HYBRID ENTREPRENEURS’ SELF-EFFICACY AND PERSISTENCE CHANGE:
A LONGITUDINAL EXPLORATION

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Highlights

- We examine hybrid entrepreneur’s career transitions over a 20-week period.
- We provide insight into the longitudinal relationship between entrepreneurial self-efficacy (ESE) and persistence for hybrid entrepreneurs.
- We find evidence that ESE predicts entrepreneurial persistence change over time.
- The relationship between ESE and entrepreneurial persistence suggests a linear growth trajectory for hybrid entrepreneurs.
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ABSTRACT

Hybrid entrepreneurship—where an individual simultaneously engages in startup activities as well as wage-based employment—is an increasingly common career transition path. Yet, relatively little research has explored entrepreneurial characteristics during these unique career transitions. We provide exploratory insight into the longitudinal relationship between self-efficacy and persistence for hybrid entrepreneurs’ \((N = 29)\) across a twenty-week period during which aspiring entrepreneurs engaged in activities related to venture startup while maintaining wage employment. As such, we propose that entrepreneurial self-efficacy (ESE) and entrepreneurial persistence are malleable concepts that change over time. Using our longitudinal sample, we find evidence that ESE predicts entrepreneurial persistence change over time. Perhaps more importantly, we model how changes in ESE over time affect changes in entrepreneurial persistence for hybrid entrepreneurs. In sum, our work provides a foundation from which future research can examine the longitudinal transition of nascent entrepreneurs moving from an occupational setting as an employee to launching their own venture.

Keywords. entrepreneurial self-efficacy; entrepreneurial persistence; startup; nascent; hybrid; longitudinal
INTRODUCTION

Being able to initiate and persist in activities related to identifying, exploring, and implementing opportunities for value creation is critical for an aspiring entrepreneur (e.g., Baum & Locke, 2004; Shane & Venkataraman, 2000). This is especially true for the growing number of aspiring entrepreneurs who undertake a hybrid entrepreneurial entry path, whereby an individual simultaneously engages in startup activities while remaining employed elsewhere during their career transition (Folta, Delmar, & Wennberg, 2010; Thorgren, Sirén, Nordström, & Wincent, 2016). This was the case for 20 percent of the CEOs in 1997 on Inc. Magazine’s 500 fastest growing companies—and, estimates suggest that around 10 percent of the individuals, in general, working on entrepreneurial ventures are hybrids (Raffiee & Feng, 2014).

Although the literature on hybrid entrepreneurship is still emerging, we know a great deal about how to increase the propensity for an individual to engage in activities related to identifying, exploring, and implementing opportunities for value creation. Specifically, there are two constructs that are especially relevant for an individual to initiate, and work towards growing, an entrepreneurial venture—namely, entrepreneurial self-efficacy (ESE) and entrepreneurial persistence (Brändle, Berger, Golla, & Kuckertz, 2018; Cardon & Kirk, 2015). ESE is defined as the “…strength of an individual’s belief that he or she is capable of successfully performing the roles and tasks of an entrepreneur” (Chen, Greene, & Crick, 1998, p. 301). And, entrepreneurial persistence is defined as a, “…behavior that involves goal-directed energy sustained over time where the goal involved is success of the entrepreneurial venture” (Cardon & Kirk, 2013, pp. 3-4).

Regarding the relationship between these two constructs—persistence and self-efficacy—what is known is that, “People with high self-efficacy have more intrinsic interest in the tasks,
are more willing to expend their effort, and show more persistence in the face of obstacles and setbacks” (Chen et al., 1998, p. 298). Put simply, “…the positive effect of more general self-efficacy on persistence is well documented” (Cardon & Kirk, 2013, p. 5). However, we contend that there are two reasons why this literature needs to be viewed in a more nuanced way.

First, self-efficacy is a malleable construct—that is, individuals can increase their self-efficacy (e.g., see Burnette et al., 2019). However, there is a notable lack of work exploring the psychological implications of how a wage-earning person’s self-efficacy beliefs evolve as they embrace the role of an entrepreneur. Second, we need insights into the relationship between ESE and persistence within the specific context of hybrid entrepreneurship. Bandura and others argue for the importance of domain-related self-efficacy beliefs and domain-related motivational outcomes (Bandura, 1997; Tierney & Farmer, 2002). Accordingly, we develop our study around the role of entrepreneurial self-efficacy (ESE) and its relationship to entrepreneurial persistence within the hybrid entrepreneurship context.

