

## Is Grit Hurting You? The Dark Side of Psychological Resources in Goal Pursuit

Rahman Khan\* 

*Iqra University Karachi, Pakistan and Université de Pau et des Pays de l'Adour, France*

Jean-Pierre Neveu

*Université de Pau et des Pays de l'Adour, France*

Ghulam Murtaza

*Kedge Business School, France*

This article presents a study of the curvilinear role of psychological resources during goal striving through an interactive model linking work goal progress to a valued resource. Specifically, we explore the nonlinear relationship of grit with work goal progress. Additionally, we test the moderating role of perceived organizational support (POS) for this relationship. We hypothesized that an employee's goal pursuit is not merely contingent on the excessive availability of the selected resources but instead might be an outcome of interaction between personal resources and the environment. Our sample comprises 293 university professors working in the United States who completed questionnaires at two time points. The study findings confirm the curvilinear role of grit in predicting work goal progress. Furthermore, the moderating role of POS on the nonlinear relationship between grit and work goal progress is confirmed to be significant. We discuss the theoretical implications for industry concerning performance and self-regulation based on our findings.

### INTRODUCTION

In our daily lives, we all typically have a number of goals we want to achieve. For example, performing well in sports, achieving work targets, and maintaining good health are, for many people, an indispensable part of daily life.

---

\* Address for correspondence: Rahman Khan, Iqra University Karachi, Main Shahrah-e-Faisal Rd, Faisal Cantonment, Karachi, Pakistan. Email: rahmankhan\_86@yahoo.com, rkhan@univ-pau.fr

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Despite having great importance, people often abandon their already set goals. Consequently, researchers have started to examine the role of resources in exploring the decision process or post-decision adjustment mechanisms (Diefendorff & Lord, 2008) instead of limiting their focus to the original goal-setting theorization (Locke & Latham, 1990). A well-established conservation of resources (COR) theory (Hobfoll, 1989, p. 516) describes resources as “those objects, personal characteristics, conditions or energies that are valued by individuals or that serve as a means for attainment for those objects, personal characteristics, conditions or energies.” Halbesleben, Neveu, Paustian-Underdahl, and Westman (2014, p. 1338) further explain that a resource is “anything perceived by the individuals to help attain his or her goals.” As such, COR theory underscores that personal resources (e.g., self-efficacy, self-esteem, hope, and optimism) are functional in achieving goals and in stimulating personal growth and development (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). One such personal resource—grit—is defined as “perseverance and passion for long-term goals” (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087) and has received scholarly attention because it seems to be an important predictor of success and performance (Duckworth & Quinn, 2009).

Although earlier research has reliably demonstrated that greater personal resources such as grit motivate and facilitate goal attainment even in the face of adversity or challenge (Sinclair, 2017), yet, the manner in which resources fluctuate is unclear. Specifically, the question remains, is more necessarily better? Therefore, by questioning the assumptions regarding the universal beneficial role of psychological resources, research has suggested a possible dark side of such resources when they exist beyond an optimal level (Credé, Tynan, & Harms, 2017; Vancouver, Thompson, & Williams, 2001). More important, Pierce and Aguinis (2013, p. 314) posited a too-much-of-a-good-thing (TMGT) framework by suggesting that “management researchers should hypothesize and test the possibility that relatively high levels of otherwise beneficial antecedents may lead to unexpected and undesired outcomes.” Occupational researchers have also suggested a curvilinear relationship between psychological resources and work outcomes (Astakhova, 2015; Grant & Schwartz, 2011; Pierce & Aguinis, 2013). This work draws on these ideas and extends them by investigating a previously untested curvilinear relationship between grit and work goal progress. Our study argues that the availability of too few or too many resources may not be fruitful when pursuing goals.

Additionally, it is quite possible that only possessing personal characteristics may not be enough for successful goal pursuit and, thus, we need to further unpack the dynamics of resources. That is, we need to examine potential moderators of the curvilinear effect. Accordingly, we introduce perceived

organizational support (POS) as a moderator of the relationship between grit and goal progress. POS is defined as employees' general beliefs regarding the extent to which "the organization values their contributions and cares about their well-being" (Eisenberger, Huntington, Hutchison, & Sowa, 1986, p. 501). Hobfoll (2011, 2012) proposed an extension of his COR theory by putting forward the notion of resource passageways, which refer to the "environmental conditions that support, foster, enrich, and protect resources of individuals, families, and organizations, or that detract, undermine, obstruct, or impoverish people's resource reservoirs" (Hobfoll, 2011, p. 29). In fact, resource investment during goal seeking is linked to supportive environments such as culture and POS (Chen, Westman, & Hobfoll, 2015; Hobfoll, 2002). For instance, during goal pursuit, these resource passageways may fuel broaden-and-build dynamics (Fredrickson, 2003) to the benefit of goal achievement and additional resources. Thus, supportive work environments among all other working conditions, work-home interface, and organizational and societal culture are instances of potential facilitators/accelerators of resource functional development (Hobfoll, 2011; Hobfoll, Halbesleben, Neveu, & Westman, 2018). Seppälä and Cameron (2015) argue that a positive workplace leads to success over time because it results in positive emotions and well-being, which, in turn, develop employees' social relationships and boost their abilities and creativity. Furthermore, in challenging and difficult situations these feelings help them to bounce back. Organizations with supportive cultures lead to staff members attaining higher financial performance and productivity and being a more engaged workforce. Specifically, drawing on COR theory, we expect that POS will moderate the relationship between grit and work goal progress.

Our primary focus is to revisit the existing linear role of resources during goal striving, and we seek to make at least two distinct contributions to the goal striving literature. First, unlike the existing research on grit (as a resource), which has focused mainly on a linear relationship, we propose a curvilinear (an inverted, U-shaped) approach as a substitute to ensure the conceptual clarity and generalization of findings. This contribution is expected to show that the benefits of resource availability may not necessarily result from a simple accumulation of resources and that resource abundance can turn excessive to the point of disfunction, because too much grit can get in the way of goal achievement.

Second, considering the COR theorizing about resource existence in a certain ecology, we propose a phenomenon of fluctuating resources such as grit when striving to attain work goals. Therefore, taking the perspective of COR theory, we contribute to exploring a boundary condition of the relationship between grit and work goal progress and test whether this association is influenced by POS.

## THEORY AND HYPOTHESES DEVELOPMENT

## Grit and Goal Progress

Grit has been defined as a combination of perseverance and passion with “effort and interest over years despite failure, adversity, and plateaus in progress” (Duckworth et al., 2007, p. 1088). Accordingly, grit has been linked to creativity, goal orientation, and drive for purposeful achievement while showing persistence when others give up (Schwartz, 2019). Research has further suggested that grit helps individuals stay engaged and be resilient in challenging situations (Maddi, Matthews, Kelly, Villarreal, & White, 2012; Von Culin, Tsukayama, & Duckworth, 2014).

