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Intraindividual Variability in Identity Centrality: Examining the Dynamics of Perceived Role Progress and State Identity Centrality

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Conventionally, identity centrality has been conceived of as a stable and transsituational construct, with situational variability in identity centrality treated as being of little informational value. In contrast to past research, we develop a theoretical model arguing that a portion of within-person variability in identity centrality is systematic and meaningful. Drawing on identity control theory, we examine the within-person relationship flowing from perceived role progress to state identity centrality, which is conventionally viewed as reverse causal at the between-person level. We further explain the intermittent effect of an intense positive emotion—passion for the role—and investigate the contingent effect of in-role effort. The results from 2 repeated-measures studies showed that a significant proportion of total variance in identity centrality occurred at the within-person level and perceived role progress influenced state identity centrality by engendering passion for the role contingent on in-role effort. We discuss the theoretical and practical implications of our findings for management and organizations to inspire new intellectual debate and novel viewpoints to advance the microfoundation of identity theory.

Keywords: identity centrality, progress, passion, effort, within-person effect

Role identity is often conceptualized as a motivational source for performing tasks and activities central to a role (Stryker, 1968).¹ The notion that identity remains stable and accounts for

role performance is pivotal to identity theory research (Burke & Stets, 2009; Stryker, 1980; Stryker & Serpe, 1982). Although scholars have acknowledged that temporal changes occur in the meaning of role identity over time, contemporary identity theory assumes that these changes occur at a slow rate (over months or years) often triggered by impactful and unavoidable life events (Burke, 2006; Burke & Cast, 1997). The situational variation in role identity is usually regarded as being of little informational value (Markus & Kunda, 1986; Marsh, 1989; Serpe, 1987). The current state of the science on role identity predominately builds on a trait-based “stable” identity concept taking into account the between-person variation but ignoring potentially “malleable” identity; thereby, discounting the within-person variation in iden-

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¹ Identity theory and social identity theory evolved as parallel streams of identity scholarship. The context of this article, however, relates to identity theory, which focuses primarily on personal identities (role identities) and not social identity theory, which focuses primarily on social identities, collective identities, and ingroup/outgroup categorization. A discussion on the differences and similarities between identity theory and social identity theory falls beyond the scope of the current article but is found elsewhere (e.g., see Stets & Burke, 2000). In the present article, we focus on the construct of “identity centrality,” a term often used in identity theory (Callero, 1985; Farmer, Tierney, & Kung-Mcintyre, 2003; Murnieks et al., 2014; Zhang & Bartol, 2010) and not on the construct of “identification,” a term often used in social identity theory. A detailed discussion on differences between identity centrality and identification is found elsewhere (e.g., see, Ashforth et al., 2008). In the present article, when we refer or point to identity research/literature, we refer to identity theory.

tity as measurement error (Owens, Robinson, & Smith-Lovin, 2010).

In contrast, the situationist viewpoint in identity theory builds on the “malleable” identity thesis, arguing that episodic identities emerge when a person performs identity-relevant activities on a day-to-day basis (Burke, 1991). Organizational and social roles are episodic in nature, and daily events influence role identities. In a daily diary study, for example, Burke (2004) showed that identity-relevant daily events can support or disrupt identity verification. As an illustration, consider the daily life of a person with an identity of a researcher. The person is likely to find congruence with the researcher role identity while successfully writing theoretical papers and/or empirically examining research questions during day-to-day activities, verifying the role identity of being a researcher at various instances/episodes. This identity verification that occurs across the ongoing weekly or daily interactions engenders the outcomes that are immediate and short-lived, such as the dynamic impact of identity trajectories on weekly leader effectiveness (Miscenko, Guenter, & Day, 2017) or the dynamic impact of identity-disruptive events on one’s daily mood (Burke, 2004).

In such scenarios, role identity is not a static marker but, instead, is “dynamically constructed in the moment” (Oyserman, Elmore, & Smith, 2012, p. 70) and the situational variability in role identity could provide distinct predictive power in understanding important within-person phenomena. These within-person relationships cannot be detected at the between-person level because within-person variance is absent at the between-person level when role identity is depicted as a trait in cross-sectional studies or is overlooked when role identity scores are aggregated to the mean level in the longitudinal studies (Fisher & To, 2012). Therefore, scholars have noticed a gap with regard to investigating the intraindividual aspect of role identity and called for further research to develop the microfoundation of identity theory by studying the nature of episodic role identity, and explicating the identity-processes that unfold at the within-person level across days or weeks (Owens et al., 2010).

To address this gap, in the present article, we study the intraindividual dynamics of identity by developing a theoretical model, explaining the mechanism how and when identity is influenced at the daily/weekly level (Burke & Reitzes, 1981). We first postulate a conceptualization of identity centrality at the within-person level and present the construct of “state identity” centrality. Second, we explicate the identity process that unfolds at the within-person level. We contend on identity control theory (Burke, 1991; Burke & Stets, 2009), which posits that the identity process is a self-regulating control system (Carver & Scheier, 1981, 1998), operating on a continuous correspondence between the person and the environment.² We argue that people continuously verify their identity using cues from situations such as perceived role progress. Thus, we study the dynamic relationship between perceived role progress and state identity centrality at the within-person level. In contrast to the dominant view in extant literature that role identity is an antecedent to subsequent role performance at the between-person level (Burke & Reitzes, 1981), we postulate the reverse effect: that identity itself is influenced by prior role progress at the within-person level (Burke, 2006; Burke & Stets, 2009).

We further elaborate on an emotion-based intermittent process to examine the mediating effect of intense emotions. According to identity control theory, people experience positive

emotions when successfully meeting identity expectations (Burke, 1991; Stets, 2005). Moreover, people in episodic roles tend to rely on their emotions to verify their identity (Burke, 2004; Stryker, 2004). Discussing the significance of intense or acute emotions in identity verification, Stryker (2004) argued that intense emotions amplified the stimuli that trigger emotions to “inform people that they are being signaled about something important, something to which they need to pay attention (p. 9).” We herein explain the effect of one intense emotion—passion for the role—on the relationship between perceived role progress and identity centrality.

Lastly, we explain the contingency—in-role effort—to examine identity verification and nonverification when perceived role progress evokes passion for the role, which in turn affects state identity centrality. We conducted two repeated-measures studies to examine the dynamics of state identity centrality at the within-person level (Study 1, a 10-wave biweekly study spanning a 5-month period, $N = 41$, total observations = 340; Study 2, a 10-day daily study spanning a 2-week period, $N = 40$, total matched morning-evening observations = 358).

Our contributions to management and organization research are twofold. First, we contribute to advancing the microfoundation of identity theory by conceptualizing the nature of identity centrality within the person—situation interactionist tradition. We argue that a situation influences identity centrality across time and that considerable variability exists across occasions, carrying systematic and meaningful information contained at the within-person level (Miscenko et al., 2017). We postulate that the dispositional construct—identity centrality—is best depicted as a frequency distribution of *states* across a wide range of occasions (Fleeson, 2001; Fleeson & Jayawickreme, 2015). Such an approach synthesizes both interindividual persons and intraindividual situations (Fleeson & Nettle, 2008) instead of narrowly focusing on one aspect at the expense of the other. This novel paradigm will open new avenues for scientific inquiry into understanding the nature and the processes of role identity at the within-person level.

Second, we contribute to identity theory by elaborating the mechanism: whether, how, and when perceived role progress influences identity centrality—a relationship that is depicted largely to be in the reverse direction (Burke & Stets, 2009). By examining the intermittent effect of passion for the role, we respond to the scholarly call to investigate the intense emotions in identity—emotion research (Stryker, 2004). We further explain the moderating effect of in-role effort, providing useful insights into the ongoing debate regarding identity verification whether one critically self-verifies role identity (self-verification vs. self-enhancement; Stets, 2003, 2005; Stets & Burke, 2014). Overall, we advance identity theory by unearthing the underresearched intra-

² Identity theory is an overarching theory that includes identity control theory (ICT; Ashforth et al., 2008; Stryker & Burke, 2000). Identity control theory is formulated from classic identity theory, which is based on traditional symbolic interaction. Classic identity theory argues that people choose behaviors that correspond to their role identity (Burke & Reitzes, 1981; Burke & Tully, 1977). Identity control theory (Burke, 1991; Stets & Burke, 2003) evolved from integrating classic identity theory and control theory (Powers, 1973) proposing a goal-based, perpetual identity control system, elaborating on the mechanism underlying the alignment of self-in-situation with self-defining meanings held in the identity.

individual relationships among identity centrality, role performance, and emotions, which, for the most part, have assumed identity centrality to be an antecedent to subsequent role performance and emotions.

Theory and Hypotheses

Conceptual Meaning and Measurement of “State Identity” Centrality

Scholarly interest in the within-person variation in role identity has been attributed to the contemporary conceptualization of identity as a process, going beyond the traditional views on role identity as solely being a stable dispositional construct (Leitch & Harrison, 2016). In classic identity theory, identity is conceived as a global, undifferentiated, and transsituational construct (Burke & Reitzes, 1981; Callero, 1985; Stryker, 1968; Stryker & Serpe, 1982). Such transsituational concept of role identity has provided a way to account for the independence of role-related behavior from immediate situational demands (Burke & Reitzes, 1981; Callero, 1985; Stryker & Serpe, 1982). In this tradition, however, variability in role identity across situations is considered error variance (Markus & Kunda, 1986; Marsh, 1989; Serpe, 1987), which is assumed to be distributed randomly across situations. Aggregating the assessments of identity across occasions is conceptualized to render the true score of identity. Although, the process of aggregation to a single point is useful in capturing consistency or stability in identity, unfortunately, any systematic and meaningful variance in identity that occurs at the within-person level is discarded as error (Beal, 2015).

