# Employee Engagement, Feedback, and Instructional Design

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This issue of *Performance Improvement Quarterly* contains three scholarly articles that provide a well-rounded view of employee engagement, feedback, and instructional design. The article by Shuck et al. examines the relationship between an employee's health and employee engagement. With a sample of 114 working adults responding to a survey, it was determined that employees with a higher level of employee engagement had a positive individual level of health.

Having determined that an employee's mindset influences how he or she responds to feedback, Matt Zingoni examines four feedback-related influence approaches in an overall policy-capturing approach and how they relate to stated motives after feedback. Utilizing a survey, Zingoni found that individuals who believe that human attributes can be changed through effort want feedback to improve after receiving negative feedback.

The article by Elizabeth Boling et al. examines the core judgments of practicing instructional designers. Transcripts from instructional designers were analyzed that discussed the judgments made in the context of both weak and strong instructional designs. It was discovered that instructional designers do not normally judge weak and strong designs in the field, but they are utilized when instructional designers are doing their own designs. The authors state that core judgment needs further attention from both scholars and design educators.

Finally, *Performance Improvement Quarterly* (*PIQ*) still needs your involvement. The quality of any research journal is developed through the peer-review process. This is a critical area of growth for the journal as we are now entering our 30th year of publication. More reviewers are needed! If you are a practitioner, we need your help in the review process. If you are a scholar practitioner, we need your help. If you are a scholar,



PERFORMANCE IMPROVEMENT QUARTERLY, 30(3) PP. 161–163

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/piq.21253

we need your help. The diverse perspective in our readership deserves a diversified perspective from our reviewers. The workload goal is two to three reviews per year. If you are interested, please contact Arielle Turner (arielle.turner@unt.edu); she can answer all your questions and get you started. First-timers are also welcome! We will mentor you. As a reviewer, you learn by doing, and at the same time you will make a long-lasting contribution to your field.

Enjoy your journal; it is a publication made possible through the peer-review process. The peer-review process needs our involvement to improve the quality of our publications and to grow our field through research scholarship.

## New Associate Editor

John Turner, PhD, has agreed to join the editorial team, starting with the next issue. He will work both with authors and with daily publishing activities to improve the editorial timeline and process. John joins with a deep résumé of experience to help our journal as we move into our fourth decade of publication. He will be introducing a new series of instructional articles in the next issue to help *PIQ* scholars and scholar-practitioners with the publishing process.

## Reviewers

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## Continuous Improvement

If you have any input or suggestions or want to be involved with *PIQ*, please contact.

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# The Health-Related Upside of Employee Engagement: Exploratory Evidence and Implications for Theory and Practice

*Brad Shuck, EdD | Meera Alagaraja, PhD | Kevin Rose, EdD | Jesse Owen, PhD | Kobena Osam | Matt Bergman, PhD*

Chronic toxic working conditions can be hazardous to employee health. Approximately 5%–8% of annual health care costs are attributable to adverse experiences at work. In contrast to the health impacts of the toxic workplace, we hypothesize that engaged employees would report elevated levels of health, including more positive levels of physical and mental health, sleep, exercise, and eating behaviors. A sample of 114 working adults responded to a survey battery regarding their levels of employee engagement, current health status, and mental health in addition to localized demographic questions. Gender was shown to moderate the engagement–health relationship (i.e., women reported sleeping better and eating less; men reported lower levels of drinking behavior). Employees who reported higher levels of employee engagement also reported more positive overall individual-level health outcomes and more positive levels of mental health, a promising finding in light of the growing reports of toxic work environments.

