followed, no matter what.	<b>.762</b>	-.199
Sometimes it is okay to ignore formal rules.	<b>-.737</b>	.024
The best answer to the question “Should rules be followed?” is “It depends”.	<b>-.709</b>	.090

Rules are so important to society that people should even follow rules they disagree with.	<b>.627</b>	.033
People should generally do whatever a formal rule requires of them.	<b>.621</b>	.118
Formal rules should generally be followed.	<b>.604</b>	.313
Formal rules should be updated regularly to stay relevant.	.031	<b>.711</b>
For formal rules to serve the purpose they were designed for, they need to be open to change.	.017	<b>.707</b>
Everyone who is or will be affected by the formal rules should have a say in how rules are formed.	.047	<b>.667</b>
Formal rules should serve a purpose.	.253	<b>.665</b>
It is important to question rules where necessary.	-.269	<b>.648</b>
When making a new rule, authorities should provide a clear justification for the purpose of the rule.	.133	<b>.647</b>
Everyone affected by formal rules should have the opportunity to partake in the making of them.	.087	<b>.631</b>
For formal rules to serve the purpose they were designed for, they need to be open to change.	-.305	<b>.598</b>
I am more likely to follow a rule when I believe the rule serves an important purpose.	-.087	<b>.578</b>
The best rules are those that are fluid and responsive to what is happening in the environment.	-.051	<b>.480</b>

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### 5.6.2. Construct validity

In order to assess construct validity of the constructive rule beliefs measure, we assessed whether high scorers on each facet were more likely to engage in rule-breaking behavior on the two scenarios described earlier. This was assessed using two Binary logistic regression

analyses, each including age, gender, and education as controls, and the two constructive rule beliefs factors as predictors. The first BLR was significant ( $df = 9, N = 291, \chi^2 = 53.875, p < .001$ ), which was primarily due to rule relativity beliefs (factor 1). Controlling for other predictors, a one unit increase in rule relativity beliefs resulted in an increase in the odds of participants opting to break the contextually problematic rule by 107% in Scenario 1,  $Exp(B) = 2.068, p < .001, 95\% \text{ CI } (1.605, 2.665)$ . The second BLR was also significant ( $df = 9, N = 291, \chi^2 = 48.933, p < .001$ ), which was also primarily due to rule relativity beliefs (factor 2). Controlling for other predictors, a one-unit increase in rule relativity beliefs resulted in an increase in the odds of participants opting to break the contextually problematic rule by 65% in Scenario 2,  $Exp(B) = 1.652, p < .001, 95\% \text{ CI } (1.276, 2.139)$ . No relationship was found, however, between constructive rule beliefs Factor 2 (rule purpose beliefs) and participant rule-breaking tendencies in either scenario.

## 5.7. Discussion

### 5.7.1. Contributions

While there is abundant research on personality traits and situational variables in the prediction of rule-breaking, there is a lack of research on how cognitive processes might underlie rule-breaking. This is problematic because cognitive processes plausibly play a role in many forms of rule-breaking, particularly the forms that stem from rational thinking about rule-breaking and its consequences. The purpose of the current study was to develop a measure of constructive rule beliefs (Zhang et al., 2022), a recently proposed construct thought to underlie rule-breaking behavior. The development of this measure is necessary to test the key claims of Zhang et al., (2022) regarding outcomes of constructive rule beliefs,

and enable more research on the cognitive basis of various forms of rule-breaking. While there is established work on the legitimacy of formal rules (e.g., Murphy, Tyler, & Curtis, 2009; Tyler, 1997; Tyler, 2006), research is sparse on beliefs about the nature, purpose, and key properties of formal rules and how such beliefs impact behavior.

Theoretically, our work clarifies the factor structure of constructive rule beliefs and identifies two dimensions. The first dimension (rule relativity beliefs) reflects beliefs about the flexibility and changeability of formal rules, and the second (rule purpose beliefs) reflects beliefs about the purpose and idealized nature of rules in general. Overall, our findings are consistent with the conceptualization of constructive rule beliefs by Zhang et al., (2022) and confirms that individuals vary in the extent to which they believe that rules should guide behavior (i.e. rule relativity beliefs), as well as their beliefs regarding the purpose of rules (i.e. rule purpose beliefs). However, our study also helps clarify the nature of constructive rule beliefs; the items we generated to assess constructive rule beliefs resulted in a clear two-factor structure; Zhang et al., (2022) did not discuss the potential dimensionality of constructive rule beliefs, and our results indicate that constructive rule beliefs is not a unidimensional construct.

An interesting finding from our study was the lack of a correlation between the two constructive rule beliefs factors. This was surprising because higher order constructs should typically have correlated factors in reflective-indicator measurement models (MacKenzie, Podsakoff, & Jarvis, 2005), and the absence of even a small correlation essentially rules out the possibility that factors share common variance and load on a higher order factor. We therefore suggest that our factors probably do not represent indicators of the same underlying

construct. On the contrary we suggest they capture non-overlapping aspects of constructive rule beliefs, and when combined, may form a meaningful *formative* construct (see MacKenzie and colleagues, 2005; 2011). Formative constructs are those whereby meaningful scores are derived from the combination of facets, rather than their overlapping variance. While formative constructs may not be as common as reflective ones, there is an abundance of well-researched formative constructs in business and management literatures. For example, uncorrelated facets of job satisfaction combine to form an overall measure of job satisfaction (MacKenzie et al., 2005).

We therefore suggest that constructive rule beliefs facets may represent formative indicators and provide 3 reasons for this based on MacKenzie et al., (2005). First, the two-dimensional structure of the constructive rule beliefs measure appears to capture two relatively unique (hence uncorrelated) aspects of rule beliefs. Factor 1 depicts how one sees them self in relation to formal rules, specifically, whether they can be flexible in their potential responses to formal rules. Factor 2, on the contrary, is more concerned with rules *per se*, namely, the purpose and idealized nature of formal rules. Second, there is no theoretical reason why these dimensions should be correlated. Zhang et al., (2022) argued that constructive rule beliefs are influenced by multiple factors (e.g. rule-relevant memories, broader mental models of the world, etc), and such factors may not all impact a single underlying construct. And third, the two factors do not appear to have the same consequences. As discussed earlier, only Factor 1 (rule relativity beliefs) significantly predicted rule-breaking. Overall therefore, the two facets of constructive rule beliefs have properties of formative indicators and although uncorrelated, the two facets combine to

produce a meaningful construct.

### 5.7.2. Methodological contributions and future research

In addition to these theoretical contributions, our research also contributes to the tools available to researchers investigating potential drivers of rule-breaking and other rule-related behaviors. Although our study provides only an initial validation of the new measure, it indicates 1) that constructive rule beliefs has a clear two-factor structure, 2) that the two factors are uncorrelated, 3) and that only one of the two factors is associated with rule-breaking as measured in the current study. Although we obtained consistent evidence for construct validity across two scenarios, future research could further test the validity of the measure in terms of actual (as opposed to hypothetical) rule-breaking behavior. Future research could also examine the nomological network of the new constructive rule beliefs measure, that is, a network of constructs related to constructive rule beliefs, such as predictors, correlates, and outcomes (Nunnally & Bernstein, 1994). Notably, as constructive rule beliefs entails adaptive, dynamic, and horizontal cognitive styles (Zhang et al., 2022), big five traits such as openness and agreeableness, and facet-level traits, such as egalitarian values, critical thinking, and adaptability, are likely correlates of constructive rule beliefs.

One potential area whereby a focus on constructive rule beliefs is likely to be particularly insightful relates to understanding the behavior and performance of individuals working in the context of highly constraining formal rules. Zhang et al. (2022) argue that constructive rule beliefs may assist with goal attainment in professionals and, therefore, it is possible that constructive rule beliefs will be associated with heightened performance in professionals operating in the context of constraining rules (in a similar way to the hypothetical scenarios



we presented participants). We therefore suggest that future research explore constructive rule beliefs in professionals and explore whether constructive rule beliefs is particularly important to professionals operating in the context of constraining formal rules.

### 5.7.3. Limitations

First, although we carefully designed our instrument based on the core theoretical elements of constructive rule beliefs, it is possible that there are aspects of constructive rule beliefs that we failed to measure, or dimensions beyond those identified in the current scale. Given that constructive rule beliefs is a new construct, we believe that ongoing work on constructive rule beliefs will impact how it is conceptualized, and therefore suggest that researchers remain cognisant of whether our measure remains appropriate over time. Second, our new measure was based on the results of an EFA in single study. Although we used an adequate sample for our EFA, a validation sample using a confirmatory factor analysis would have provided further support for our obtained factor structure. Finally, our instrument relies on self-report which has inherent biases and limitations (Stone, Bachrach, Jobe, Kurtzman, & Cain, 1999), even though it is an appropriate method for collecting data for individual difference variables (Oishi & Roth, 2009). Self-reporting biases may be overcome by adopting convergent validity measures (Connolly, Kavanagh, & Viswesvaran, 2007; Duckworth & Kern, 2011), for example, using the constructive rule beliefs measure in conjunction with relevant behavior measures.

### 5.8. Conclusion

The focus of this study was to develop a psychometrically valid instrument to measure constructive rule beliefs. The outcome of our work is the creation of a 20-item survey

instrument which has two uncorrelated dimensions: rule relativity beliefs and rule purpose beliefs. Our study suggests that constructive rule beliefs is a two-dimensional construct, where the first dimension is predictive of rule-breaking and the second, though not directly relevant to rule-breaking, taps into beliefs about the purpose and idealized nature of rules. We hope that the development of this new constructive rule beliefs instrument will facilitate further investigation of the constructive rule beliefs construct, as well as its antecedents, correlates, and outcomes.

## CHAPTER 6. CONSTRUCTIVE RULE BELIEFS AND ITS CAUSAL INFLUENCE ON RULE-BREAKING IN THE ENTREPRENEURIAL CONTEXT: A PRE-REGISTERED EXPERIMENT

### 6.1. Chapter overview

Building on the proposed entrepreneurial rule-breaking theory in Chapter 4, this chapter empirically addresses research question 4 by testing the causal relationship between constructive rule beliefs and entrepreneurial rule-breaking via an online experiment. The experiment results demonstrated that constructive rule beliefs was a meaningful cognitive construct that has a causal influence on goal-directed rule-breaking tendencies in participants. It was also found that rule-breaking stemming from constructive rule beliefs was a rational and purposeful entrepreneurial action that aligns with entrepreneurial goals.

*Note:* The main content in this chapter—from Abstract to Conclusion—has been recently submitted to *Journal of Small Business Management* for consideration of publishing. To be consistent with the rest of the thesis, the abbreviations of general terms (e.g., CRB for ‘constructive rule beliefs’) in the submitted manuscript have been converted into full spellings. The abbreviations of statistical terms are retained.

### 6.2. Statement of contribution of co-authors

The authors listed below have certified that:

1. they meet the criteria for authorship and that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
2. they take public responsibility for their part of the publication, except for the

- responsible author who accepts overall responsibility for the publication;
3. there are no other authors of the publication according to these criteria;
  4. potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit, and
  5. they agree to the use of the publication in the student's thesis and its publication on the QUT's ePrints site consistent with any limitations set by publisher requirements.

In the case of this chapter:

Zhang, S., O'Connor, P., Gardiner, E. (under review). Constructive rule beliefs and its causal influence on rule-breaking in the entrepreneurial context: A pre-registered experiment. *Journal of Small Business Management*.

Contributor	Statement of contribution
Senlin Zhang	Senlin Zhang was the chief investigator of this study who proposed the conceptualization of the research topic, question and aims, conducted the research design, developed the study materials, collected and curated data, performed statistical analysis and interpretation, wrote the original draft, and incorporated feedback and suggestions made by the two co-authors.
Peter O'Connor	Peter O'Connor jointly assisted with the conceptualization of the research topic, question and aims and contributed to the research design, statistical analysis and interpretation as well as writing, reading, proofing and providing feedback and edits on drafts of the manuscript.
Elliroma Gardiner	Elliroma Gardiner jointly assisted with the conceptualization of the research question and aims and contributed to the research design, and jointly contributed to the drafting and refinement of study materials, as

	well as reading, proofing, and providing feedback and edits on drafts of the manuscript.
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### 6.3. Abstract

In this study we investigated whether constructive rule beliefs, i.e., beliefs that rules are imperfect and one's potential response to them is flexible, is a cognitive cause of entrepreneurial rule-breaking. We also explored whether entrepreneurs are more open to rule-breaking than non-entrepreneurs. Based on a 2x2 between-subjects experimental design, these relationships were empirically tested using a sample of U.S. based entrepreneurs and salaried professionals ( $N = 418$ ). A pilot study was conducted to ensure ecological validity. The pre-registered experiment involved two hypothetical entrepreneurial scenarios in which participants were tasked with a series of rule-breaking decisions under varied conditions. The results revealed that a manipulation targeting constructive rule beliefs had a causal impact on participant rule-breaking tendencies, and that rule-breaking stemming from constructive rule beliefs was goal-directed. Interestingly, entrepreneurial status did not have a significant effect on rule-breaking. In other words, entrepreneur participants were not more likely to break rules than non-entrepreneur participants. Overall, the findings indicate that rule-breaking in entrepreneurs can stem from cognitions about rules in general, and challenge widely held beliefs that entrepreneurial rule-breaking has roots in deviance and dysfunctional traits.

### 6.4. Introduction

Entrepreneurs are widely regarded as rule-breakers. Stories of successful entrepreneurs such as Richard Branson, Mark Zuckerberg, and Elon Musk breaking rules are frequently featured in mainstream media outlets. Some of these articles contend that rule breakers are

destined to become entrepreneurs (e.g., Moffatt, 2017) and that entrepreneurial success requires rule-breaking (e.g., Entrepreneur.com, 2021). Academic research provides some support for such sentiments. For example, individuals who show rule-breaking tendencies early in life are more likely to become entrepreneurs later in life compared to those who do not show such tendencies (Fairlie, 2002; Zhang & Arvey, 2009), and individuals with traits related to rule-breaking (e.g., illicitness), achieve better entrepreneurial outcomes (e.g., higher incomes) than those low in such traits (Arend, 2016; Levine & Rubinstein, 2017). Overall, a strong message directed at prospective entrepreneurs is that entrepreneurs tend to be “rule-breakers” and that those with rule-breaking tendencies will make successful entrepreneurs.

However, while academic research broadly supports the notion that entrepreneurs are rule-breakers, until recently, researchers have paid little attention to clarifying i) what is meant by rule-breaking in the entrepreneurial context, ii) *when* rule-breaking leads to positive outcomes, and iii) what causes entrepreneurs to break rules in discrete situations. Most empirical work on this topic has explored associations among deviant traits and rule-breaking tendencies (e.g., Fairlie, 2002; Levin & Rubinstein, 2017) and are thus informative for identifying *who* is likely to become an entrepreneur but provide little insight into when and how rule-breaking can benefit entrepreneurs. Consequently, it remains unclear whether and how rule-breaking behaviours impact entrepreneurial outcomes, why some entrepreneurs break more rules than others, and what causes entrepreneurs to break rules across varied situations.

While empirical researchers have not thoroughly explored the causes and outcomes of

entrepreneurial rule-breaking, recent conceptual work has started to make some progress in this area (e.g., Elert & Henrekson, 2016; Lucas, Fuller, & Packard, 2022; Sottini & Cannatelli, 2022; Zhang et al., 2022). In particular, Zhang et al., (2022) proposed a theory of entrepreneurial rule-breaking that focuses on a cognitive construct termed Constructive Rule Beliefs. Defined briefly as the subjective view that rules are imperfect and therefore flexible, constructive rule beliefs theoretically makes individuals more open to breaking contextually problematic rules in the context of entrepreneurial goal attainment. The theory also proposes that entrepreneurs with such beliefs will tend to be more effective than those without such beliefs, based on being open to breaking rules that represent a barrier to goal attainment. As yet however, the theory has not been tested, and the relevance of constructive rule beliefs to entrepreneurial rule-breaking has not been explored.

#### 6.4.1. The present study

Drawing from Zhang et al.'s (2022) rule beliefs theory of entrepreneurial rule-breaking, the purpose of the present study is to examine whether constructive rule beliefs has a causal impact on entrepreneurial rule-breaking. Specifically, the present study addresses two major research questions: (1) whether constructive rule beliefs play a causal role in formal rule-breaking in the entrepreneurial context, and (2) whether entrepreneurs are more likely to engage in formal rule-breaking than non-entrepreneurs. To respond to calls for greater use of experimental methods in entrepreneurship research (e.g., Stevenson, Josefy, McMullen, & Shepherd, 2020; Williams, Wood, Mitchell, & Urbig, 2019), the present study involved a preregistered online experiment containing two entrepreneurial tasks. A pilot studies was conducted to ensure ecological validity.

We believe the current study will contribute to theory by providing an explicit test of a newly proposed theoretical cause of rule-breaking amongst entrepreneurs (i.e., constructive rule beliefs), and therefore add to knowledge on entrepreneurial rule-breaking. We also believe it will challenge existing assumptions about entrepreneurial rule-breaking, in that Zhang et al.'s (2022) theory posits that rule-breaking amongst entrepreneurs stems primarily from morally evolved thinking about rules (i.e., constructive rule beliefs), rather than deviant traits. The study will also contribute to practice, by exploring a potential cause of entrepreneurial success that, according to Zhang et al., (2022), is something that can be developed within entrepreneurs.