However, a few studies have also raised issues concerning the inconsistent results of grit in predicting performance (Credé, 2018; Credé et al., 2017). For example, these studies found support for the argument that resources can possibly turn into demands depending on the context (Cormier, Dunn, & Dunn, 2019; Duckworth & Gross, 2014). These results question the expected monotonic linear relationship between psychological resources and work outcomes. Recent studies have suggested a possible curvilinear impact of grit in the workplace (Alaoui & Fons-Rosen, 2019; Jordan, Wihler, Hochwarter, & Ferris, 2019). A number of explanations have been advanced to account for this downside of grit. For instance, in the presence of a high level of grit, investing additional efforts in nonproductive goals was thought to be harmful to the point of expressing “inappropriate persistence” (Howard & Crayne, 2019; Lucas, Gratch, Cheng, & Marsella, 2015). In the same vein, grittier individuals can end up by being costly for organizational performance, because their over-commitment to a course of action can become stubborn to the point of investing in less-than-optimal or even negative directions (Hietala, Kaplan, & Robinson, 2003; Lindberg & Wincent, 2011).

Previous inconsistent findings suggest the possible problem in linear relationships of grit with various goal outcomes. According to the COR conceptualization, psychological resources should not be labeled good or bad in advance because their role can be determined based on how much they contribute to motivating an individual (Halbesleben et al., 2014; Hobfoll et al., 2018). In addition, using the framework of too-much-of-a-good-thing, Pierce and Aguinis (2013) explained the curvilinear relationship between work experience and employee performance. They demonstrated that increases in work experience correspond to more desirable outcomes up to point, but after that inflection point, more work experience does not lead to additional value and may actually lead to less desirable results. Integrating these arguments, we propose that an individual may benefit from the availability of grit resources, which have a positive impact on goal progress as long as resource levels

remain moderate. This relationship may turn negative when grit is at a very low or very high level, leading to our first hypothesis.

*Hypothesis 1:* There is a curvilinear relationship between grit and goal progress, such that the highest work progress relates to intermediate levels of grit investment.

## The Moderating Role of Perceived Organizational Support

The literature shows that perceived social support can predict positive work outcomes (Eder & Eisenberger, 2008). Supportive workplaces have thus been found to enhance employees' willingness to contribute at higher levels of efforts and abilities to the process of goal attainment (Eisenberger et al., 1986; Rhoades, Eisenberger, & Armeli, 2001; Schaufeli & Bakker, 2004). Specifically, POS was found to be related to job satisfaction, employee performance, organizational commitment, and less absenteeism and turnover (Baran, Shanock, & Miller, 2012; Kurtessis et al., 2015; Rhoades & Eisenberger, 2002; Riggle, Edmondson, & Hansen, 2009).

In addition to its direct positive impact on work behavior, POS has also proven to be an influential moderator in relation to selected task performances requiring social skills (Hochwarter, Witt, Treadway, & Ferris, 2006) and leader-member exchanges (Erdogan & Enders, 2007). Earlier research suggests that favorable work environments could be better explored from the perspective of their interactive effects along with personal resources. For example, availability of support from an organization combined with a high level of social skills possessed by an employee has been found to positively predict job performance (Hochwarter et al., 2006). Such a moderating role of organizational support has been found significant in the linkage between leader-member exchanges and the performance shown by subordinates, suggesting that supervisors having access to such supportive environments can be helped when exchanging psychological resources with their subordinates (Erdogan & Enders, 2007). In line with COR theory (Hobfoll, 1989), POS was found to result in an accumulation of psychological resources (e.g., hope, resilience, and optimism) that are helpful for goal attainment (Luthans, Norman, Avolio, & Avey, 2008). Conversely, a lack of supportive organizational environment, also known as an absence of "resource passageways" (Hobfoll, 2011), reduces the resource pool of individuals and productivity.

Accordingly, we expect goal progress to be not only a product of a non-linear effect of grit resources, but, more important, conditioned by its interaction with POS. We suggest that very low levels of grit resources with the availability of supportive environments can help individuals sustain efforts

during goal pursuits. However, very high levels of grit may result in stubbornness or over-commitment, but having access to such supportive environments can help individuals accept failures instead of continuing to invest efforts in unattainable goals. Consequently, we anticipate the following hypothesis:

*Hypothesis 2:* POS will moderate the curvilinear relationship between grit and work goal progress, because individuals with higher POS will demonstrate higher work goal progress.

## METHOD

### Participants and Procedure

A time-lagged study was administered at two data points (T1 and T2). University professors working in the US completed survey questionnaires at a time interval of 2 months. Contacted individuals were performing duties at various positions, such as assistant professor, associate professor, and full professor, in public and private sector universities. Those having job titles such as adjunct instructor or teaching assistant were not considered as part of this study, because these employees do not have specific research goals in addition to teaching goals; therefore, we limited our sample to individuals having both research and teaching work goals. Individuals were initially contacted by email to provide them with details about the study and to gain consent. Participation in this study was voluntary and no financial reward was offered to the respondents. Participants were provided with the links to respond to questionnaires available on Survey Monkey. For the second data collection wave, only respondents from the first wave were invited through reminder emails. At time 1, scale items of grit, POS, and work goals were included in the questionnaire. At time 2, participants completed a second questionnaire that included scale items of work goal progress, age, gender, and tenure in the current organization.

In total, 3,371 university professors were invited by email to be part of the study. At T1, 436 participants completed and returned valid questionnaires. The initial response rate was 12.93 percent. Due to an attrition effect, the total number of T2 participants dwindled to 293 (67.2% of T1). Data from T2 responses were matched using email addresses initially provided by the participants at T1. The study sample ( $N = 293$ ) presented a balanced distribution with 153 men and 140 women. The average age of respondents was 39.36 years ( $SD = 8.62$ ) and, tenure of 73.4 percent of the respondents had accumulated between 1 and 7 years ( $SD = 5.11$ ).

To control for potential selection bias due to sample loss, we checked whether the university professionals who took part in the second wave were

significantly different from dropouts with regard to study variables. For this purpose, we conducted an analysis of variance. Results showed non-significant differences for grit [ $F(1, 434) = 2.65, p = .104$ ] as well as for POS [ $F(1, 434) = 1.45, p = .229$ ], thus validating that sample size reduction did not cause a significant selection bias.

## Measures

*Grit.* We measured grit using the eight-item Grit-S (Duckworth & Quinn, 2009). Participants responded to statements such as “Setbacks don’t discourage me” and “I finish whatever I begin” on a 5-point Likert scale: 1 (Not like me at all) to 5 (Very much like me).