Recently, identity scholars have extended conceptualization of identity construct beyond the traditional definition of role identity as purely dispositional in nature, arguing that social roles are ensembles of short-term episodes/events that unfold across a wide range of occasions (Ashforth & Schinoff, 2016; Miscenko et al., 2017). In fact, identity-relevant episodes/events occur daily (Burke, 2004). Identity theorists argue that the “subjectivity of identity [is] inherently fragile and temporary [. . .] and does not comprise a single static entity” (Leitch & Harrison, 2016, p. 6). Furthermore, other have noted that, “identity is located on the level of subjective psychological experience, rather than necessarily referring to an objective ‘essence’” (Vignoles, Regalia, Manzi, Golledge, & Scabini, 2006, p. 309).

Building on these insights, we expand the traditional concept of personal identity or role identity, in which identity is a self-referential description that provides contextually appropriate answer to the question “Who am I?” (Mead, 1934). Personal identity describes “a person’s unique sense of self” (Postmes & Jetten, 2006, p. 260). Such personal identities inhere roles such as organizational, relational, and occupational roles and are called role identities (Stryker, 1968, 1980). At the state level, we define state identity as an internalized sense of self in a role derived from a momentary situation or episode. State identity centrality shares the same content space as trait identity centrality, which refers to the psychological centrality or importance of a role (Stryker & Serpe, 1994). However, state identity centrality refers to the variable importance of an identity that is derived from momentary situations or episodes. Unlike stable trait identity centrality, state iden-

tity centrality is situational and transient and is captured at momentary or episodic instances across time.

We argue that identity centrality manifests in the form of states of identity centrality across a range of occasions and, thus, is best depicted by the frequency distribution of states of identity centrality across occasions/time. This frequency distribution of identity centrality consists of two components: (a) state identity centrality: instances of identity centrality at each occasion and (b) trait identity centrality: the enduring or stable feature or features of the identity distribution (e.g., the mean of the identity distribution; Dalal et al., 2015; Fleeson & Jayawickreme, 2015; Fleeson & Law, 2015). Whereas, trait identity centrality corroborates to explain the between-person effects—the differences between those who have strong identity centrality and those who have weaker identity centrality—state identity centrality explains the within-person effects—how a person’s identity centrality influences the same person’s behavior, cognition, and emotions at discrete instances across occasions (Ashforth & Schinoff, 2016; Beal, 2015; Dalal et al., 2015; Fleeson, 2001; Fleeson & Nofle, 2008).

Identity Verification: Perceived Role Progress and State Identity Centrality

Identity control theory (Burke, 1991; Burke & Stets, 2009) contends that the identity process operates on a continuous perpetual feedback system, which consists of three elements: the input, the identity verification, and the output. Identity is a set of meanings applied to the self in a social role (Burke & Tully, 1977). This set of meanings serves as a standard or reference for which one is in a role. According to identity control theory, continuous correspondence occurs between the person and the environment. A person receives input from the environment in the form of social feedback, symbols, and cues from social situations (e.g., one’s own reflected appraisals of previous role progress). The person then assesses the congruence between this input and the identity standard, verifying the identity. Identity verification results in an output, which completes the feedback loop, and this outcome serves as the input to start a new feedback loop.

A large part of identity control theory research has argued that the output of identity verification—the congruence between the input and the identity standard—is role performance (Burke, 1991; Burke & Reitzes, 1981). However, an ancillary argument to this dominant view is that identity verification could also affect identity itself, which allows continuous adjustments to identity to match the input with the identity standard (Burke, 2006; Burke & Stets, 2009). This supposition of identity to be also influenced by situations is largely overlooked in identity theory, where identity is assumed to be a stable or dispositional construct. Situational variability is particularly relevant in the daily context, where identity is affected by daily interactions through identity-relevant events. Take, for example, the work life of an employee with a creative role identity (Farmer, Tierney, & Kung-Mcintyre, 2003). In day-to-day work life, the employee is likely to face numerous occasions during which he or she can contribute creative ideas or suggestions. The employee with creative identity is more likely to contribute creative ideas, on average, across occasions that invoke his or her creative identity. Using the reflected appraisal of prior creative contributions, the more the employee perceives him- or herself to be successful in making creative contributions; the more

likely he or she is to consider his or her creative role identity important. Ultimately, this enhances the psychological centrality of his or her identity as a creative person. Thus, progress in performing role-relevant activities is likely to enhance subsequent state identity centrality.

Drawing from these insights, we posit that a reflected appraisal of prior performance, which indicates a congruence with the identity standard, enhances one's identity centrality (Ashforth, 2001). Perceived role progress refers to the self-evaluation or appraisal of an individual's success in pursuing goals related to a role (Brunstein, Schultheiss, & Grässmann, 1998; Karoly, 1993). An individual's subjective experience of making progress reflects that he or she is moving toward a desirable outcome (Fishbach & Dhar, 2005). Small wins—brief, localized, and plausible experiences of making progress that can give rise to arousal (Weick, 1984)—motivate individuals to strive for long-term goals on a day-to-day basis (Uy, Foo, & Ilies, 2015). Prior experience of progress is a feedback that signals to people that they are on the right path in realizing a role (Stryker, 1980). As people progress successfully on prototypical role-related activities, they tend to internalize role identity as a legitimate representation of themselves (Ashforth, 2001; Ashforth & Schinoff, 2016), enhancing identity centrality. Therefore, we posit the following:

Hypothesis 1: At the within-person level, perceived role progress is positively related to subsequent state identity centrality.

Emotions in Identity Verification: The Mediating Effect of Passion for the Role

We posit that the effect of perceived role progress on state identity centrality is transferred through emotions. Identity control theory argues that emotions play an important role in identity verification (Stets, 2005; Stryker, 2004). People experience positive emotions when engaging in identity-relevant activities and when meeting identity expectations successfully (Burke, 1991; Stets, 2003, 2005). Here, we theorize the mediating effect of an intense positive emotion—passion for the role—on the relationship between perceived progress and identity centrality.

Passion refers to highly intense positive feelings, like excitement and joy, while engaging in tasks and activities that are central to a role (Vallerand, 2010; Vallerand et al., 2006). Scholars have described passion for a role as “hot,” “intense,” “the fire of desire,” and “love for the role” (Cardon, Wincent, Singh, & Drnovsek, 2009, p. 515). Passion is defined as a strong inclination toward an activity or role that people like and find important, and in which they invest time and energy (Vallerand, 2010). Individuals show preference for passionate activities because they find them interesting and enjoyable. Passionate activities are perceived as having high resonance with how one sees oneself; thus, the person values those activities immensely (Aron, Aron, & Smollan, 1992; Csikszentmihalyi, 1978).

Passion is comprised of both between- and within-person components. For example, people showed stable preference toward their passionate activity for years (Vallerand et al., 2003), suggesting that passion is a dispositional construct. On the other hand, other studies have shown that substantial within-person variability exists in passionate feelings for a role across time (Collewaert, Anseel, Crommelinck, De Beuckelaer, & Vermeire, 2016; Gielnik,

Spitzmuller, Schmitt, Klemann, & Frese, 2015). In the present study, we focus on the passionate feelings for a role as a within-person construct. Unlike moods, which are generic in nature and can be affected by events or activities that are unrelated to a particular role (Ellsworth & Scherer, 2003; Schwarz, 2011), passion is targeted at an identifiable referent—the role. Thus, events related to a particular role (Gielnik, Spitzmuller, et al., 2015; Vallerand, 2010) are likely to affect passion.

Like other emotional states, proximal factors affect passion for a role, such as situational perceptions, cognitive appraisals, physiological processes, or feedback. We argue that perceived role progress evokes passionate feelings for the role. Accomplishing subgoals, in terms of perceived progress or small wins, engenders positive emotions among individuals (Amabile & Kramer, 2011; Weick, 1984). For example, Gielnik, Spitzmuller, et al. (2015) showed that progress in venture creation increased passion for entrepreneurial activities among the founders. People experience intense emotions such as elation, euphoria, and excitement when they perceive that they have achieved their goals in an activity (Carver, 2003, 2006; Mageau & Vallerand, 2007). Following these arguments, we posit that the perceived role progress will positively relate to passion for the role:

Hypothesis 2a: At the within-person level, perceived role progress is positively related to passion for the role.

Next, we posit that passion for the role positively influences subsequent identity centrality. Identity control theory contends that positive emotions play an important role in verifying an identity. Experiencing passion for the role indicates that one is excited about the role and is enthusiastic to engage in role-related activities. The intense emotions targeted at a role signal that the role is immensely important, and one needs to afford sincere attention to the role-related activities (Stryker, 2004). Accordingly, we argue that passion for the role positively affects identity centrality:

Hypothesis 2b: At the within-person level, passion for the role is positively related to subsequent state identity centrality.

