Does Learning Agility Vary Primarily at the Between- or Within-Person Level of Analysis?

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DeRue, Ashford, and Myers’ (2012) review of learning agility leaves open an important question: Does learning agility vary primarily at the between- or within-person level of analysis? There is reason to expect variance at both levels of analysis, but this is an empirical question. Assuming for a moment that there is variance in learning agility at both between- and within-person levels of analysis, the amount of variance residing at each level remains unclear. Furthermore, if learning agility varies within individuals over time, it is unclear exactly what form this within-person variance may take. These issues are important because the answers to these questions will determine which type of interventions—specifically, selection, training, or motivational—are likely to be most useful for organizations seeking to increase learning agility in their workforce.

Within-Person Variance

Many psychological constructs vary at both between- and within-person levels of analysis. For example, some employees might have low learning agility on average, but others have high learning agility on average. This is between-person variance—one person’s overall standing on the construct is higher than another person’s overall standing. Yet, individuals tend to vary around their means. For instance, a person may exhibit high learning agility at some occasions yet low learning agility at other occasions. This is within-person variance. Many (if not most) psychological constructs vary at both levels of analysis, a point which I will elaborate upon in the following section. But first it is important to consider how variance in psychological constructs is manifested across levels of analysis.

Specifically, within-person variance can take a variety of forms. The first, illustrated in Figure 1a, is the growth model. In this case, there is within-person variance on a construct because the person is changing systematically over time. For instance, job knowledge may be expected to vary within individuals in this way during training. The second way within-person variance is observed is the stochastic model, shown in Figure 1b. In these models, a person varies around a central point. For example, a person may be moderately gregarious overall, yet moretalkative when around friends. Figure 1b is a special case of the stochastic model, as time can be used to perfectly predict one’s standing on the construct (it follows a sine wave).
Learning Agility Likely Varies Both Between and Within Individuals

DeRue et al. focused on three antecedents of learning agility: goal orientation, metacognition, and Openness to Experience. All these constructs have been shown to vary both between and within individuals. For instance, Yeo, Loft, Xiao, and Kiewitz (2009) conducted two studies in which goal orientations were measured repeatedly. Yeo et al. found that over the course of a lab study (2 hours), between 12% and 15% of the variance in goal orientations occurred at the within-person level of analysis, and over the course of a college semester (16 weeks), between 26% and 39% of the variance in goal orientations occurred at the within-person level of analysis. There is also evidence of both between- and within-person variance in metacognition. For instance, many studies have shown positive correlations among metacognitive skills and learning, both measured at the between-person level of analysis (e.g., Sitzmann & Ely, 2011). However, there are also studies demonstrating that metacognitive activity can be increased via training and instructions (e.g., Bell & Kozlowski, 2008; Keith & Frese, 2005; Schmidt & Ford, 2003), which indicates variance at the within-person level. Finally, with regard to Openness to Experience, Fleeson and Gallagher (2009) conducted a mega-analysis2 of 15 studies that used experience sampling methods to measure Big Five personality traits repeatedly (typically 4 or 5 times a day for 1–2 weeks). These authors found that on average, 49% of the variance in Openness to Experience occurs at the within-person level of analysis. If the antecedents of learning agility vary at both between- and within-person levels of analysis, then it is reasonable to expect learning agility to vary at both levels as well.

Furthermore, a case could be made for learning agility varying within individuals over time according to any one of the

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2. Mega-analysis is similar to meta-analysis in that it involves combining data from several studies. However, whereas with meta-analysis summary statistics (e.g., correlations) from the individual studies are weighted and averaged, mega-analysis involves creating a new data set from the primary data collected for each study. This method is used when data are collected at multiple levels of analysis (Cooper & Patall, 2009).
models shown in Figure 1. For instance, if metacognition is a primary determinant of learning agility, then a growth model might be expected. That is, metacognitive skills develop over time (Kuhn, 2000). Although much of this development occurs during childhood and adolescence, individuals can continue to develop metacognitive skills into adulthood, evidenced by the fact that metacognitive skills can be trained (e.g., Schmidt & Ford, 2003). On the other hand, if goal orientations are a primary determinant of learning agility, then perhaps a more stochastic model of within-person variance in learning agility might be expected. That is, a learning goal orientation is more likely to emerge when individuals believe they have the ability to develop their skills (Jagacinski, Kumar, Boe, Lam, & Miller, 2010) and are under little time pressure (Beck & Schmidt, 2011), meaning learning agility may be more likely to emerge under these conditions as well.

Variance Partitioning Is Important for Choosing Interventions

Assuming that learning agility is positively related to outcomes that are important to organizations (e.g., job performance), organizations may wish to implement a number of interventions to increase the level of learning agility in their workforce. Specifically, organizations may wish to select individuals with high learning agility, train individuals to develop learning agility, or motivate employees to display learning agility at the appropriate times. However, the choice of intervention (or more likely, the relative importance given to each intervention) will depend on the way variance in learning agility is distributed. For instance, if the majority of the variance in learning agility is at the between-person level of analysis, then an organization would be best off trying to select employees who already possess high levels of learning agility. On the other hand, if the majority of variance in learning agility is at the within-person level of analysis, organizations may choose to select randomly (at least with regard to learning agility) and instead elicit learning agility on the job. However, the way this is done will depend on whether learning agility varies according to a growth model or a stochastic model. In the case of the former, organizations may wish to invest in training, so that employees develop requisite levels of learning agility. In the case of the latter, organizations may wish to focus on motivational interventions (e.g., goal setting) in an effort to “activate” learning agility when it is most relevant (e.g., when new technology is introduced). Of course, as long as there is at least some variance at each level of analysis, organizations are likely to adopt some combination of all three strategies. Nonetheless, the relative importance of these strategies in terms of the return on investment that can be expected will depend on how variance in learning agility is distributed among between- and within-person levels of analysis.

Parting Thoughts

The issue raised in this comment is germane to a broad range of psychological constructs not just learning agility. Variance partitioning should be a standard part of the construct validation process. Failure to do so can lead to misplaced efforts when it comes time to implement organizational interventions.

References