*Perceived Organizational Support.* To assess POS we used the eight-item Survey of Perceived Organizational Support (Eisenberger et al., 1986; Eisenberger, Fasolo, & Davis-LaMastro, 1990). The respondents were asked to rate items referring to their current organization. Sample items were “The organization really cares about my well-being” and “The organization strongly considers my goals and values” on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). This eight-item version of the POS scale has been validated in several previous studies (Burnett, Chiaburu, & Shapiro, 2015; Farh, Hackett, & Liang, 2007).

*Goal Elicitation and Goal Progress.* At the first data collection point (T1), participants responded to the goal elicitation items. Respondents were told that the study focuses on individual work goals. They were instructed with the following: “Goals are projects and concerns that people think about, plan for, carry out, and sometimes (though not always) complete or succeed at. They may be more or less difficult to implement; require only a few or a complex series of steps; and be more or less time-consuming, attractive, and urgent” (Koestner, Otis, Powers, Pelletier, & Gagnon, 2008). Following the procedure adopted in past research (Sheldon & Kasser, 1995, 1998), the participants were asked to list their current work goals: “Please list the four most important work-related goals (e.g., teaching, research project/publication, research supervision) that you have for the current academic semester.”

At a second data collection point, a three-item goal progress scale adopted from Gaudreau, Carraro, and Miranda (2012) was used. This scale measured progress related to each work goal mentioned at time 1. Sample item scale was “Please rate the extent to which you have progressed on your goal.” Items were measured on a 5-point Likert scale (1 = not at all to 5 = totally). We used an aggregated level of goal progress by combining scores of all four goals for



each respondent. Overall, results for this second-order construct showed a good fit ( $\chi^2/df = 1.603$ , comparative fit index (CFI) = 0.990, Tucker-Lewis index (TLI) = 0.987, incremental fit index (IFI) = 0.990, root mean square error of approximation (RMSEA) = 0.045).

*Demographics.* Age, gender, and tenure in the current organization were included in the study. Gender was coded as 0 = male and 1 = female. Tenure in the current organization was measured in number of years.

## RESULTS

### Descriptive Analysis

Table 1 shows the descriptive statistics for all variables, including means, standard deviations, correlations, and scale internal consistency. From the results, it is salient that respondents showed above-average mean levels of resource constructs (grit and POS), as well as for goal-related outcomes. Findings of the descriptive data analyses showed higher levels of grit for male respondents ( $M = 3.68$ ) as compared to females ( $M = 3.47$ ). In terms of work goal progress, gender didn't have much impact and mean scores were nearly identical for male and female respondents.

### Preliminary Analysis

Before testing our hypothesized relationships, we conducted a confirmatory factor analysis (CFA) to confirm discriminant validity of the study constructs and to check for common method bias (CMB). We tested four alternate measurement models in addition to our proposed three-factor model, which includes grit, POS, and work goal progress. Results showed our hypothesized

TABLE 1  
Means, Standard Deviations, and Scale Reliabilities among all Study Variables

Variables	M	SD	1	2	3	4	5	6
1. Age	39.36	8.62						
2. Gender	0.48	0.50	-0.07					
3. Tenure in organization	6.13	5.11	0.72*	-0.08				
4. Grit (Time 1)	3.58	0.93	-0.04	-0.11	-0.03	(0.92)		
5. Perceived organizational support (Time 1)	3.31	0.91	0.01	0.02	0.01	0.07	(0.93)	
6. Work goal progress (Time 2)	3.24	0.84	0.14*	-0.03	0.10	-0.06	0.34*	(0.93)

Note.  $N = 293$ . Alpha reliability estimates are presented diagonally.

\* $p < .05$ .



three-factor model to be the best fit ( $\chi^2/df = 1.172$ , CFI = 0.991, TLI = 0.990, IFI = 0.991, RMSEA = 0.024). Findings for all two-factor models, for example, grit and POS, collapsed ( $\chi^2/df = 5.313$ , CFI = 0.773, TLI = 0.751, IFI = 0.775, RMSEA = 0.122), work goal progress and POS collapsed ( $\chi^2/df = 9.003$ , CFI = 0.574, TLI = 0.537, IFI = 0.576, RMSEA = 0.166), and grit and work goal progress collapsed ( $\chi^2/df = 8.814$ , CFI = 0.584, TLI = 0.548, IFI = 0.586, RMSEA = 0.64), showing poor fit. Additionally, results of the single-factor model ( $\chi^2/df = 13.071$ , CFI = 0.356, TLI = 0.302, IFI = 0.359, RMSEA = 0.203) with all the items loaded on a common latent factor showed a poor fit, thus confirming the discriminant validity of the study variables.

In order to check for CMB, we conducted a Harman single-factor analysis. Results confirmed all factors yielded by rotation have an eigenvalue greater than 1 and explained 71.22 percent of the variance. The first factor was found to explain 30.42 percent of the variance, which is quite less than the cutoff (50%) suggested by Harrison, McLaughlin, and Coalter (1996). This suggests that there should be no concern for possible CMB. Nevertheless, we conducted further common latent factor analysis during CFA to rule out the likelihood that relationships among the variables were due only to self-report bias. To test the percentage of variance explained by a common latent factor, we used our CFA model that comprises all constructs and introduced a common latent factor. Gaskin and Lim (2017) recommended that a zero-constrained technique is accurate and efficient to check for the existence of a CMB. We performed a Chi-square difference ( $\Delta\chi^2$ ) test using Satorra-Bentler-scaled Chi-square technique between constrained and unconstrained models in which all paths from the common latent factor are constrained to be zero (Gaskin, 2016; Podsakoff, MacKenzie, & Podsakoff, 2012). The results showed that the Chi-square difference between constrained and unconstrained models are a statistically insignificant [ $(\Delta\chi^2)$  test because  $\Delta\chi^2 = \chi^2_{\text{constrained}}(320) = 371.496 - \chi^2_{\text{unconstrained}}(291) = 332.918$ ,  $\Delta\chi^2(29) = 38.578$  ( $p = .110$ )]. Therefore, we conclude that the CMB does not exist in our measures (Gaskin & Lim, 2017; Serrano Archimi, Reynaud, Yasin, & Bhatti, 2018).

## Hypothesis Testing

The time-lagged data were analyzed using the hierarchical polynomial regression, as recommended in previous research (Cohen, Cohen, West, & Aiken, 2003; Shanock, Baran, Gentry, Pattison, & Heggstad, 2010). To confirm our hypothesized relationships, we used regression coefficients as well as  $R^2$  changes ( $\Delta R^2$ ) at each hierarchical regression step. Also, results from a polynomial regression were visualized using response surface modeling (RSM) as suggested by Shanock and Colleagues (2010, 2014). This allows for exploring

nonlinear linkages (Edwards, 2007; Edwards & Rothbard, 1999; Yang, Che, & Spector, 2008).