#### 6.4.2. Theories of entrepreneurial rule-breaking

Recently, several theoretical approaches have been put forward that approach the phenomenon of entrepreneurial rule-breaking from different angles. Most of these approaches consider rule-breaking through a macro-lens and focus on drivers of rule-breaking at the group, national or population level. For example, Lucas, Fuller, and Packard's (2022) theory of regulatory governance and rule-breaking entrepreneurial action views entrepreneurial rule-breaking as being dependent on rule enforcement and rule subjectivity. The authors posit that imperfect regulatory enforcement spurs black market rule-breaking (i.e., blatant legal violations) and interpretative subjectivity of regulations gives rise to grey market rule-breaking (i.e., skirting application of rules). Similarly, Elert and Henrekson's (2016) theory of evasive entrepreneurship postulates that institutional contradictions (i.e., ambiguous, inconsistent or absent rules) spur evasive entrepreneurship (i.e., rule-breaking).

Only two theories have focused on entrepreneurial rule-breaking through a micro-lens and focus on individual-level drivers and outcomes of rule-breaking. One such account is



Sottini and Cannatelli's (2022) theory of institution divergence. The theory entails a framework of trait precursors of both informal and formal rule-breaking where informal rule-breaking is defined as nonconformity to group expectations (based on Kaplan & Kaplan, 1980) and formal rule-breaking is defined as resistance to bureaucratic structures and rules (based on Longenecker, McKinney, & Moore, 1988). According to this theory, risk propensity in entrepreneurs leads them to breaking legal rules and self-enhancement drives informal rule-breaking.

The second theoretical account of entrepreneurial rule-breaking with an individual-level focus is Zhang et al., (2022) theory centred around constructive rule beliefs. As briefly described earlier, Zhang et al., proposed that constructive rule beliefs was an important individual-level driver of entrepreneurial rule-breaking. Constructive rule beliefs was defined as a cognitive construct underlying people's general beliefs about formal rules, and themselves in relation to these rules. Constructive rule beliefs was said to vary between people, such that an individual's level of constructive rule beliefs can range from low (i.e., the tendency to view rules as primarily static, vertical, and fixed) to high (i.e., the tendency to view rules as dynamic, horizontal, and contextual) and described as relatively stable and not bounded by context or specific rules (Zhang et al., 2022). Building upon constructive rule beliefs, the authors introduced a theoretical model of entrepreneurial rule-breaking which posits that entrepreneurs high in constructive rule beliefs are more open to formal rule-breaking when rule-breaking assists with goal attainment, and that this rule-breaking behaviour can be triggered when entrepreneurs are cognisant of high compliance costs or opportunity-spurring institutional deficiencies.

An important aspect of Zhang et al.'s theory, and one that therefore warrants testing, is their suggestion that rule-breaking can stem from morally evolved, rather than morally corrupt thinking. This suggestion differs from alternative accounts of individual-level drivers of entrepreneurial rule-breaking, which tend to attribute the phenomena to traits associated with deviance, such as nonconformity, illicitness, risk propensity, and self-enhancement (e.g., Levin & Rubinstein, 2017; Sottini & Cannatelli, 2022; Zhang & Arvey, 2009). In proposing constructive rule beliefs as cause of rule-breaking, Zhang et al., (2022) challenged this view of entrepreneurial rule-breakers as individuals who are necessarily morally corrupt, to those who simply think more deeply about the efficacy and appropriateness of rules across discrete situations, when such rules impinge upon their professional goals.

#### 6.5. Theory and hypotheses

As outlined earlier, the purpose of this study is to test whether, consistent Zhang et al.'s theory, constructive rule beliefs play a causal role in triggering formal rule-breaking in the entrepreneurial context. As a secondary purpose of the current study, we also sought to determine whether entrepreneurs are more likely to engage in formal rule-breaking than non-entrepreneurs. Regarding this secondary question, while research suggests that those with rule-breaking tendencies are more likely to become entrepreneurs than others (e.g., Levin & Rubinstein, 2017; Sottini & Cannatelli, 2022; Zhang & Arvey, 2009), it is not clear whether entrepreneurs are more open to breaking formal rules than non-entrepreneurs, and can really be considered "rule-breakers". To answer the two research questions, we developed two specific hypotheses, primarily drawing from on Zhang et al.'s (2022) theory – and consequently providing an initial test of the theory – while also drawing from elements of other theories. In

this section, we discuss the theoretical foundations that lead to the two hypotheses.

#### 6.5.1. Constructive rule beliefs and rule-breaking.

Zhang et al.'s (2022) theory of entrepreneurial rule-breaking posits that constructive rule beliefs plays a causal role in people's openness to rule-breaking. Accordingly, different levels of constructive rule beliefs in entrepreneurs explain why, under similar conditions, some entrepreneurs are more likely than their peers to break formal rules in the presence of contextual triggers. Contextual triggers involve salient rule circumstances, for example, where entrepreneurs face stifling high compliance costs of formal rules or see business opportunities arising from institutional deficiencies. These contextual triggers align with Brenkert (2009), and Elert and Henrekson, (2016) which Zhang et al., drew from in developing their theory.

Of primary importance to our first research question, Zhang et al., (2022) proposed that increased levels of constructive rule beliefs in people increases the likelihood of goal-directed rule-breaking behaviour. They reasoned that people with increased levels of constructive rule beliefs are more likely to view rules as imperfect; they are more likely to view rules as dynamic and/or contextual, and recognise that the conditions upon which rules are made change both temporarily and spatially. Changes in conditions can render existing rules no longer effective or in contradiction with local conditions (Boettke, Coyne, & Leeson, 2008). Because people with increased levels of constructive rule beliefs are more likely to view rules as horizontal—that is, they see themselves as legitimate constituents and active agents in rule systems rather than passive recipients of rules—they are more likely to question and challenge rules that are illegitimate or ineffective. Similarly, they are more open to breaking rules if incremental steps

(i.e., questioning and challenging) do not work. For the present study, we investigate whether an experimental manipulation designed to temporarily increase constructive rule beliefs in participants, would cause changes in people's rule-breaking behaviour. We explicitly test whether constructive rule beliefs causes rule-breaking behaviour *only* in the context of broader entrepreneurial goals; we do not expect constructive rule beliefs to cause higher levels of rule-breaking more broadly.

This leads to our first hypothesis:

*H1: Participants exposed to a constructive rule beliefs manipulation (experimental group) will report greater goal-related rule-breaking in a laboratory task relative to those participants who do not receive a constructive rule beliefs manipulation (control group).*

#### 6.5.2. Entrepreneurial status and rule-breaking

Are entrepreneurs really more open to rule-breaking, on average, than non-entrepreneurs? While none of the theories of entrepreneurial rule-breaking directly speak to this question, we make two arguments as to why rule-breaking should be elevated in entrepreneurs. First most theoretical accounts of entrepreneurial rule-breaking posit potential benefits from breaking rules. For example, Zhang et al., (2022) argue that rule-breaking can assist with goal-attainment in entrepreneurs, particularly when entrepreneurs have a paradox mindset, and Lucas et al., (2022) argue that many forms of entrepreneurship are based on rule-breaking at their very outset. Given that being open to rule-breaking may afford benefits to entrepreneurs, our first argument is based on *selection* and *attrition* processes. Regarding selection, we argue that those open to rule-breaking will be more likely to consider, and ultimately engage in entrepreneurial activities that capitalise off different forms of rule-breaking (e.g., evasive

entrepreneurship, Elert & Henrekson, 2016). Since a substantial portion of entrepreneurial opportunities involve some form of rule-breaking at the outset (Elert & Henrekson, 2016, Lucas et al., 2022), there will be an initial selection effect such that only certain individuals will consider starting a business that capitalises off rule-breaking. Regarding attrition, we suggest that those not open to rule-breaking will be more likely leave the profession. Consistent with Zhang et al., (2022), we argue that those with a strict commitment to rule following will face more barriers to goal attainment, be less likely to have success in the short and long term, and consequently less likely to persist in their endeavours. This attrition of non rule-breakers from entrepreneurial endeavours will mean that successful entrepreneurs will tend to be more open to rule-breaking relative to the broader population.

*H2: Participants who self-report as entrepreneurs will engage in more rule-breaking in a laboratory task relative to those who do not self-report as entrepreneurs.*

In addition to the two main hypotheses, we are also interested in whether the effect of the rule beliefs manipulation (relevant for H1) will be stronger for entrepreneurs compared to non-entrepreneurs (or vice versa) in terms of its effect on rule-breaking behaviour. Given our factorial design this question will automatically be assessed with our factorial ANOVA.

While none of the various theories we have considered allows us to make predictions regarding this research question, we are interested to test this relationship.

## 6.6. Method

### 6.6.1. Research design

The study adopted a 2 x 2 between-subjects experimental design. The first independent variable was a manipulated variable termed constructive rule beliefs condition, with two levels

(experimental condition vs control condition). The second IV was a participant variable, entrepreneurial status, with two levels (entrepreneur versus non-entrepreneur). The DV was rule-breaking behaviour based on multiple decision-making tasks from two entrepreneurial scenarios.

### 6.6.2. Pilot study

The main study involved participants reading two entrepreneurial scenarios and then deciding whether to follow or break a set of formal rules. To ensure that the scenarios, which would form the basis of the laboratory task, were ecologically valid, we conducted a pilot study with subject matter experts. (The pilot study utilised a convenience sample of twelve entrepreneurs and corporate managers who were invited to participate in the online experiment and provide feedback. Following Grégoire, Binder, and Rauch's (2019) advice on assessing the ecological validity of the entrepreneurial scenarios forming the laboratory tasks, we asked participants to indicate the extent to which the materials resembled real entrepreneur's work, based on a 7-point scale (1=not at all, 7=extraordinarily). Among the five participants who provided feedback on the ecological validity, all scored 5 (to a good extent) or above. This indicates that the two hypothetical scenarios were good reflections of real entrepreneurial work. Qualitative feedback from participants was used to further refine the materials.

### 6.6.3. Main study

#### 6.6.3.1. Sample

The final sample for the main study consisted of 418 participants. A power analysis (using G\*Power) indicated that a sample of 370 is required to detect a medium effect size ( $f = 0.25$ ) with 0.95 power at a significance level (alpha) of  $p = 0.01$ . Participants were recruited

via the online panel Prolific. Participants consisted of entrepreneurs and salaried professionals (entrepreneurs: 205; salaried professionals: 213) who were U.S. based and at least 18 years old at the time of participation. Pre-screening criteria were applied for the recruitment of the entrepreneur group and the salaried professional group. For the entrepreneur group, participants were sampled from the pool where Prolific users self-reported “Entrepreneurship: I’m currently doing this.” In their occupation information. For the non-entrepreneur group, participants were sampled from the pool where Prolific users self-reported “Full-time” or “Part-time” in their employment status information. Procedure

Entering the survey, participants were asked two qualifying questions. Participants were disqualified if they were below 18 years old, unemployed, retired, or students. Remaining participants were randomly assigned to the constructive rule beliefs or control condition via the Qualtrics embedded randomisation function, whereby they were either exposed to a task designed to enhance their constructive rule beliefs levels (experimental condition) or a filler task (control condition). Participants were then asked to complete the laboratory task which involved reading two entrepreneurial scenarios, and asked to make series of decisions potentially involving rule-breaking based on the two entrepreneurial scenarios. Following this, participants completed a survey which measured levels of constructive rule beliefs along with several demographic questions prior to completing and submitting the survey.

*Manipulation of constructive rule beliefs.* The manipulation was performed by presenting participants with a written paragraph (305 words) on the “purposes and shortcomings” of rules. Participants were told to read the text carefully because a number of questions related to the text would follow. In the text, it was argued that sometimes it was more ethical to

negotiate, bend, or break a formal rule than following the rule based on a set of detailed arguments (see supplementary materials). The manipulation targeted the core facet of constructive rule beliefs termed “rule relativity beliefs” which previous research demonstrates correlates with rule-breaking behaviour (Zhang et al., 2022). Once participants had read the manipulation text, they progressed to the next page of the survey where they were given a list of eight statements and asked to select at least three “true” statements from the list based on the text they read.

*Manipulation check.* A manipulation check was conducted to determine if the manipulation was effective at increasing constructive rule beliefs levels in participants in the experimental condition. This was done by measuring constructive rule beliefs levels in both experimental groups shortly after the manipulation. Constructive rule beliefs was measured using the constructive rule beliefs scale (Zhang et al., 2023), which has a two-factor structure and comprised 20 items. Factor 1, labelled *rule relativity beliefs*, contained 10 items which measured participants’ beliefs about the extent they believe that formal rules should guide behaviour (e.g. rules are so important to society that people should even follow rules they disagree with). Factor 2, labelled *rule purpose beliefs*, also contained 10 items which measured beliefs about key properties of ideal formal rules, such as purpose and procedural legitimacy (e.g. Formal rules should serve a purpose).. As expected, independent *t* tests found significant differences between the two conditions for rule relativity beliefs (experimental group:  $M = 4.37$ ;  $SD = .89$ ; control group:  $M = 2.84$ ;  $SD = 1.02$ ;  $t(416) = -5.60$ ,  $p < .001$ ) and no significant differences between the two conditions for rule purpose beliefs (experimental group:  $M = 5.68$ ;  $SD = .68$ ; control group:  $M = 5.65$ ;  $SD = .76$ ;  $t(416) = -5.60$ ,  $p = .71$ ).



*Control condition.* Participants in the control condition were asked to complete a brief memory task, whereby they were presented with a short text about Earth and the Solar System. Participants were then asked to select two true statements from a list of eight items (e.g., “most of the water on Mars is frozen”, “saltwater oceans cover more than two-thirds of the Earth’s surface”). The control task was designed to be a similar length to the manipulation task.

#### 6.6.3.2. Laboratory task

After completing the manipulation or control task, participants were then presented with the laboratory task which involved reading two detailed, entrepreneurial scenarios, whereby they took on the role of an entrepreneur and were asked to decide how likely they would be to break a contextually problematic formal rule under a set of varied conditions. Participants were instructed to read the scenarios carefully and told that several questions based on the scenario would follow. The first scenario occurred in a hypothetical startup which provided insurance companies with outsourced expert reviews for dental surgeries. Participants were required to make a range of rule-breaking decisions regarding the “experts” they outsourced provide the reviews given a varied set of circumstances (e.g. the use of readily available graduate students rather than unavailable faculty staff). The second scenario was embedded in a hypothetical smart-wear start-up which was launching a flagship product to EU markets. It was undergoing final procedures of CE mark certification for the product, which was important to its success in EU markets. For this scenario participants were to make a range of rule-breaking decisions regarding whether to put the CE mark on the product at the expo, again under several conditions. Please see supplementary material for more detail about scenarios.

### 6.6.3.3. Variables and measures

#### *Independent variables (IVs)*

The first IV, entrepreneurial status, was a quasi-IV involving two levels: entrepreneurs versus non-entrepreneurs. Working status was utilised as a pre-screening criterion for the recruitment of non-entrepreneur participants to screen out unemployed, retired and student participants. This was to ensure that participants in both groups had comparable levels of experience and familiarity with the two entrepreneurial scenarios. The second IV, constructive rule beliefs manipulation, also had two levels: experimental condition (i.e. elevated constructive rule beliefs) vs control condition (non-elevated constructive rule beliefs).

#### *Dependent variable (DV)*

The dependent variable, entrepreneurial rule-breaking, was measured using 4 different indicators. The first was a composite measure of rule-breaking, based on participant responses to 4 rule-breaking questions based on scenario 1 (DV1). The second was a composite measure of rule-breaking, based on participant responses to 6 rule-breaking questions based on scenario 2 (DV2). Consistent with the type of rule-breaking constructive rule beliefs should cause, these individual questions referred to goal-conducive rule-breaking, such that participants were asked their likelihood of breaking a certain rule in a given situation (e.g. "how likely will you break rule X under condition Y") from "extremely unlikely (1) to extremely likely (7)". In each of these questions, rule-breaking served a clear and salient purpose conducive to overall business goals (e.g., saving the business, gaining critical resources, or helping patients). Composite measures were used to create reliable measures of rule-breaking for each scenario and reduce type 1 error rate (see Churchill Jr.,

1979; Song, Lin, Ward, & Fine, 2013).

The third (DV3) and fourth (DV4) indicators, were single-item binary DV's. DV3 was a binary variable based on a behavioural item in Scenario 1, and DV4 was a binary variable in Scenario 2 (i.e., "All things considered, will you break rule X? (1) No (2) Yes"). These two DVs were used as secondary tests of hypotheses. They were included because they required participants to make a clear decisions (i.e. will you break the rule) as opposed to rating their likelihood of rule-breaking in the items comprising the composite measures. See Table 12 for the detail of the four DVs.