Combining Hypotheses 2a and 2b, we argue that passionate feelings for the role will transfer the indirect effect of perceived role progress on state identity centrality. Progress on role-related activities increases one's passion for the role (Hypotheses 2a). Passion for the role, in turn, positively affects subsequent identity centrality (Hypotheses 2b). Overall, we posit the following:

Hypothesis 2c: At the within-person level, passion for the role mediates the positive effect of perceived role progress on subsequent state identity centrality.

Identity Verification Versus Nonverification: The Moderating Effect of In-Role Effort

So far, we have argued that role progress enhances identity centrality by engendering passion for the role-related activities based on identity control theory (Burke, 1991; Burke & Stets, 2009). In-role effort, however, can affect this process, because people attribute the success (“who is responsible”) contingent on the in-role effort. In the case of high effort, people attribute that they themselves are responsible for the progress; however, in the case of low effort, this attribution is less likely.

According to identity control theory, identity verification evokes positive emotions, whereas identity nonverification does not (Stets & Burke, 2014). This effect follows from the *investment* principle (Swann, 1990; Swann, Rentfrow, & Guinn, 2003), which posits that people are motivated to critically self-verify their progress using attributions to understand the cause of their progress (Burke & Stets, 2009). When people feel responsible for positive outcomes and attribute the success to themselves (“I am responsible”), positive emotions occur; this contrasts the external attribution (“someone else is responsible” or accidental effects), which does not lead to positive emotions (Loewenstein, 2000; Snyder, 1994; Weiner, 1985).

We argue that the positive effect of progress on passion for the role depends on in-role effort. High effort depicts identity verification that people have worked hard to achieve a goal, attributing the role progress internally to themselves (“I am responsible”), which evokes passion for the role (Bem, 1972; Swann, 1990; Swann et al., 2003). Thus, we expect a stronger positive relationship between perceived progress and passion for the role when one invests high effort in role-relevant activities. On the other hand, low effort depicts identity nonverification; people have not worked hard to achieve a goal, thereby attributing the role progress externally to accidental causes (“I am lucky” or “someone else is responsible”). In this case, we expect a weaker positive relationship between perceived progress and passion for the role when one invests low effort in role-relevant activities (Weiner, 1985). Overall, we posit:

Hypothesis 3: At the within-person level, in-role effort moderates the relationship between perceived role progress and passion for the role, such that the positive relationship between perceived progress and passion is stronger with high effort than with low effort.

The Moderated Mediation Model

Overall, we theorize a moderated mediation model, in which (a) perceived role progress positively affects subsequent state identity centrality (Hypothesis 1), (b) passion for the role mediates the effect of perceived role progress on subsequent state identity centrality (Hypothesis 2c), and (c) the indirect effect of perceived role progress on subsequent state identity centrality via passion for the role is contingent on in-role effort. As discussed, in-role effort moderates the relationship between perceived role progress and passion for the role (Hypotheses 3), and passion for the role has a positive effect on subsequent state identity centrality (Hypothesis 2b). Combining Hypotheses 2b, 2c, and 3, we posit that the indirect effect of perceived progress on identity centrality through an increase in passion for the role is contingent on whether one has invested effort in role-related activities. Accordingly, we posit:

Hypothesis 4: At the within-person level, in-role effort moderates the indirect effect of perceived progress on subsequent state identity centrality through passion for the role such that the indirect effect is positive and stronger with high effort than with low effort.

Overview of the Two Studies

We conducted two studies to unravel the within-person dynamics between perceived role progress and state identity centrality.

We obtained approval from the Institutional Review Board (IRB) at National University of Singapore (Protocol ID: 11–395) to conduct this research. In the first study, we aimed to test the direct effect of perceived role progress on state identity centrality conducting a 10-wave, biweekly, repeated-measures study (Study 1, $N = 41$, total observations = 340). A biweekly time frame allowed us to capture within-person variance in identity centrality (e.g., Miscenko et al., 2017). In the second study, we elaborated on (a) the emotion-based mediation process through passion for the role and (b) the contingency—in-role effort—on the relationship between perceived role progress and state identity centrality. Here, we tested the overall moderated mediation model (Hypotheses 1–4). Because emotional states are transient, we examined the hypothesized relationships at the day-to-day level conducting a 10-day, twice-a-day repeated-measures study measuring study variables both in the morning and in the evening (Study 2, $N = 40$, total matched morning—evenings observations = 345).

Study 1: Method

Studies involving measurements at the within-person level should ensure sampling across situations; as such, we followed the recommendations of contemporary within-person personality research (e.g., Baird, Le, & Lucas, 2006; Beal & Weiss, 2003; Dalal et al., 2015). Such studies have recommended that the sample of situations use a representative sample of the population of situations that people might experience. Repeated measures that are contingent on a fixed period of time, such as a day or a week, provide the potential to obtain measurements in a wide variety of situations (Baird et al., 2006; Dalal et al., 2015; Hektner, Schmidt, & Csikszentmihalyi, 2007). Thus, we used an interval-contingent approach, in which participants report their experiences by accounting for a definite period of time (Beal, 2015; Fisher & To, 2012). The interval-contingent approach is considered less intrusive, lowering participants’ burden (e.g., compared with the signal-contingent approach, asking participants to report how they feel at a particular moment several times a day upon receiving a signal) and the chances of noncompliance because of failures to report (e.g., compared with the event-contingent approach, asking participants to report immediately after an event such as an interaction with a customer; Fisher & To, 2012). Thus, interval-contingent approach is suitable for capturing temporal phenomena at the within-person level, as in the present study (Beal, 2015).

Participants and Procedure

We chose an early stage entrepreneurship context to examine the within-person dynamics of state identity centrality. Unlike contexts in which role identity is formed through long-term socialization, for example, religion, race, and gender (Oyserman et al., 2012), we test the within-person dynamics of role identity in an entrepreneurial context, in which role identity is subjected to the influence of proximal situational and environmental factors (Alvesson, Lee Ashcraft, & Thomas, 2008). The early stage of new venture creation (i.e., the first three years of new venture establishment, Shane, Locke, & Collins, 2003) represents a dynamic environment full of risks and uncertainties (Gartner, 1985), in which the founders’ entrepreneurial identity is subjected to the influence of proximal situational factors. We recruited participants

from a start-up hub (i.e., a business incubator; Dutt, Hawn, Vidal, Chatterji, McGahan, & Mitchell, 2016) sponsored by a university and the government of a country in Southeast Asia. This start-up hub aims to nurture early stage entrepreneurs, promoting colocation of technology based start-up firms in a cluster by providing office space and basic infrastructure resources to help founders establish their businesses.

The prerequisite for participating in the present study was that the person was pursuing a business opportunity. The initial sample consisted of 43 founders from 43 start-ups. Two participants dropped out after finishing only one survey. We excluded data from these two participants, resulting in a final dataset from 41 entrepreneurs. All the participants ($N = 41$) received a monetary incentive of approximately USD 35 (or equivalent in local currency). Most of the participants were male (79%), ethnically Chinese (93%) and Indian (7%), and most held a bachelor's degree (80%). The participants' ages ranged from 17 years to 46 years ($M = 26.6$ years, $SD = 4.46$). Most of the participants, who were founders of ventures in advanced technology and engineering, were forming new businesses either for the first time (50%) or the second time (41%). We contacted all the participants on a bi-weekly basis and asked them to report their experiences and perceptions "for the past half month." The participants received e-mail notifications to complete the surveys online. On average, the participants responded 8.29 out of 10 times, resulting in 340 valid observations (83% response rate). All the participants completed surveys in the English language.

Measures

State entrepreneurial identity centrality. To measure entrepreneurial identity centrality, we identified eight items aligned with prior research in entrepreneurial role identity (Murnieks, Mosakowski, & Cardon, 2014), donor role identity (Callero, 1985), leader empowerment role identity (Zhang & Bartol, 2010), creative role identity (Farmer et al., 2003), and professional identification (Hekman, Bigley, Steensma, & Hereford, 2009; Mael & Ashforth, 1992). The items are as follows: "Being an entrepreneur is an important part of who I am," "Being an entrepreneur is

something I frequently think about," "I am very interested in what others think about me as an entrepreneur," "When someone criticizes me for being an entrepreneur, it feels like a personal insult," "When someone praises my entrepreneurial work, it feels like a personal compliment," "I do not have any clear concept of myself as an entrepreneur (reverse coded)," "If someone criticizes entrepreneurs, it feels like a personal insult," and "If someone praises entrepreneurs, it feels like a personal compliment."

Note, however, that some of the items include clauses "criticizes me" and "praises my," which are likely to provoke a response regardless of how central the identity actually is to the person. To address the issue of construct validity of the identity centrality measure, we conducted a study using the online platform Amazon Mechanical Turk (MTurk). We recruited entrepreneurs from MTurk to report their entrepreneurial identity centrality on the aforementioned eight items. We framed the survey questions by asking participants to report their identity centrality referring to the "past half month." We received 136 valid responses. Among the 136 participants, 65% were male, 35% were female, 49% were Indian, and 46% were American (others included participants from Canada and Hong Kong). The participants received a monetary incentive of USD 2 for participating in the study.