To test our proposed relationships, we entered different variables at multiple steps into the regression equation. Specifically, at Step 1, we started by entering demographic variables, then proceeded with centered scores of grit and POS at Step 2. At Step 3, squared terms of grit and POS were included in the regression equation. At Step 4, the interaction terms of grit and POS were entered, followed by the interaction term of their squared values at Step 5. Finally, at Step 6, interaction terms of grit (squared) and POS were added to the regression equation. The results from polynomial regression analysis (Table 2) supported Hypothesis 1, showing the quadratic term of grit as significantly (negatively) related to work goal progress ( $\beta = -0.37, p < .05$ ). We further explored this linkage and found the inverted U-shaped curve as illustrated in the plot (Figure 1).

For Hypothesis 2, we tested the moderating role of POS on the curvilinear relationship between grit and work goal progress. The linear impact of organizational support in predicting employee goal-related outcomes was significant ( $\beta = 0.19, p < .05$ ). From the regression results, it appears that the interaction between squared grit and POS is also significant ( $\beta = 0.24, p < .05$ ). This shows that POS has a significant moderating impact on the nonlinear relationship between grit and work goal progress. Following previous recommendations (Dawson, 2014), we plotted this interaction effect by incorporating slopes having  $\pm 1$  SD (standard deviation) above and below the mean score of POS (Figure 2). Figure 2 confirms our polynomial regression results by showing the moderating role of POS on the curvilinear relationship between grit and work goal progress.

In addition to results presented in Table 2, we computed our hypothesized relationships using response surface modeling (Figures 3). This visual confirms that work goal progress is at its lowest when the level of grit is low and reaches its highest at a moderate availability of grit resources. It then dips down in relation to more accumulation of grit. Figure 3 also emphasizes the moderating role of POS. Specifically, a high availability of POS buffers the negative role of low grit on work goal progress. It also shows that goal progress is optimal when a moderate level of grit is associated with high levels of organizational support.

## DISCUSSION

Checking for the quality of individual work goal progress is at the core of organizational challenges. For this purpose, the management literature has recently emphasized the positive role of grit as a significant determinant for goal achievement (Duckworth, 2016). This reactivates classic concerns about

TABLE 2  
Grit and POS as Predictors of Work Goal Progress

Predictors	Step 1			Step 2			Step 3			Step 4			Step 5			Step 6		
	<i>b</i>	<i>SE</i>	<i>Sig.</i>	<i>b</i>	<i>SE</i>	<i>Sig.</i>	<i>b</i>	<i>SE</i>	<i>Sig.</i>	<i>b</i>	<i>SE</i>	<i>Sig.</i>	<i>b</i>	<i>SE</i>	<i>Sig.</i>	<i>b</i>	<i>SE</i>	<i>Sig.</i>
Age	0.12	0.01	0.14	0.12	0.01	0.13	0.09	0.01	0.23	0.09	0.01	0.25	0.08	0.01	0.26	0.08	0.01	0.29
Gender	-0.02	0.10	0.71	-0.04	0.09	0.49	-0.04	0.09	0.49	-0.04	0.09	0.46	-0.04	0.09	0.48	-0.04	0.09	0.50
Tenure in organization	0.01	0.01	0.90	0.01	0.01	0.92	0.01	0.01	0.86	0.02	0.01	0.82	0.02	0.01	0.80	0.04	0.01	0.62
Grit				-0.08	0.05	0.16	0.05	0.05	0.36	0.07	0.05	0.25	0.08	0.05	0.20	0.09	0.05	0.15
POS				0.34	0.05	0.00	0.30	0.06	0.00	0.33	0.06	0.00	0.33	0.06	0.00	0.19	0.08	0.04
Grit (squared)							-0.33	0.05	0.00	-0.33	0.05	0.00	-0.40	0.07	0.00	-0.37	0.07	0.00
POS (squared)							0.07	0.06	0.27	0.07	0.06	0.23	0.01	0.09	0.92	0.08	0.09	0.40
Grit × POS										-0.07	0.05	0.25	-0.08	0.05	0.19	-0.12	0.05	0.05
Grit (squared) × POS (squared)													0.11	0.04	0.31	-0.03	0.05	0.81
Grit (squared) × POS																0.24	0.05	0.02
<i>Total R</i> <sup>2</sup>	0.136			0.225			0.228			0.231			0.245					
$\Delta R^2$	0.117*			0.089*			0.004			0.003			0.014*					
$\Delta F(1, 849)$	19.485*			16.299*			1.353			1.025			5.107*					

Note. *N* = 293. All non-demographic variables have been centered on scale means.

\**p* < .05.

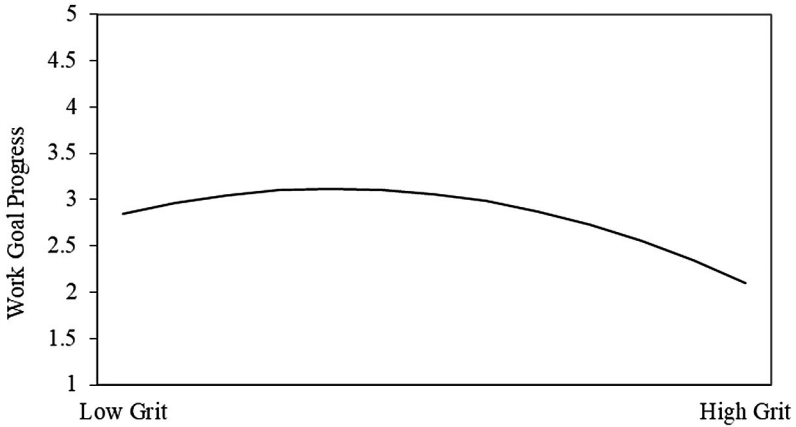


FIGURE 1. Curvilinear role of grit in predicting work goal progress

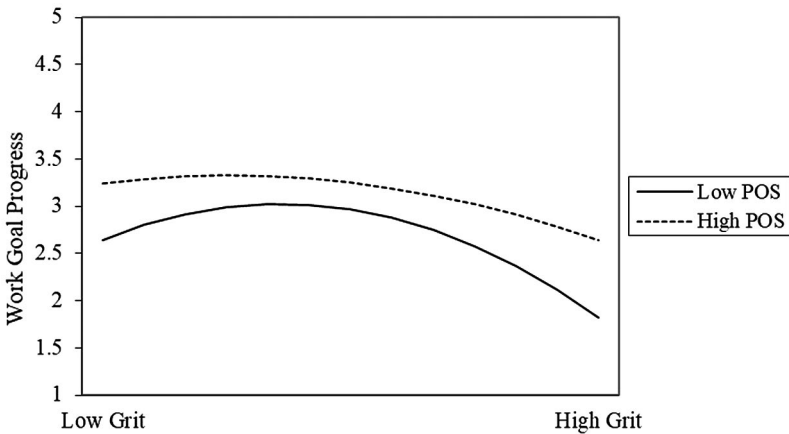


FIGURE 2. Interactive role of grit and POS in predicting work goal progress

the role of personal inputs relative to the support system (Sheldon & Elliot, 1998). Furthermore, both research and practical experience have shown that dynamics of success do not necessarily result from a linear accumulation of instrumental determinants (Buzzanell & Goldzwig, 1991). Based on this fact, this study develops and tests a curvilinear model where goal pursuit is patterned after a nonlinear relationship with personal grit investment. Grounded in the main tenets of COR theory, this model integrates the impact of environmental influences with POS as a moderator of the grit-goal progress relationship.

