An Investigation of the Big Five and Narrow Personality Traits in Relation to Self-Regulated Learning

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Abstract

Based on a sample of 2036 college students at a large Southeastern university, learner self-regulation was found to be significantly related to four of the big five traits: agreeableness, conscientiousness, emotional stability, and openness—as well as five narrow personality traits: sense of identity, optimism, tough-mindedness, work drive, and major satisfaction. The purpose was to examine self-regulation in relationship to other personality traits, vocational interests, and demographic variables. It was suggested that other personality traits may be influencing learner self-regulation. The results provide empirical support for SRL as a personality trait and for its multiple connections to the Big Five and narrow personality traits. Based on the present findings, we can characterize self-regulating learners as more likely than their more traditional peers to be hard-working, open to new learning, satisfied with their academic major, having a sense of identity, optimistic, conscientious, emotionally stable, and agreeable. Results were discussed in terms of theoretical and methodological implications.

Keywords:personality, traits, learner self-regulation, self-direction, learning styles

1. Introduction

This paper examines self-regulated learning (SRL) as a personality trait; that is, as a relatively enduring, trans-situational, dispositional attribute of individual learners. We first review our rationale for doing so, then, present empirical findings which illuminate the nomological network and construct validity of SRL.

Boekaerts and Corno (2005) posit that SRL is a complex concept which requires study from different angles for a more comprehensive model. Although various definitions of SRL have been proposed, there is consistent emphasis on SRL referring to individuals taking responsibility for their own learning and using self-regulation to achieve learning goals (Chen, 2002).

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Also, self-regulated learners "are aware of when they do or do not know something. They seek out information when needed and follow the necessary steps to master it." (Zimmerman, 1990). Others (e.g., Schunk, 1991) view self-efficacy as a major component of SRL--notably a belief in one's own ability to determine and achieve learning goals—while others stress the importance for SRL of control over one's learning environment and goal-attainment (e.g., Doherty, 1998; Pintrich, 2000).

There is much conceptual overlap between the specifications of SRL and self-directed learning (SDL), which "refers to activities where primary responsibility for planning, carrying out, and evaluating a learning endeavor is assumed by the individual learner." (Brockett, 1983, p.16). In fact, a number of scholars have used the terms self-regulated learning and self-directed learning interchangeably. For example, in Zimmerman, Bandura, and Martinez-Potts' (1992) "conception of self-directed learning", "self-regulated learners exhibit a high sense of efficacy in their capabilities, which influences the knowledge and skill goals they set for themselves and their commitment to fulfill these challenges" [p. 664]. Also, Travers, Sheckley, and Bell (2003) reported on new teaching strategies in which "Self-regulation shifted learners from other directed to self-directed." A number of other authors have equated SRL to SDL and used them as interchangeable terms (Abd-El-Fattah, 2010; Loyens, Magda, & Rikers, 2008).

As Hiemstra (2009) states in Emerging Directions in Self-Directed Learning, "what separates one discipline from another, even resulting sub-disciplines, is the lexicon developed so scholars can communicate about their specialty" (p. 5). In a modified content analysis, Hiemstra identified several terms related to self-directed learning, including self-regulated learning. Self-direction learning research has been dichotomized into two categories of perspectives by Oddi (1987), Merriam and Caffarella (1999), and Ponton (1999): process or personality characteristic. Ponton (2009) posits that self-regulation is a process of self-directed learning.

1.2 Purpose

In view of the convergence of the SRL and SDL constructs, we turn now to the present study which reports on results bearing on the nomothetic span and construct validity of SRL as a personality trait. These findings were based on a personality trait measure which expressly taps features of SRL (cf., Lounsbury, Levy, Park, Gibson, & Smith, 2009). We examined its relationship to other personality traits, vocational interests, and demographic variables. Where feasible, we advanced directional hypotheses; otherwise, we posited non-directional research questions.

1.3 Research Hypotheses

Regarding other personality traits, we evaluated the following hypotheses:

(1) Learner self-regulation will be positively related to openness. Based on previous research, one of the main objectives of self-directed learners is to acquire new knowledge and learning, which, in turn, is a core feature of the Big Five trait of openness. In this regard, Oddi (1986) found a positive correlation between her measure of continuous self-directed learning (OCLI) and open-mindedness. Lounsbury et al. (2009) also found a positive correlation between SDL and openness; therefore, we expect to find a positive correlation between SRL and openness

(2) Learner self-regulation will be positively related to conscientiousness. Learner self-direction requires a person to have some level of self-discipline, purposefulness, deliberateness, intentionality, and goal-directed behavior, which are components of conscientiousness (Costa & McCrae, 1992) and cognate dispositions to be reliable, dependable, orderly, and goal-directed.