Table 12. Dependent variables and measures

<b>DV</b>	<b>Scenario</b>	<b>Description</b>
<i>DV<sub>1</sub></i>	1 (Dental)	<p>Composite variable based on the below four individual variables:</p> <ol style="list-style-type: none"> <li>1) How likely are you to accept Cynthia's proposal?</li> <li>2) How likely would you be to accept Cynthia's proposal if reneging on this contract would likely cause your business to fail?</li> <li>3) In your opinion, it is justifiable to accept Cynthia's proposal if doing so would mean that dental patients would not receive delayed dental treatment.</li> <li>4) How likely would you be to accept Cynthia's proposal if reneging on this contract meant that a large number of dental patients received delayed treatment?</li> </ol>
<i>DV<sub>3</sub></i>	1 (Dental)	<p>Binary variable based on the below behavioural item:</p> <p>All things considered, will you accept Cynthia's proposal? (1) No (2) Yes.</p>
<i>DV<sub>2</sub></i>	2 (CE mark)	<p>Composite variable based on the below six individual variables:</p> <ol style="list-style-type: none"> <li>1) How likely are you to put the CE mark on "D-Tect" for the expo?</li> <li>2) How serious an issue do you consider putting the CE mark on "D-Tect"?</li> </ol>

- 
- 3) Do you agree that putting the CE mark on “D-Tect” earlier than its official certification is breaking a formal rule and should not be considered regardless of its benefits or consequences?
  - 4) Do you agree that it is justifiable to put the CE mark on “D-Tect” a bit earlier than its official certification as long as the overall benefits of doing so outweigh the potential harms caused by it?
  - 5) How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if the presence of the CE mark increases your chances of securing funds from AlpesV?
  - 6) How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if it means that the success of “D-Tect” will ultimately translate into better health outcomes for consumers sooner?

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*DV<sub>4</sub>* 2 (CE mark)

Binary variable based on the behavioural item:

All things considered, will you put the CE mark on "D-Tect" at the expo? (1) No (2) Yes.

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## *Other*

In addition to demographics (e.g., age, gender, education) we also included one rule-breaking question for each scenario whereby rule-breaking was either not conducive to business goals, or its effect would only be negligible (e.g., for Scenario 1: “How likely would you be to accept Cynthia’s proposal if renegeing on this contract only had a minor impact on your businesses’ overall performance?). The purpose of including these items was to assess whether, as theorised by Zhang et al., (2022), constructive rule beliefs influences only goal-related rule-breaking and not rule-breaking behaviour more broadly.

### 6.6.4. Open Science Framework (OSF) registration

We registered on OSF the design and key information of our experiment study, which included design plan, sampling plan, variables and analysis plan. Click the link <https://osf.io/vkat8> to see the full information of the registration. All hypotheses tested here were specified in the preregistration and all IV’s and DV’s are as described in the pre-registration.

## 6.7. Results

### 6.7.1. Data cleaning and descriptives

Prior to the main analyses, preliminary analysis was first conducted to clean the data. Several criteria were used to select out the inattentive participants from the main analyses. These included failed attention checks for two times or more, incomplete data (<95%), outliers with extreme large values for Mahalanobis distance, reported country of residence other than U.S., and patterns in the data implying inattention and low efforts (e.g., many consecutively identical responses). As a result, 44 participants were screened out and 418

participants were retained from the main analyses.

Table 13 reports the mean, standard deviation, and correlations for all variables. The constructive rule beliefs manipulation was positively related with the main DVs (i.e., the two composite outcome variables) and this observed relationship was consistent in both scenarios and in both entrepreneur and salaried professional groups. The constructive rule beliefs manipulation was positively related to the secondary DVs (i.e., the two binary outcome variables) in the entrepreneur group but no relationship between the two variables was found in the salaried professional group. Age was negatively related to all DVs and this relationship was consistent in both entrepreneur and salaried professional groups.

Table 13. Main study descriptive statistics and correlations

Variables	Mean	S.D.	1	2	3	4	5	6	7	8
Entrepreneurs ( $n_1 = 205$ )										
1. Constructive rule beliefs			1.00							
2. Rule-breaking tendency (composite DV1)	3.77	1.64	0.11	1.00						
3. Rule-breaking tendency (composite DV2)	3.33	1.48	0.12	0.54	1.00					
4. Rule-breaking tendency (binary DV3)	1.42	0.50	0.11	0.75	0.48	1.00				
5. Rule-breaking tendency (binary DV4)	1.30	0.46	0.14	0.40	0.76	0.45	1.00			
6. Age	36.66	12.12	0.01	-0.20	-0.26	-0.15	-0.17	1.00		
7. Education			0.11	0.06	-0.08	0.01	-0.02	0.14	1.00	
8. Gender			0.03	0.01	-0.10	0.03	-0.08	-0.05	0.01	1.00
Salaried professionals ( $n_2 = 213$ )										
1. Constructive rule beliefs			1.00							
2. Rule-breaking tendency (composite DV1)	3.83	1.47	0.14	1.00						
3. Rule-breaking tendency (composite DV2)	3.49	1.35	0.16	0.49	1.00					



4. Rule-breaking tendency (binary DV3)	1.46	0.50	0.02	0.71	0.28	1.00				
5. Rule-breaking tendency (binary DV4)	1.38	0.49	0.02	0.23	0.73	0.14	1.00			
6. Age	32.75	10.43	-0.05	-0.18	-0.35	-0.13	-0.26	1.00		
7. Education			0.03	-0.02	-0.01	-0.07	0.01	0.07	1.00	
8. Gender			0.00	0.01	-0.02	-0.05	-0.05	-0.01	-0.02	1.00

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Note: Total sample size:  $N = 418$

Constructive rule beliefs was the categorical IV representing the experiment condition based on which participants were randomly assigned to the primed and unprimed constructive rule beliefs groups.

Composite DV1 was the mean score of 4 individual outcome variables in Scenario 1, based on a 7-point Likert Scale. See detail of the individual outcome variables in Table 1.

Composite DV2 was the mean score of 6 individual outcome variables in Scenario 2, based on a 7-point Likert Scale. See detail of the individual outcome variables in Table 1.

Binary DV3 and DV4 were the behaviour-oriented outcome variable in Scenario 1 and 2.

Age was a continuous variable between 18 and 80.

Gender was a categorical variable consisting of 4 categories: (1) Male, (2) Female, (3) Non-binary / third gender, (4) Prefer not to say.

Education was a categorical variable asking for participant highest level of education which consists of 5 levels: (1) High school or below, (2)

Associate college degree or diploma, (3) Bachelor's degree, (4) Master's degree, (5) PhD or a professional doctorate.

## 6.7.2. Hypothesis testing

### 6.7.2.1. Hypothesis 1

The main tests of H1 were conducted using two one-way ANCOVAs. Age was found to be a significant predictor of entrepreneurial rule-breaking in both scenarios, so it was added as a control variable in the main analyses. In both scenarios, ANCOVAs revealed that entrepreneurial rule-breaking was higher for those in the experimental group than those in the control group (Scenario 1:  $F(1, 415) = 6.073, p = .014, \text{partial } \eta^2 = .014$ ; Scenario 2:  $F(1, 413) = 7.908, p = .005, \text{partial } \eta^2 = .019$ ). The results remained highly significant when the analyses were run without the control variable, and thus, analyses indicate that the manipulation was effective at enhancing rule-breaking amongst those in the experimental condition. Thus, H1 was supported in both scenarios.

*The Impact of constructive rule beliefs on non-goal-oriented rule-breaking.* To assess whether the constructive rule beliefs manipulation only influenced rule-breaking in the context of clear goal-related benefits, we re-ran ANCOVAs but replaced the DV's with rule-breaking items that were not conducive to business goals (e.g., for scenario 1; "How likely would you be to accept Cynthia's proposal if renegeing on this contract only had a minor impact on your business' overall performance?"). Consistent with predictions derived from Zhang et al., (2022) we found no significant differences between the experimental and control condition in these analysis (Scenario 1:  $F(1, 415) = .104, p = .747, \text{partial } \eta^2 = 0$ ; Scenario 2:  $F(1, 415) = .100, p = .752, \text{partial } \eta^2 = 0$ ).

*Secondary tests for rule-breaking tendencies.* To assess whether the constructive rule beliefs manipulation impacted participants responses on the behavioural measures of overall

rule-breaking in each scenario (see table 1) two Binary Logistic Regressions were conducted. In Scenario 1, a significant overall relationship was found between constructive rule beliefs manipulation, control variables, and participant rule-breaking behaviour ( $df = 9, N = 418, \chi^2 = 17.66, p = .04$ ). However no significant effect was found for the constructive rule beliefs manipulation specifically ( $Exp(B) = 1.28, p = .23$ ). In Scenario 2, a significant overall relationship was again found between constructive rule beliefs manipulation, control variables, and rule-breaking behaviour ( $df = 9, N = 418, \chi^2 = 36.40, p < .001$ ) with the rule-breaking manipulation being significant ( $Exp(B) = 1.44, p = .043, \text{one-tailed}$ ). Compared with the control group participants therefore, participants in the constructive rule beliefs manipulation group were 44% more likely to choose the rule-breaking option. Although the test results on the binary DVs were mixed, it is consistent with the earlier, non-goal-oriented analyses, in that when it is *unclear* if rule-breaking is conducive to entrepreneurial goals (i.e., the binary question regarding scenario 1), high levels of constructive rule beliefs *unnecessarily* results in increased likelihood of rule-breaking.

#### 6.7.2.2. Hypothesis 2

Two ANCOVA analyses were performed to test Hypothesis 2. The first analysis tested for whether entrepreneurs engaged in higher levels of goal-directed entrepreneurial rule-breaking (i.e., rule-breaking that supports at least one entrepreneurial goal) than salaried professionals in Scenario 1 and the second ANCOVA tested for group differences in Scenario 2. Age was included in the ANCOVA analyses because initial tests suggested that age had a significant effect on participant rule-breaking tendencies. ANCOVA tests found no significant effect of entrepreneurial status on participant rule-breaking tendencies in both scenarios after

controlling for the effect of age (Scenario 1:  $F(1, 413) = .195, p = .659$ , partial  $\eta^2 = 0$ ;

Scenario 2:  $F(1, 413) = .003, p = .957$ , partial  $\eta^2 = 0$ ). Results did not change when age was not controlled.

Similarly, binary logistic regression analyses on the binary DVs found no significant relationship between participants' entrepreneurial status and their rule-breaking behaviour (Scenario 1:  $df = 1, p = .827, Exp(B) = 1.045$ ; Scenario 2:  $df = 1, p = .511, Exp(B) = 1.155$ ). H2 was consistently not supported in both scenarios. Consistent with the main DVs, it suggests that entrepreneurial status did not influence participant rule-breaking tendencies.

#### 6.7.2.3. Exploratory analysis

In addition to the two hypotheses, we were interested in whether the constructive rule beliefs manipulation would have a differential impact on entrepreneurs compared with non-entrepreneurs in terms of its effect on hypothetical rule-breaking behaviour. Two-way ANCOVA analyses were performed in SPSS to analyse the effect of constructive rule beliefs manipulation and entrepreneurial status on participant rule-breaking tendencies. Tests results revealed that there was not a statistically significant interaction between the effects of constructive rule beliefs manipulation and entrepreneurial status  $F(1, 411) = .004, p = .947$ .

### 6.8. Discussion and conclusion

#### 6.8.1. Key findings

The purpose of the present study was to conduct an experiment to (1) determine whether constructive rule beliefs does play a causal role in entrepreneurial rule-breaking, and (2) investigate whether entrepreneurs are indeed more likely to break formal rules than non-entrepreneurs. Our study has two key findings. First, consistent with the first hypothesis,

constructive rule beliefs was found to have a causal influence on participants' rule-breaking tendencies in an experimental task. Participants who were exposed to a constructive rule beliefs manipulation reported higher scores on composite measures of goal-conducive, entrepreneurial rule-breaking. As predicted, the constructive rule beliefs manipulation did not enhance general levels of rule-breaking (i.e., rule-breaking where there was no clear benefit to goal attainment). Second, no relationship was found between entrepreneurial status and rule-breaking tendencies; that is, entrepreneurs were not more likely to break formal rules when compared with non-entrepreneurs. Hence, H2 was not supported.

#### 6.8.2. Theoretical implications

The primary theoretical implication of the present study is that our findings support an untested, key component of Zhang et al.'s (2022) theory of rule-breaking: constructive rule beliefs within entrepreneurs play a causal role in triggering their rule-breaking behaviour in critical rule situations. Support for this aspect of Zhang et al.'s theory advances knowledge about entrepreneurial rule-breaking in numerous ways. First, there is now good evidence for the idea that constructive rule beliefs can account for why, under similar conditions, some entrepreneurs are more open to formal rule-breaking than their peers. Compared with other individual-differences based constructs that have been associated with rule-breaking (e.g., nonconformity, illicitness, risk propensity), our finding demonstrates a causal rather than predictive relationship, and therefore provides a partial explanation for rule-breaking. Second, our results challenge the prevalent notion that rule-breaking among entrepreneurs has a basis in deviant traits such as nonconformity and high risk-propensity (e.g., Fairlie, 2002; Levin & Rubinstein, 2017; Zhang & Arvey, 2009). Our finding that constructive rule beliefs

is a cause of entrepreneurial rule-breaking suggests that rule-breaking can stem from morally evolved rather than morally compromised thinking. And third, our results demonstrate that a broad cognitive variable regarding general rule beliefs is important for a range of entrepreneurial rule-salient situations. Compared to other cognitive predictors of rule-breaking (e.g., perceived legitimacy of formal rules; Murphy et al., 2009; Tyler, 2006) the causal impact of constructive rule beliefs is not limited to specific rules or specific situations, but rather formal rules *in general* that represent a potential barrier to entrepreneurial goal attainment and whereby breaking such rule-breaking is morally justifiable.

The theoretical implications related to our second hypothesis are less clear. We did not find support for the hypothesis that those who self-report as entrepreneurs will engage in more rule-breaking relative to those who do not self-report as entrepreneurs. This was in contrast to some other some empirical studies support that entrepreneurs are more likely to break rules than non-entrepreneurs (e.g., Arend, 2016). We offer two explanations for these non-significant results regarding hypothesis two. First it is possible that there are no differences between entrepreneurs and the general population in terms of openness to rule-breaking. While counterintuitive and contradictory to Arend's (2016) finding, the results in the present study may indicate that entrepreneurs – on average - are no more open to rule-breaking than non-entrepreneurs. It may simply be that entrepreneurs *appear* to be rule breakers because the entrepreneurial context is one that drives rule-breaking. Consistent with this, Zhang et al. (2022) posit that entrepreneurial rule-breaking is a rational behaviour occurring in entrepreneurs only when a set of conditions— including entrepreneurial goals, and salient rule circumstances—make it necessary and desirable.

Second, it is possible that there *are* differences between entrepreneurs and the general population in terms of openness to rule-breaking, but that we simply did not capture such differences in our study. There are several reasons as to why we may not have detected such differences in our study. One reason relates to effect size and power. While we had sufficient power to detect a medium effect size, it is possible that the difference amongst entrepreneurs and professionals represents only a small effect, in which case we lacked sufficient power to detect this difference. Indeed, we only utilised two scenarios to assess rule-breaking and it is possible that sampling more types of rule-breaking, and utilising a large number of participants would have revealed significant differences between the two groups.

### 6.8.3. Practical implications

Several implications for practice stem from the current set of findings. First, as rule-breaking in the entrepreneurial context can be driven by functional traits and cognitions - such as constructive rule beliefs—our findings reinforce messages from other researchers that, if used effectively, rule-breaking could benefit entrepreneurs in attaining their goals (e.g., Arend, 2016; Brenkert, 2009). However building on this message, our results highlight that constructive rule beliefs has a causal impact on goal-directed rule-breaking and therefore is something entrepreneurs could potentially target as a way to enhance their openness to breaking rules. In other words, seeking to develop constructive rule beliefs may be helpful to those entrepreneurs seeking strategies to improve their effectiveness under critical conditions, but are less open to formal rule-breaking, because compliance to rules is often taken for granted (e.g., Oliver, 1991). Such individuals could re-examine some of their fundamental assumptions about formal rules. They could ask themselves some questions in the context of

specific rule situations, for example, “*will following the formal rule contradict its underlying purpose or intent, when other contingencies are taken into account?*” (see Zhang et al., 2022).

Second, and building on the previous point, our findings suggest that constructive rule beliefs can be boosted temporarily with a relatively simple intervention. In the current study, simply having participants read a persuasive paragraph on the “purposes and shortcoming of rules” was sufficient to increase their scores on a measure of constructive rule beliefs relative to a control group. This has important practical implications because constructive rule beliefs, as a key cause of people’s openness to formal rule-breaking in certain instances, assists them to in achieving goals that would be difficult without openness to rule-breaking. We believe that if even a simple intervention like that used in the current study can enhance constructive rule beliefs, then it is likely that well designed interventions will have more robust and longer-term effects on constructive rule beliefs.