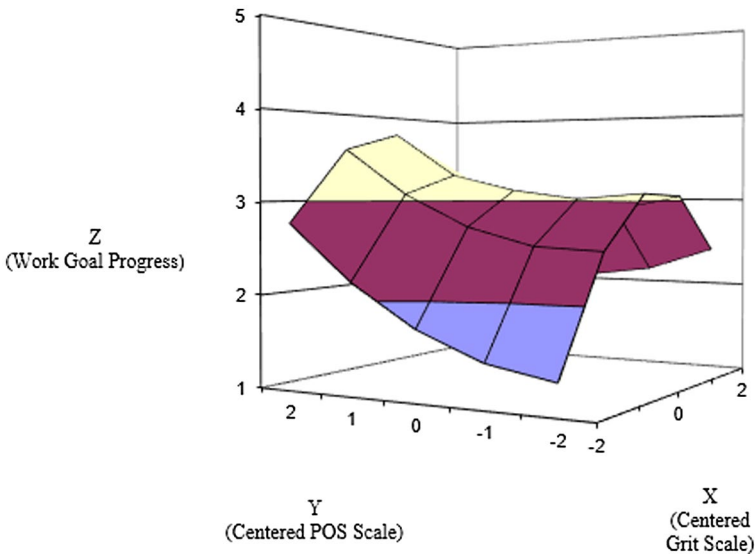


FIGURE 3. Work goal progress as predicted by grit-perceived organizational support discrepancy

Based on time-lagged data, our findings reveal an inverted U-shaped relationship between grit and work goal progress outcomes. This validates Hypothesis 1. Additionally, we found support for a moderating effect of POS on the nonlinear relationship between grit and work goal progress. More specifically, when having access to POS, moderately gritty individuals make maximum progress toward their goals. These results provide empirical support for Hypothesis 2. We now present some main theoretical and practical implications.

## Theoretical Implications

Implications of our findings add to the literature in several ways. First, this research provides elements for a nuanced view of grit. Although the benefits of grit have recently been emphasized (Duckworth et al., 2007; Duckworth & Gross, 2014), our results show that it is not necessarily associated with optimal work progress, because the best work progress actually relates to intermediate levels of grit investment. This is coherent with critics who have been skeptical and have downplayed the assumed major benefits of grit for success (Kohn, 2014; Rose, 2013). For instance, a recent overview of the empirical literature showed that students' grit did not surpass other predictors, such as intelligence or personality traits, for academic performance (Christopoulou, Lakioti, Pezirkianidis, Karakasidou, & Stalikas, 2018). Our study also shows

that a satisfactory progression toward an objective does not correspond to the linear accumulation of “good” determinants. This is in line with previous research that questions the linear and additive function of selected determinants in goal-oriented processes (Costanza et al., 2007). It also confirms that benefits of resources have limits, that the “too-much-of-a-good-thing” syndrome is a reality, and that the nature of a psychological resource is potentially reversible, from a positive to a negative factor of performance (Halbesleben, Harvey, & Bolino, 2009; Pierce & Aguinis, 2013).

Second, we found evidence of a moderating role of POS in the curvilinear relationship between grit and work goal progress. Broadly, the results validate a view of goal progress as an outcome of the interaction between psychological resources (grit) and work environments (POS). High POS during interaction with grit helps in buffering the detrimental effect of too much grittiness. Individuals with a high level of grit who are unable to disengage from nonproductive goals may better self-regulate themselves when organizations are supportive. This implies that not everything is worth doing by grit. Grit emphasizes responsibility of the individual. Coherent with COR theory’s assumption on the importance of the environment (Hobfoll, 2011), our results emphasize that individual performance is also a tributary of its organizational context. Hence, failed POS can be indicative of a lack of integration. For instance, academics evolve in a world of (pedagogical) teams and research laboratories, where “my goal” is not necessarily compatible with “their goals.” Being attuned to the social context is, therefore, important, and failure to perceive support from the work environment can indeed account for a decrease of individual work progress.

A third implication bridges both theoretical and methodological issues. Although emphasizing the importance of psychological resources, previous research shows inconsistent findings (Sadri & Robertson, 1993; Stirin, Ganzach, & Pazy, 2016; Vancouver & Kendall, 2006; Vancouver, More, & Yoder, 2008). Our study suggests that such limitations may stem from traditional linear research designs that assume identified positive/negative predictors. By contrast, nonlinear designs built on polynomial equations can bring to light underestimated results through regular linear-derived scores. Here, our findings are in line with calls for investing in more complex modeling (Richardson, Dale, & Marsh, 2014).

## Practical Implications

Organizations devote increasing attention to the problems associated with employees’ motivation as a means of sustaining their performance. However, managerial strategies are often in accordance with the assumption that employees with certain characteristics remain successful in every situation and achieve already set goals. Our findings show a somewhat different story, and

they propose considering work goal striving as not being solely dependent on a certain set of dispositions.

This research suggests that work goal striving has a nonlinear mechanism, and, during such a pursuit, distinction between the positive and negative roles of valued psychological resources can be limiting. Psychological states appear to be more reversible than expected, with usually assumed resources turning into liabilities and vice versa. This finding has the advantage of grounding employee motivation initiatives on actual worker perceptions of the workplace experience. Self-regulation-focused programs are necessary to enable employees to deal with adverse situations, but special attention should be given because ready-made programs may not benefit every employee.

Another practical conclusion is that managers should avoid devoting absolute faith to grit. Our results temper this view by showing that not all professionals fit a pattern of competitive work profiles. For academics, as for other knowledge workers, grit is to be replaced in the context of an activity when their value increases in time and involves continuing education, sabbatical leaves, renewed programs, job transfers, and sometimes redesign. Grit is embedded within learning goal orientation, rather than being attached to the sole prospect for a clearly identified outcome (Allen & Katz, 1989; Joo, Park, & Lim, 2016; Tampoe, 1993). Furthermore, we suggest that practitioners pay greater attention to cross-cultural features of their workforce. The recent interest in grit has emerged in the context of (Western) societies, where the idea of success is often associated with that of individualistic achievement. Instead, grit may be valued differently in group-conscious collectivist cultures (Schwartz & Andrasik, 2017). Therefore, we suggest considering differently the role of grit in non-individualist cultures, where work progress can be negatively affected by a perceived lack of organizational support.