We conducted a factor analysis specifying extraction method as principal component and rotation method as Varimax with Kaiser Normalization. Based on an Eigenvalue greater than one, two factors emerged with the first factor explaining 50% of variance and the second factor explaining 16% of variance (cumulative variance explained was 66%). The factors and item loadings are reported in Table 1. The two items, "Being an entrepreneur is an important part of who I am," and "Being an entrepreneur is something I frequently think about," obtained the highest loadings on the first factor (.831 and .757, respectively). The two-item short measure of identity centrality also showed a high correlation with the full eight-item measure ($r = .76$), suggesting that the two items are good indicators of identity centrality. Therefore, we used the two items to measure entrepreneurial identity centrality in Study 1. The participants responded to the two items referring to the past half month on

Table 1
Factor Analysis: Factor Loadings From Rotated Component Matrix

Items	Factors (Components)	
	1	2
1. Being an entrepreneur is an important part of who I am ^a	.831	.167
2. Being an entrepreneur is something I frequently think about ^a	.757	.096
3. I am very interested in what others think about me as an entrepreneur	.544	.617
4. When someone criticizes me for being an entrepreneur, it feels like a personal insult	.389	.689
5. When someone praises my entrepreneurial work, it feels like a personal compliment	.679	.287
6. I do not have any clear concept of myself as an entrepreneur (reverse coded)	.375	-.736
7. If someone criticizes entrepreneurs, it feels like a personal insult	.356	.801
8. If someone praises entrepreneurs, it feels like a personal compliment	.467	.695
Eigen value	3.99	1.31
Variance explained	50%	16%
Cumulative variance explained by the two factors	66%	

Note. $N = 136$. Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser Normalization.

^a The items included in the short form of identity centrality measurement.

a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha = .80$).

Perceived entrepreneurial progress. Motowidlo, Borman, and Schmit (1997) posit that performance is episodic and evaluative. As people engage at work, there are instances “when people do something that makes a difference in relation to their goals and these are the episodes that make up the domain of performance” (Motowidlo et al., 1997, p. 73). When being asked about performance, individuals can rate episodes according to their contribution to accomplishing goals with reasonable agreement to justify using specific critical incidents as anchors (Motowidlo, Dunnette, & Carter, 1990). Thus, self-rating one’s progress is appropriate for identifying episodes that are regarded as being productive. We measured perceived entrepreneurial progress by asking participants how much progress they had made in the past half month. Following the scale Gielnik, Spitzmuller, et al. (2015) used, we measured entrepreneurial progress based on three aspects of new venture creation: (a) business model development, (b) networking, and (c) product or service development. The participants answered using a 5-point Likert scale ranging from 1 = *not at all* to 5 = *very much*. The alpha coefficient obtained for this scale was .76.

Controls. We controlled for alternative causal relationships between perceived entrepreneurial progress and identity centrality at the within- and between-person levels. At the within-person level, to test the effect of perceived entrepreneurial progress on subsequent state entrepreneurial identity centrality rigorously, we controlled for the reverse effect of state entrepreneurial identity centrality on subsequent perceived entrepreneurial progress as well. The conventional self-regulation lens has argued that identity centrality influences role performance (Burke & Reitzes, 1981; Callero, 1985; Farmer et al., 2003; Murnieks et al., 2014; Stryker, 1980; Stryker & Serpe, 1982,

1994; Zhang & Bartol, 2010). At the within-person level, state identity centrality shares the same content space as trait identity centrality (Fleeson, 2001), applied to “a moment” or for “a short span of time” rather than “in general” or for “a longer period of time.” It is likely, therefore, that state entrepreneurial identity centrality also positively influences subsequent perceived entrepreneurial progress.

At the between-person level, we controlled for the between-person relationship between entrepreneurial identity centrality and perceived entrepreneurial progress in the same multilevel model when testing within-person bidirectional relationship between entrepreneurial identity centrality and perceived entrepreneurial progress.

Lastly, given that we aim to test within-person causal effects, we offset any carry-over or time-related confounding effects by controlling for prior dependent variables (e.g., at time t) to predict subsequent dependent variables (e.g., at time $t + 1$).

Analyses and Results

We found that almost half of the total variance in the present study’s variables (48% in entrepreneurial identity centrality and 55% in perceived entrepreneurial progress) occurred at the within-person level. To test the relationship between perceived entrepreneurial progress and entrepreneurial identity centrality (Hypothesis 1), we examined a cross-lagged model at the within-person level controlling for between-person effects (Bryk & Raudenbush, 2002) using Mplus (Muthén & Muthén, 1998–2015). We person-mean centered the predictor variables at the within-person level (Enders & Tofighi, 2007; Hofmann & Gavin, 1998). Figure 1 presents both between- and within-person effects. At the within-person level, the cross-lagged path from perceived entrepreneurial progress t to subsequent state entrepreneurial identity centrality $t + 1$ was positive and sig-

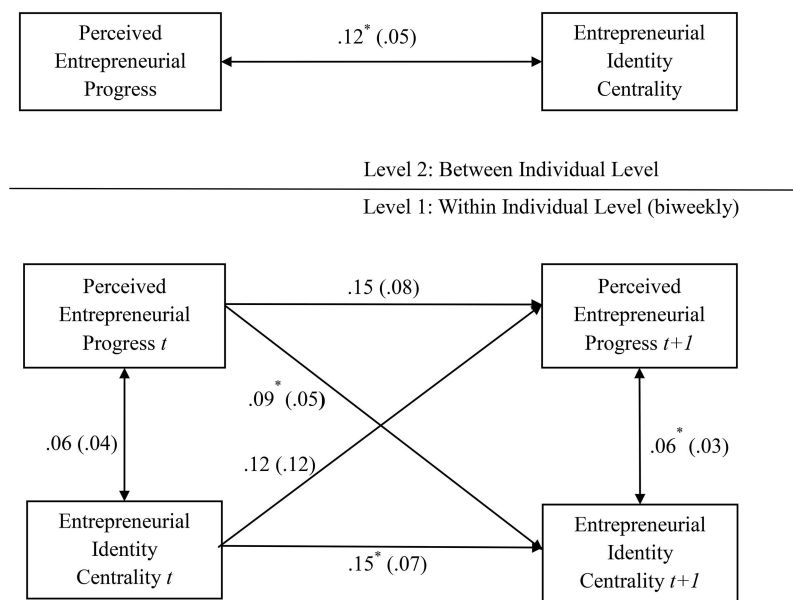


Figure 1. Study 1: Cross-lagged model of perceived entrepreneurial progress and entrepreneurial identity centrality. Number of individuals = 41. Number of observations = 340. Sample size is smaller for lagged analyses. Standard errors are reported in parenthesis. * $p < .05$. ** $p < .01$, two-tailed test.

nificant ($\gamma = .09, p = .04$), supporting Hypothesis 1. The path from state entrepreneurial identity centrality t to subsequent perceived entrepreneurial progress $t + 1$ ($\gamma = .12, p = .29$) was not significant. At the between-person level, perceived entrepreneurial progress was significantly related with entrepreneurial identity centrality ($\gamma = .12, p = .01$).

Study 1: Discussion

We used a multiwave methodology to examine (a) intraindividual variability in identity centrality and (b) the effect of perceived role progress on state identity centrality. First, our results showed that almost half of the total variance in entrepreneurial identity centrality occurred at the within-person level (48%). The present study provides a new perspective on the malleable characteristic of identity centrality. Our findings are similar to those of Miscenko et al. (2017), who conducted a seven-wave weekly study and found that 43% of the total variance in leadership identity occurred at the within-person level. The present study's findings support the person—situation interactionist viewpoint that the contexts might vary in allowing discretion to invoke role identity (Meyer, Dalal, & Hermida, 2010). Although both our Study 1 and Miscenko et al. (2017) examine changes in identity on a (bi-)weekly level, our study differs from Miscenko et al. (2017). They focused on the person-level trajectories of identity development in a leadership training and development context. In contrast, we conceptualize the construct of identity centrality at the within-person level and investigated the dynamic, coevolving relationship between identity centrality and role performance.

Second, our results suggest that perceived entrepreneurial progress affected subsequent state entrepreneurial identity centrality. Role identity is verified from situation to situation across time as a result of an individual's retrospectively interpreting past performance (Grube & Piliavin, 2000). Perceived role progress, as the self sees reflexively, predicts states of identity centrality as one attempts to verify, support, and validate the identity (Riley & Burke, 1995) through direct self-assessment (Markus & Wurf, 1987).

Counterintuitively, we did not find support for the expected positive effect of state entrepreneurial identity centrality on role progress at the within-person level. Conceptually, state identity centrality refers to one's identity centrality in a specific situation or within a short span of time; as such, it represents one's immediate concept of identity centrality. One possible reason we did not find this within-person relationship might be because of Study 1's methodology. In Study 1, the two consecutive data points were half a month apart, which could possibly attenuate the causal effect. A longer time span could potentially explain why we did not find a significant effect of state identity centrality on perceived progress at the within-person level. In fact, at the between-person level, perceived progress and identity centrality were positively and significantly related; however, we were unable to infer the direction of this between-person relationship because our data is cross-sectional at the between-person level. To overcome these limitations and to test the full moderated mediation model, we conducted a second field study at the daily level.