**HYBRID ENTREPRENEURSHIP AS AN OCCUPATIONAL CHOICE CONTEXT**

The daily decision set for hybrid entrepreneurs consists of (a) pursuing wage-employment only, (b) choosing full-time entrepreneurial entry, or (c) maintaining continued hybridity (Raffiee & Feng, 2014; Thorgren et al., 2016). Unfortunately, there are few insights about how this career transition might unfold psychologically. To help explain this, we draw on social cognitive theory (SCT). Social cognitive theory explains how individuals observe, practice, learn, and acquire new skills and knowledge (Bandura, 2012; Lent & Brown, 2013).

**Entrepreneurial Persistence Change in Occupational Choice Contexts**

Persistence towards domain-related goals is a key outcome associated with SCT (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001), and we know that entrepreneurial
persistence change, and the continuation of action despite setbacks and obstacles represents a key construct for hybrid entrepreneurs (Adomako, Danso, Uddin, & Ofori-Damoah, 2016; Gimeno, Folta, Cooper, & Woo, 1997; Holland & Shepherd, 2013; Shane, 2003).

As noted earlier, we adopt the definition of entrepreneurial persistence put forward by Cardon and Kirk (2013, pp. 3-4), namely that persistence is a “…behavior that involves goal-directed energy sustained over time where the goal involved is success of the entrepreneurial venture.” This conceptualization highlights two distinct components of entrepreneurial persistence. First, continued persistence reflects ‘energy sustained over time.’ Second, it specifically mentions ‘behavior’ towards the goal of launching a successful entrepreneurial venture. Drawing on this conceptualization, it is our exploratory supposition that hybrid entrepreneurs’ “behavior that involves goal-directed energy sustained over time” is marshaled to increase “the success of the entrepreneurial venture” over time. Accordingly, we offer our primary research question:

Research Question 1: Does hybrid entrepreneurs’ persistence increase over time?

Self-Efficacy and Persistence Change within Occupational Choice Contexts

Within the domain of entrepreneurship, research on the topic of self-efficacy has coalesced around the study of distal outcomes of a static construct, such as the positive relation with firm performance (Baum & Locke, 2004; Miao, Qian, & Ma, 2017). But when examined from a SCT framework, self-efficacy is a key proximal predictor—that is changeable—which leads to continued behavioral persistence (Bandura, 1986). Thus, in contrast to extant perspectives, we contend that ESE and entrepreneurial persistence are malleable and situationally dependent. Consistent with SCT, we surmise that individuals’ actions and engagement in the new venture creation process will influence ESE. And, over time, we believe that greater ESE
will positively affect persistence. We further surmise that higher levels of ESE are a function of the on-going attempts of the hybrid entrepreneur to advance their ventures, and over time those who start with higher levels of ESE should have even higher levels of entrepreneurial persistence. This line of thinking leads to our second exploratory research question.

Research Question 2: Will hybrid entrepreneurs’ persistence increase over time as a function of entrepreneurial self-efficacy? And, moreover, will hybrid entrepreneurs who start with higher levels of entrepreneurial self-efficacy see a greater positive change in their persistence than those with lower ESE?

METHOD

Participants and Procedures

We received 87 responses from 29 hybrid entrepreneurs recruited via a university-based outreach center in the southeastern United States for this 20-week study that assessed 3 time periods (i.e., initial survey, then at 10 weeks, and again at 20 weeks). For each time period, the entrepreneur was sent an online questionnaire of all study measures. All participants held a full-time job in addition to working on their venture. Their average number of years of relevant industry experience was 5.67. Of these individuals, 9 were female (31%) and 20 were male. A variety of industries were represented within these data—e.g., Software as a Service (SaaS), Video & Photography, Retail, Consulting, Commercial Real Estate, and Manufacturing.

Measures

The properties for each measure described below were examined using confirmatory factor analysis with bootstrapped estimates of model fit to address normality assumptions, and reliabilities were estimated using McDonald’s Omega (McDonald, 1985). Omega was used as it
provides a congeneric estimation of reliability, which is not downwardly biased as compared to Cronbach’s alpha (Revelle & Zinbarg, 2009; Zinbarg, Yovel, Revelle, & McDonald, 2006).

Entrepreneurial self-efficacy (ESE) was assessed using an adapted version of Zhao, Seibert and Hills (2005) composed of 5 items on a Likert scale ranging from (1) extremely incompetent, to (7) extremely competent. Example items included, “How confident are you in your ability to successfully perform the various roles and tasks of entrepreneurship?” and “How confident are you in your ability to successfully identify new business opportunities?”