A final main practical implication of this research is about people holding key positions in organizations and formulating strategies for their subordinates. Although grit has been suggested as dispositional as well as situational, evidence confirms its developmental nature when considered as a trait (Duckworth, 2016; Jordan, Ferris, Hochwarter, & Wright, 2019; Jordan, Wihler, Hochwarter, & Ferris, 2019; Von Colin et al., 2014). “Nature matters, and so does nurture” in deciding the grittiness level of an individual (Duckworth, 2016, p. 80). Instead of just relying on an already available level of grit, the programs necessary for its enhancement (considering its optimal level) should be implemented. Management should consider grit as a valuable asset and try to provide opportunities that add to employees’ moderate level of grit.

## Limitations and Future Directions

This study also shows a number of limitations. First, as a two-wave study the limited time-lagged nature of design didn’t allow for testing causal inferences.



The main purpose of this research was to explore possible nonlinear and interactive effects of certain variables on work goal progress and not investigate the actual resource accumulation process. A regular multi-wave longitudinal modeling would seem contradictory because it implies a linear evolution between variables. Nevertheless, future research may consider such relationships on a longitudinal basis with appropriate methodology to check for dynamics. This will help to understand nonlinear over time relationships of psychological resources in terms of resource gain/loss spiral notions of COR theory (Hobfoll, 2001).

Second, although we found strong evidence of a nonlinear role of grit, and a significant interactive effect with POS, additional samples could be integrated to investigate the specific role of POS. Because some previous research studies showed the possible curvilinear role of POS (Burnett et al., 2015), further research is necessary to confirm whether such environments are beneficial universally or their utility relates to the nature of existing psychological resources. Further research along these lines can be conducted while considering alternative constructs that may capture a greater range of variability in relation to goal progress.

Third, there still exists the risk of concerns about CMB affecting the data. Nevertheless, we introduced procedures and statistical methods to overcome this issue. The data were collected at two time points, during and at the end of the university semester. Also, we tested the common latent factor during the CFA to confirm that common method variance does not exist in our case. Last, we conducted Harman's single-factor analysis, which also confirmed the nonexistence of CMB. Future research may consider testing goal-related outcomes using multiple sources, such as supervisor evaluations and performance reports from the organization, which will improve the reliability of findings.

## CONCLUSION

Our study examined the curvilinear role of grit with work goal progress. Furthermore, we explored the moderating role of POS on this relationship. Grit resource has a significant inverted U-shaped relationship with work-related goal outcome. The existence of a supportive environment adds value to such relationships. Together, our findings emphasize not only that individuals' psychological resources have an impact on work goal pursuit but also such strivings for attainment are contingent on the perceptions of work environments. Further research is encouraged to propose and test the role of other psychological resources coupled with additional individual factors by incorporating nonlinear theorizing and methodologies.

## REFERENCES

- Alaoui, L., & Fons-Rosen, C. (2019). *Know when to fold 'em: The flip side of grit*. Retrieved from [http://www.econ.upf.edu/~alaoui/alaoui\\_fonsrosen\\_grit.pdf](http://www.econ.upf.edu/~alaoui/alaoui_fonsrosen_grit.pdf)
- Allen, T.J., & Katz, R. (1989). Managing engineers and scientists: Some new perspectives. In Y. Doz, P. Evans, & A. Laurent (Eds.) *Human resource management in international firms* (pp. 191–199). London, UK: Palgrave Macmillan.
- Astakhova, M.N. (2015). The curvilinear relationship between work passion and organizational citizenship behavior. *Journal of Business Ethics, 130*(2), 361–374. <https://doi.org/10.1007/s10551-014-2233-5>
- Baran, B.E., Shanock, L.R., & Miller, L.R. (2012). Advancing organizational support theory into the twenty-first century world of work. *Journal of Business and Psychology, 27*(2), 123–147. <https://doi.org/10.1007/s10869-011-9236-3>
- Burnett, M.F., Chiaburu, D.S., Shapiro, D.L., & Li, N. (2015). Revisiting how and when perceived organizational support enhances taking charge: An inverted U-shaped perspective. *Journal of Management, 41*(7), 1805–1826. <https://doi.org/10.1177/0149206313493324>
- Buzzanell, P.M., & Goldzwig, S.R. (1991). Linear and nonlinear career models: Metaphors, paradigms, and ideologies. *Management Communication Quarterly, 4*(4), 466–505. <https://doi.org/10.1177/0893318991004004004>
- Chen, S., Westman, M., & Hobfoll, S.E. (2015). The commerce and crossover of resources: Resource conservation in the service of resilience. *Stress & Health, 31*(2), 95–105. <https://doi.org/10.1002/smi.2574>
- Christopoulou, M., Lakioti, A., Pezirkianidis, C., Karakasidou, E., & Stalikas, A. (2018). The role of grit in education: A systematic review. *Psychology, 9*(15), 2951–2971.
- Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple correlation/ regression analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Cormier, D.L., Dunn, J.G., & Dunn, J.C. (2019). Examining the domain specificity of grit. *Personality and Individual Differences, 139*, 349–354. <https://doi.org/10.1016/j.paid.2018.11.026>
- Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., ... Gayer, D.E. (2007). Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecological Economics, 61*(2–3), 267–276.
- Credé, M. (2018). What shall we do about grit? A critical review of what we know and what we don't know. *Educational Researcher, 47*(9), 606–611. <https://doi.org/10.3102/0013189X18801322>
- Credé, M., Tynan, M.C., & Harms, P.D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology, 113*(3), 492–511. <https://doi.org/10.1037/pspp0000102>
- Dawson, J.F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19. <https://doi.org/10.1007/s10869-013-9308-7>
- Diefendorff, J.M., & Lord, R.G. (2008). Goal-striving and self-regulation processes. In R. Kanfer, G. Chen, & R.D. Pritchard (Eds.), *Work motivation* (pp. 179–224). New York, NY: Routledge.