Finally, as noted previously, our findings challenge the notion in scholarly work as well as in the mainstream media that entrepreneurs are dispositional rule-breakers. This has implications for entrepreneurs, because it conflicts with the popular message directed prospective entrepreneurs that those with an affinity for deviant forms of rule-breaking may find success as entrepreneurs. We argue that promotion of entrepreneurial mindset based on deviance-based rule-breaking will channel entrepreneurial culture in a wrong direction and result in greater magnitudes of unproductive or destructive entrepreneurship. By challenging and correcting such a misleading message through empirical evidence, we provide a nuanced understanding of entrepreneurial rule-breaking and a key driver; in doing so we instead



advocate virtue-based and functional rule-breaking.

#### 6.8.4. Limitations and future research

We acknowledge several limitations in the present study. First, results of the present study are based on a U.S. sample. As rule beliefs are heavily influenced by culture (Gelfand, 2019), future research can test in varied cultures the causal link between constructive rule beliefs and rule-breaking tendencies. Second, data collection was conducted via *Prolific* and relied on self-identification as entrepreneurs/professionals and elements of data collection relied on self-report; this has inherent biases and limitations (Stone, Bachrach, Jobe, Kurtzman, & Cain, 1999). Third, results of the present study were based on one study. Future researchers could benefit from a multi-study and/or multimethod design.

In terms of potential future research, since entrepreneurial rule-breaking driven by constructive rule beliefs is posited to be rational and conducive to entrepreneurial goals, future research can test the relationship between constructive rule beliefs and specific and quantified performance in entrepreneurial tasks by modelling rule-breaking as a mediator. In addition, even though entrepreneurial context is charged by high levels of paradoxical tensions between rule-following and rule-breaking, constructive rule beliefs as a general construct, however, is not confined to the entrepreneurial context. Therefore, scholars can apply the lens of constructive rule beliefs to their rule-breaking investigations in highly regulated sectors—such as healthcare, education, financial services, and government—where excessive or contradictory rules can be problematic to practitioners' effectiveness and/or can spur value-creation activities *via* rule-breaking.

## 6.9. Conclusion

Although entrepreneurs are widely regarded as rule breakers, only limited research has explored whether entrepreneurs are indeed rule breakers, and what constitutes and causes rule-breaking in the entrepreneurial context. In this study, we drew from a recent theory of entrepreneurial rule-breaking and used an experiment to investigate whether constructive rule beliefs could be considered a cause of entrepreneurial rule-breaking. Consistent with our primary hypothesis, we found evidence for a causal impact of constructive rule beliefs on entrepreneurial rule-breaking. While we did not find differences among entrepreneurs and non-entrepreneurs in overall rule-breaking, our findings reveal that high levels of constructive rule beliefs in people increase their openness to breaking rules. We suggest that entrepreneurs may benefit from developing constructive rule beliefs, and consequently be open to breaking problematic rules in seeking to attain the entrepreneurial goals.

## CHAPTER 7. DISCUSSION AND CONCLUSION

### 7.1. Chapter overview

This chapter summarises key research findings from the previous chapters, then discusses the theoretical and practical implications, as well as opportunities for future research. In addition, the capacity of entrepreneurs as partially autonomous social actors and their two overarching goals—which provide a broad context to entrepreneurial action and was not captured in the previous chapters—is briefly discussed in the beginning of this chapter.

### 7.2. Entrepreneurial rule-breaking in entrepreneurs' general context

Entrepreneurial rule-breaking is a distinct entrepreneurial action embedded not only in specific rule situations but also in the general “being” and “doings” of entrepreneurs. These generalities are socially-constructed identities and capacities of entrepreneurs, as well as what drives them at fundamental levels across varied contexts and contingencies. The understanding of entrepreneurial rule-breaking is incomplete and myopic without this backdrop placed back in. Two important aspects are briefly discussed here.

*Entrepreneurs as partially autonomous social actors.* Moore (1972) conceptualised a semi-autonomous social field which has the capacity to generate its own rules and to build its internal order whilst being vulnerable to rules and forces emanating for the external world. Building on this idea, a social actor is perhaps the smallest unit in a semi-autonomous social field, as she/he is capable of making her own rules and maintaining an evolving internal order (e.g., values, beliefs, principles, which regularly guide her behaviour) yet still susceptible to the influence of rules and institutions external to them (see a related discussion of “partially autonomous actor in a contradictory social world” in Seo & Creed, 2002). The level of

autonomy afforded by a social actor—the ability to go by their own rules where external rules contradict internal rules—is partially dependent on their social and cognitive resources (Baluku et al., 2018; Castelfranchi, 2000; Fineman, 2000, 2016). Effective entrepreneurs may not have been born privileged, but they are rarely timid in making their autonomy claims.

*Two overarching goals of entrepreneurs.* Building a flourishing business from scratch is not for the fainthearted (Kuemmerle, 2002). For example, institutions often are the results of political bargains among different interest groups and coalitions, often reflecting the interests of actors with dominant powers in society (Brousseau et al., 2011; Fligstein, 1996). This power imbalance in shaping institutions is particularly pertinent to business laws and regulations, which constitute the rules of game for businesses and entrepreneurs. Markets are barely a level playing field. Being an entrepreneur—for those who start small and with marginal bargaining power, in particular—is really about just two things: surviving and thriving with limited resources. They may not have even remotely contesting powers to negotiate for preferred rules and institutions. Effective entrepreneurs, however, know their game or the “play of the game” (Aoki, 2010). To overcome constraints and outplay rivals, effective entrepreneurs use what is at hand, identify leverages, and transform inconspicuous things into strategic resources to create an advantage (e.g., Desa, 2012; Rasmussen et al., 2015).

Surviving and thriving are the two overarching goals in the documented entrepreneurial rule-breaking examples. The literature of institutional tensions and confrontations observed in emerging economies has provided numerous examples of survival-driven entrepreneurial rule-breaking. For example, to evade predatory state actors and stifling institutional rules, entrepreneurs in emerging markets use a range of rule-breaking strategies, including false

reporting, kickbacks (i.e., bribery), hiding assets by having two sets of accounts, and so on (Rodgers et al., 2022). The occurrence of entrepreneurial rule-breaking, however, is not limited to the presence of predatory state actors. It can also eventuate where formal rules do not reflect local conditions even though they are well intended (see examples in Cieslik et al., 2019, of entrepreneurial rule-breaking by farmer entrepreneurs in the Burundian microfinance programmes). Still, entrepreneurial rule-breaking can occur amid ample ambiguities during institutional transitions (see examples in Droege & Marvel, 2010, of entrepreneurial rule-breaking by Chinese entrepreneurs during the country's transitioning from central planning to market economy). As noted by the authors, "*Institutional transition was a second-order phenomena; survival was the first order*" (Droege & Marvel, 2010, p.218).

In addition to survival, entrepreneurs also actively seek rule-breaking opportunities, which lead them to a thriving business model and contributing to a flourishing society. Because of their unimaginable novelty, the new technologies and business model entrepreneurs create are often in tension with existing regulatory frameworks (Edelman & Geradin, 2015; Tatar et al., 2020). On one hand, tremendous consumer and social welfare have been created via breakthrough innovations; on the other hand, business laws and regulations were violated or evaded alongside the innovation. Examples are many. For instance, BitTorrent, a file-sharing technology, enabled platforms such as Pirate Bay to provide free music, movies, and content consumption to the public by exploiting institutional deficiencies and making digital copyright infringement commonplace (Elert & Henrekson, 2016). Wikipedia provides the world largest online reference system through open collaboration and uses the copyleft license to circumvent the copyright law (Safner, 2016). Sharing-economy companies, such as Uber and Airbnb, tap

into under-utilised private properties and generate substantial consumer surplus by evading the externality liabilities to which traditional traders are held legally accountable (Edelman & Geradin, 2015; Elert & Henrekson, 2016). In some instances, the violated or evaded business laws and rules by entrepreneurs via innovation are problematic as they are outdated, contradictory, or protect the interests of large corporations and incumbent firms, thus missing on social realities, impeding competition in markets, and hurting the common good (Edelman & Geradin, 2015). Other times, the violated or evaded laws and rules *per se* are not problematic. Rule-breaking is a merely strategic means to a legitimate end or a side-product for entrepreneurs to introduce new business models and technologies to outplay advantaged incumbent firms (see a related discussion on the legality and legitimacy of entrepreneurial action in Webb et al., 2009). Such violations and evasions can be rectified *ex post* and inform legal improvements (Edelman & Geradin, 2015). Either way, entrepreneurs are *self-empowered* to take risks, break rules, and disrupt markets without seeking for prior approval (Thierer, 2016). Such entrepreneurial rule-breaking instances can elicit the rethinking of institutional efficacies and induce institutional changes that better mirror new social conditions without thwarting the socioeconomic value created via rule-breaking and innovation (Pahlow & Teupe, 2021).

### 7.3. Research aims and scope

The overall research aims of the present thesis are to explore, theorise, and understand an under-researched aspect of entrepreneurial rule-breaking (i.e., functional entrepreneurial rule-breaking), its key drivers and outcomes, and how it may benefit entrepreneurs, policymakers, and society in certain instances. This thesis investigated the overarching issue of entrepreneurial rule-breaking by providing a new definition of entrepreneurial rule-breaking,

introducing a cognitive driver (i.e., constructive rule beliefs), proposing an integrative theory of entrepreneurial rule-breaking, then developing a constructive rule beliefs measure and empirically testing the key relationships outlined in the entrepreneurial rule-breaking theory.

This thesis focuses on formal rules instead of on informal rules or on both, as formal rule-breaking has more salient resource implications for entrepreneurs, and formal rule-breaking is more closely linked to critical decision-making, which is an important topic in business and management. While both individual and contextual factors have important influences on entrepreneurial rule-breaking, and were integrated in the proposed theory of entrepreneurial rule-breaking, the focal point was on the individual-level factors, as extant studies failed to adequately account for traits underlying functional entrepreneurial rule-breaking. Lastly, these well-considered focuses were based on the assumptions that entrepreneurs are rational economic actors in general, and entrepreneurial rule-breaking can involve economic and social rationality (i.e., reason-based evaluations) and decision-making in critical instances.

#### 7.4. Key research findings

The key findings of this research were reported in the literature review (Chapter 2 and 3) and the three papers, which included the development of an integrative entrepreneurial rule-breaking theory (Chapter 4), a scale development study of constructive rule beliefs (Chapter 5), and an online experiment study testing the relationships between entrepreneurial rule-breaking and hypothesised causes (Chapter 6).

Chapter 2 reviewed the predominant constructs and theories of rule-breaking in the broad literatures. Workplace deviance, constructive deviance, and prosocial rule-breaking are the three most widely researched constructs of workplace rule-breaking. Three broad categories of

factors were found to predict workplace rule-breaking: (1) actor's intrinsic factors, for example, agreeableness, neuroticism, extraversion, excitement seeking, anger, cognitive style, autonomy, risk propensity, empathy and conformity (e.g., Borry & Henderson, 2020; Dahling et al., 2012; Mackey et al., 2019); (2) environmental factors, such as organisational injustice and unethical climate, abusive supervision, leadership styles (e.g., Dahling et al., 2012; Hussain et al., 2014; Mackey et al., 2019); and (3) actor's perceptual and attitudinal factors, including job attitude, job satisfaction, and group attachment (e.g., Mackey et al., 2019; Vadera et al., 2013). While some predictors of workplace rule-breaking can be transcendental in varied contexts (e.g., actor's intrinsic factors), others are confined to the organisational boundaries. Even though some intrinsic predictors of workplace rule-breaking exhibit a high potential of relevance to the entrepreneurial context (e.g., openness, autonomy, cognitive style), no study was found on the relationships between these traits and entrepreneurial rule-breaking. Future research could benefit from comparisons of workplace rule-breaking and entrepreneurial rule-breaking precursors.

The three most influential theories in the institutions and sociology literatures were also examined to find out if they can shed a light on entrepreneurial rule-breaking: (1) strategic responses to institutional processes (Oliver, 1991), (2) anomie and microanomie theories (Durkheim, 1893, 1897; Konty, 2005), and (3) legitimacy theory of authorities and legal rules (Tyler, 2006). Drawing upon resource dependence theory and acknowledging a higher level of organisational discretion, the strategic responses theory provides a typology of organisational strategies eventuated by the paradoxical tensions between organisational goals and institutional constraints, much of which involves varied forms of organisational-level rule-breaking.



Accordingly, for an organisation, the decision whether/when/how to break a formal rule is driven by organisational goals and embodied in strategic agency. The anomie theory posits that rapid social changes as well as institutional voids and ambiguities account for high rates of crimes, suicides, and other forms of social unrest (Cullen et al., 2014; Durkheim, 1893, 1897). Konty's (2005) theory of microanomie posits that deviant behaviours are caused by the imbalance between social and self-interests in individuals. Tyler's (2006) legitimacy theory posits that people's beliefs about the legitimacy of authorities and rules is an important intrinsic precursor to their self-enforced compliance. When the perceived legitimacy is absent, people are more likely to break rules. One informative commonality identified among these constructs and theories of rule-breaking is that they all acknowledge that rule-breaking is an outcome of both individual and environmental factors. However, limited by either the level of analysis or the contextual relevance, none of them can be readily applied to the explanation of the individual-level mechanisms underlying entrepreneurial rule-breaking.

Chapter 3 analysed the extant entrepreneurial rule-breaking studies through a scoping review to discover how they fared collectively in building a body of knowledge of entrepreneurial rule-breaking. Relevant studies (conceptual, qualitative, and quantitative) were examined based on the following criteria: (1) rule-breaking was central to the investigation or was a key concept/construct in the study, (2) rule-breaking occurred in the entrepreneurial context, and (3) individual-level mechanisms of rule-breaking were investigated. 25 studies were found and analysed. Results revealed that entrepreneurial rule-breaking comprises a small body of literature, fragmented in general. However, the increasing number of entrepreneurial rule-breaking studies over the past decade implies that scholarly interest in this topic is gaining

momentum.

Several similarities, contradictions, and points of divergence in the extant entrepreneurial rule-breaking literature are informative to this thesis. First relates to the nature of the entrepreneurial rule-breaking. It has been mostly treated as an unethical and dysfunctional behaviour that has roots in deviance (e.g., Aidis & van Praag, 2007; Alonso et al, 2020; Fairlie, 2002; Lundmark & Westelius, 2019; Sottini & Cannatelli, 2022). This assumption is problematic because it ignores the positive potential of entrepreneurial rule-breaking, and as a result promotes a culture where rule-breaking is loathed and discouraged *by default*. Several recent conceptual articles and editorials, instead, suggested that in certain instances entrepreneurial rule-breaking can be legitimate and beneficial to entrepreneurs and society (e.g., Brenkert, 2009; Dey, 2016; Elert & Henrekson, 2016; Rindova et al, 2009). This constitutes a major contradiction in the entrepreneurial rule-breaking literature that has been inadequately addressed. Currently, little is known about what drives legitimate and positive entrepreneurial rule-breaking, particularly at the individual level. The second relates to the approach taken towards the boundary conditions of entrepreneurial rule-breaking. One group focused on formal rule-breaking (e.g., Elert & Henrekson, 2016; Lucas et al, 2022) while the other included both formal and informal rule-breaking in their studies (e.g., Lundmark & Westelius, 2012; Obschonka et al, 2013; Sottini & Cannatelli, 2022). The rationale backing these two different approaches is unclear, as boundary conditions were sparsely discussed in their studies. The third pattern is related to the second. Due, in part, to different approaches to boundary conditions, inconsistencies in scholarly definitions of entrepreneurial rule-breaking were found. Some studies focused on a specific trait, behaviour, or experience (e.g., illicitness in Levine &

Rubinstein, 2017; drug dealing in Fairlie, 2002; corruption in Ufere et al., 2012; and illegal entrepreneurial experience in Aidis & Van Praag, 2007) while other studies involved a range of rule-breaking behaviours and left entrepreneurial rule-breaking undefined (e.g., Obschonka et al., 2013; Warren & Smith, 2015). Among the studies which did provide a definition of entrepreneurial rule-breaking, how it was defined is significantly different (e.g., Breslin & Wood, 2016; Cantner et al., 2017; Lucas et al., 2022; Zhang & Arvey, 2009). Fourth, consistent with the organisational behaviour literature, extant entrepreneurial rule-breaking studies suggests that entrepreneurial rule-breaking can be driven by both extrinsic factors, such as institutional contradictions, interpretative subjectivity, and imperfect enforcement of regulatory rules (Elert & Henrekson, 2016; Lucas et al., 2022), and intrinsic factors, such as self-enhancement and risk propensity (Sottini & Cannatelli, 2022). The intrinsic entrepreneurial rule-breaking drivers have been under-researched. Only one formal theory of entrepreneurial rule-breaking focuses on intrinsic drivers, which posits that self-enhancement leads to informal rule-breaking and risk propensity leads to legal rule-breaking (Sottini & Cannatelli, 2022). However, this theory is theoretically ambiguous and inadequate, as it fails to explicate why formal rule-breaking is not driven by self-enhancement and why informal rule-breaking is not driven by risk propensity. In sum, the entrepreneurial rule-breaking literature is fragmented in general and leaves a few important questions unanswered. For example, what is the nature of entrepreneurial rule-breaking, what is the key individual driver of positive entrepreneurial rule-breaking, how do intrinsic drivers interact with contextual factors to result in entrepreneurial rule-breaking, and when can entrepreneurial rule-breaking be beneficial to entrepreneurs?