Parceling and bootstrapped fit indices were used to confirm the measurement model.Parceling is acceptable as the ESE construct is unidimensional in nature (Yuan, Bentler, & Kano, 1997), which resulted in dropping one item with large residual variance with other items; “How confident are you in your ability to create new products?” Model fit for ESE was good across all fit indices ($\chi^2 (2) = 2.07, p = .355$; CFI = .99, TLI = .99, IFI = .99, RMSEA = .036, BIC = -4.67). Reliability estimates of ESE across each time point were, $\omega = .95$ for time 1, $\omega = .93$ for time 2, $\omega = .95$ for time 3.

Entrepreneurial persistence was assessed using an adapted, 3-item, measure based on Baum and Locke (2004) as well as Cardon and Kirk (2013). The items, captured on a Likert scale ranging from (1) strongly disagree to (7) strongly agree included: “I continued to work hard on my startup even when others opposed me,” “I can think of many times when I persisted with my startup when others would have quit,” and “No matter how challenging my startup has been I did not give up.” The factor model for entrepreneurial persistence was just identified, thus all model fit indices were equal to 1.0 (1.0 – RMSEA). Reliability estimates of entrepreneurial persistence were, $\omega = .96$ for time 1, $\omega = .98$ for time 2, and $\omega = .98$ for time 3.

Analytical Approach
Measurement invariance was tested due to the nested structure of the data; i.e., repeated measurements nested within individual hybrid entrepreneurs. The purpose of testing for measurement invariance is to make sure the measurement model of the focal constructs does not change over time (Vandenberg & Lance, 2000; Widaman, Ferrer, & Conger, 2010). Strict invariance was found for both constructs in this study (ESE and persistence), which indicated that (a) the same factor structure held for each individual entrepreneur over time, (b) the items (i.e., factor loadings) had the same meaning for each entrepreneur over time, (c) the item intercepts over time (i.e., average) were not systematically different among individuals, and (d) the residual variance of the items does not differ over time. Thus, with strict invariance it is valid to index items of each construct (e.g., sum or average) and compare across repeated measures.

A Latent Growth Curve (LGC) model with a time-varying covariate (see Figure 1) was used as the primary method of analysis, which is a structural equation for modeling change over time (Bollen & Curran, 2006). A LGC model is the preferred method of analysis for studying change over time in entrepreneurs as it provides more information specific to each individual (e.g., individual slope trajectories) relative to either repeated measure ANOVA or hierarchical linear models (HLM) (Curran, Obeidat, & Losardo, 2010). Similarly, due to the power of a repeated measures design, LCG models have been successfully estimated with sample sizes as small as \( N = 22 \) (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991), which we have exceeded (\( N = 29 \)). In addition, growth curve models provide additional information regarding how specific individuals vary over time, which allows for a test of consistency in the change of entrepreneurial persistence within our sample of hybrid entrepreneurs. Both linear and non-linear models were examined and it was found that a linear model fit the data best (\( \chi^2 (9) = 2.24, p < .001 \)). Missing data, which accounted for approximately 5% of responses, was imputed using
multiple imputation through chained equations with a bootstrapped sample \((n = 500)\)—this is appropriate for data missing completely at random (White, Royston, & Wood, 2011). All analyses were conducted using the lavaan and mice package(s) in R, version 3.3.1 (R Core Team, 2016).

**RESULTS**

Correlations and descriptive statistics are provided in Table 1. Overall, results from the LGC analysis showed that entrepreneurial persistence increased over time. We found that ESE positively relates to entrepreneurial persistence across 2 of the 3 time points. And, we found through the intercept and slope covariance that individuals with higher ESE had higher rates of persistence growth over time \((COV = 6.39, p = .002)\). In addition, when including ESE at each time point predicting entrepreneurial persistence, the slope on persistence became significantly negative over time rather than remaining positive \((slope = -7.02, p = .006)\). This result shows that ESE has considerable impact on an entrepreneurs’ persistence in their venture over time. Put differently, similar to the interpretation of a simple OLS regression, if ESE were zero across each time point in the model, then the slope on persistence over time would change from a positive 1.0 to -7.02, which reinforces the importance of ESE in continued persistence for hybrid entrepreneurs.

For Research Question 1, results from model 1 (see Table 2) indicated that entrepreneurs had an average persistence of 4.87 (Likert scale from 1 to 7) over the study time frame (i.e., 20 weeks) and entrepreneurial persistence increased positively at a rate of 1.0 \((slope = 1.00, p = .005)\). In addition, the intercept and slope of entrepreneurial persistence had significant covariance \((COV = 6.96, p = .002)\), suggesting that hybrid entrepreneurs who start with higher persistence at time 1 increased faster than those with lower persistence at time 1. This significant
effect may indicate a possible moderating variable, as results show individual entrepreneurs’ persistence increase at different rates, which presents a future research opportunity. Overall, the model had good fit ($N = 29$; Chi-square (3) = .91, $p = .823$; CFI = 1.0; TLI = 1.0; RMSEA = 0; BIC = -9.19). Fit indices were 1.0 as the growth model was just-identified, meaning 3 time points were used to estimate the latent variables of the intercept and slope. To more clearly assess model fit, the model BIC value was approximately -10, thus indicating a strong preference for this model over the saturated model (Raftery, 1995).