Thus, it is not surprising that Lounsbury, Saudargas, Gibson, and Leong (2005) reported a positive correlation between SDL and conscientiousness. Due to the similarities between SDL and SRL, we expect to find a positive correlation between SRL and conscientiousness.

(3) Learner self-regulation will be positively related to emotional stability. Such a relationship is to be expected from the standpoint of construct equivalence in that effective self-management, control over one's feelings, and able to persist toward one's goals in the face of stress are important components of both SRL and emotional stability.

Indeed, several studies have confirmed a positive relationship between self-directed learning and emotional stability (e.g., Homes, 2005; Lounsbury, Saudargas, & Gibson, 2004).

(4) Learner self-regulation is positively related to work drive. Self-regulated learners tend to have higher learning aspirations and are more successful in achieving their learning goals (Radovan, 2011). They also are more internally motivated (Zimmerman & Martinez-Potts, 1986) and tend to expend more effort to attain learning goals (Radovan, 2011). These characteristics are also shared by individuals with higher levels of work drive which Lounsbury, Gibson, and Hamrick (2004) define as an individual's disposition to work long hours and extend oneself, when needed, to meet demands and achieve success in academic or work settings. Consistent with this view, Lounsbury, Saudargas, and Gibson (2004) found that self-directed learning was significantly and positively correlated with work drive.

(5) Learner self-regulation is positively related to sense of identity. As described by Bidjerano and Dai (2007), among others, self-regulation theory originates from Bandura's (1986, 1997) social cognitive theory, particularly his concepts of self-control and self-efficacy. In this model, the potential for learning is enhanced for individuals having a sense of identity, as they are better able to integrate what they have learned and apply it to their own future plans and activities.

(6) For college students, learner self-regulation will be positively related to satisfaction with one's major. There is a broad body of studies showing a positive relationship between different personality traits and satisfaction measures (e.g., DeNeve& Cooper, 1998). In the case of college students, one would expect that students with higher levels of learner self-regulation would be more like to seek out and find courses that align with their goals and interest, learn more outside of class, through, for example, use of online resources, interactions with professors, ad hoc study groups, and internships and field placements. As a result, one can readily envision such efforts leading to more satisfaction with: what one has learned, one's GPA, and, ultimately, one's major as a whole.

In addition to the above hypotheses, we also investigated as non-directional research questions how learner self-regulation is related to the personality traits of optimism, extraversion, and agreeableness.

2. Material and Methods

2.1.Participants

A total of 2,036 students enrolled in an introductory psychology course and a First-Year Studies program, at a large, public southeastern U. S. state university volunteered to participate in this study. Demographic characteristics of the sample were: Sex--68% female (32% male); year in school--79% Freshmen, 15% Sophomore, 3% Junior, 3% Senior; Age—3% under 18, 81% 18-19, 8% 20-21, 3% 22-25, 2% 26-30, and 3% over 30.

2.1.1. Resource Associates Transition to College Scale

The RATTC is a normal personality inventory contextualized for late adolescents (Jaffe, 1998) and adults through high school and college. It measures the Big Five Traits of Agreeableness, Conscientiousness, Emotional Stability, Extraversion, and Openness as well as other "narrow" personality traits and learner self-direction. Scale development, norming, reliability, criterion-related validity, and construct validity information for the RATTC can be found in Lounsbury & Gibson (Lounsbury & Gibson, 2010).

Findings from the above studies demonstrates that the RATTC constructs are internally consistent and display generally high convergence with common traits on other, widely used personality inventories, including the 16 PF, NEO-PI-R, and the Myers-Briggs Type Inventory (e.g., the RATTC measure of Extraversion correlates .77 with NEO-PI-R measure of Extraversion). Moreover, the Big Five measures of the RATTC significantly predict collegiate academic performance and withdrawal intention (Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Ridgell& Lounsbury, 2004). In addition, an adult version of the RATTC has been found to be related to job performance, job satisfaction, and career satisfaction in a wide variety of occupations in many different business and industry settings (Lounsbury & Gibson, 2010).

