The Impact of Diagnostic Score Reporting on Test Performance:
Implications for Feedback Intervention Theory

Study Purpose

The objective of this study is to review the limited research that has evaluated the impact of diagnostic score reporting on test performance, discuss important variables taken from feedback intervention research that can assist in understanding how test results influence performance, and provide suggestions for future research in score reporting.

Theoretical Framework

Subscores are of increasing interest as the U.S. government’s No Child Left Behind Act of 2001 has demanded that diagnostic reports of student performance are provided to inform preparation for improved learning (SinhaRay, Puhan, & Haberman, 2011). This demand follows the general assumption common within the social sciences, which is that providing feedback will have a positive effect on performance (Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988); however, a number of meta-analyses have generally concluded that feedback does not always lead to improved performance (e.g., Bangert-Drowns, Kulik, Kulik, & Morgan, 1991), and under certain conditions can lead to detrimental performance (Kluger and DeNisi, 1996).

In terms of research that has looked directly into the impact of diagnostic score reporting on student performance, Muralidharan and Sundararaman (2010) found that student performance only improved when teachers were provided with both diagnostic feedback and monetary incentives for gains in student test scores. Without incentives, no differences were noted when providing and not providing diagnostic feedback. These results suggest that simply providing diagnostic feedback will not lead to improved test performance as there may be contextual variables that mediate and moderate this relationship. As a result, it is important to identify the conditions that are optimal for providing feedback to improve performance.

Methodology

As there is a dearth of research on the impact of diagnostic score reporting on improved test performance, a literature review will be conducted to incorporate findings from feedback intervention theory in the areas of education, psychology, and economics/business to better understand variables that mediate and moderate this relationship.
Results

A review of existing research identified a number of mediating and moderating variables that influence the relationship between feedback and performance improvement (e.g., Smither, London, & Reilly, 2005; Figure 1). These variables can be classified into four main areas: 1) feedback characteristics, 2) feedback perceptions, 3) goal-setting, and 4) action taking.

Feedback Characteristics. The issue of feedback characteristics has been studied extensively with focus being placed on characteristics, such as font size, inclusion/exclusion of psychometric jargon, score scales, the addition of figures, translation of score reports into non-English languages, improved timing of feedback, and the specificity or feedback grain-level (e.g., Zenisky & Hambleton, 2012). However, a characteristic often not considered in the score reporting literature is whether the feedback is positive or negative. In particular, if the negative feedback is lower than individual’s self-perceived feedback, the feedback credibility will be questioned, which may limit performance improvement (Coe, 1998). Therefore, finding effective ways to present negative feedback is an important area that needs further research.

Feedback Perception. Feedback Implementation has been found to be highly related to initial affective reactions (Smither et al., 2005). For example, feedback that negatively impacts one’s self-esteem will decrease feedback effectiveness (Kluger & DeNisi, 1996). Affective reactions are also moderated by feedback orientation or an individual’s predisposition to seek and use feedback (London & Smither, 2002). Individuals high in feedback orientation like and seek feedback, believe that feedback can be effective, and feel accountable to use the feedback, which is highly correlated with feedback acceptance (Rutkowski, Steelman, & Griffith, 2004). Furthermore, a propensity for continuous learning as well as perception of the feedback credibility has been found to also moderate affective reactions (Coe, 1998). These findings suggest that individuals undergo an emotional experience when presented with feedback and that affect is moderated by a number of constructs, such as feedback orientation, a propensity for continuous learning, and a perception of feedback credibility.

Goal Setting. Locke and Latham (1990) found that merely accepting feedback as credible and desired does not lead to performance improvements. Instead, it is of upmost importance to use feedback in setting new performance goals. Once an individual sets his/her goals, goal regulation becomes an important component of improved test performance. That is, an individual can either work to reduce or avoid any discrepancy between goals and
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performance. Smither et al. (2005) suggest that increased performance improvements are more likely to be obtained by individuals that: (a) desire to gain new skills, master new situations, and learn from experience and (b) reduce any discrepancy between goals and performance.

**Taking Action.** Performance improvement is only likely to occur if appropriate actions are taken, which is dependent on a number of individual- and organizational-level variables. In the case of teachers’ use of student-level performance feedback, one must question whether the individual is content with his/her job and/or committed to the organization for which s/he works (Smither et al., 2005). If the individual is committed, s/he must be provided with appropriate tools by the organization to take action (Coe, 1998). As demonstrated by Muralidharan and Sundararaman (2010), providing rewards for behavior change may also be useful for promoting performance improvement. Therefore, the literature suggests that in order to effectively put feedback into action, one must have the appropriate means and support.

**Implications**

A review of previous literature suggests that there is not a direct link between feedback and performance. To this point, score reporting research has largely focused on the user’s comprehension of various feedback characteristics. However, as highlighted in the feedback intervention research, there are both individual and contextual differences in affective reactions, feedback orientations, goal-setting, and beliefs about change that mediate and moderate the relationship between feedback and performance improvement. Although score reporting practices cannot directly influence goal setting and action taking by an individual (i.e., these variables are impacted by a larger organizational system), it is important that future score reporting research considers how negative results can be communicated to improve initial affective reactions so that the probability of feedback implementation is increased.
Figure 1. Model of Feedback on Performance Improvement. Adapted from Smither, London, and Reilly (2005)
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References