Writers at the *New York Times* recently hinted at a growing epidemic they deemed the *toxic workplace* (Slaughter, 2015). A *winning at all costs* culture was described as "workers across the socioeconomic spectrum, from hotel housekeepers to surgeons, [telling] stories about 12- to 16-hour days (often without overtime) and experiencing anxiety attacks and exhaustion" (p. SR1). Weeks earlier, an exposé on the culture of a major online retailer recounted stories of "workers who suffered from cancer, miscarriages and other personal crises" (Kantor & Streitfeld, 2015, p. B1), who were often "evaluated unfairly or edged out rather than given time to recover" (p. B1). Research by Kantor and Streitfeld (2015) suggested that toxic, dysfunctional working conditions like those described can be hazardous to employees' health. For example, workplace stressors—such as long hours, job insecurity, and a lack of work–life balance—contribute to 120,000 deaths per year (Goh, Pfeffer, & Zenios, 2015a). In addition, approximately 5%–8% of annual health care costs have been associated with and may be attributable to how U.S. companies manage their workforce (Goh, Pfeffer, & Zenios, 2015b). Findings by Goh et al. (2015a, 2015b) indicate that dysfunctional and toxic workplaces have deleterious effects, causing short- and long-term trauma, which in turn can affect worker mortality.



PERFORMANCE IMPROVEMENT QUARTERLY,30(3) PP. 165–178

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/piq.21246

Workplace climates that engender high levels of employee engagement are, however, distinct from those described as dysfunctional, toxic, and chronically stressful and employees are far more positively focused. Employee engagement is defined as a positive, active, work-related, psychological state operationalized by the maintenance, intensity, and direction of cognitive, emotional, and behavioral energy (Rose, Shuck, Twyford, & Bergman, 2015; Shuck, Adelson, & Reio, 2016; Shuck, Nimon, & Zigarmi, 2016). Research has reliably documented engaged employees as being more productive (Shuck, Shuck, & Reio, 2013), creative (Barrick, Thurgood, Smith, & Courtright, 2015; O'Boyle, Forsyth, Banks, & McDaniel, 2012), satisfied (Černe, Nerstad, Dysvik, & Škerlavaj, 2014), and profitable (Alarcon & Edwards, 2011; Rayton & Yalabik, 2014; Yalabik, Popaitoon, Chowne, & Rayton, 2013). Despite the clear organizational benefit, no research has explored the potential health-related effects of employee engagement.

The purpose of our work was to examine the relationship between employee engagement and individual-level health outcomes. Specifically, we explored how levels of employee engagement were related to health outcomes such as an individual employee's self-reported sleep patterns; perceptions of overall health and well-being; and engagement in health promotion behaviors such as going to the gym, alcohol consumption, and dietary habits. This exploratory study unfolds in the following main sections: review of relevant literature and positioning of hypotheses, methods, results, and a brief discussion of the implications for research and practice.

## The Relation between Employee Engagement and Health Outcomes

While the benefits of an engaged workforce have been documented for organizations, little has been explored regarding how higher levels of employee engagement affect the individual employee, particularly around issues of physical and mental health. We hypothesize that employees who worked in environments where they experienced higher levels of employee engagement drew upon positive psychological spiral gains, which positively influenced their health (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Spiral gains are momentary increases in available resources that allow employees to temporarily draw upon an expansion of their emotional, social, and physical resources (Fredrickson & Joiner, 2002). Conceptually grounded in the framework of Fredrickson's (1998) broaden-and-build theory, employees who work in places where they experienced higher levels of engagement have been shown

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to experience positive yields in the manifestation of their work. As suggested by Shuck and Reio (2014):

> [R]esources accrued by the individual during such moments of positive emotion are enduring, operating like emotional reservoirs to be drawn upon at a later time. The reservoir of accrued personal resources outlasts the fleeting, short-lived experience of the emotion highlighting the lasting, durable, resilient effect of experiencing positive affect. (p. 44)

The literature supporting spiral gains, expanding resources, and positive emotions has, to date, been limited to work-related applications. Despite a loose connection to both mental and physical health (Shuck & Reio, 2014), we expected employees who reported higher levels of employee engagement to also report higher levels of positive individual health outcomes. Grounded in work by Schaufeli, Taris, and Van Rhenen (2008), Bakker, Schaufeli, Leiter, and Taris (2008), and Shuck and Reio (2014), we expected employee engagement to reach beyond work-related applications and into other areas of an employee's life, such as personal health. We believed that engagement would not develop in negative, dysfunctional climates (Schaufeli et al., 2008) and that more positive working conditions would have the opposite effect on health, as documented by Bakker, Shimazu, Demerouti, Shimada, and Kawakami (2013). Grounded in both Goh et al. (2015a) and Goh et al. (2015b) as well as Bakker et al. (2008) and Shuck and Reio (2014), we formulated *Hypothesis 1:* Employees who report higher levels of employee engagement will also report more positive individual-level health outcomes.