2.1.2. Self-Regulated Learning

The items comprising the learner self-regulation subscale of the Resource Associates Transition to College (RATTC) inventory are as follows, for which item responses were made on a five-point Likert scale: 1=Strongly Disagree; 2= Disagree; 3=Neutral/Undecided; 4=Agree; 5=Strongly Agree.
Learner Self-Regulation Items

1. If there is something I don't understand in a class, I always find a way to learn it on my own.
2. I set my own goals for what I will learn.
3. I am very motivated to learn on my own without having to rely on other people.
4. I regularly learn things on my own outside of class.
5. I am very good at finding out answers on my own for things that the teacher does not explain in class.
6. I view self-directed learning based on my own initiative as very important for success in school and in my future career.
7. I like to be in charge of what I learn and when I learn it.
8. I am better at learning things on my own than most students.

For the present sample, the coefficient alpha for the above RATTC was .85.
A brief description of the Big Five and narrow traits measured in this study along with their coefficient alphas is provided below:

- Agreeableness: being agreeable, participative, helpful, cooperative, and inclined to interact with others harmoniously. (Coefficient alpha = .78).
- Conscientiousness: being conscientious, reliable, trustworthy, orderly, and rule-following. (Coefficient alpha = .79).
- Emotional Stability: overall level of adjustment and emotional resilience in the face of stress and pressure. We conceptualized this as the inverse of Neuroticism. (Coefficient alpha = .84).
- Extraversion: tendency to be sociable, outgoing, gregarious, warmhearted, expressive, and talkative. (Co-efficient alpha = .82).
- Openness: receptivity and Openness to change, innovation, new experience, and learning. (Coefficient alpha = .74).
- Major Satisfaction (Coefficient alpha = .86)
- Learner Self-Regulation (Coefficient alpha = .85)

- Sense of Identity: knowing one's self and where one is headed in life, having a core set of beliefs and values that guide decisions and actions; and having a sense of purpose. (Coefficient alpha = .84).
- Optimism: having an optimistic, hopeful outlook concerning prospects, people, and the future, even in the face of difficulty and adversity as well as a tendency to minimize problems and persist in the face of setbacks. (Coefficient alpha = .87).
- Tough-Mindedness: appraising information and making decisions based on logic, facts, and data rather than feelings, sentiments, values, and intuition. (Coefficient alpha = .78).
- Work Drive: being hard-working, industrious, and inclined to put in long hours and much time and effort to reach goals and achieve at a high level. (Coefficient alpha = .85).

2.2. Procedure

After obtaining human subjects approval from the university's Institutional Review Board, participants were solicited to take a personality inventory on-line. Upon completion of the inventory, participants were provided a feedback report summarizing their personality characteristics and implications for a variety of areas related to being a student, including area of study, social life, managing stress, study habits, living situation, and using campus resources. Students in the introductory psychology course were offered extra credit for participation.

3. Results

Descriptive statistics and intercorrelations among the study variables are displayed in Table 1. All of the Big Five personality traits are correlated significantly and positively with learner self-regulation, except for Extraversion. Specifically, in descending order of magnitude, the correlations with learner self-regulation were: Openness ($r = .42$, $p < .01$), Conscientiousness ($r = .19$, $p < .01$), Agreeableness ($r = .18$, $p < .01$), Emotional Stability ($r = .17$, $p < .01$), and Extraversion ($r = -.12$, $p > .01$), and the other narrow personality traits also correlated significantly with learner self-regulation, with the largest magnitude correlation observed for Work Drive ($r = .48$, $p < .01$), followed by Major Satisfaction ($r = .29$, $p < .01$), Sense of Identity ($r = .27$, $p < .01$), and Optimism ($r = .25$, $p < .01$).

Table 1: Descriptive Statistics and Intercorrelations for the Big Five and Narrow Personality Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Agreeableness	---	.31**	.22**	.07	.14*	.29**	.37**	.45**	.17**	.23**	.18**
(2) Conscientiousness		---	.14**	.06	.05	.23**	.29**	.-.05	.35**	.21**	.19**
(3) Emotional Stability			---	.19**	.06	.60**	.41**	.09	.14**	.32**	.17*
(4) Extraversion				---	.04	.27**	.39**	.05	.08	.14**	-.12
(5) Openness					---	.30**	-.30**	.-.29**	.41**	.19**	.42**
(6) Optimism						---	.56**	-.07	.24**	.39**	.25**
(7) Sense of Identity							---	.23**	.25**	.45**	.27**
(8) Tough-Mindedness								---	-.23**	-.11**	-.03
(9) Work Drive									---	.36**	.48**
(10) Major Satisfaction										---	.29**
(11) Learner Self-Regulation											---
Mean	3.67	3.48	3.05	3.69	3.65	4.03	3.97	2.30	2.92	5.28	3.28
Standard Deviation	.67	.67	.79	.71	.65	.64	.69	.66	.73	.88	.57
Coefficient alpha	.78	.79	.84	.82	.74	.87	.84	.78	.85	.86	.85

$n = 2036$; * $p<.05$ ** $p<.01$

4. Discussion

The results of the present study indicate that learner self-regulation is positively and significantly related to a range of broad and narrow personality traits. All six of the directional hypotheses were confirmed, indicating that learner self-regulation has a wide nomological network with traits which are logically related to it based on the meaning of the self-regulated or self-regulation learning construct.