- Duckworth, A. (2016). *Grit: The power of passion and perseverance* (Vol. 234). New York, NY: Scribner.
- Duckworth, A., & Gross, J.J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science*, 23(5), 319–325. <https://doi.org/10.1177/0963721414541462>
- Duckworth, A.L., Peterson, C., Matthews, M.D., & Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Duckworth, A.L., & Quinn, P.D. (2009). Development and validation of the Short Grit Scale (GRIT-S). *Journal of Personality Assessment*, 91(2), 166–174. <https://doi.org/10.1080/00223890802634290>
- Eder, P., & Eisenberger, R. (2008). Perceived organizational support: Reducing the negative influence of coworker withdrawal behavior. *Journal of Management*, 34(1), 55–68. <https://doi.org/10.1177/0149206307309259>
- Edwards, J.R. (2007). Polynomial regression and response surface methodology. In C. Ostroff & T.A. Judge (Eds.), *Perspectives on organizational fit* (pp. 361–372). San Francisco, CA: Jossey-Bass.
- Edwards, J.R., & Rothbard, N.P. (1999). Work and family stress and well-being: An examination of person-environment fit in the work and family domains. *Organizational Behavior and Human Decision Processes*, 77(2), 85–129. <https://doi.org/10.1006/obhd.1998.2813>
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75(1), 51–59. <https://doi.org/10.1037/0021-9010.75.1.51>
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507. <https://doi.org/10.1037/0021-9010.71.3.500>
- Erdogan, B., & Enders, J. (2007). Support from the top: Supervisors' perceived organizational support as a moderator of leader-member exchange to satisfaction and performance relationships. *Journal of Applied Psychology*, 92(2), 321–330. <https://doi.org/10.1037/0021-9010.92.2.321>
- Farh, J.L., Hackett, R.D., & Liang, J. (2007). Individual-level cultural values as moderators of perceived organizational support–employee outcome relationships in China: Comparing the effects of power distance and traditionality. *Academy of Management Journal*, 50(3), 715–729. <https://doi.org/10.5465/amj.2007.25530866>
- Fredrickson, B.L. (2003). Positive emotions and upward spirals in organizations. In K.S. Cameron, J. Dutton, & R. Quinn (Eds.), *Positive organizational scholarship* (pp. 164–175). San Francisco, CA: Berrett-Koehler.
- Gaskin, J. (2016). Confirmatory factor analysis. *Gaskination's StatWiki*. Retrieved from [http://statwiki.kolobkreations.com/index.php?title=Confirmatory\\_Factor\\_Analysis](http://statwiki.kolobkreations.com/index.php?title=Confirmatory_Factor_Analysis)
- Gaskin, J. and Lim, J. (2017). Confirmatory factor analysis tools, AMOS Plugin. *Gaskination's StatWiki*. Retrieved from [http://statwiki.kolobkreations.com/index.php?title=Confirmatory\\_Factor\\_Analysis#Common\\_Method\\_Bias\\_28CMB.29](http://statwiki.kolobkreations.com/index.php?title=Confirmatory_Factor_Analysis#Common_Method_Bias_28CMB.29)
- Gaudreau, P., Carraro, N., & Miranda, D. (2012). From goal motivation to goal progress: The mediating role of coping in the self-concordance model. *Anxiety, Stress & Coping*, 25(5), 507–528. <https://doi.org/10.1080/10615806.2011.628015>

- Grant, A.M., & Schwartz, B. (2011). Too much of a good thing: The challenge and opportunity of the inverted U. *Perspectives on Psychological Science*, 6(1), 61–76. <https://doi.org/10.1177/1745691610393523>
- Halbesleben, J.R., Harvey, J., & Bolino, M.C. (2009). Too engaged? A conservation of resources view of the relationship between work engagement and work interference with family. *Journal of Applied Psychology*, 94(6), 1452–1465.
- Halbesleben, J.R., Neveu, J.P., Paustian-Underdahl, S.C., & Westman, M. (2014). Getting to the “COR”: Understanding the role of resources in conservation of resources theory. *Journal of Management*, 40(5), 1334–1364. <https://doi.org/10.1177/0149206314527130>
- Harrison, D.A., McLaughlin, M.E., & Coalter, T.M. (1996). Context, cognition, and common method variance: Psychometric and verbal protocol evidence. *Organizational Behavior and Human Decision Processes*, 68(3), 246–261. <https://doi.org/10.1006/obhd.1996.0103>
- Hietala, P., Kaplan, S.N., & Robinson, D.T. (2003). What is the price of hubris? Using takeover battles to infer overpayments. Working Paper, National Bureau of Economic Research. <https://doi.org/10.3386/w9264>
- Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50(3), 337–421. <https://doi.org/10.1111/1464-0597.00062>
- Hobfoll, S.E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, 6(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hobfoll, S.E. (2011). Conservation of resource caravans and engaged settings. *Journal of Occupational and Organizational Psychology*, 84(1), 116–122. <https://doi.org/10.1111/j.2044-8325.2010.02016.x>
- Hobfoll, S.E. (2012). Conservation of resources and disaster in cultural context: The caravans and passageways for resources. *Psychiatry: Interpersonal & Biological Processes*, 75(3), 227–232.
- Hobfoll, S.E., Halbesleben, J., Neveu, J.P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 103–128. <https://doi.org/10.1146/annurev-orgpsych-032117-104640>
- Hochwarter, W.A., Witt, L.A., Treadway, D.C., & Ferris, G.R. (2006). The interaction of social skill and organizational support on job performance. *Journal of Applied Psychology*, 91(2), 482–489. <https://doi.org/10.1037/0021-9010.91.2.482>
- Howard, M.C., & Crayne, M.P. (2019). Persistence: Defining the multidimensional construct and creating a measure. *Personality and Individual Differences*, 139, 77–89. <https://doi.org/10.1016/j.paid.2018.11.005>
- Joo, B.K.B., Park, J.G., & Lim, T. (2016). Structural determinants of psychological well-being for knowledge workers in South Korea. *Personnel Review*, 45(5), 1069–1086. <https://doi.org/10.1108/PR-01-2015-0011>
- Jordan, S.L., Ferris, G.R., Hochwarter, W.A., & Wright, T.A. (2019). Toward a work motivation conceptualization of grit in organizations. *Group and Organization Management*, 44(2), 320–360. <https://doi.org/10.1177/1059601119834093>