Chapter 4 addressed the identified research gaps by first providing a definition of

entrepreneurial rule-breaking then an integrative theory of entrepreneurial rule-breaking. Centring on constructive rule beliefs, an integrative entrepreneurial rule-breaking theory was proposed to explain the key cognitive driver, contextual triggers, and an efficacy moderator. Consistent with Brenkert (2009) and other scholars who hold the view that in certain instances entrepreneurial rule-breaking can be beneficial to entrepreneurs and society, an ethically-neutral definition of entrepreneurial rule-breaking was proposed. entrepreneurial rule-breaking is defined as *a purposeful, discrete behaviour taken by entrepreneurs, aimed at alleviating the regulating powers of formal rules*. In addition, constructive rule beliefs was conceptualised as a key intrinsic driver of entrepreneurial rule-breaking. The conceptualisation of constructive rule beliefs was based on influential psychological theories (social cognitive theory, cognitive schema theory, and moral development) and modern democratic values (i.e., egalitarianism, constitutivism). Constructive rule beliefs denotes people's general beliefs about the instrumentality, purpose, and legitimacy of formal rules. People high in constructive rule beliefs tend to see formal rules as context-based guidance that should have legitimate purposes and procedures, and rule compliance as a voluntary choice based on moral reasoning, personal values, principles, and contextual demands. In addition, they regard themselves as constituents and accountable agents in the formation and evolution of formal institutions. High levels of constructive rule beliefs in individuals, however, do not necessarily translate into the occurrence of rule-breaking. Two contextual triggers—high compliance costs and identified business opportunities in institutional deficiencies—were identified to explain the activation of entrepreneurial rule-breaking in entrepreneurs stemming from constructive rule beliefs. Further, paradox mindset, that is, the comfort and ability to cope with paradoxical tensions, was posited

to moderate the occurrence and efficacy of entrepreneurial rule-breaking.

Chapter 5 built upon the conceptualisation of constructive rule beliefs and developed a measure of constructive rule beliefs to enable future empirical investigations of this potential driver of rule-breaking. With a U.S. sample of working professionals and entrepreneurs, a measure of constructive rule beliefs was developed through exploratory factor analysis. The final constructive rule beliefs scale has a two-factor structure. The first factor, labelled “*rule relativity beliefs*”, represents one’s beliefs about to what extent formal rules guide behaviour and whether contextual variations provide a level of flexibility in behaviour where a formal rule is irrelevant or contextually problematic. The second factor, labelled “*rule purpose beliefs*”, represents one’s beliefs about the purpose and procedural legitimacy of a formal rule. The construct validity of constructive rule beliefs was assessed in two hypothetical entrepreneurial scenarios, to see whether high constructive rule beliefs scorers were more likely to break rules. The two constructive rule beliefs factors were used as predictors, alongside control variables of age, gender, and education. Results revealed that Factor 1 (rule relativity beliefs) had a significant effect on participant rule-breaking in both scenarios. No relationship was found between Factor 2 (rule purpose beliefs) and participant rule-breaking tendencies in both scenarios. Theoretically, this study supports that constructive rule beliefs is a meaningful construct and can predict rule-breaking in individuals. It also provided clarity for the factor structure of constructive rule beliefs. Methodologically, this study contributed to the literature by providing a tool to investigate potential drivers of rule-breaking in varied settings, including entrepreneurial rule-breaking, workplace rule-breaking, or consumer rule-breaking. In addition, the provision of a constructive rule beliefs measure opens the door to new research

opportunities for future researchers who will be interested in precursors, correlates, and outcomes of constructive rule beliefs (Nunnally & Bernstein, 1994).

Building on the conceptualisation of constructive rule beliefs, proposed theory of entrepreneurial rule-breaking, and the developed constructive rule beliefs measure, Chapter 6 empirically tested in two hypothetical entrepreneurial scenarios the relationships between: (1) constructive rule beliefs manipulation condition and entrepreneurial rule-breaking, and (2) entrepreneurial status and entrepreneurial rule-breaking. Two main hypotheses were developed. *H1*: Based on the theorised relationship between constructive rule beliefs and entrepreneurial rule-breaking, it was hypothesised that participants in the constructive rule beliefs manipulation group would be more likely to engage in hypothetical rule-breaking behaviour than those in the control group. *H2*: Drawing on the selection and attrition process (i.e., those who are open to rule-breaking are more likely to choose entrepreneurship as a career and less likely to exit the entrepreneurial career), it was hypothesised that entrepreneur participants would have greater rule-breaking tendencies than participants who reported as salaried professionals. Hypotheses were tested, using a 2x2 between-subjects experimental design. Participants were randomly assigned to one of the four groups: (1) entrepreneur x constructive rule beliefs manipulation condition, (2) entrepreneur x constructive rule beliefs control condition, (3) non-entrepreneur x constructive rule beliefs manipulation condition, and (4) non-entrepreneur x constructive rule beliefs control condition. Pilot studies were conducted, the results of which confirmed adequate ecological validity and manipulation efficacy. Constructive rule beliefs manipulation condition and entrepreneurial status were used as independent variables, alongside control variables including age, gender and education, to predict entrepreneurial rule-

breaking, which was operationalised and consisted of two composite continuous DVs and two binary DVs. H1 was supported in both scenarios. Results revealed that, after controlling for the effect of age, entrepreneurial rule-breaking scores were significantly higher for participants in the manipulation group than those in the control group. Sensitivity tests were conducted to understand what type of rule-breaking was caused by the constructive rule beliefs manipulation. ANCOVA analyses were performed on outcome variables which involved clear entrepreneurial goals versus those did not. No significant differences were found between the constructive rule beliefs manipulation and control groups where the purpose of rule-breaking was unclear or rule-breaking was likely to result in undermined business goals. This suggests that rule-breaking caused by the constructive rule beliefs manipulation was guided by entrepreneurial goals. ANCOVA analyses were also performed to test H2 (i.e., participants self-reported as entrepreneurs were more likely to break rules than those self-reported as salaried professionals). H2 was not supported as no significant effect of entrepreneurial status was found on participant rule-breaking in both scenarios after controlling for the effect of age. The results revealed that entrepreneurial status did not have a causal effect on entrepreneurial rule-breaking. In other words, entrepreneurs were not more likely to break rules than non-entrepreneurs. entrepreneurial rule-breaking, like other types of entrepreneurial action, is mostly goal-directed, even though specific goals may be fluid and change in time (Bird, 1988; Furlotti et al., 2020; Shaver, 2012). Combined with the scale development study, the empirical evidence showed that constructive rule beliefs is a meaningful cognitive construct which has a causal impact on people's rule-breaking behaviour. It also challenges the popular beliefs that entrepreneurial rule-breaking is driven by dysfunctional, deviance-based traits. On the contrary, results showed

that entrepreneurial rule-breaking can stem from functional traits and is guided by rationality and entrepreneurial goals.

#### 7.5. Knowledge contributions

Building on the overall research aims and the specified research questions, the research findings in this thesis made *systematic* and *incremental* new contributions to the literature of entrepreneurial rule-breaking. Chapter 2 and 3 addressed research questions 1 and 2 by carefully surveying the extant studies, concepts, constructs, and theories of rule-breaking in the entrepreneurship and related literatures. Based on what is known about entrepreneurial rule-breaking and rule-breaking in related contexts as well as the identified research gaps, Chapter 4 theoretically addressed research questions 3 and 4, by firstly providing a definition of functional entrepreneurial rule-breaking then the conceptualisation of a key cognitive driver (constructive rule beliefs), and finally an integrative theory of entrepreneurial rule-breaking. These have several theoretical contributions. First, the new definition of entrepreneurial rule-breaking focuses on the nature of the behaviour aiming at alleviating the regulating power of formal rules. With its morally neutral stance, this definition reconciles the contrasting views of entrepreneurial rule-breaking in the literature—the traditional deviance-based and dysfunctional view versus the emergent view of entrepreneurial rule-breaking as a means to ends, and something that may have a positive potential to entrepreneurs and society. It also disentangles entrepreneurial rule-breaking from informal rule-breaking. Informal rule-breaking was often bundled with formal rule-breaking in the extant literature and caused conceptual ambiguity. Second, the introduction of constructive rule beliefs adds to the knowledge of entrepreneurial rule-breaking in a substantial way. Constructive rule beliefs was



conceptualised by drawing on influential psychological theories and reflections on personal experiences as well as those of others in challenging rule situations. The introduction of constructive rule beliefs constitutes the central contribution of this thesis and, taking an interdisciplinary perspective, draws on theories and ideas from psychology, sociology, and philosophy. Constructive rule beliefs has the potential to be informative in other contexts, such as employee rule-breaking or consumer rule-breaking. It is also an example of how immersive and reflective learning (a bit of “me-search”, see, e.g., Shepherd et al., 2021) can contribute to knowledge advancement in social sciences. Third, the proposed model integrates individual traits and contextual factors to explicate the underlying mechanisms of entrepreneurial rule-breaking. Finally, through constructive rule beliefs and the proposed entrepreneurial rule-breaking theory, this thesis challenges the widely-held belief that rule-breaking is mostly rooted in deviance. Based on the theoretical account in Chapter 4, Chapter 5 methodologically addressed research question 4 by developing a measure of constructive rule beliefs which had a two-factor structure. Empirically, participant goal-directed rule-breaking was found to be caused by constructive rule beliefs Factor 1 (rule relativity beliefs) and not by Factor 2 (rule purpose beliefs). This empirical finding provided clarity of the working mechanisms of constructive rule beliefs in relation to entrepreneurial rule-breaking. Finally, Chapter 6 empirically addressed research question 4 by testing the causal relationship between constructive rule beliefs and entrepreneurial rule-breaking, then discerning the type of rule-breaking stemming from constructive rule beliefs. It provided empirical evidence to the main claims made in Chapter 4, namely, that entrepreneurial rule-breaking can be a functional behaviour in entrepreneurs as well as in non-entrepreneurs; and that functional traits, such as

constructive rule beliefs, can have a causal impact on entrepreneurial rule-breaking.

## 7.6. Practical implications

This thesis, through the investigations of entrepreneurial rule-breaking and constructive rule beliefs, provides an explanation of how effective entrepreneurs empower themselves in a way that is *permissionless*, *game-changing*, and *sometimes unacceptable* to many people. The key findings of this research have practical implications for both entrepreneurs and policymakers.

*Constructive rule beliefs as a strategic resource for entrepreneurs.* The central idea of this thesis—constructive rule beliefs—denotes a latent cognitive resource in individuals, and was developed based on modern democratic values, including egalitarianism (i.e., equal rights, equity, and inclusiveness) and constitutivism (i.e., “*justify fundamental normative claims by showing that agents become committed to these claims merely in virtue of acting*”, Katsafanas, 2019, p.275). In Kuemmerle’s (2002) view, the willingness to break law and formal rules is a key characteristic that discerns entrepreneurs from ordinary businesspeople. Constructive rule beliefs provides a foundation for this willingness to break formal rules. It allows actors to judge the merits and legitimacy of rules and formalities installed by formal institutions and to decide their action based on their own values. The constitutivism perspective of agency posits that a social agent supports or denies fundamental normative claims (e.g., formal rules) by the virtue of acting, and agentic action accounts for the reshaping of institutions by actors (see Aoki, 2010; Brousseau et al., 2011; Katsafanas, 2019; Oliver, 1991). To many people, formal rules and institutions exist exogenously and form fixed conditions to their action—compliance with which is taken for granted (Machovec, 1995; Oliver, 1991). In contrast, effective entrepreneurs

regard formal rules and institutions as moveable pieces of the game and tap into their deep knowledge of rules and institutions to create an edge (Gerber, 2020; Gilson, 1984; Pahlow & Teupe, 2021).

Practically, entrepreneurs can expand their strategic horizon by looking beyond traditional categories when searching for resources required in the entrepreneurial game of surviving and thriving. Constructive rule beliefs, essentially a cognition concerning formal rules, the self, and rule-breaking, is an example of where entrepreneurs can look to acquire non-traditional strategic resources. As partially autonomous actors, entrepreneurs are typically found in the downstream of formal rules and disadvantaged by their lesser bargaining powers. However, this does not mean that entrepreneurs are powerless. Constructive rule beliefs, rooted in democratic and constitutivist values, is a strategic resource justifiably allowing entrepreneurs to be self-empowered in critical rule situations. The manifestation of constructive rule beliefs in a critical rule situation—entrepreneurial rule-breaking—is well captured by Williams et al.'s (2021) definition of *entrepreneurial resourcefulness*: the boundary-breaking behaviour in creative resources generation and deployment. It is the willingness and ability to break boundaries (in and outside their head) that makes entrepreneurs resourceful.

If behavioural boundary-breaking is a stretch at the onset, one may begin by pushing boundaries in their mental models (Markides, 1997). As supported by the experimental study results in this thesis, peoples' rule beliefs, although developed over time and relatively stable, can be influenced or pivoted. Entrepreneurs are encouraged to identify and reflect on the fundamental assumptions and beliefs underlying their behavioural patterns and inhibitors shaped by their mental models, and to examine how those patterns and inhibitors impact their

goal attainment over the long run. In instances where entrepreneurs are disadvantaged or threatened by a formal rule on important goals, but locked in the moral conundrum of formal rule-breaking, they can unpack the essential aspects of the situation by asking themselves a few questions. For example, is the rule legitimate in terms of purpose and procedures? Does it reflect the specific contextual conditions? Are there alternative pathways for achieving my goal without having to break the rule? If no other option exists, what are the virtues and consequences of breaking the rule at individual, organisational, and societal levels, in the short and long run?

*Implications for policymakers.* An important message from this thesis for policymakers is that a more permissive culture underlying light-touch, adaptive, and dialogical institutions will likely spur entrepreneurial activity and innovation. Entrepreneurial rule-breaking is not necessarily a dysfunctional behaviour stemming from deviance-based traits. On the contrary, it can be based on functional traits and is necessitated by surviving and thriving needs, which are, in many instances, aligned with the values and principles conducive to a flourishing society (Brenkert, 2009). By understanding the positive potential of entrepreneurial rule-breaking, society may move away from condemning entrepreneurial rule-breaking without carefully considering its positive potential and virtues. Subsequently, an open-minded and permissive culture will be cultivated where judgments of entrepreneurial rule-breaking and entrepreneurial actions are virtue-based (Brenkert, 2009) rather than stereotyped. As an example, China owes its unrivalled economic growth over the past decades to the late leader Deng Xiaoping's experimental approach to rule-breaking in economic and institutional spheres, which led to dysfunctional old institutions being replaced by new ones that better reflected the new social

conditions post Mao's era (Droege & Johnson, 2007).

Decades ago, Hayek envisioned a flourishing society based on permissive and evolving institutions: *“It is, in fact, desirable that rules should be observed only in most instances and that the individual should be able to transgress them when it seems to him worthwhile to incur the odium this will cause ... It is this flexibility of voluntary rules which in the field of morals makes gradual evolution and spontaneous growth possible, which allows further modifications and betterments”* (Hayek, 1962, p.60). Hayek's vision of embedded flexibility and liberty in the creation and curation of rules and institutions is well-founded on the idea of constructivism, whereby fundamental normative claims are justified merely by the virtue of acting (Katsafanas, 2019). As architects and co-constructors of a flourishing modern society, policymakers will start off in a better position by nurturing a permissive, adaptive, and dialogic institutional culture that encourages boundary-breaking and spurs entrepreneurial innovation.

In my view, much of social rules' role is to liberate humans as a collective group from resource challenges (e.g., cognitive load due to chaos and uncertainties, costs of coordination and transactions) and from infights. Given the diverse nature of human societies, rules can only sustain in a dynamic equilibrium of dialectic and countervailing forces and mechanisms (see, e.g., a discussion on the enabling and constraining roles of institutions in Welter & Smallbone, 2011). Similarly, rule-following and rule-breaking are a voluntary dialectic duo that addresses the liberation challenge in social changes, contradictions, injustices, and complexities. Imagine a society where everyone follows rules. Try to find an alternative means for major institutional changes such as the abolition of slavery and emancipation of women from social deprivations and inequalities—none of these social advances was possible without people awakened by

profound values and beliefs taking actions for themselves or assisting others to break free from established social rules and institutions (e.g., Hochschild, 2006; Stewart, 2008; Tomek, 2021).

#### 7.7. Limitations and future research

There are several limitations in this thesis. They are discussed in two broad categories: methodological and resource-based limitations pertaining to the investigations carried out in this thesis, and left-out opportunities as the result of the prescribed research scope. I will begin with the left-out opportunities resulting from the research scope since these may be regarded more interesting and worth noting than methodological limitations that are invariably involved in all empirical studies.