Study 2: Method

To ensure that inferences about causality can be made about both between- and within-person relationships, a rigorous study design was required for Study 2, in which the measurement of a predictor variable precedes the measurement of a dependent variable within a day across a number of days. Accordingly, we designed a daily study, in which all study variables were reported in the morning and in the evening. We then tested whether the morning—evening effects that the variables reported in the morning predicted the variables reported in the evening. We did not examine the evening—morning effects (i.e., whether the variables reported in the evening predicted the variables reported in the morning of the next day), because the experiences that occur in the evening are followed by a night, during which the participants engage in nonwork-related activities including sleep. In contrast, the morning experiences are followed by a workday, during which the participants engage in identity-relevant activities in a workplace setting. Thus, inferences about causality are more relevant for the morning—evening effects than for evening—morning effects (e.g., Ouyang, Cheng, Lam, & Parker, 2019).

Participants and Procedure

Like Study 1, we conducted Study 2 with early stage entrepreneurs. We published the study online and called for early stage founders of new ventures to register for the study. We advertised the study information in professional and entrepreneurship-oriented forums and groups, including university alumni entrepreneurs' groups, institutes of engineering professional groups, Internet of Things professional groups, Project Management Institute local chapters, and so on. The groups' memberships vary from 250 to 4,000 members. We offered a monetary incentive of approximately USD 40 (or equivalent in local currency) to the participants. Fifty-five early stage founders registered for the study. The registered participants then received e-mail notifications to administer two short daily surveys: one in the morning and the other in the evening from Monday to Friday for two consecutive weeks. We chose a 2-week time span with no public holidays except Saturday and Sunday. Participants received the morning survey notification at 8:00 a.m. and were asked to complete it by 11:30 a.m. Participants received the evening survey notification at 6:00 p.m. and were asked to complete it by 11:30 p.m. Participants received these reminder emails based on their local time zone.

We measured all four focal variables—progress, passion, identity centrality, and effort—in both the morning and the evening surveys. By doing so, our aim was to test (a) morning identity centrality as a predictor of progress, effort, and passion in the evening and (b) evening identity centrality as influenced by progress, effort, and passion in the morning. Given that effort and progress are absent at the start of a workday, we asked participants to reflect on their progress and effort the previous day in the morning. This is in line with the arguments of identity control theory that contends a reflected appraisal of prior performance as input to identity verification; thus, evoking emotional reactions and influencing subsequent identity centrality. Accordingly, in the morning or evening surveys, we framed the questions to align with the interval-contingent approach: (a) identity centrality, that is,

“Please indicate the extent to which the following statements describe you this morning/today . . .”; (b) passion, that is, “The extent to which the following statements describe you, according to your feelings this morning/today . . .”; (c) progress, that is, “Yesterday/today, how much progress did you make in . . .”; and (d) effort, that is, “Yesterday/today, how much of your available time did you spend in venture-related activities . . .” Table 2 depicts the construct timeframe and time of measurement of the focal variables in Study 2.

Of the 55 participants, 10 participants did not respond to any of the morning—evening surveys, and five participants left after responding to the morning—evening surveys for only 2 days; we removed these participants from our data. After merging the morning and evening surveys, we received 358 matched responses (response rate = 65.1%, 358 divided by 550 expected responses from 55 registered participants) from 40 participants (average cluster size = 8.95, 358 divided by 40). Of the 40 participants, 75% were male, and in ethnicity, 80% were Chinese and 20% were Indian. The participants’ ages ranged from 22 years to 54 years ($M = 28$ years, $SD = 6.30$). The participants were at the early stage of forming their ventures ranging from 1 month to 30 months ($M = 11$ months, $SD = 8.03$). The participants belonged to a wide range of industries, including artificial intelligence, childcare/education, digital marketing, fashion, e-commerce, engineering, entertainment, food and beverage, health, human resources, information technology, the Internet of things, jewelry, sports, retail technology, software, marketing, real estate, and social entrepreneurship. All the participants responded to surveys in the English language.

Measures

State entrepreneurial identity centrality. We used the same two-item short measure of identity centrality as that used in Study 1. The alpha coefficient for entrepreneurial identity centrality_{today/morning} was .72 and for identity centrality_{today} was .72.

Perceived entrepreneurial progress. We used the same measure as that used in Study 1. The alpha coefficient obtained for perceived entrepreneurial progress_{previous day} was .67 and for perceived entrepreneurial progress_{today} was .61.

State entrepreneurial passion. Following Gielnik, Spitzmuller, et al. (2015), we measured state entrepreneurial passion

with nine items from Cardon, Gregoire, Stevens, and Patel (2013), which has been shown to vary across time (52% within-person variance in a weekly repeated-measures study, Gielnik, Spitzmuller, et al., 2015). The participants evaluated state entrepreneurial passion on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Sample items include, “Searching for new ideas for products/services to offer is enjoyable to me” and “Establishing a new company excites me.” The alpha coefficients were .93 for entrepreneurial passion_{today/morning} and .94 for entrepreneurial passion_{today}.

Entrepreneurial effort. We measured entrepreneurial effort by asking participants how much of their available time they spent on entrepreneurial activities (Murnieks et al., 2014; Stryker & Serpe, 1994). This time-based effort measure is aligned with prior studies in identity theory research (e.g., Stryker & Serpe, 1994). We focus more on the duration of the effort because it is an important concept in the domain of entrepreneurship. Entrepreneurs need to devote time to start and manage the business by engaging in activities such as implementing a productive process, developing a presence for the new firm, creating an organizational and financial structure for the firm, and so on (Carter, Gartner, & Reynolds, 1996; Reynolds, 2007). Past studies have shown that the time devoted to the business is a key predictor for start-ups to launch the business successfully (Reynolds, 2007) and achieve firm performance (Bitler, Moskowitz, & Vissing-Jørgensen, 2005). Not surprisingly, given the importance of time spent in starting a venture, a time-based effort measurement has been used commonly in the entrepreneurship research to operationalize entrepreneurial effort (Bitler et al., 2005; Gielnik, Spitzmuller, et al., 2015; Murnieks et al., 2014). Accordingly, we asked the participants to report the available time devoted to entrepreneurial activities on a 5-point Likert scale ranging from 1 = *not at all* to 5 = *to a great extent*. To establish the reliability of this single-item measure, we followed the recommended procedure by assessing internal consistency with an estimate of test–retest reliability (Klimstra et al., 2010; Robins, Hendin, & Trzesniewski, 2001). We calculated internal consistency by measuring the interclass correlation (ICC) coefficient with a two-way mixed model specifying absolute agreement across 10 days ($\alpha = .85$ for entrepreneurial effort_{previous day} reported in the morning survey and .88 for entrepreneurial effort_{today} reported in the evening survey).

Control variables. We controlled for several variables at the within- and between-person levels. At the within-person level, we included three control variables. First, people differ in their daily work experiences across days within a week; thus, we controlled for the day of the week in our analyses. Second, research on daily recovery shows that sleep quality might affect one’s work experiences during the day (e.g., Sonnentag, Binnewies, & Mojza, 2008). We controlled for sleep quality_{previous night} in all regression analyses. Sleep quality was measured by asking the participants, “How would you evaluate your sleep last night?” on a 4-point Likert scale with the response options of 1 = *very poor*, 2 = *poor*, 3 = *good*, and 4 = *very good*. Third, we controlled for dependent variables at the prior time point when predicting concurrent dependent variables to strictly predict the change in the dependent variables.

At the between-person level, we controlled for person-mean scores of the predictor variables to examine both the within- and

Table 2

Study 2: Time of Measurement and the Construct Timeframe of Variables

Constructs	Construct time-frame
Time of measurement: Morning survey	
Sleep quality	Previous night
Perceived entrepreneurial progress	Previous day
Entrepreneurial effort	Previous day
Entrepreneurial passion	Today/morning
Entrepreneurial identity centrality	Today/morning
Time of measurement: Evening survey	
Perceived entrepreneurial progress	Today
Entrepreneurial effort	Today
Entrepreneurial passion	Today
Entrepreneurial identity centrality	Today

Table 3

Study 2: Means, Standard Deviations, ICCs, and Correlations

Variables	Mean	SD between	SD within	ICC	1	2	3	4	5	6	7	8	9
1. Sleep quality _{previous night} ^a	2.71	.72	.63	.22		.10	.17**	.16**	-.01	.24**	.21**	.19**	.22**
2. Perceived entrepreneurial progress _{previous day} ^a	2.45	.87	.74	.27	.01		.23**	.27**	.42**	.42**	.32**	.34*	.09
3. Entrepreneurial identity centrality _{today/morning} ^a	2.96	1.15	.64	.64	.09	.04		.60**	.11	.28**	.70**	.50**	.22**
4. Entrepreneurial passion _{today/morning} ^a	3.76	1.24	.82	.56	.15**	.14	.39**		.12*	.36**	.56**	.68**	.22**
5. Entrepreneurial effort _{previous day} ^a	2.54	1.06	.90	.28	-.04	.54**	.01	.05		.17**	.17**	.15**	.43**
6. Perceived entrepreneurial progress _{today} ^b	2.56	.87	.70	.36	.12*	.18**	.13*	.22**	.09		.41**	.42**	.42**
7. Entrepreneurial identity centrality _{today} ^b	2.85	1.21	.69	.70	.13*	.18**	.17**	.32**	.10	.30**		.67**	.34**
8. Entrepreneurial passion _{today} ^b	3.42	1.31	.85	.59	.12*	.16**	.08	.29**	.09	.60**	.42**		.35**
9. Entrepreneurial effort _{today} ^b	2.77	1.11	.83	.46	.19**	-.00	.12*	.16**	.08	.41**	.29**	.37**	

Note. ICC = intraclass correlation. Study 2: Number of individuals = 40. Number of matched observations = 317–358.