Throughout our review, gender-related inequalities were well documented (Schaufeli et al., 2008). Research by Read and Gorman (2006), for example, explained how both work and health-related gender differences could be explained by way of gender social construction. In short, the lived experiences of men and women at work are different (Annandale & Hunt, 2000). One explanation for this gender difference at work was that men and women encountered differential risks due to varying activities, habits, and coping strategies when it came to high stress (Macintyre, Hunt, & Sweeting, 1996). Differences in employment status, income, wealth, and depressive symptoms, among many other factors, were also connected to this gender–work difference (Hogh, Henriksson, & Burr, 2005; Rieker, Bird, & Lang, 2010).

When it came to employee engagement and gender, the literature was decidedly mixed (Read & Gorman, 2006). In an examination of gender and employee engagement, Avery, McKay, and Wilson (2007) reported that women were more engaged ($r = .19$) than their male coworkers. However, research by Yildirim (2008) who studied Turkish counselors, reported that levels of engagement did not differ significantly between males and females. Relatedly, some researchers (Schaufeli, Bakker, & Salanova, 2006; Sprang, Clark, & Whitt-Woosley, 2007) have suggested that females were

at a higher risk of developing unhealthy levels of stress due to competing work and home responsibilities and, therefore, reported higher levels of burnout and consequently lower levels of engagement.

Despite differences, there was general agreement that women and men have varying experiences of their work and the working context, which has the potential to influence aspects of mental and physical health. In line with previous research, we expected gender to influence the relation between employee engagement and individual-level health outcomes and hypothesized the following: *Hypothesis 2:* Gender will moderate the relation between health outcomes and employee engagement.

Decades of long-standing research have connected mental and physical health (Camgoz, Ekmekci, Karapinar, & Guler, 2016; Mache, Bernburg, Groneberg, Klapp, & Danzer, 2016; Sonnentag, 2003; Sonnentag, Dormann, & Demerouti, 2010). Previous research has, for example, demonstrated a multifaceted relationship between health-related outcomes and mental-health symptoms (Banack et al., 2014). Research has long held that mental health symptoms explain large disparities in health-related quality of life (Baglioni et al., 2011). Grounded in existing research (Read & Gorman, 2006), we expected individuals reporting lower levels of mental health to also report lower levels of quality-of-life outcomes (Baglioni et al., 2011; Tan et al., 2014; Wang et al., 2014). No research had explored the influence of mental health alongside employee engagement; nonetheless, because research had demonstrated a reliable linkage between both mental and physical health outcomes, we hypothesized that mental health would moderate the relationship between employee engagement and positive health outcomes:

Hypothesis 3: Mental health will moderate the relationship between health outcomes and employee engagement. Specifically, we believed that employees who reported higher levels of mental health would also report more positive health outcomes, and those with lower levels of mental health would report poorer health outcomes.

## Method

The following section includes a discussion of the procedures and participants along with research measures. Prior to any data collection, the study protocol was reviewed and approved by a university-affiliated institutional review board.

### Procedures and Participants

An online survey battery was distributed electronically to working adults who were enrolled part-time in a professional, graduate-level program at a large, research-intensive university in the Midwest. Two hundred fifteen participants were invited to participate. Individual faculty emailed participants a link to the survey as well as follow-up reminders

(Dillman, Smyth, & Christian, 2014). Students who participated were offered extra credit for completing the survey. The final sample included 114 respondents, representing a 52% response rate (49.6% female, 46.0% male, and 0.90% transgender). The mean age of the sample group was 38.39 years ($\sigma = 10.76$).

### Research Measures

The survey battery included separate sections for each measure. All scales were scored using a 5-point Likert continuum from 1 (*strongly disagree*) to 5 (*strongly agree*). Instruments were scored and reported separately.