Taking the present findings in order of decreasing magnitude of effect for the observed correlations, we first consider that work drive was the trait most highly correlated with learner self-regulation. Why might this be? One explanation is that self-regulated learners are probably exerting more effort in the pursuit of their learning goals and doing more work than their traditional learner counterparts. In this vein, it should be noted that learner self-regulation was also positively related to conscientiousness, from which it can be inferred that self-regulated learners tend to be dutiful and responsible when it comes to attending class, turning in assignments on time, and fulfilling normal classroom demands. Engaging in self-regulated learning activities is likely accomplished above and beyond traditional learning, which would require the extra time and effort characteristic of students with higher levels of work drive. It would be interesting to see if future research in this area could find such behavioral manifestations of learner self-regulation as amount of time spent learning course material, preparing for exams, and meeting other class requirements.

That openness was the trait which was second most highly related to learner self-regulation affirms the importance of new learning to students who are self-regulated learners. Openness to new experiences has been found to be positively associated with meaning-directed learning and achievement motivation (Busato, Prins, Elshout, & Hamaker, 1998). New learning is likely one of the primary motivators for learning in a self-directed manner. Since learning is a lifelong endeavor for most people (Candy, 1991), self-regulated learning is probably important at later stages of the lifespan beyond school, including in the workplace and in the acquisition of new skills in a variety of contexts, such as learning new knowledge, skills, and abilities (KSA's) for parenting, computer usage, personal finance and money management, home maintenance, and all manner of leisure activities. One area for future researchers to address is whether and how self-regulated learning is related to KSA acquisition in non-academic settings and if the importance of SRL is sustained as individuals mature and progress in their lives.

Sense of identity was the third most highly correlated trait, indicating that students who have a stronger sense of identity--which corresponds to Erikson's (Erickson, 1980) key stage of development for adolescents--are more likely to engage in self-regulated learning. One explanation for this result is that having a sense of identity facilitates all types of learning, but especially self-regulated or self-directed learning which requires a coherent sense of self to initiate and sustain self-regulating learning activities. Indeed, a sense of ego identity is requisite for self-efficacy and other core attributes of self-regulated learners, such as prioritization of tasks, goal-directedness, and proactive learning activities (Abdullah, 2001; Nota, Soresi, & Zimmerman, 2004; Paris & Paris, 2001).

Optimism was also positively related to learner self-regulation. A possible explanation for this relationship might be that individuals with higher levels of optimism have more positive expectations concerning the future (Scheier & Carver, 1985) and, as conceptualized in the presented study, they tend to have an upbeat, sanguine outlook, even in the face of difficulty and adverse circumstances, which would facilitate SRL in demanding situations. Similarly, self-regulated learners have an expectation of achieving positive learning outcomes despite constraints and challenges to overcome (Nocol& MacFarlane-Dick, 2006; Pajares & Schunk, 2001).

As these learning outcomes are achieved and individuals are reinforced for their self-directed learning efforts, the learner is likely to develop a generalized positive expectancy about future opportunities for self-regulated learning which may, in turn, contribute to the person's optimism. In fact, a cycle of reciprocal effects may develop which strengthens the association between self-regulated learning and optimism. Future research, especially using a longitudinal design, would be needed to unravel the direction(s) of causality between optimism and self-regulated learning.

As predicted, conscientiousness was positively, though modestly, related to learner self-regulation, which may reflect the sense of purpose and goal-directed orientation of self-regulating learners.

While it may be the case that self-regulated learning is facilitated by the conscientiousness of the learner, it should also be noted that the amount of shared variance between the two constructs is relatively small (i.e., less than 4%). Perhaps a stronger relationship would be found if conscientiousness were examined for different learning tasks, ranging from those which require sequential, systematic accretion of principles and facts as well as determinative relations—favoring a higher correlation between conscientiousness and SRL—to those which involve more ambiguity, fuzzy logic, non-standard approaches, and stochastic relations—which would, presumably, be more likely to lead to a lower correlation between conscientiousness and SRL. Thus, one interesting topic for future research would be to investigate how some of these varied facets of the global trait of conscientious are related to self-regulated learning and more conventional types of learning such as instructor-directed learning. Also, subsequent research in this area could assess whether the type of learning task moderates the conscientiousness-SRL relationship. At present, however, it appears that we can conclude merely that conscientiousness is one of the constructs which is positively related to SRL, but at a relatively low level of magnitude.