- Jordan, S.L., Wihler, A., Hochwarter, W.A., & Ferris, G.R. (2019). The roles of grit in human resources theory and research. In M.R. Buckley, J.R.B. Halbesleben, & A.R. Wheeler (Eds.), *Research in personnel and human resources management* (Vol. 37, pp. 53–88). Bingley, UK: Emerald Group.
- Koestner, R., Otis, N., Powers, T.A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality, 76*(5), 1201–1230. <https://doi.org/10.1111/j.1467-6494.2008.00519.x>
- Kohn, A. (2014). The downside of “grit”. *Washington Post*. Retrieved from <http://www.alfiekohn.org/article/downside-grit/>
- Kurtessis, J.N., Eisenberger, R.F., Ford, M.T., Buffardi, L.C., Stewart, K., & Adis, C.S. (2015). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management, 43*(6), 1854–1884. <https://doi.org/10.1177/0149206315575554>
- Lindberg, E., & Wincent, J. (2011). Goal commitment and performance: An empirical study incorporating role-stress literature to reveal functional and dysfunctional influences. *Journal of Applied Social Psychology, 41*(11), 2634–2655. <https://doi.org/10.1111/j.1559-1816.2011.00837.x>
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Lucas, G.M., Gratch, J., Cheng, L., & Marsella, S. (2015). When the going gets tough: Grit predicts costly perseverance. *Journal of Research in Personality, 59*, 15–22. <https://doi.org/10.1016/j.jrp.2015.08.004>
- Luthans, F., Norman, S.M., Avolio, B.J., & Avey, J.B. (2008). The mediating role of psychological capital in the supportive organizational climate–employee performance relationship. *Journal of Organizational Behavior, 29*(2), 219–238. <https://doi.org/10.1002/job.507>
- Maddi, S.R., Matthews, M.D., Kelly, D.R., Villarreal, B., & White, M. (2012). The role of hardiness and grit in predicting performance and retention of USMA cadets. *Military Psychology, 24*(1), 19–28. <https://doi.org/10.1080/08995605.2012.639672>
- Pierce, J.R., & Aguinis, H. (2013). The too-much-of-a-good-thing effect in management. *Journal of Management, 39*(2), 313–338. <https://doi.org/10.1177/0149206311410060>
- Podsakoff, P.M., MacKenzie, S.B., & Podsakoff, N.P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539–569.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology, 87*(4), 698–714. <https://doi.org/10.1037/0021-9010.87.4.698>
- Rhoades, L., Eisenberger, R., & Armeli, S. (2001). Affective commitment to the organization: The contribution of perceived organizational support. *Journal of Applied Psychology, 86*(5), 825–836. <https://doi.org/10.1037/0021-9010.86.5.825>
- Richardson, M.J., Dale, R., & Marsh, K.L. (2014). Complex dynamical systems in social and personality psychology: Theory, modeling, and analysis. In H.T. Reis & C.M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–282). Cambridge, UK: Cambridge University Press.

- Riggle, R.J., Edmondson, D.R., & Hansen, J.D. (2009). A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research*, *62*(10), 1027–1030. <https://doi.org/10.1016/j.jbusres.2008.05.003>
- Rose, M. (2013). Being careful about character. *Phi Delta Kappan*, *95*(2), 44–46.
- Sadri, G., & Robertson, I.T. (1993). Self-efficacy and work-related behaviour: A review and meta-analysis. *Applied Psychology: An International Review*, *42*, 139–152. <https://doi.org/10.1111/apps.1993.42.issue-2>
- Schaufeli, W.B., & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, *25*(3), 293–315. <https://doi.org/10.1002/job.248>
- Schwartz, A. (2019). *Hiring for grit: Why it matters, and how to identify it*. Retrieved from <http://blog.indeed.com/2019/02/22/hire-for-grit>
- Schwartz, M.S., & Andrasik, F. (Eds.) (2017). *Biofeedback: A practitioner's guide* (4th ed.). New York, NY: Guilford Press.
- Seppälä, E., & Cameron, K. (2015). *Proof that positive work cultures are more productive*. Retrieved from <https://hbr.org/2015/12/proof-that-positive-work-cultures-are-more-productive>
- Serrano Archimi, C., Reynaud, E., Yasin, H.M., & Bhatti, Z.A. (2018). How perceived corporate social responsibility affects employee cynicism: The mediating role of organizational trust. *Journal of Business Ethics*, *151*(4), 907–921. <https://doi.org/10.1007/s10551-018-3882-6>
- Shanock, L.R., Baran, B.E., Gentry, W.A., Pattison, S.C., & Heggestad, E.D. (2010). Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology*, *25*(4), 543–554. <https://doi.org/10.1007/s10869-010-9183-4>
- Shanock, L.R., Baran, B.E., Gentry, W.A., Pattison, S.C., & Heggestad, E.D. (2014). Erratum to: Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology*, *29*(1), 161. <https://doi.org/10.1007/s10869-013-9317-6>
- Sheldon, K.M., & Elliot, A.J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, *24*(5), 546–557.
- Sheldon, K.M., & Kasser, T. (1995). Coherence and congruence: Two aspects of personality integration. *Journal of Personality and Social Psychology*, *68*(3), 531–543. <https://doi.org/10.1037/0022-3514.68.3.531>
- Sheldon, K.M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin*, *24*(12), 1319–1331. <https://doi.org/10.1177/01461672982412006>
- Sinclair, E. (2017). *Grit literature: Developing a grit-building curriculum to increase task perseverance*. Doctoral dissertation. Terre Haute, IN: Indiana State University.
- Stirin Tzur, K., Ganzach, Y., & Pazy, A. (2016). On the positive and negative effects of self-efficacy on performance: Reward as a moderator. *Human Performance*, *29*(5), 362–377. <https://doi.org/10.1080/08959285.2016.1192631>



- Tampoe, M. (1993). Motivating knowledge workers: The challenge for the 1990s. *Long Range Planning*, 26(3), 49–55. [https://doi.org/10.1016/0024-6301\(93\)90006-2](https://doi.org/10.1016/0024-6301(93)90006-2)
- Vancouver, J.B., & Kendall, L.N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, 91, 1146–1153. <https://doi.org/10.1037/0021-9010.91.5.1146>
- Vancouver, J.B., More, K.M., & Yoder, R.J. (2008). Self-efficacy and resource allocation: Support for a nonmonotonic, discontinuous model. *Journal of Applied Psychology*, 93, 35–47. <https://doi.org/10.1037/0021-9010.93.1.35>
- Vancouver, J.B., Thompson, C.M., & Williams, A.A. (2001). The changing signs in the relationships among self-efficacy, personal goals, and performance. *Journal of Applied Psychology*, 86(4), 605–620. <https://doi.org/10.1037/0021-9010.86.4.605>
- Von Culin, K.R., Tsukayama, E., & Duckworth, A.L. (2014). Unpacking grit: Motivational correlates of perseverance and passion for long-term goals. *The Journal of Positive Psychology*, 9(4), 306–312. <https://doi.org/10.1080/17439760.2014.898320>
- Xanthopoulou, D., Bakker, A.B., Demerouti, E., & Schaufeli, W.B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, 82(1), 183–200. <https://doi.org/10.1348/096317908X285633>
- Yang, L.Q., Che, H., & Spector, P.E. (2008). Job stress and well-being: An examination from the view of person-environment fit. *Journal of Occupational and Organizational Psychology*, 81(3), 567–587. <https://doi.org/10.1348/096317907X243324>