For Research Question 2, the time varying covariate ESE was added to the initial model to create model 2 (see Table 2). Looking at each direct effect of ESE on persistence over time showed that ESE was significantly and positively related to persistence change over time, except for Time 1, which showed no significant effect (Time 1: $b = -0.02, p = .856$; Time 2: $b = .25, p = .009$; Time 3: $b = .52, p = .001$). Importantly, the intercept and slope covariance for persistence remained positive and significant ($COV = 6.39, p = .002$). Put simply, individuals with higher levels of entrepreneurial self-efficacy saw a greater positive change in their persistence relative to those with lower ESE. However, the model including ESE suffered in terms of fit due to limited sample size and an increase in the degrees of freedom (i.e., parameters estimated)—although, the model still exhibited acceptable fit ($N = 29$; Chi-square (26) = 31.90, $p = .906$; CFI = .90; TLI = .86; RMSEA = .141, BIC = -55.65). RMSEA was not focused on in assessing model fit due to its inflated estimation in models with small sample sizes and degrees of freedom (Kenny, Kaniskan, & McCoach, 2014). Instead, the BIC value indicated a negative value (i.e., below -10), which indicated a very strong preference for this model over the saturated model (Bollen, Harden, Ray, & Zavisca, 2014; Raftery, 1995). For both models, quadratic slopes were
tested, but the linear growth model provided the best fit. Table 2 provides results for model 1, the growth model with only persistence, and model 2, with ESE as a time-varying covariate.

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Insert Figure 1 and Tables 1 & 2 about here
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**DISCUSSION**

**Theoretical Implications**

The results of this study indicate that ESE is related to entrepreneurial persistence growth over time. Specifically, we found that hybrid entrepreneurs with higher ESE had higher rates of persistence growth. These findings enable researchers to think differently about how individuals become entrepreneurs from a psychological perspective. Much attention has been paid to the nexus of the individual and the opportunity (Shane & Venkataraman, 2000). Our results point to the conclusion that the individual, and the individuals’ level of ESE and persistence over time may be a key area to focus on in addition to the study of entrepreneurial opportunities (Baron, 1998; 2000).

Furthermore, since Bandura and others emphasized the domain-specificity of self-efficacy beliefs and motivational outcomes (Bandura, 1997; Tierney & Farmer, 2002), our work embedded within the context of hybrid entrepreneurship is an illuminating exploration at the intersection of entrepreneurship and occupational transitions. Extant work related to hybrid entrepreneurship has primarily explored questions related to ‘why’ (Raffiee & Feng, 2014) and ‘who’ (Thorgren et al., 2016). We provide initial exploratory evidence as to ‘how’ the hybrid entrepreneurship career transition occurs from a psychological perspective offering greater nuance to existing research. From a SCT perspective, our work addresses some of Bandura’s (1997; 2012) concerns associated with the misapplication of SCT in organizational settings, the
need to design within-person studies of self-efficacy, and the importance of developing such studies with domain-specificity (i.e., hybrid entrepreneurship). We observe persistence change as an outcome of self-efficacy with the occupational choice context highlighting this dynamic.

**Practical Contributions**

Our study offers important insights for staged transitions to entrepreneurship. This transition has been aptly characterized by the notion that “hybrid entrepreneurs learn about the merits of their venture idea, skills, and entrepreneurial fit prior to committing to the business full time” (Raffée & Feng, 2014, p. 941). Here, we recommend that anyone who wishes to become an entrepreneur, or who wants to encourage others to become entrepreneurs, support the creation of an environment in which individuals’ self-efficacy can grow. Fortunately, the SCT literature provides a guide as to how to create such an environment (Bandura, 1986). First, there must be a setting in which individuals can engage in developing greater mastery of their entrepreneurial experiences (through on-going engagement). Second, there must be the opportunity for individuals to engage in social interactions so that modeling other entrepreneurs can occur. And, third, interested stakeholders must enable individuals to make decisions at critical inflection points which, over time, can move hybrid entrepreneurs along the path towards full-time self-employment (Bandura, 2012). Overall, our study indicates that hybrid entrepreneurial entry potentially offers the transition time necessary to improve the confidence, beliefs, and abilities necessary to perform important new venture creation tasks that can increase persistence.