### Employee Engagement

The employee engagement scale (EES; Shuck, Adelson, et al., 2016) was used to measure levels of employee engagement. The EES consists of three subdimensions of employee engagement (i.e., cognitive engagement, emotional engagement, and behavioral engagement). Each dimension was measured with four questions. Reliability of the scale was robust: cognitive engagement ($\alpha = .91$), emotional engagement ($\alpha = .90$), and physical engagement ($\alpha = .88$). Additionally, the overall engagement scale similarly showed high reliability ($\alpha = .92$). Sample items of the EES included "I feel a strong sense of belonging to my job" and "I often go above what is expected of me to help my team be successful."

### Individual Health Outcomes

To explore individual health outcomes, we deployed a battery of health-related subscales to examine individual health perceptions; sleep patterns; and individual-level behavior data on alcohol consumption, consumption of fast food, and exercise.

#### *Individual health perceptions*

We utilized the medical outcomes study-short form (MOS-20; Stewart, Hays, & Ware, 1988) to explore individual perceptions of health. In its full form, the MOS-20 measures several types of health behavior. For this study, we used only the four-item health perceptions subscale ($\alpha = .83$), which included statements such as "I am somewhat ill" and "My health is excellent."

#### *Sleep patterns*

Individuals' sleep patterns were assessed using the Bergen insomnia scale (BIS; Pallesen et al., 2008). The BIS consisted of six questions related to sleep and tiredness ($\alpha = .76$). Sample statements included "During the past month, how many days a week has it taken you more than 30 minutes to fall asleep after the light was switched off" and "During the past month, how many days a week have you felt that you have not had enough rest after waking up?"

*Individual-level behavior data*

For alcohol consumption, fast-food consumption, and exercise-related behaviors, we asked participants to report their frequency of participation in each activity. Participants were asked to recall their behavior over the past 30 days and to respond to the questions appropriately. Participants utilized the following response options to report levels of consumption of both alcohol and fast food as well as how often they exercised on average over the past 30 days: (a) never, (b) monthly or less, (c) 2–4 times per month, (d) 2–3 times per week, (e) 4 or more times per week.

### Mental Health

Mental health was measured using the nine-item patient health questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2003). The PHQ is a screening and diagnostic tool for mental health disorders, including depression, anxiety, and somatic symptom disorder (Kroenke et al., 2003). The tool was copyrighted by Pfizer for use in primary-care settings and is now in the public domain. The PHQ-9 is specific to mental health and mood variations. Reliability of the scale was $\alpha = .83$. A sample item of the PHQ-9 is "Over the past two weeks, how often have you been bothered by any of the following problems?" Answers included stems such as "feeing down and depressed," "little interest or pleasure in doing things," and "feeling bad about yourself."

## Results

To provide an overview of the data, bivariate correlations between employee engagement and individual health outcomes are presented in Table 1. We reported the correlations for men and women separately to highlight any meaningful differences. As seen in Table 1, engagement for men was negatively associated with alcohol use; however, the same pattern did not emerge for women. For men, emotional engagement was

**TABLE 1 BIVARIATE CORRELATIONS BETWEEN EMPLOYEE ENGAGEMENT AND PHYSICAL AND MENTAL HEALTH FOR MEN AND WOMEN**

| | TOTAL ENGAGEMENT | COGNITIVE ENGAGEMENT | EMOTIONAL ENGAGEMENT | PHYSICAL ENGAGEMENT |
|---|---|---|---|---|
| | RMEN/WOMEN | RMEN/WOMEN | RMEN/WOMEN | RMEN/WOMEN |
| Alcohol Consumption | –.42**/.01 | –.30*/–.16 | –.38**/.06 | –.35*/.10 |
| Sleep Patterns | –.05/–.16 | –.20/–.32* | –.01/–.10 | .08/–.01 |
| Health Perception | .24/.37** | .02/.34** | .29*/.25 | .23/.36** |
| Fast Food Consumption | –.14/–.51*** | –.12/–.42*** | –.24/–.42*** | .09/–.45*** |
| Exercise Activity | .01/–.03 | –.02/–.11 | .04/–.02 | –.01/.06 |
| Mental Health | –.20/–.44*** | –.06/–.50*** | –.26/–.40*** | –.13/–.23 |

*Notes.* *p < .05, **p < .01, ***p < .001.

positively associated with their individual health perceptions. For women, cognitive engagement was negatively associated with sleep. For women, but not men, engagement was negatively associated with consumption of fast food and mental health. There were no significant associations between engagement and exercise for either men or women. Accordingly, we did not utilize exercise as a variable in subsequent analyses. Results provided partial support for Hypothesis 1.