^a Variables are measured in the daily morning survey. ^b Variables are measured in the daily evening survey. Correlations below diagonal represent within-person associations and correlations above diagonal represent between-person associations.

* $p < .05$. ** $p < .01$, two-tailed test.

between-person effects. We aggregated person-mean scores of perceived role progress, effort, identity centrality, and passion by calculating the average of each over a 2-week period.

Analyses and Results

Table 3 presents the intraclass, within- and between-person correlations of the study variables. The ICCs of state entrepreneurial identity centrality, perceived entrepreneurial progress, entrepreneurial passion, and entrepreneurial effort showed sufficient within-person variance ($\geq 30\%$, see Klein & Kozlowski, 2000) of 36% in entrepreneurial identity centrality_{today/morning}, 30% in entrepreneurial identity centrality_{today}, 73% in perceived entrepreneurial progress_{previous day}, 64% in perceived entrepreneurial progress_{today}, 44% in entrepreneurial passion_{today/morning}, 41% in entrepreneurial passion_{today}, 72% in entrepreneurial effort_{previous day}, 55% in entrepreneurial effort_{today}, and 78% in sleep quality_{previous night}.

Because of the nested nature of our data, we conducted multilevel regression analyses using Mplus statistical software package. To test Hypotheses 1–4, we first conducted the multilevel confirmatory factor analysis to examine the discriminant validity of the study's vari-

ables—perceived entrepreneurial progress_{previous day}, entrepreneurial effort_{previous day}, entrepreneurial passion_{today/morning}, and state entrepreneurial identity centrality_{today}. As shown in Table 4, the four-factor model provided the best fit to the data ($\chi^2 = 94.75$, $df = 44$, comparative fit index [CFI] = .93, root mean square error of approximation [RMSEA] = .057, standardized root mean square residual [SRMR] (within) = .033) compared with a variety of alternative three-factor, two-factor, and one-factor models. Accordingly, we treated the four variables as separate constructs.

In the multilevel regression models, all within-person predictor variables were person-mean centered, and all between-person predictor variables were grand-mean centered (Enders & Tofghi, 2007; Hofmann & Gavin, 1998). To examine the indirect and conditional indirect effects, we tested the full moderated mediation model (Table 5, Model 3, and Figure 2) in the unconfated multilevel modeling framework to avoid bias in the estimation of multiple indirect effects, which is often seen in conventional multilevel modeling approaches (Preacher, Zyphur, & Zhang, 2010). Table 5 presents the results. As depicted in Model 1, perceived entrepreneurial progress_{previous day} in the

Table 4

Study 2: Discriminant Validity of Study Variables: Results From Multilevel Confirmatory Factor Analyses

Model description	χ^2	df	χ^2/df	CFI	RMSEA	SRMR (within)	$\Delta\chi^2$
Four-factor model: Progress _{previous day} , effort _{previous day} , passion _{today/morning} , identity centrality _{today} as separate factors	94.75	44	2.15	.93	.057	.033	
Three-factor model: Combine passion _{today/morning} and identity centrality _{today} as one factor	130.64	50	2.61	.89	.068	.060	35.89**
Three-factor model: Combine progress _{previous day} and effort _{previous day} as one factor	111.38	48	2.32	.92	.061	.035	16.63**
Three-factor model: Combine progress _{previous day} and identity centrality _{today} as one factor	149.85	50	3.00	.87	.075	.088	55.10**
Three-factor model: Combine progress _{previous day} and passion _{today/morning} as one factor	322.74	50	6.45	.64	.159	.125	227.99**
Three-factor model: Combine passion _{today/morning} and effort _{previous day} as one factor	197.46	48	4.11	.80	.110	.094	102.71**
Three-factor model: Combine effort _{previous day} and identity centrality _{today} as one factor	152.70	48	3.18	.86	.089	.079	57.95**
Two-factor model: Combine passion _{today/morning} and identity centrality _{today} as one factor, and combine progress _{previous day} and effort _{previous day} as one factor	191.89	52	3.69	.82	.061	.088	97.14**
One-factor model: Combine all scales to one factor	355.76	54	6.59	.60	.163	.126	261.01**

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. Study 2: Number of individuals = 40. Number of observations = 317–358. We parceled passion_{today/morning} to three parcels.

* $p < .05$. ** $p < .01$, two-tailed test.

Table 5

Study 2: Multilevel Regression Analyses for Moderated Mediation Model Predicting Entrepreneurial Identity Centrality

Variables	Dependent variables							
	Entrepreneurial identity centrality _{today}		Entrepreneurial identity centrality _{today}		Entrepreneurial passion _{today/morning}		Entrepreneurial identity centrality _{today}	
	Model 1		Model 2		Model 3			
	γ	SE	γ	SE	γ	SE	γ	SE
Within-person level								
Constant	3.33**	.20	3.25**	.15	3.91**	.16	1.90**	.31
Control variables								
Day	-.00	.01	.01	.01	-.04**	.01	.01	.01
Sleep quality _{previous night}	.13	.09	.09	.07	.12	.10	.09	.07
Entrepreneurial identity centrality _{today/morning}	.14*	.06	.05	.05	1.04**	.24	.15*	.06
Predictor variables								
Perceived entrepreneurial progress _{previous day}	.18*	.07			.24**	.07	.13	.08
Entrepreneurial effort _{previous day}					-.02	.07	.02	.06
Perceived Entrepreneurial Progress _{previous day} \times Entrepreneurial Effort _{previous day}					.27**	.10		
Entrepreneurial passion _{today/morning}			.29**	.07			.22**	.08
Between-person level								
Perceived entrepreneurial progress mean _{previous day}	1.08*	.33					.55**	.18
Entrepreneurial effort mean _{previous day}							.20	.18
Entrepreneurial passion mean _{today/morning}			.92*	.15			.41*	.19
χ^2	22.51		44.80		9.80			
df	5		5		6			
p-value	.00		.00		.13			
Variance component (between/within)	1.44/.60		.71/.57		.47/.57			

Note. Study 2: Number of individuals = 40. Number of observations = 317–358. Unstandardized regression coefficients are reported.

* $p < .05$. ** $p < .01$, two-tailed test.

morning was positively related to entrepreneurial identity centrality_{today} ($\gamma = .18, p < .05$) in the evening, supporting Hypothesis 1.

As depicted in Table 5 (Model 3), perceived entrepreneurial progress_{previous day} was positively related to entrepreneurial passion_{today/morning} ($\gamma = .24, p < .01$) in the morning, and entrepreneurial passion_{today/morning} in the morning was positively related to entrepreneurial identity centrality_{today} ($\gamma = .22, p = .02$) in the evening, supporting Hypothesis 2a–b. As shown in Table 6, the

indirect effect of perceived entrepreneurial progress_{previous day} on entrepreneurial identity centrality_{today} through entrepreneurial passion_{today/morning} was positive and significant ($\gamma = .05, 95\% \text{ CI } [.003, .105]$), supporting Hypothesis 2c.

This indirect effect was contingent on entrepreneurial effort. The interaction term—perceived entrepreneurial progress_{previous day} \times entrepreneurial effort_{previous day}—was positively related to entrepreneurial passion_{today/morning} ($\gamma = .27, p < .01$). Figure 3 depicts the interaction plot. Perceived entrepreneurial progress_{previous day}

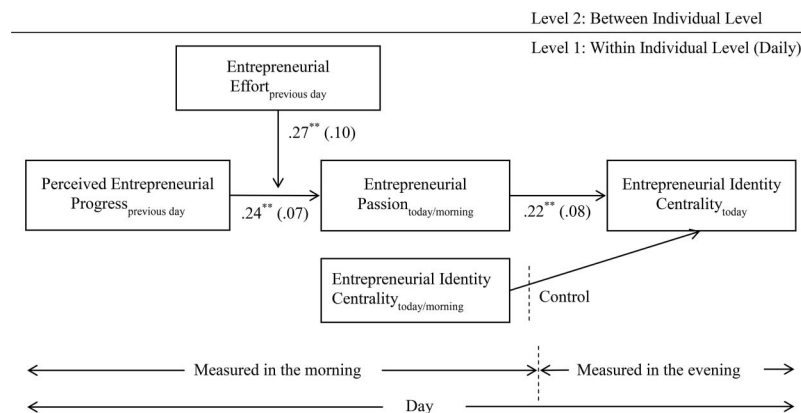


Figure 2. Study 2: Perceived entrepreneurial progress predicting state entrepreneurial identity centrality: The moderated-mediation model. Study 2: Number of individuals = 40. Number of observations = 317–358. Standard errors are reported in parenthesis. * $p < .05$. ** $p < .01$, two-tailed test.