*Precursors and correlates of constructive rule beliefs.* Due to time limits, precursors and correlates of constructive rule beliefs were not investigated in this thesis. Constructive rule beliefs in individuals develops over time and is influenced by their unique set of salient rule experiences, and how individuals process and integrate such experiences with their other mental models to form rule beliefs. It is therefore likely to be susceptible to the influence of other cognitive traits. For example, as constructive rule beliefs has a root in moral reasoning, and moral sentiments are influenced by internalised values (Moll et al., 2008), knowledge of underlying values and moral sentiments involved in peoples' salient rule experiences can provide a comprehensive understanding of constructive rule beliefs, and therefore will have practical implications for people who want to have a deep understanding of their own rule beliefs, or want to pivot their beliefs. In addition, broad and facet-level traits, such as openness, agreeableness, autonomy, may be precursors or correlates of constructive rule beliefs. The knowledge of constructive rule beliefs can be advanced via its precursors, correlates, and

outcomes (Nunnally & Bernstein, 1994). Future research on formal rule-breaking can benefit from a deep and comprehensive understanding of constructive rule beliefs as a potential cognitive driver of behaviour.

*Other limitations.* Both empirical studies involved a single-study design. Although sample sizes were adequate and rigorous research processes were followed in both studies, follow-up and supplementary studies with triangulated methods would provide additional confidence in research findings. For example, constructive rule beliefs measure could benefit from a confirmatory factor analysis for further support. For the experimental study, a follow-up interview study with participants who scored high on constructive rule beliefs and entrepreneurial rule-breaking could provide qualitative information, and additional insights on the relationship between constructive rule beliefs and entrepreneurial rule-breaking and factors not captured in the experiment; for example, potential moderating factors between constructive rule beliefs and entrepreneurial rule-breaking. Another limitation in the two empirical studies is the reliance on self-reporting. While self-reporting is an appropriate method for collecting data for individual difference variables (Oishi & Roth, 2009), the inherent biases associated with self-reporting can be mitigated by measurement triangulation, for example, using self-reports in conjunction with behavioural measures (Connolly et al., 2007; Stone et al., 1999). Thirdly, both empirical studies were based on U.S. samples. Both constructs—constructive rule beliefs and entrepreneurial rule-breaking—may have been affected by that unique culture and social contexts in which social cognition and behaviour are embedded. Cultural and social contexts can be and should be identified and accounted for in interpreting constructive rule beliefs and entrepreneurial rule-breaking. Further research on this topic will benefit from

research designs involving social and cultural diversification. Finally, not all the propositions in the proposed entrepreneurial rule-breaking theory were empirically tested due to limits of time and resources.

## 7.8. Conclusion

This thesis focuses on entrepreneurial rule-breaking, a purposeful and discrete behaviour that entrepreneurs utilise to alleviate the regulating power of formal rules and institutions, which assists them to survive and thrive in the entrepreneurial game. Drawing on influential psychological theories and analyses of extant literatures, as well as personal reflections, I conceptualised a novel cognitive construct—constructive rule beliefs, then developed an embedded and integrative model to explicate a key driver, contextual triggers, a moderator, and outcomes of entrepreneurial rule-breaking. Evidence in the two empirical studies demonstrates that constructive rule beliefs is a meaningful cognitive construct, and one of the two constructive rule beliefs dimensions (i.e., rule relativity beliefs) has a causal influence on functional rule-breaking in the entrepreneurial context. Empirical evidence in this thesis also suggests that entrepreneurial rule-breaking as a manifestation of constructive rule beliefs is a goal-directed entrepreneurial action which has roots in rationality and functional traits, hence not rooted in deviance.

The research findings in this thesis provide a nuanced understanding of entrepreneurial rule-breaking, a cognitive driver of such behaviour, and its potential benefits to entrepreneurs and society. They stimulate in society the rethinking of entrepreneurial rule-breaking as a stereotyped deviant behaviour and entrepreneurs as an illicit group. They are illuminating to entrepreneurs who are not open to formal rule-breaking, and encourage them to re-examine



their mental models which can attenuate their entrepreneurial efficacy by blocking out unconventional yet contextually justifiable means. The findings are also informative to policymakers and institutional architects that rule-breaking is not only inevitable but sometimes necessary and justifiable in the entrepreneurial context. A permissive, discerning, and dialogical institutional approach and culture will spur entrepreneurial activity and innovation, allow consumer surplus and social welfare to keep springing out of boundary-breaking innovations, and make progressive betterments of institutions possible.

## APPENDICES

### Appendix 1: Synopses of reviewed entrepreneurial rule-breaking studies

#### PART 1. The 10 conceptual papers

*Lucas et al. (2022). Regulatory governance and rule-breaking entrepreneurial action.* A recent formal theory paper on entrepreneurial rule-breaking is Lucas et al.'s (2022) theory of regulatory governance and rule-breaking entrepreneurial action. The authors theorise rule-breaking as an entrepreneurial action stemming from conditions of institutional deficiencies; specifically, interpretative ambiguity and imperfect enforcement of regulatory rules. They define 'rule-breaking entrepreneurial action' as "*behavior aimed at launching and growing new ventures in a manner inconsistent with law, regulation, or other state policies*" (p.2). Rule-breaking entrepreneurial action is anchored in the nature of regulatory rules being socially-constructed institutional artifacts, to which meanings are given through enforcement and interpretation. The authors further proposed a model of rule-breaking entrepreneurial action in which two categories of rule-breaking venturing opportunities were theorised based on the type of exploited institutional deficiencies. Black market opportunities arise from the exploitation of imperfect enforcement and result in "illicit" entrepreneurial activity and offerings. Gray market opportunities stem from interpretative ambiguity of regulatory rules where entrepreneurs seek to evade the application of rules in pursuing their venturing opportunity. A key contribution of this theory to entrepreneurial action is its insights in social constructivism and the subjective nature of regulatory rules, a perspective which is rare in institutional economics and entrepreneurship yet pertinent to the social embeddedness of entrepreneurial action.

*Sottini and Cannatelli. (2022). Institutional divergence.* Another recent entrepreneurial rule-breaking conceptual paper tries to discern entrepreneurial rule-breaking between formal and informal institutions. Sottini and Cannatelli's (2022) conceptual model of institutional divergence attempts to explain what drives entrepreneurs to diverge from informal institutions (defined by the authors as value, beliefs, and norms shared by large portions of society), and what leads them to breaking formal institutions (defined by the authors as legal rules). Through the model, the authors argue that: (1) self-enhancement in entrepreneurs leads them to diverge from informal institutions; (2) the relationship between entrepreneurs' self-enhancement and their divergence from informal institutions is negatively moderated by the presence of external locus of control, because their belief that potential consequences resulting from such divergence will be out of their control reduces the desirability of divergence from informal institutions; (3) risk propensity in entrepreneurs leads them to break legal rules; and (4) the relationship between entrepreneurs' level of risk-propensity and their tendencies in breaking legal rules is negatively moderated by the extent of legal deregulation (which the authors refer to as legalisation of previously illegal activities, e.g., recreational uses of marijuana), in that deregulation reduces entrepreneurs' tendencies in breaking legal rules. Worth noting are two issues about this conceptual model. First, is rule-breaking in entrepreneurship mostly misbehaviour? The authors treat entrepreneurial divergence from institutions as misbehaviour (referred to as "misconducting behaviors" in their article), which sets entrepreneurial rule-breaking in the immoral/unethical foundation. This limited their search for the drivers in entrepreneurs' divergence from informal institutions to the deviance space and resulted in "self-enhancement" as the identified driver

of such divergence. Second, the coherence and the logic of their model is questionable. The authors focused on self-enhancement (a motive) as the key driver of the divergence from informal institutions, while, for explaining divergence from formal institutions, they leaped onto risk propensity (a decision trait). Such a difference in approaching the drivers of divergence from institutions remains unexplained. It would have enhanced the coherence of the model if they had considered motives, decision mechanisms, and external conditions consistently in the two domains (informal versus formal institution), or at least explicated the different choices, in order not to leave an impression of “random choices”. In addition, the authors’ claim on deregulation as a moderator between risk propensity in entrepreneurs and their divergence from legal rules seems to be based on circular reasoning. If a legal rule has been deregulated or is in the process of deregulation (e.g., legalisation of previously illegal uses of marijuana), it is unclear why divergence from a deregulated legal rule is rule-breaking.

*Lundmark and Westelius. (2019). Antisocial entrepreneurship.* The authors applied a one-dimension scale (i.e., socialness) to conceptualising an underexplored phenomenon, *antisocial entrepreneurship*, which they referred to as the “antipode” of social entrepreneurship. They defined antisocial entrepreneurship as businesses that destroy or appropriate social value by taking advantage of vulnerable groups or damaging social relationships (p.2). The authors argue that antisocial entrepreneurship is distinct from illegal entrepreneurship and destructive entrepreneurship, and deserves a fair share of scholarly attention. The relevance of antisocial entrepreneurship to entrepreneurial rule-breaking may not be obvious. Antisocial entrepreneurship focuses on the morality (against social values) of

entrepreneurial behaviour, and can involve violations of both informal rules (such as pro-social values) and formal rules, while entrepreneurial rule-breaking focuses on a particular form of entrepreneurial behaviour and its underlying mechanisms in the context of formal rules. The rules themselves could be on either end of legitimacy and/or efficiency. The association between the two concepts, however, lies in the intersection where antisocial entrepreneurship occurs in regulated domains, so that there is an overlap between the two concepts.

*Dey. (2016). Destituent entrepreneurship.* This study was embedded in a particular historical context of post-economic crisis social struggles resulting in the movement of worker-occupied enterprises in Argentina. Dey's conceptualisation of destituent entrepreneurship was built on Agamben's destituent power. It refers to the bottom-up transformative forces with an intention to constitute a new social structure amid wide and profound social crises, by overthrowing official norms and rules in a subversive and systematic manner (see Agamben, 2013, 2014, 2015). Prior to the turning of the 21<sup>st</sup> century, Argentina's government policies and laws were based on neoliberal capitalism and catered for global capital and benefits of large corporations. Such policies and laws led the country into a deep recession with 25% of the population unemployed and 60% in poverty. Workers were deprived of employment, which resulted in society-wide insurrections. Socioeconomic experiments, such as worker-occupied enterprises, emerged as a form of emancipating and enabling entrepreneurship in profound social crises – defined by the author as “destituent entrepreneurship”. Destituent entrepreneurship is not concerned with socioeconomic activities in the majority body of the entrepreneurship literature, which promote economic

prosperity under stable or progressive conditions, but destituent social forces under extreme conditions. Compared with entrepreneurship in conventional senses, destituent enterprising forces emerged from profound social needs and are intended for restoring social justice, community building, and emancipation through the overthrow of dysfunctional official rules, governmental machines, and the failed socioeconomic ideologies.

*Elert and Henrekson. (2016). Evasive entrepreneurship.* This study theorised rule-breaking in the entrepreneurial context with an explicit definition of evasive entrepreneurship to convey their focus, which is helpful in terms of articulating boundaries. Their theory tried to explain the dynamic relationships between institutional contradictions, social welfare, innovative and entrepreneurial exploitation of institutional contradictions, and institutional change. The authors defined evasive entrepreneurship as “*profit-driven business activity in the market aimed at circumventing the existing institutional framework by using innovations to exploit contradictions in that framework*” (Elert & Henrekson, 2016, p. 95). From their definition, the boundary conditions seem to include: the environmental condition involving contradictions in the institutional framework, the actor’s intent to circumvent the institutional framework, and the actor’s using innovation as the means to actualise the intent. They argue that: (1) institutional contradictions induce evasive entrepreneurship, (2) whether evasive entrepreneurship benefits or destroys social welfare depends on whether the institutions entrepreneurs seek to circumvent are pro-social welfare, and (3) financially successful evasive entrepreneurship tends to facilitate institutional changes. Elert and Henrekson’s (2016) theory of evasive entrepreneurship focuses on a particular form of rule-breaking (i.e., circumvention of institutional frameworks via innovation) without specifically focusing on

the firm or on the entrepreneur, and explores how such entrepreneurial rule-breaking may have an effect on institutional changes and resulted in increased or decreased social welfare.

*Lundmark and Westelius. (2012). Entrepreneurship as misbehaviour.* This was the first published piece work of these two authors on entrepreneurial rule-breaking (see above for another work of theirs on antisocial entrepreneurship). In this work, they proposed a typology of entrepreneurship (formal, informal, offensive, and renegade) based on the legality (i.e., whether a legal rule is broken) and social legitimacy (i.e., whether a non-legalised rule is broken) of the business. The authors then provided a typology of institutions (laws, social norms, organisational rules, and organisational norms) based on two dimensions (i.e., formalisation and level of institutions). They treated entrepreneurial rule-breaking as misbehaviour and their typology of entrepreneurship assumed that the rules entrepreneurs break, formal or informal, are legitimate and without problems. This assumption, however, leaves no room for entrepreneurial rule-breaking where formal or informal rules themselves are illegitimate and/or problematic (see Brenkert, 2009; Rodgers et al., 2022; Welter & Smallbone, 2011).

*Brenkert. (2009). Rule-breaking and ethics of entrepreneurship.* The author investigated entrepreneurial rule-breaking through an ethics lens. Brenkert contests the morality-based ethics paradigm and advocates a virtue-based one. He argues that the entrepreneurial context in which rule-breaking is embedded is a complex one, which is highly uncertain, dynamic, and volatile, and cannot be well captured by rule-based ethical accounts. In addition, the author further argues that rules, by and in themselves, are imperfect, as they cannot cover every eventuality and can be too general or too specific to be useful. Further, the higher-order

principles of rules are general and vague, meanings of which are given in context and through interpretation. In some instances, moral rules can limit moral decision making (Peterson, 2002). Based on unusual complexities of the entrepreneurial context, Brenkert defends the virtue-based ethics paradigm concerning entrepreneurial rule-breaking that accounts for the paradoxical tensions between morality and other considerations linked to a flourishing society.

*Rindova et al. (2009). Entrepreneurship as emancipation.* Related to Dey's (2016) destituent entrepreneurship, but in a more general sense, is Rindova et al.'s (2009) editorial which champions a new concept and direction of "entrepreneurship as emancipation" for entrepreneurship scholarship. They argued that entrepreneurship research had disproportionately focused on wealth creation through entrepreneurial opportunities and activities, and neglected the change-oriented aspects of entrepreneurship. The authors proposed three change-oriented core elements of the emancipation perspective of entrepreneurship; that is, autonomy seeking, authoring, and making declaration. The logic of emancipation begins with autonomy seeking (the goal of emancipation), which underlies entrepreneurs' intention and subsequent actions to "*escape from or remove perceived constraints in their environment*" (Rindova et al., 2009, p. 480). The perceived environmental constraints in entrepreneurs' socioeconomic life are embedded in the "*conventional structures of authority*" (p. 479) and embodied by formal and informal institutions/rules.

*Other conceptualisations relevant to entrepreneurial rule-breaking.* There are other conceptualisations in the entrepreneurship literature which are distally associated with rule-breaking. Such conceptions are centered on entrepreneurial thinking and actions which target



at changing structures and orders in (some aspects of the) society – the upstream purposes from which rules are built. Two of them, however, are interesting and deserve a brief mention here. Comparing entrepreneurship with art, Bureau and Zander (2014) coined the concept of “artful entrepreneurship”. They argued that subversion and resistance are two fundamental aspects in both art and entrepreneurship, which had been neglected in entrepreneurship research. The authors suggested that entrepreneurship had a subversive potential in that it “*upsets the status quo, disrupts accepted ways of doing things, and alters traditional patterns of behaviour*” (Smilor, 1997, p. 1) and some entrepreneurs are self-identified as social activists and change agents at the outset of their venturing. When entrepreneurs introduce novelty in a subversive manner, to them what comes, *vis-à-vis*, is resistance. Similar to this idea, Corbett et al. (2018) called for scholarly work on why, how, and when distinctive entrepreneurial attitudes, behaviours, and cognition led to socioeconomic changes. They call those entrepreneurs who are social change agents “*rebels with a cause*” – those challenging the status quo and break/change rules with revolutionary thinking and transformative action.

## PART 2. The 6 qualitative studies

*Sydow et al. (2022). Entrepreneurial workaround.* This study focused on entrepreneurial workaround practices in the context of Kenya’s institutional voids, that is, in the absence of formal institutions or in the presence of weak formal institutions. To cope with institutional voids, entrepreneurs in emerging economies heavily rely on intermediaries (e.g., business incubators, trade associations) and informal institutions (e.g., kinship and personal network). In many African countries, even these suboptimal remedies are inadequate, which need

intentional and more proactive approaches to institutional arrangements than responsive workarounds. Using triangulated data (interviews, observations, and archives), the authors studied 47 commercial entrepreneurs in Kenya. They found that these entrepreneurs became active micro-institutional agents by combining commercial and social goals in their entrepreneurial activities, carefully designing and nurturing business relationships, and scaffolding infrastructure for institutional changes.