To test our second and third hypotheses, we conducted multiple regression analyses utilizing the total employee engagement score, mental health, and participant gender as predictors of alcohol consumption, sleep, health perceptions, and fast-food consumption. We also created interaction terms between gender and engagement for Hypothesis 2 and engagement and mental health for Hypothesis 3 (*Note:* We tested whether there would be a three-way interaction between gender, engagement, and mental health, but there were no significant associations). To create the interaction effects we recentered the variables.

As seen in Table 2, there was partial support for Hypothesis 2. Results indicated that gender was a significant moderator between engagement and alcohol use and fast-food consumption. There was a stronger association between engagement and alcohol use for men (r = –.42) but not women (r = .01). There was also a stronger association between engagement and fast food for women (r = –.51) as compared to men (r = –.14).

Results partially supported Hypothesis 3. Specifically, mental health was a significant moderator between employee engagement and alcohol use (see Figure 1). Those who reported more depressive symptoms utilized alcohol less when they were highly engaged as compared to those were reported fewer depressive symptoms. Mental health was also a significant moderator between engagement and health perceptions (see Figure 2).

## Discussion and Suggestions for Future Research

Our findings suggested that different states of employee engagement affect individual-level health outcomes. Prior to this study, no research had addressed the positive influence of employee engagement

**TABLE 2 SUMMARY OF MULTIPLE REGRESSION RESULTS**

| | ALCOHOL | SLEEP | HEALTH PERCEPTION | FAST FOOD |
|---|---|---|---|---|
| | *B (SE)/β* | *B (SE)/β* | *B (SE)/β* | *B (SE)/β* |
| Gender | –.27 (.24)/–.11 | 3.79 (1.69)/.20* | –.89 (.70)/–.11 | .31 (.19)/.15 |
| Depression | –.10 (.14)/–.08 | 4.50 (.97)/.48* | –1.84 (.40)/–.46*** | .09 (.11)/.09 |
| Engagement | –.59 (.19)/– .46** | –.83 (1.37)/–.09 | .46 (.55)/.11 | –.13 (.15)/–.12 |
| GxEE | .69 (.25)/.42** | .84 (1.79)/.07 | .73 (.73)/.14 | –.40 (.20)/–.29* |
| DxEE | –.23 (.10)/–.25* | .92 (.72)/.13 | –.68 (.30)/–.23* | .05 (.08)/.07 |

*Notes.* *p < .05, **p < .01, ***p < .001. D = Depression, EE = Employee Engagement