Table 6

Study 2: Conditional Indirect Effects for Moderated Mediation Model Predicting Entrepreneurial Identity Centrality

Indirect path	Moderator	Indirect effect	SE	95% CI
Perceived entrepreneurial progress _{previous day} → Entrepreneurial passion _{today/morning} → Entrepreneurial identity centrality _{today}	—	.05	.03	[.003, .105]
Perceived entrepreneurial progress _{previous day} → Entrepreneurial passion _{today/morning} → Entrepreneurial identity centrality _{today}	1 SD Entrepreneurial effort _{previous day}	.10	.04	[.019, .178]
Perceived entrepreneurial progress _{previous day} → Entrepreneurial passion _{today/morning} → Entrepreneurial identity centrality _{today}	−1 SD Entrepreneurial effort _{previous day}	.01	.02	[−.033, .051]

Note. CI = confidence interval. Study 2: Number of individuals = 40. Number of observations = 317–358.

was positively and significantly related to entrepreneurial passion_{today/morning} with high entrepreneurial effort ($\gamma = .49, p < .01$) but not with low entrepreneurial effort ($\gamma = .00, p = .99$), supporting Hypothesis 3. As depicted in Table 6, the conditional indirect effect of perceived entrepreneurial progress_{previous day} on entrepreneurial identity centrality_{today} through entrepreneurial passion_{today/morning} was positive and significant with high entrepreneurial effort_{previous day} ($\gamma = .10, 95\% \text{ CI } [.019, .178]$) but not with low entrepreneurial effort_{previous day} ($\gamma = .01, 95\% \text{ CI } [−.033, .051]$), supporting Hypothesis 4.

Post Hoc Analyses

We tested the reverse causality—state entrepreneurial identity centrality_{today/morning} in the morning as an antecedent to daily perceived entrepreneurial progress_{today}, entrepreneurial effort_{today}, and entrepreneurial passion_{today} in the evening—through post hoc analyses. We controlled for day and sleep quality_{previous night} at the within-person level, and for person-mean scores: entrepreneurial identity centrality mean_{today/morning} at the between-person level. Because all three daily outcome variables—perceived entrepreneurial progress_{today}, entrepreneurial effort_{today}, and entrepreneurial passion_{today}—were measured at the same time point in the evening survey, we controlled for the other two outcome variables

when predicting an outcome variable to reduce common method bias. Table 7 (Models 4–6) presents the results. At the within-person level, state entrepreneurial identity centrality_{today/morning} was not related to daily scores of perceived entrepreneurial progress_{today} ($\gamma = .05, p = .09$, Model 4), entrepreneurial effort_{today} ($\gamma = .05, p = .41$, Model 5), or entrepreneurial passion_{today} ($\gamma = −.06, p = .20$, Model 6). These results also ruled out any possibility of a potential mediation effect because none of the variables—perceived entrepreneurial progress_{today}, entrepreneurial effort_{today}, and entrepreneurial passion_{today}—were significantly related to state entrepreneurial identity centrality_{today/morning} when all three variables were included in the regression model. At least one path (i.e., b path, from the mediator to the dependent variable) should remain significant to qualify for a potential mediation effect (Preacher & Hayes, 2008).

At the between-person level, however, entrepreneurial identity centrality mean_{today/morning} was positively and significantly related to perceived entrepreneurial progress mean_{today} ($\gamma = .20, p = .04$) and entrepreneurial passion mean_{today} ($\gamma = .66, p < .01$) but not to entrepreneurial effort mean_{today} ($\gamma = .18, p = .14$). This suggests that entrepreneurial identity centrality as a dispositional and stable construct engenders positive emotions and drives the role performance (Burke, 1991; Burke & Reitzes, 1981). These results bear important theoretical implications for identity theory research. We speculate that identity might not predict immediate behavior because of situational demands, however, on average across several occasions, identity might predict individual differences; that is, who is more likely to engage in the identity-relevant behaviors. As Ashforth, Harrison, and Corley (2008) rightly stated, “behavior should be regarded as a probabilistic outcome of [identity], not as a necessary component” (p. 331) reasoning that “various factors may attenuate the link between [identity] and behavior, such as situational constraints, competing [identities], impression management concerns, and so on” (p. 331). We caution future identity research not to assume that between-person effects occur in a similar way at the within-person level. Contemporary research in personality, leadership, and organizational behavior (Fleeson & Gallagher, 2009; Judge, Simon, Hurst, & Kelley, 2014; Sitzmann & Yeo, 2013; Vancouver, Thompson, & Williams, 2001) has shown similar insight that within- and between-person relationships are distinct (Beal, 2015; Fisher & To, 2012). For example, Sitzmann and Yeo (2013) found that the predominant self-regulation perspective on the relationship between self-efficacy and performance is reversed at the within-person level,

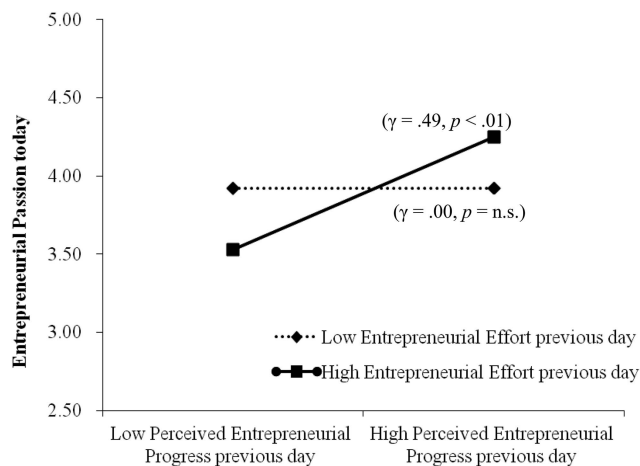


Figure 3. Study 2: Moderating effect of entrepreneurial effort on the relationship between perceived entrepreneurial progress and entrepreneurial passion.

Table 7

Study 2: Multilevel Regression Analyses: Entrepreneurial Identity Centrality Predicting Perceived Entrepreneurial Progress, Entrepreneurial Passion, and Entrepreneurial Effort at the Within- and Between-Person Level

Variables	Dependent variables					
	Perceived entrepreneurial progress _{today}		Entrepreneurial effort _{today}		Entrepreneurial passion _{today}	
	Model 4		Model 5		Model 6	
	γ	SE	γ	SE	γ	SE
Within-person level						
Constant	2.44**	.09	2.93**	.17	3.14**	.13
Control variables						
Day	.01	.01	-.01	.01	.03**	.01
Sleep quality _{previous night}	.02	.04	.16*	.07	.03	.05
Perceived entrepreneurial progress _{previous day}	.08*	.03				
Entrepreneurial effort _{previous day}			.04	.06		
Entrepreneurial passion _{today/morning}						
Perceived entrepreneurial progress _{today}			.32**	.09	.58**	.08
Entrepreneurial effort _{today}	.19**	.05			.16**	.07
Entrepreneurial passion _{today}	.40**	.04	.19*	.08		
Predictor variable						
Entrepreneurial identity centrality _{today/morning}	.05	.03	.05	.06	-.06	.05
Between-person level						
Predictor variable						
Entrepreneurial identity centrality mean _{today/morning}	.20*	.09	.18	.12	.66**	.12
χ^2	283.50		351.73		371.68	
df	38		38		38	
p-value	.00		.00		.00	
Variance component (between/within)	.25/.30		.62/.54		.48/.43	

Note. Study 2: Number of individuals = 40. Number of observations = 317–358.

* $p < .05$. ** $p < .01$, two-tailed test.

showing that prior performance is a stronger predictor of self-efficacy than vice versa.

Study 2: Discussion

Our results from Study 2 provide evidence that daily experiences—perceived role progress, emotions, and in-role effort—influence identity centrality. It is well documented that people experience positive emotions when engaging in identity-relevant activities; however, a paucity of research explains the microprocesses regarding how passion for the role influences identity centrality at the within-person level. At the between-person level, Murnieks et al. (2014) found that entrepreneurial identity centrality predicted entrepreneurial passion. Given that these scholars collected both entrepreneurial identity centrality and entrepreneurial passion at the same time point, they acknowledged the possibility of a bidirectional relationship, and called for future research to investigate this relationship using repeated measures methodology (pp. 1599–1600). Addressing their call, our empirical findings indicate that passion influences subsequent identity at the within-person level. Our findings provide thought-provoking insights for scholars to critically think, design, and theorize future research on role identities.

The present study's findings suggest that the effect of perceived role progress on passion for the role and identity centrality is more pronounced when one invests high effort. People do not feel passion for the role if they do not invest time in the identity-relevant activities despite seeing progress. Our results are in line

with predictions from identity theory, which posits that identity verification evokes positive emotions (Stets & Burke, 2014); whereas identity nonverification does not (Stets, 2003, 2005). People tend to critically self-verify their identities in the case of high effort and not gratify themselves with self-enhancement views in the case of low effort. This is particularly true in the entrepreneurship context where the founders' role as entrepreneur is highly important, critical, and consequential (Swann, 1990; Swann et al., 2003). One bears the responsibility for evaluating the progress realistically and attributes the success to the self critically only when one invests effort in entrepreneurial activities. These important insights are generalizable to other organizational contexts where individuals accept a role in which the financial and career stakes are high including managerial, strategic, and leadership roles.