**Limitations and Future Research Directions**

We relied on a shortened ESE measure, although previous work points to more nuanced facets of ESE (e.g., Chen et al., 1998; McGee, Peterson, Mueller, & Sequeira, 2009). Future research might consider examining some of these individual facets (e.g., hiring, negotiation,
management) to extend the generalizability of our findings. We also focused on just one proximal outcome of ESE in startup persistence and suggest that future work examine more complex relationships such as moderating and mediating models (Caron & Kirk, 2015) which might add to conditions under which greater self-efficacy is not desirable (e.g., Hmieleski & Baron, 2008).

Our measures of ESE and persistence only captured variance in agreement with the statements included in each measure. We realize this does not address all nuanced changes in these variables over time however.\footnote{We thank our review team for insights here.} We approached our exploratory study seeing the integration of SCT and hybrid entrepreneurship as a way to examine ‘process’ as a “logic used to explain a causal relationship” (Van de Ven, 1992, p. 169). Nevertheless, we did not directly observe this process. There are multiple areas where future research can advance our work in order to better capture the ‘process-oriented’ nature of this relationship (e.g., McMullen & Dimov, 2013). To do so, future research requires “…Regularly scheduled and intermittent real-time observations…to observe if and how changes occur over time” (Van de Ven 1992, p. 181). Future work can (a) bring in more process-oriented theories (e.g., life-cycle process theory) to examine the hybrid entrepreneurship process, and (b) explore hybrid entrepreneurship as a “…sequence of events that describe how things change over time,” as Van de Ven (1992, p. 169) suggests.

Related, we simply captured hybrid entrepreneurs’ perceived, subjective, ESE and persistence by as ‘traits’ at various time periods. Skinner (1996) notes the depth of confusion regarding actual, perceived, and experienced control and provides a framework to increase the precision through which studies on control approach empirical inquiry—that is, via the identification of agents (e.g., self, others, collective), means (e.g., actions, cognition), and ends
(e.g., performance, process, reactions). Therefore, we encourage more holistic approaches to modeling ESE change as a process, by including the three different perceptions (for each entrepreneur) that might include the self and others, while accounting for subjective, actual, as well as experienced ESE. Furthermore, we modeled the ESE – entrepreneurial persistence relationship as a linear relationship, as the linear growth model provided the best fit. However, alternative sampling approaches (e.g., experience sampling) with varying time increments (e.g., day or week) might reveal changes in ESE and persistence resemble more of a sigmoid curve. This might suggest there are thresholds (or regions) below which, and above which, ESE and persistence have greater (or lesser) influence on actual behaviors (e.g., regions where “I quit” is likely versus regions where “likelihood of persisting” is greater).

To summarize, it is intuitively appealing within the extant literature to view self-efficacy and the ability to persist as something that individuals do, or do not, possess. This view, however, obscures the nuanced nature of these relationships we studied in the hybrid entrepreneurship context. Hybrid entrepreneurship provides an excellent context to explore the critical decision points of pursuing venture launch when entrepreneurs may feel they “have arrived.” Efficacy beliefs affect their persistence and likely other related outcomes like identity and venture activity (e.g., Engel, Dimitrova, Khapova, & Elfring, 2014; Schulz, Urbig, & Procher, 2017). Work here can build more precise theory regarding self-efficacy and persistence change through the specification of when things happen within the startup venture (Mitchell & James, 2001).

2 We thank our review team for insights here.
References


### Table 1
*Correlations and Descriptive Statistics*

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<th>M</th>
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<td>2. Entrepreneurial Persistence</td>
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<td>3. Entrepreneurial Self-Efficacy</td>
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<td>0.03</td>
<td>0.32***</td>
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Note. p < .05*, < .01**, < .001***

n = 87
## Table 2

*Latent Growth Curves*

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<td>Entrepreneurial Persistence with Entrepreneurial Self-Efficacy</td>
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<tr>
<td>ESE ( t_3 )</td>
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Note. Significant at p < .05*, p < .01**, p < .001***

Note. \( t_1 = \text{time 1}, \ t_2 = \text{time 2}, \ t_3 = \text{time 3} \), COV = covariance
Figure 1
Latent Growth Model

Outcome \( (Y_t) = EP \) at time \( t \)
Predictor \( (X_t) = ESE \) at time \( t \)
\( \varepsilon_Y = \) error of \( Y \) at time \( t \)
i = \text{latent intercept}
s = \text{latent slope}