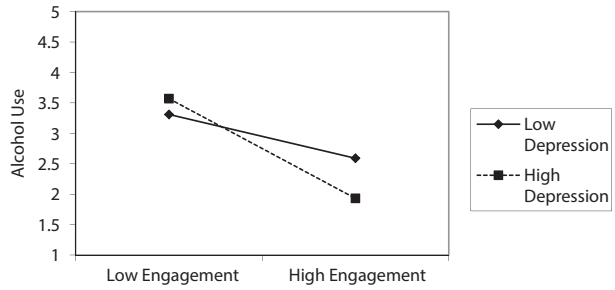


**FIGURE 1.** INTERACTION BETWEEN DEPRESSION AND ENGAGEMENT ON ALCOHOL USE

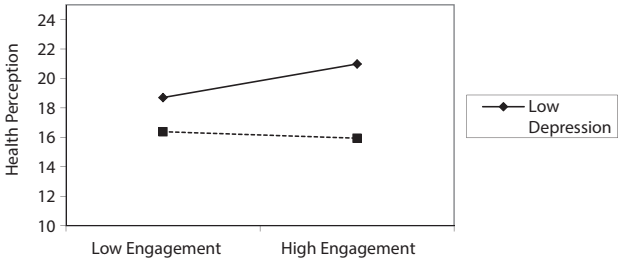


**FIGURE 2.** INTERACTION BETWEEN DEPRESSION AND ENGAGEMENT ON HEALTH PERCEPTION

on health-related outcomes. Evidence suggested that employees who reported higher levels of employee engagement also reported more positive individual-level health outcomes. This is a promising finding that has implications for both individuals and organizations. Developing organizational cultures that facilitate high levels of employee engagement have some relation with positive health outcomes. While we cannot infer causal relationships from our data, there are interesting implications for risk-profile analyses, for health-risk assessments, and for managing the rising cost of insurance. Additional work must be done with larger, more industry-specific samples, yet it is promising to note the influence of positive places of work on health in light of the work by Rose et al. (2015) and Goh et al. (2015a).

At a second level, our findings highlighted the important role of gender in moderating the engagement–health relationship. This pattern of evidence had not been demonstrated in prior studies and suggested a potentially new perspective on gendered experiences of work in organizational contexts. Extant work has documented that women grapple with the burden of negative stereotypes and distorted perceptions related to working style (e.g., autocratic versus participatory or transformational) and role expectations, balancing family and career demands, and lack of access to organizational networks (Eagly & Carli, 2007; Eagly, Johannesen-Schmidt, & Van Engen, 2003). Gender-related work experiences appear to be unique and different for men and women and further

suggest that even though women may tend to report high levels of engagement, the downstream effects of gender inequities at work can affect how they experience work and, in turn, have an important relation with their health.

**Gender-related work experiences appear to be unique and different for men and women and further suggest that even though women may tend to report high levels of engagement, the downstream effects of gender inequities at work can affect how they experience work and, in turn, have an important relation with their health.**

Specifically, evidence suggested that employee engagement for men was negatively associated with alcohol use; and that for women, employee engagement was negatively associated with consumption of fast food, some variants of sleep patterns, and mental health. In the exploratory spirit of our work, we embrace these seemingly inconsistent findings as they relate to gender. Not only did our data indicate gender-related differences in the employee engagement experience (i.e., cognitive, emotional, and behavioral), but also predicted differences in health outcomes. At issue is not why high levels of engagement are linked to better individual health outcomes but how the strength of the engagement–health linkage and its perceived impact are experienced and reported differently by men and women. Clearly, more research is needed to understand this multifaceted, multilayered relationship. Extrapolating the implications of these findings to more problematic health outcomes connected with alcohol consumption, sleep deprivation, and food-related chronic disease onset and management is an important next step.

Our third finding indicated that mental health was a moderator between engagement and health perceptions. Specifically, findings reflected that the relational strength of the engagement–health outcome linkage influenced employee performance. Managers might note that employees who report lower levels of employee engagement also report heightened feelings of hopelessness and giving up, resulting in reduced participation in the workplace (Csikszentmihalyi & Larson, 2014; Shuck & Reio, 2014).

In the context of our findings, there are also limitations that must be addressed. The survey battery deployed was self-report and could have been biased by social desirability leading to common-method variance (CMV). To combat this, we took both a procedural (i.e., we assured participants anonymity and there were no right or wrong answers) and a statistical approach. Harman's one-factor diagnostic test revealed no statistical evidence that either type of bias was an issue. Future research might take additional steps to reduce possible CMV bias, such as collecting the dependent variable at a different time than the independent variables, using supervisor or coworker rating data in combination with self-reports, or accessing actual health records from a primary-care physician.

Our cross-sectional, correlational design did not allow for causal claims. Thus, the relations we discuss throughout the paper are predictive but not causal. Longitudinal and experience-based sampling techniques

coupled with larger sample sizes would benefit future studies. We suspect that with a larger sample, some of the close but nonsignificant findings would indicate impactful effect sizes and could shed additional light on the work–health linkage.

Notwithstanding these limitations, the innovative aspect of the current report lies in the finding that employee engagement showed a relation with employee-health outcomes. The results from our study contribute to an understanding of the ways in which employees internalize their working experience and how that internalization manifests in the context of health. Managers should prioritize developing interventions that enhance employee engagement, knowing that doing so could confer beneficial health outcomes for the employee, which the organization and employee both benefit from over the long term. Initial evidence points toward a growing understanding about how experiences of work affect an employee's health, including the consequences of both dysfunction (Goh et al., 2015a; Goh et al., 2015b; Rose et al., 2015) and now, employee engagement (Shuck & Wollard, 2010).