General Discussion

Theoretical and Practical Implications

By conceptualizing “malleable” role identity, our article advances the microfoundation of identity theory. Traditionally, identity theory has placed more weight on the effect of the “person” on the “situation,” articulating that a person is more likely to define situations in ways that invoke the identity; as such, the person is more likely to act out the identity in and across situations (Stryker, 1968; Stryker & Serpe, 1982). As a result, role identity is consid-

ered unaffected by immediate situational demands (Burke & Reitzes, 1981; Callero, 1985). The arguments that identity is global and undifferentiated were built and supported by then contemporary personality research (Allport, 1937; Epstein, 1979; Roberts & DelVecchio, 2000). In the past decade, however, extant personality research expanded its boundaries to resolve the person—situation debate by offering whole trait theory as a new paradigm (Fleeson & Nofhle, 2008). Here, both interindividual persons and intraindividual situations are seamlessly integrated to depict a dispositional construct as a frequency distribution of states across time (Fleeson, 2001; Fleeson & Jayawickreme, 2015). Integrating these advanced concepts from recent personality research into identity theory, we articulate that a more appropriate conceptualization of role identity should include an intraindividual component instead of placing the focus solely on the stable component of identity.

By considering within-person variability in role identity, we offer a paradigm shift that accepts the inconsistency of role identity across occasions and acknowledges the power of situations. This should open new avenues to future scholarship on identity as a processual phenomenon. Inconsistency in identity across occasions can serve as variability needed to test predictive models at the intraindividual level (Fleeson & Law, 2015). Thus, this theory allows us to identify the key factors that differ between these two occasions and that determine whether an individual acts according to role identity. For example, one can compare the occasions that allow an individual to enact a role identity to the occasions that do not encourage the same individual to enact the same role identity.

The existence of within-person variability in role identity has important practical implications for how managers use role identity to determine employee selection (Dalal, Bhawe, & Fiset, 2014). Past research has suggested that role identity is a basis for selecting employees to enhance work performance. For example, Farmer et al. (2003) suggested that managers can identify employees with a strong creative role identity to promote creativity at work. Our results suggest, however, that role identity is malleable and, thus, depends on how one progresses in daily work. We recommend that managers should not rely solely on the initial level of an employee's role identity to predict future work performance. Managers need to be aware that positive or less than positive experiences at work can change their employees' role identity, and they must provide appropriate interventions at the microlevel when they observe that their employees' identities within their roles have weakened. Based on our findings, managers can emphasize on progress experienced at work, the level of passion for the role, and effort to better influence the role identity of their employees.

The present study's findings also inform training and development programs that attempt to nurture appropriate role identities in organizations, such as leader identity (Johnson, Venus, Lanaj, Mao, & Chang, 2012). Specifically, we identify three elements that are crucial for developing role identity: the experience of progress, passion, and effort on role-related activities. We recommend that, to gain a greater likelihood of success, training and development programs for nurturing role identity should incorporate these three elements into their interventions. Noteworthy is that managers need to be aware that a successful outcome without investing effort may not be fruitful to strengthen an identity. One possible way to incorporate these elements is to design interventions based on action theory, which facilitates trainees' active engagement in performing role behavior (Frese & Zapf, 1994; Gielnik, Frese, et

al., 2015). Such elements aid trainees in establishing multiple milestones to decompose difficult goals and to self-generate progress markers (Uy et al., 2015). They also imbue an environment with autonomy for trainees to develop passion for their work (Gielnik, Frese, et al., 2015).

Limitations and Future Directions

We acknowledge several limitations in the present two studies. First, all variables were self-reported. Although it is reasonable to argue that the participants are a suitable source to report the variables (i.e., identity centrality, effort, passion, and progress), because rating others may suffer from lack of observation opportunities in repeated-measures studies, the same source of data may raise concerns about common method bias (i.e., inflation of the relationships among the study variables; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We took several precautions to attenuate this concern. First, we used a repeated measure of the variables to mitigate the potential problems of response bias and susceptibility to faking (Fleisher, Woehr, Edwards, & Cullen, 2011; Ilies, Scott, & Judge, 2006). Specifically, by centering the predictor scores at the person-means, we ruled out potential problems of self-reporting such as personality confounds (Enders & Tofighi, 2007; Ilies et al., 2006). Second, we controlled for the outcome variable at a prior time point to offset any carry-over effects. These methodological strategies alleviate concerns about common method bias.

Second, we reported findings from two field studies, in which inference about causality is limited. However, we used a rigorous methodology to remove the ordering of effects (i.e., we conducted lagged analyses by separating the predictor and outcome variables across time). In Study 1, a predictor variable was reported at time t , and an outcome variable was reported at time $t + 1$ in a cross-lagged model. Similarly, in Study 2, the participants reported a predictor variable in the morning and an outcome variable in the evening every day. Nonetheless, we call for future research to test our findings in a controlled setup by conducting experimental studies to provide a stronger test for the causal inferences.

Third, we did not obtain the reliability for perceived entrepreneurial progress that met the acceptable cutoff of .70 in Study 2, which might raise the concern about internal consistency of the measure as a reflective construct. George and Mallery (2003) suggested that the alpha coefficients within a range of .60 and .70 should be considered with caution. We used an established measure, however, that has shown good internal consistency both in previous studies (e.g., Gielnik, Spitzmuller, et al., 2015) and in our Study 1 ($\alpha = .76$). One possible reason for the low reliability in Study 2 could be the greater within-person variability in the scores of perceived progress at the daily level (73 and 64% within-person variance) compared with the biweekly level in Study 1 (55% within-person variance). We expect a new venture creation period to be turbulent and full of peaks and valleys, with founders witnessing irregular progress toward their desired goals (Gartner, 1985; Shane et al., 2003). It is possible that one does not progress in all three aspects (but instead in either one or two aspects)—business model development, networking, and product or service development—within a day compared with within a period of 2 weeks. Nonetheless, we advise future researchers to be cautious that perceived progress in the entrepreneurship context can exhibit

the characteristics of a composite or formative construct rather than a reflective construct in a daily context (Diamantopoulos, Riefler, & Roth, 2008; Van Dyck, Frese, Baer, & Sonnentag, 2005).

Fourth, the sample sizes in the Study 1 and Study 2 are 41 and 40 (between-person sample sizes), respectively, each clustered in 10 consecutive repeated measures. This may raise the concern of statistical power in estimating effect sizes from the two studies. Recently, Arend and Schäfer (2019) developed a Monte Carlo based power analysis method for two-level models, providing the rules of thumb for deriving sufficient sample sizes for a minimum detectable effect sizes that yield an acceptable power $\geq .80$. They recommend that a sample size of 40 individuals in a 10-wave repeated measures study can provide a power $\geq .80$ for the medium- and large within-person effects (Arend & Schäfer, 2019, p. 14). Thus, the sample size in our two studies can provide acceptable statistical power $\geq .80$ for the within-person estimates. We caution future researchers to take note that similar statistical power $\geq .80$ for the cross-level interaction effects (unlike within-person direct and interaction effects in the present article) requires a much higher sample size ($= 200$ between-person sample size; Arend & Schäfer, 2019; Mathieu, Aguinis, Culpepper, & Chen, 2012).

Fifth, we focused only on the effect of progress on identity. Individuals who work in a dynamic and risk-prone environment may also experience setbacks. According to identity theory (Stets, 2005; Stryker, 2004), negative experiences reflect nonverification of one's identity and evoke negative emotions. Depending on attributions, one can experience discrete emotions if they fail a task, for example, feeling shame when attributing oneself as responsible for the failure or feeling anger when attributing others as responsible for the failure. Such emotions differ in action tendencies—absconding from the situation in shame or attacking or getting even with the perpetrator in anger. It is important to study whether, when, and how the negative emotions, arising from setbacks, influence one's role identity at the episodic level. Therefore, we call for future research to delve deeper into investigating the impact of setbacks, adversely affecting one's identity.

Lastly, we operationalized effort in terms of effort duration, which is one component of effort. The other two components could be effort intensity (how hard a person tries to carry out a chosen behavior) and effort direction (whether a person invests effort in identity relevant activities or identity nonrelevant activities). Although a time-based operationalization of effort is widely accepted in the extant identity literature (Gielnik, Spitzmuller, et al., 2015; Murnieks et al., 2014; Stryker & Serpe, 1994), the other two aspects of effort—intensity and direction—are also important and relevant to identity research. Likely that, effort duration, intensity, and direction not only have a direct effect but also an interaction effect (i.e., multiplicative function) on identity centrality; whether identity centrality accelerates or decelerates effort investment (Duration \times Intensity \times Direction). We call for future research to examine these underexplored aspects of effort in identity verification and nonverification across time.

Conclusion

In summary, our findings show that identity centrality has substantial within-person variance. At the within-person level, perceived role progress influences state identity centrality and this effect is mediated by passion for the role and is contingent on

in-role effort. The flow of direction of the relationship between perceived role progress and identity centrality is distinct at the within- and between-person levels. Whereas, trait identity centrality influences one's role performance at the between-person level, this directionality is reversed at the within-person level. Our findings bring novel viewpoints about the dynamics of state identity centrality impelling advances in the microfoundation of identity theory.

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