*Alonso et al. (2020). Entrepreneurial deviance in New Zealand's honey industry.* In responding to the under-researched dimension of entrepreneurship, that is, the “dark” sides of entrepreneurs, the authors examined entrepreneurial deviance by interviewing honey producers in New Zealand who were victimised by the deviant behaviour of their peer entrepreneurs. The study was founded on social learning theory (social learning theory) and entrepreneurial action. The authors revealed that entrepreneurial deviance as an entrepreneurial action, which in this particular context includes unfair competition, theft, sabotage, product adulteration, and so on, was motivated by greed for illegitimate gains. It was then enacted by illicitness and vandalism arising from the interactions between environmental events, personal traits, cognitive processes, peer group learning, and reinforced by financial and perceived gains. The authors propose that their framework combining social learning theory and entrepreneurial action theory could be applied to deepening the knowledge of contextual triggers of entrepreneurial deviance.

*Cieslik et al. (2019). Unruly entrepreneur farmers in Burundi.* This study involved an unconventional type of “entrepreneurs”: the clients of microfinance institutions—the targeted poor, rural population in designated countries – who have been superimposed an entrepreneur

identity by microfinance institutions. Against the backdrop of poverty alleviation microfinance programmes in the context of Burundi, the authors used the storyboard technique (using a series of images to represent some rule-breaking practices) to elicit participant responses and attitudes towards unruly practices from small farmers in seven Burundian rural provinces. Based on the loan processes and decisions (granted or rejected), the authors reconstructed four types of rule-breaking practices by these “entrepreneurs”: illegitimate investment, consumption spending, loan juggling, and loan arrogation. They pointed out that such rule-breaking practices emerged largely because microfinance institutions failed to sufficiently understand local conditions and the needs of their clients (the superimposed “entrepreneurs”) in designing the microfinance programmes and regulations. The authors also argued that some of these unruly practices were indeed entrepreneurial as they created value for families and community. Consistent with the perspectives of institutional hierarchy and stickiness (Boettke et al., 2008; Williamson, 2000), a key argument of this study is that, when formal institutions are at odds with informal institutions and do not or insufficiently reflect local conditions, people are more likely to break formal rules.

*Warren and Smith. (2015). The “gangster” entrepreneur in North England.* The final qualitative study relates to entrepreneurial rule-breaking and its implications for legitimacy. Also using a longitudinal case study, the authors studied, through media reports and documentary analysis, how a controversial English entrepreneur’s series of rule-breaking behaviours in his life and business for over a decade attracted wide media (de)legitimising narrations. The entrepreneur then attempted to use discursive strategies to recover his

legitimacy in the eyes of the public. The authors suggested that Suchman's (1995) three forms of entrepreneurial legitimacy (pragmatic, moral, and cognitive) were illustrated both in the media narratives as well as in the countering discursive strategies of the entrepreneur in attempts to restore his legitimacy and image.

*Breslin and Wood. (2013). The UK social care entrepreneur decoupling formal rules.*

This study was built on Martin et al.'s (2013) conceptualisation of formal rule-breaking on two dimensions: the organisational hierarchy and contentiousness of rule enforcement. The authors sought to add to Martin et al.'s notion by understanding rule-breaking behaviour as a result of the interplay between formal rules and informal rules. Using a longitudinal case study approach which involves interviews and documentary analysis nested in a UK social care firm, the authors revealed how and why formal rules, both regulation and organisational rules, were broken by both the entrepreneur and employees. Their findings pointed to the competing demands between formal rules and local context, for example, systematically-imposed rigidity by formal rules versus internal flexibility required in numerous and trivial conditions in domiciliary care. As the result, the entrepreneur decoupled internal practices from the standardised regulations imposed by the Care Quality Commission. In addition, the odds between formal rules and values of those who implement rules in the field also contributed to the adaption of formal rules to local needs; for example, carers "gifted" clients extra services for social justice or broke a firm's rule for the best interests of the client.

*Ufere et al. (2012). Merchants of corruption in Nigeria.* Corruption had been a real threat to the economic wellbeing of the general population in Nigeria. There was abundant research on causes of corruption, however, little had been known of how entrepreneurs experienced it.

To address this gap, the authors conducted semi-structured interviews with 32 Nigerian entrepreneurs to understand how they experienced the high levels of corruption in their business undertakings and what roles they played in such processes. The authors found that, instead of being victims of corruption practices, entrepreneurs willingly engaged in and even became the architects of “bribery best practices”. They primarily applied the lens of Giddens’ structuration theory to their findings. The authors suggested that Giddens’ notion of “structure-agency duality” was reflected in that, to gain strategic resources and advantages, entrepreneurs used their intimate knowledge of formal government structure to exploit connections with officials in important decision roles, and their arbitrary uses of power in allocating critical resources. In addition, an important reason that corruption practices, although constituting rule-breaking in the perspective of formal rules (at least nominally), were prevalent in Nigeria, is because they were rooted in and congruent with informal institutions in that context, such as inadequate legal frameworks, political norms, abusive rulers, and a pervasive “get rich quick” culture.

### PART 3. The 9 quantitative studies

#### 3.1. The 6 time-lagged studies

*Cantner et al. (2017). Schumpeter’s entrepreneur.* The first time-lagged (longitudinal) study identified in the current research enlisted a model centred on the Theory of Planned Behaviour (TPB) framework (Ajzen, 1991; Fishbein & Ajzen, 2010). Cantner et al. (2017) investigated the intentions of scientists founding a new firm by leveraging their research outputs, and how the “*Schumpeterian attitude*” played a role in that decision process. The

“*Schumpeterian attitude*” was conceptualised as acting against group expectations, and was measured by attitudes towards injunctive and descriptive norms in the TPB framework. Four hundred scientists working in German research institutes were surveyed. The model also taps into the five-factor personality (Barrick et al., 2003; Rauch & Frese, 2007; Schmitt-Rodermund, 2007, 2004; Zhao & Seibert, 2006) traits as distal predictors, and group identification as the moderator. In the analysis, 400 participants were split into two groups: ‘identifiers’ and ‘non-identifiers’, based on their group identification scores. The authors found that among the ‘non-identifier’ scientists ( $N = 213$ ) 11% of them ( $n = 44$ ) were characterised with having a “*Schumpeterian attitude*” and reported high entrepreneurial intentions. This study therefore provides a small but significant (p. 187) support for the idea that Schumpeterian attitude is an important predictor of entrepreneurial intentions. They also found that conscientiousness and openness positively predicted entrepreneurial intention and neuroticism negatively predicted entrepreneurial intention, but these personality traits became nonsignificant when analysed in conjunction with the TPB variables.

*Levine and Rubinstein. (2017). Who becomes an entrepreneur and do they earn more?*

The authors were interested in answering the question ‘who becomes an entrepreneur and do they earn more?’ The authors proposed a different operational definition of ‘entrepreneur’ and used incorporated self-employment – differentiating it from unincorporated self-employment – as the proxy for entrepreneurship. Also drawing from the theories of human capital (Baumol, 1990; Gennaioli et al., 2013; Lucas, 1978; Murphy et al., 1991) and risk venturing process (Schumpeter, 1911), they assessed what traits in youth predicted one’s likelihood of becoming an entrepreneur in later years, and whether they earned more than

non-entrepreneurs. Samples were drawn from two American longitudinal datasets: The Current Population Survey and the National Longitudinal Survey of Youth, and divided into three occupational groups: incorporated self-employed, unincorporated self-employed, and waged workers. The human capital predictor was operationalised with a comprehensive set of factors including learning aptitude, self-esteem, locus of control, illicitness, and family traits and background. The authors tested the relationships among these factors, as well the influence of potential confounding factors. They found that those who were “*male, white, better educated, and are more likely to come from high-earning, two-parent families*” (Levine & Rubinstein, 2017, p. 1015) as well as smart, confident, and illicit youths were more likely to become an incorporated self-employed, and to earn more than unincorporated self-employed and salaried workers.

*Obschonka et al. (2013). Rule-breaking, crime and entrepreneurship.* This study was a partial replication study of Zhang and Arvey's (2009) study. The authors carried out a longitudinal study by using the 37-year data contained in the Individual Development and Adaptation Swedish dataset. Both rule-breaking attitude and rule-breaking behaviour were used as predictors of entrepreneurial status in adulthood. They found a positive relationship ( $N = 658$ ) between participant's modest rule-breaking (e.g., breaking school rules or social norms) in adolescence, as opposed to severe rule-breaking (crimes), and their entrepreneurial status in adulthood, corroborating Zhang and Arvey's (2009) findings. In addition, Obschonka et al. (2013) found this relationship only among male participants, and only adolescent rule-breaking behaviour was predictive of entrepreneurial status in adulthood. The

correlations were found to be insignificant between female rule-breaking in adolescence and their entrepreneurial status in adulthood.

*Zhang and Arvey (2009). Rule breaking in adolescence and entrepreneurial status.* This study was based on Willis' (1963) nonconformity theory, which posits that nonconformity is a function of both independence and *net conformity* (i.e.: conformity minus anticonformity), and anticonformity represents the social response "*directly antithetical to the norm prescription*" (see Willis, 1963, p. 379). The authors hypothesised a positive relationship between one's risk propensity and their entrepreneurial status in adulthood, using adolescent rule-breaking behaviour as a mediator between risk propensity and entrepreneurial status. The authors used the longitudinal dataset of Minnesota Twins Registry in the United States. The study consisted of measurements at three time points: Personality traits were measured at Time 1 (1998), and adolescent rule-breaking behaviour was self-reported at Time 2 (1999), followed by the measurement of entrepreneurial status at Time 3 (2004). The authors found that risk propensity positively correlated with entrepreneurial status and with adolescent rule-breaking in both modest and severe forms, but only modest rule-breaking in adolescence mediated the relationship between risk propensity and entrepreneurial status.

*Aidis and Van Praag. (2007). Illegal entrepreneurship experience.* Another time-lagged study was conducted during the transition of Lithuania from a planned economy to a market economy. Aidis and Van Praag (2007) examined the relationship between illegal entrepreneurship experiences (or IEE, defined as supplying illegal products to willing customers, p. 290) and an entrepreneur's motivation to continue and transition their business to a legal business, as well as its performance. These entrepreneurial outcomes were



hypothesised to be predicted by human capital where IEE was used as an indicator of human capital. The authors surveyed a sample of private business owners recruited via entrepreneurship organisations and received 399 valid survey results. The results revealed a strong positive relationship between an entrepreneur's IEE and their motivation to legally continue ( $\beta = .512, \alpha = .01$ ) and grow their business ( $\beta = .316, \alpha = .05$ ) after transitioning to a market economy. IEE's were found to be a stronger predictor of business performance after the transition for younger (*firm size*:  $\beta = .104, \alpha = .05$ ) rather than older entrepreneurs. A weak positive relationship was also found between entrepreneur's IEE and their business ownership obtained through founding a new business (*earnings*:  $\beta = .660, \alpha = .05$ ; *turnover*:  $\beta = .681, \alpha = .1$ ), as opposed to ownership via acquisition.

*Fairlie. (2002). Drug dealing and legitimate self-employment.* The final of the time-lagged studies was conducted by Fairlie (2002) who used the sample from the United States National Longitudinal Survey of Youth ( $N = 16,701$ ) to test whether youth drug dealing predicted legitimate self-employment in later years. Youth drug dealing was used as a proxy for entrepreneurial characteristics: risk attitudes, entrepreneurial ability, and preference for autonomy. Fairlie found youth drug dealing increased the probability of becoming self-employed in later years by 22.1%. Compared with non-drug-dealers, youths with drug dealing experience were 11%-21% more likely to become self-employed. The authors reasoned that higher entrepreneurial characteristics in one's youth was likely to predispose them to pursue entrepreneurship later in life. This predictive relationship was established through youth drug dealing as the proxy for entrepreneurial characteristics. In fact, among the nine studies a few of them link rule-breaking to entrepreneurial characteristics and human

capital. The author also examined several alternative explanations. The possibility of reporting continued drug dealing as self-employment was ruled out as the respondents needed to provide a range of detailed information, including the name of their business if self-employed, which made it quite difficult to misreport. Another alternative explanation could be that experience of incarceration decreased the drug dealing youths' opportunities of becoming waged workers in later years, hence forcing them into self-employment. The author ruled this out by creating alternative models with incarceration added as a control variable. Having a previous incarceration only increased the chance of self-employment by less than 6%, and the incarceration had little effect on the drug dealing coefficient. The third alternative explanation was that the accumulated wealth from drug dealing led those drug dealing youths into a more advantageous position for starting their legitimate business. An alternative model was created with the respondents' net worth in the prior year to their transitioning into self-employment. The net worth was found to have a nonsignificant effect on the drug dealing coefficient, hence this alternative explanation was also ruled out. The author concluded with an indirect positive relationship between the latent entrepreneurial characteristics, that is, risk attitudes, entrepreneurial abilities, and preference for autonomy, and self-employment. The relationship was reported as indirect because these entrepreneurial traits were proxied by drug dealing rather than measured and examined directly in the relationship.

### 3.2. The 3 non-time-lagged studies

*Onu et al. (2019). Gaming the system.* The first non-time-lagged study (Onu et al., 2019) proposed a new tax compliance continuum by introducing tax avoidance, a creative tax compliance tactic, into the traditionally dichotomous tax compliance-noncompliance scale. Tax avoidance refers to the legally legitimate measures taken by business owners to reduce their tax liabilities through unconventional ways of exploiting loopholes in the tax system, also described as “*creative compliance*” (Onu et al., 2019, p. 2). The study then further examined how entrepreneurs’ perceptions of and attitudes towards tax systems affected their tax compliance attitudes and actual behaviour. The study was conducted using an online survey among a sample of 330 micro-business owners in the United Kingdom. The authors investigated how psychological factors affected business owners’ attitudes towards tax planning, tax avoidance, and tax evasion – three distinct categories of tax behaviour involving different tactics and legal implications, which then affected their actual compliance behaviour. Predictors, including business owners’ personal and social norms of tax morality, confidence in their own tax knowledge, their perceptions of fairness and loopholes in the tax system, as well the perceived seriousness of evasion and deterrence factors, were included. The results show that tax planning, the legitimate and traditional compliance behaviour, was predicted by the belief that the tax system was flexible for tax efficiency purposes ( $\beta = .170$ ,  $p < .010$ ) and confidence in their own tax knowledge ( $\beta = .235$ ,  $p < .001$ ). Tax avoidance, the creative and exploitive compliance, was negatively correlated with their fairness perceptions of the tax system ( $\beta = -.134$ ,  $p < .050$ ) and their personal tax morality of public good contribution ( $\beta = -.165$ ,  $p < .010$ ), and positively correlated with the belief that the tax system had loopholes and could be exploited ( $\beta = .137$ ,  $p < .010$ ). Tax evasion, the illegal form of tax

behaviour, was driven by a few cognitive factors, including low personal tax morality ( $\beta = -.281, p < .001$ ), lack of confidence in their tax knowledge ( $\beta = -.125, p < .050$ ), and an underestimation of tax evasion as a serious crime ( $\beta = -.259, p < .001$ ). In addition, tax avoidance ( $r = -.298, p < .001$ ) and tax evasion ( $r = -.681, p < .001$ ) attitudes both predicted business owners' actual noncompliance behaviour. These results suggest that rule-breaking attitude and behaviour are affected by not only endogenous factors (one's beliefs, knowledge, and perceptions) but also exogeneous factors (institutions and social norms).

*Bhat. (2017). Attitudes towards tax evasion and the choice of self-employment.* In the second non-time lagged study, Bhat (2017) examined how Americans' attitudes towards tax evasion are associated with self-employment as their choice of career, and then with income levels. The author used the 2004 data of General Social Survey (United States), which is one of the largest surveys in the United States. The tax evasion attitudes were assessed using a one-item measure: "*Do you feel it is wrong or not wrong if a taxpayer does not report all of his income to pay less income taxes?*" (Bhat, 2017, p. 44), and the four-point Likert responses were grouped in two categories, one reflecting the pro-evasion attitudes (not wrong and a bit wrong) and the other reflecting against-evasion attitudes (wrong and seriously wrong). The results revealed that an individual with pro-evasion attitudes is more likely (by 3.46 times,  $\alpha = .05$ ) to be self-employed than one with against-evasion attitudes. In addition, self-employed individuals tend to earn more than waged workers. Further, an individual with pro-evasion attitudes is likely to have a lower income than an individual with against-evasion attitudes, and the self-employed people who are pro-evasion tend to earn less than individuals in the other categories.

*Arend. (2016). Entrepreneurs as sophisticated iconoclasts.* The third non-time-lagged study used an experimental design, in which Arend (2016) investigated how rule-breaking empowers entrepreneurs, giving them an edge in their entrepreneurial pursuits in the competitive business world. Drawing upon the theories of entrepreneurial opportunity, discovery, and experimental learning, Arend (2016) analysed the relationship between entrepreneurs' rule-breaking behaviour and the consequently-realised advantages through breaking rules. This study was facilitated with an experimental game among 60 students who were attending a strategy course – 40 were businesspeople (non-entrepreneurs) and 20 were entrepreneurs. Rule-breaking was distinguished between rational and irrational rule-breaking, where rational rule-breaking was defined as the skills to exploit rule-breaking opportunities in a sophisticated manner, for example, the ability to discover rule-breaking opportunities early, and more aggressive reactions to positive feedback from rule-breaking. In contrast, irrational rule-breaking was referred to as rule-breaking without seeking or accommodating feedback from the previous rule-breaking outcomes. The results of the games revealed that entrepreneurs break rules more often than businesspeople, and it was the rational rule-breaking behaviour, not irrational ones, which positively predicted realised advantages. Competitive advantages were realised as rational rule breakers won the game more often than irrational rule breakers and those who did not break rules, and, as an inference, rational rule-breaking entrepreneurs would likely realise greater economic gains in competition.