In a similar vein, learner self-regulation was positively related to emotional stability, although the effect size (Cohen, 1977) was low. While emotional control may facilitate SRL, its role is minor. This may be due to the importance for self-regulated learners of rational, logical, "cognitive, and metacognitive strategies that are systematically directed towards the achievement of learning goals" (Corno & Mandinach, 1983). In comparison, the role of affect and emotional regulation may be less consequential for self-regulated learners. Before consigning emotional stability to a minor role in the self-regulated learning process, two avenues should be explored by future research. First, it seems reasonable to expect that highly neurotic students would be less able to engage in and benefit from SRL (Peters & Gray, 2006). Future research could examine whether emotional stability and SRL are more aligned when comparing highly neurotic versus other learners. Second, students who have very high levels of SRL may achieve some distinctive outcomes, such as making the Dean's list, induction into an academic honor society like Phi Beta Kappa, or winning a prestigious scholarship, internship, or field placement. Future research could investigate whether such outcomes are more associated with high levels of SRL.

Another trait displaying a low effect size correlation with SRL was agreeableness. One possible explanation for this correlation was observed by (Radovan, 2011) who noted that self-regulating learners will be more likely than traditional learners to seek help from teachers and classmates, when they "find themselves in learning difficulties." Being pleasant and agreeable are qualities which would facilitate such interactions and make it more likely that teachers or peers would provide help to learners who are more agreeable and equable. As is the case for other traits related to SRL, there may be some learning tasks and conditions for which the correlation with agreeableness may be higher. For example, it may be that SRL is more highly related to agreeable-ness in situations where learners must work in teams or on learning tasks requiring extensive social interaction.

Presumably, self-regulated learning has instrumental value in that it leads to increased learning and knowledge acquisition (Miller & Brickman, 2004). In the context of college students, we predicted and found that SRL is positively related to major satisfaction. There are several possible explanations for such a finding. First, students who are more self-regulating in their learning modes may actually learn more and perform better in their classes, including classes in their major. In addition, students with higher levels of SRL may be better at getting into courses they want as well as engaging in independent study, advising, and participating in clubs and groups related to their major or other extracurricular activities which could lead to more satisfying relationships with faculty and peers.

Students who are more inclined to engage in SRL may also be more adept than their traditional counterparts at finding resources online and elsewhere that facilitate their out-of-class learning, career planning, interpersonal relationships, leisure pursuits, and various opportunities for personal growth and development.

4.1. Study Limitations

There are several limitations of the current study that should be acknowledged. First, this study was limited to a single year in a single geographic area at a large, public university, leaving open the question of generalizability to other learners, including adult learners in organizations, geographic areas, and types of universities. Second, most of the study participants were under-class students; thus, we do not know if the results would generalize to samples of primarily upper-class or graduate students. Third, the present study was limited to a single occasion of measurement, which precluded analysis of potential changes in the relationships among the study constructs over time and causal analysis of variable relationships. Fourth, we did not examine how the measure we used assess SRL relates to other measures and facets of SRL, notably the Pintrich, Smith, Garcia, and McKeachie's (1993) Motivated Strategies for Learning Questionnaire (MSLQ), which has nine subscales for learning strategies. Finally, our study did not examine the generalizability of results as a function of possible moderator variables, such as type of major, values for work and leisure, the maturity of the learner, and socio-economic status, to name but a few.

5. Conclusions

Notwithstanding such limitations, the findings of our study provide empirical support for SRL as a personality trait and for its multiple connections to the Big Five and narrow personality traits. Indeed, the wide nomothetic span (Messick, 1989) of SRL observed here affirms its richness as a theoretical construct. Based on the present findings, we can characterize self-regulating learners as more likely than their more traditional peers to be: hard-working, open to new learning, satisfied with their academic major, having a sense of identity, optimistic, conscientious, emotionally stable, and agreeable. Hopefully, future research can determine whether such relationships can be replicated in other settings and whether self-regulated learning is related to other personality characteristics as well as a robust range of learning outcomes. We do not know the limits of the nomological network for self-regulated learning, but its boundaries appear to be wide-ranging.

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