## Appendix 2: Initial pool of the 50 constructive rule beliefs scale items

Please rate your agreement with the statements below.

Note: Formal rules, simply put, are codified laws and regulations usually written and enforceable by some relevant authority.

1. Formal rules should generally be followed.
2. People who follow rules without considering their purpose can do more harm than good.
3. Formal rules should play a major role in informing one's behaviour.
4. It is wrong to think of formal rules as things that can be modified in specific situations.
5. Formal rules are more of a guide of how to behave rather than something that has to be rigorously followed.
6. Formal rules should apply to everyone equally.
7. I rarely question formal rules.
8. Some people should be exempt from following formal rules due to their justifiable circumstances.
9. Formal rules should not be tools for authorities to exert power.
10. A formal rule is worthless if not applied consistently across situations.
11. People should always follow formal rules.
12. Everyone affected by formal rules should have the opportunity to partake in the making of them.
13. Formal rules should serve a purpose.
14. Formal rules need to be flexible across contexts to be useful.
15. Formal Rules are meant to be followed without question.
16. A good formal rule is clear and not open to interpretation.
17. After formal rules are established, the extent to which they should be followed depend on the situation.

18. It is justifiable to break some formal rules.
19. I only follow rules when convenient.
20. Formal rules should be exclusively made by authorities.
21. I question formal rules when it is necessary.
22. The world would not function as well if people ignored formal rules.
23. It is always important to consider the context before deciding whether to follow a formal rule.
24. When making a new rule, authorities should provide a clear justification for the purpose of the rule.
25. Most formal rules are open to interpretation.
26. Once a formal rule has been made there should be no exceptions.
27. The rationale underlying formal rules relevant to me is none of my business.
28. For formal rules to serve the purpose they were designed for, they need to be open to change.
29. When making a rule the views of all parties affected by the rule should be considered.
30. The best answer to the question “should rules be followed?” is “it depends”.
31. Formal rules should be followed regardless of the context.
32. I accept that people with power have greater influence on formal rules.
33. Some rules should be broken.
34. I enjoy breaking rules.
35. Persuading people to comply with formal rules works better than giving orders.
36. People should generally do whatever a formal rule requires of them.
37. Formal rules strongly guide my thinking when making decisions.
38. The best rules are those that are fluid and responsive to what is happening in the environment.

39. Formal rules should be followed, no matter what.
40. Rules play an important role in society.
41. Formal rules should be updated regularly to stay relevant.
42. Everyone who is or will be affected by the formal rules should have a say in how rules are formed.
43. No individuals are “above” rules.
44. I am more likely to follow a rule when I believe the rule serves an important purpose.
45. Rules are so important to society that people should even follow rules they disagree with.
46. It is important to question rules where necessary.
47. I trust that rules set by authorities generally improve societal functioning.
48. It is important to break problematic rules.
49. I often break rules for the sake of it.
50. Sometimes it is okay to ignore formal rules.

-- END OF APPENDIX 1 --



### Appendix 3: Constructive Rule Beliefs Manipulation & Sham Tasks

#### 1. The Constructive Rule Beliefs Sham Task

*Next, you will be presented a text on the topic of 'planets'. Although the topic is not directly related to entrepreneurship, we are very interested in your ability to recall information from the text. Please read the text quickly (yet carefully) and then respond to the following questions.*

Earth is the only planet presently known to support life, and its natural features are the subject of many fields of scientific research. Within the solar system, it is third closest to the sun; it is the largest terrestrial planet and the fifth largest overall. Its most prominent climatic features are its two large polar regions; two relatively narrow temperate zones, and a wide equatorial tropical to subtropical region. Rainfall varies widely with location, from several meters of water per year to less than a millimeter. Saltwater oceans cover seventy-one percent of the Earth's surface. The remainder consists of continents and islands, with most of the inhabited land in the Northern Hemisphere. Although the planet Earth is currently the only known body within the solar system to support life, current evidence suggests that in the distant past the planet Mars possessed bodies of liquid water on the surface. For a brief period in Mars' history, it may have also been capable of forming life. At present though, most of the water remaining on Mars is frozen. If life exists at all on Mars, it is most likely to be located underground where liquid water can still exist. Conditions on the other terrestrial planets, Mercury and Venus, appear to be too harsh to support life as we know it.

*Please select the two TRUE statements based on the above paragraph.*

- Most of the water on Mars is frozen.
- John decided to go to casino out of free will.
- Saltwater oceans cover more than two-thirds of Earth's surface.
- John was meant to go to the casino.

Earth is the sixth largest planet of our solar system.

Pluto is a dwarf planet.

John sometimes wins money with gambling.

-- End of The Constructive Rule Beliefs Sham Task --

## 2. The Constructive Rule Beliefs Manipulation Task

*Following is a set of arguments in support of the statement “some formal rules should be broken”. Please read these arguments carefully because we have some questions about these arguments later.*

1. Sometimes breaking, bending, or negotiating a formal rule is more ethical than following a formal rule. This can be true when:

- a. The rule is flawed and causes some form of injustice
- b. The rule is generally good, but problematic in a specific context
- c. The rule is outdated – it might have been beneficial when created but is not anymore
- d. There is more “good” to be achieved from breaking rather than following a particular rule.

For example: A driver speeding in a life-or-death emergency, or a business owner finding a loophole to a bureaucratic rule that jeopardises the firm's survival.

2. Some rules are inconsistent with the higher order values upon which they are based. For example, laws designed to assist refugees but inadvertently encourage people smuggling.

3. Breaking and/or negotiating problematic rules can apply pressure on rule-makers to reconsider problematic rules and therefore have broader benefit for other individuals.

4. More good will be achieved when more people adopt the mindset “formal rules should sometimes be questioned” rather than “formal rules should always be followed”. Rules are imperfect and when followed blindly can sometimes cause harm.

*Based on the arguments just presented, please select at least 3 correct statements from the following (note that 4 are actually correct):*

- Rule should always be broken.
- Rules are not perfect.
- Formal rules and social norms are not the same thing.

□ Sometimes breaking, bending, negotiating a rule can result in better outcomes than following a rule.

□ Rules can be good, but problematic in certain contexts (e.g., emergency situations).

□ Rules can be problematic when they are outdated.

□ Rules are always made by corrupt individuals hungry for power.

□ There is an exception for every rule.

-- End of The Constructive Rule Beliefs Manipulation Task --

-- END OF APPENDIX 2 --

## Appendix 4: Two Entrepreneurial Scenarios and Tasks

### Scenario 1: Approving high-cost dental procedures

In your country, before performing a high-cost (\$5000 plus) dental procedure on a patient, a dentist must first be granted approval from the patient's insurance company to perform the procedure. For the insurance company to decide whether the requested procedure is necessary, the insurance company relies on an assessment provided by a National Health Board certified dentist. Rather than hiring the dentists directly, which is costly and difficult to organize, insurance companies rely on third party companies to secure the workforce to perform the assessments.

Your company, HealthChoice is one such company. HealthChoice is a start-up company which finds board-certified dentists to perform the assessments required by the insurance companies. You are the sole founder of HealthChoice.

A key part of your business is securing contracts with insurance companies as well as certified dentists who can perform the assessments. You receive a fee for each assessment delivered, and in return you guarantee that the assessment is made by a qualified board-certified dentist.

A major part of your business model is establishing contracts with university dental schools where their staff (i.e., professors who are all board-certified dentists) perform assessments as part of their workload. You pay an agreed fee to the school and the school coordinates the work. Contracting the work to dental schools is efficient because the work is completed for a set fee, and you do not have to spend time or energy hiring individual dentists. Your business would not be as profitable or sustainable without these types of contracts.

To increase the capability of your company, you approached and established a contract with Capitol School of Dentistry (CSD), one of the world's best known and prestigious dental schools. Initially, the agreement with CSD works well, however, after three months you notice

that CSD's turn-around times have increased, and that they are behind on their quota of assessments. You call Cynthia, the Director of CSD to see why their performance has been slipping. Cynthia explains that the school has been experiencing some short-term staffing changes, with fewer board-certified dentists available to perform the assessments. Although she anticipated that the situation would be resolved within 6 months, she admitted that there was no way that CSD could perform the number of assessments promised given the small number of board-certified dentists they had on staff. Keen to salvage the contract, however, Cynthia suggested enlisting some of the best performing post-graduate students from the school to perform the assessments.

Cynthia believes that students would be a suitable substitute for staff given that the students would be certified within the next six months and would be amongst the top performers in the country. All of the students that Cynthia is referring to have completed their formal coursework and all dental internships and are now in the final stages of completing their clinical training. Most of these students already have jobs lined up, pending board-certification in the coming months. Because of these factors, Cynthia reasoned that there would be no difference between the quality of assessments by these select students and certified dentists. Cynthia also suggested that complex cases could be flagged and referred to a professor at the school to perform the assessment. CSD, would ask those involved to sign a confidentiality agreement. With confidentiality agreements in place, it is almost impossible that the insurance companies would ever find out that your company is partially using students to complete the assessments. You have heard of this happening before in other areas of health care assessment; however, you know that there are mixed opinions regarding the practice and technically, it is breaking a formal rule. It would be problematic if this arrangement were ever made public as insurance companies could legally end their contract with you and may not be open to future contracts.

It is important for your business that you do what you can to keep the contract with CSD

in place. The contract with CSD currently accounts for two thirds of your revenue and there is no other potential partner/dental school in sight who will become as important to you as CSD in any time soon. Aligning your business with such a prestigious organization is also extremely important to strengthen the reputation of your start-up. Importantly, your possible decision to run down Cynthia's offer would likely lead to the delay of dental procedures for a large number of dental patients and cause unnecessary suffering to them.

Please answer the questions below. We are interested in how you would behave under different situational factors. Please answer every question as though it was the only option available to you at that point.

	Extremely unlikely	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely	Extremely likely
How likely are you to accept Cynthia's proposal?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This is an attention check. Please select "extremely likely" here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely would you be to accept Cynthia's proposal if renegeing on this contract would likely cause your business to fail?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely would you be to accept Cynthia's proposal if renegeing on this contract only had a minor impact on your businesses' overall performance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely would you be to accept Cynthia's proposal if renegeing on this contract meant that a large number of dental patients received delayed treatment?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely would you be to seek out opportunities with other dental schools that utilized similar agreements to Cynthia's proposal (i.e., relied on high performing dental students to make judgements)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Still thinking about the Dental Procedure Scenario.

	Extremely unlikely	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely	Extremely likely
How likely would you be to make a case to major insurance companies to change their rules regarding who should assess the relevance of procedures?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

All things considered, will you accept Cynthia's proposal?

- No
- Yes

Based on this scenario, to what extent do you agree with the following statements?

	Totally disagree	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Totally agree
In your opinion, it is justifiable to accept Cynthia's proposal regardless of the impact it will have on your business and/or patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In your opinion, it is justifiable to accept Cynthia's proposal if doing so would assist your business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In your opinion, it is justifiable to accept Cynthia's proposal if doing so would mean that dental patients would not receive delayed dental treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Imagine that** – despite having some initial reservations – you accepted Cynthia’s proposal.

One year later, you look at data which strongly indicates the dental students did an excellent job at assessing the necessity of dental procedures. Despite no more faculty shortages, Cynthia suggests you continue using dental students. How likely are you to agree to this suggestion (agreeing will have the effect of cutting your costs slightly, but no longer directly benefit patients)?

- Extremely unlikely
- Very unlikely
- Unlikely
- Neither likely nor unlikely
- Likely
- Very likely
- Extremely likely

--END OF THE FIRST SCENARIO--

## Scenario 2: Putting the CE mark on your product

Your firm recently developed a flagship smart-wear product, “D-Tect” to help consumers detect early warning signs of contracting a range of contagious diseases, even before any obvious symptoms appear. It is particularly useful because early detection of infection has been shown to significantly improve patient outcomes. Independent research has confirmed that “D-tect” is highly accurate and therefore has the capacity to reduce the spread of disease, reduce recovery time and ultimately save lives.

A key target market for “D-Tect” is Europe, as statistics have shown a steady increase in these contagious diseases over the past decade in European countries. You are excited to showcase “D-Tect” at the upcoming European Smart Health Expo 2022, a prestigious and high-profile event, and one that is perfect for launching a new product to EU (European Union) markets. The expo is two weeks away and will take place both physically in Düsseldorf and virtually through holographic technology, which allows access to the expo from anywhere in the world. It is crucial that the launch goes well. A successful launch could attract much needed funds from new investors. While everything seems promising, there is one thing that has been concerning you. Like most start-ups, you are experiencing cash-flow problems. All your cash has been invested in the R&D of the device and to get you through, you have negotiated a 6-month no-pay arrangement with your core team (i.e., you, the Chief Product Officer and the Chief Financial Officer). The arrangement is going to come to an end soon, so a cash injection from new investors is important to meet ongoing expenses.

Jeff, your CFO, has identified AlpesV as an attractive potential institutional investor. Jeff is aware that AlpesV will send investment managers to this expo and he has also heard that all products within AlpesV’s portfolio companies bear a “CE mark”.

A “CE mark” is a professional certification which signifies that a product sold in Europe has been assessed to meet safety, health, and environmental protection requirements. Putting

a CE mark on “D-Tect” will make market penetration a lot easier, particularly in EU markets, because it gives consumers an additional sense of assurance.

Your team started the procedure for getting the CE mark a while ago. Formally, you have been told that although the final paperwork has been approved, technically, you will need to wait a further 6 weeks before you can affix the CE mark on the product due to procedural formalities. Informally, however, you were told that since your product has met all the criteria, the approval paperwork could come through a lot sooner than 6 weeks.

However, this means that you cannot put the CE mark on “D-Tect” when you showcase the device at the expo in two weeks because putting the CE mark on the device would technically be breaking a formal rule. This will inevitably give rise to consumer concerns and may also keep away potential investors like AlpesV. These will result in efforts on your part to remedy and involve significant opportunity costs.

If you put the CE mark on “D-Tect” for the expo, things would unfold perfectly for the business. But there is a risk that this could be uncovered by the EU CE mark certifying agent and this could result in sanctions against your company or withdrawal of approval. Only two people on your team know the exact status of the CE mark certifying for “D-Tect” and the chance of being found out in 6 weeks is extremely small. It doesn’t really matter though if it is found out after 6 weeks because you would have already obtained the official CE certificate and you are fairly sure that the certifying authority would not go after a small start-up firm like yours, particularly when your product is perfectly aligned with the greater good of consumers.

Please answer the questions below. We are interested in how you would behave under different situational factors. Please answer every question as though it was the only option available to you at that point.

	Extremely unlikely	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely	Extremely likely
How likely are you to put the CE mark on “D-Tect” for the expo?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if the chance of being found out by the certifying agent is small?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if being found out by the certifying agent will mean that your request for to have the CE mark is rejected?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if being found out by the certifying agent will mean that your company will experience reputational damage?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if the presence of the CE mark increases your chances of securing funds from AlpsV?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This is an attention check. Please select “extremely likely” here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, if it means the success of	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>“D-Tect” will ultimately translate into better health outcomes for consumers sooner?</p>							
<p>How likely will you put up a pull-up banner at your booth during the expo, on which it highlights: “Our products meet highest health and safety standards. All of them have been or will be CE certified in EU.”?</p>	○	○	○	○	○	○	○
<p>If bearing the CE mark on “D-Tect” is likely to result in securing significant venture funds to further its launch to market, how likely are you to ensure that the product has the CE mark?</p>	○	○	○	○	○	○	○
<p>Still thinking about the D-Tect Scenario.</p>							
	Extremely unlikely	Very unlikely	Unlikely	Neither likely nor unlikely	Likely	Very likely	Extremely likely
<p>How likely will you go ahead with the expo with “D-Tect” bearing a CE mark, with a small plaque under the product display, noting: “We are currently undergoing the final CE certification procedure.”?</p>	○	○	○	○	○	○	○

All things considered, will you put the CE mark on "D-Tect" at the expo?

- No
- Yes

How serious an issue do you consider putting the CE mark on "D-Tect"?

- Not serious at all
- Mostly not serious
- Not quite serious
- Neither serious nor not serious
- Quite serious
- Very serious
- Extremely serious

Based on this scenario, to what extent do you agree with the following statements?

	Totally disagree	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Totally agree
Do you agree that companies in the real world take risks, such as claiming certification before officially endorsed?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you agree that it is justifiable to put the CE mark on “D-Tect” a bit earlier than its official certification as long as the overall benefits of doing so outweigh the potential harms caused by it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you agree that putting the CE mark on “D-Tect” earlier than its official certification is breaking a formal rule and should not be considered regardless of its benefits or consequences?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

-- END OF SCENARIO 2 --

-- END OF APPENDIX 3 --



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