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# Motives in Response to Negative Feedback: A Policy-Capturing Study

*Matt Zingoni, PhD*

Individuals vary in their mindsets—their implicit beliefs regarding the malleability of human attributes in general, including their own. Because individuals' mindsets influence their self-regulating activities, it is assumable that employees' mindsets will influence how they respond to feedback. Using a policy-capturing approach, I examine how four different feedback-related factors may vary in their influence and how these factors interact in relation to stated motives after feedback. My findings suggest that those who believe human attributes can change through effort are more likely to report wanting similar feedback and to improve after receiving negative feedback or when the feedback comes from a highly credible source. The opposite was found for those who believe attributes are fixed, but those with a fixed mindset were sensitive to the feedback standard. My results suggest that employees' beliefs about their ability influence how negative feedback affects employees' motivation to receive diagnostic information and to improve.

Supplying employees with feedback is a vital part of employee development and the cornerstone of employee-performance management. Despite the importance of communicating feedback, employees do not always respond to feedback in the way managers intend—that is, that employees will use feedback to improve their performance. In fact, in a meta-analytic review Kluger and DeNisi (1996) found that in more than one-third of the cases examined, feedback interventions were associated with reduced performance. The considerable variability in outcomes for feedback interventions highlights the fact that feedback has a more complicated relationship with employee behavior than is commonly believed. This complex relationship is due to the several factors that influence employees' response to feedback. A further understanding of how these factors work together to influence employees' response to feedback could provide managers with guidance to improve their feedback communication.

The factors that influence employees' response to feedback fall into several categories—namely, factors that are specific to the feedback message itself (e.g., relative or absolute), the task (e.g., complexity), the individual (e.g., self-esteem), and the feedback context (e.g., the credibility of the feedback source). In this study, I examine whether different feedback, situational, and individual characteristics combine to predict employees' motivation to seek similar feedback and their motivation to improve. I focus on these two motivations because they seem likely to underlie performance improvements.

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PERFORMANCE IMPROVEMENT QUARTERLY, 30(3) PP. 179–197

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/piq.21249

For employees to improve their performance, they need information about their progress in the feedback area, and they need to be able to sustain efforts toward improvement.

I focus on one individual characteristic—employees' implicit mindset—because employees' beliefs about fixed or changeable ability is likely to have both direct and indirect effects on their responses to negative feedback. I also examine three feedback and situational characteristics: (1) the feedback standard used (i.e., absolute or relative feedback), (2) the credibility of the feedback sender (i.e., high or low credibility source), and (3) the complexity of the task for which performance is being assessed. Although researchers have examined various combinations of these factors, I am not aware of any studies that examine factors from all four feedback aspects (i.e., feedback message, recipient, task, and source). Doing so will allow us to develop an understanding of which aspects of the feedback process are more or less influential.

I use a policy-capturing approach to examine how factors from each aspect of the feedback process influence employees' responses (i.e., motivation to seek similar feedback and motivation to improve; Atwater & Brett, 2006) to negative feedback. A policy-capturing approach allows me to examine whether the influence each of the three feedback and situational factors has on employees' responses systematically varies on the basis of employees' mindset. That is, I examine how relative or absolute feedback (i.e., the feedback message aspect), task complexity (i.e., the task aspect), and feedback-source credibility (i.e., the feedback-environment aspect) influence employees' responses to negative feedback and whether this influence varies on the basis of an employee's mindset (i.e., the individual-difference aspect).

Furthermore, I focus this study on employees' responses to negative feedback only for a few reasons. First, although the intention of all feedback is to presumably improve performance, negative feedback is of particular importance because it makes employees aware that they need to take corrective action. Second, most of the problems with feedback occur when the feedback is negative (Fedor, Davis, Maslyn, & Mathieson, 2001). These problems include both the difficulties generated by employees' responses to negative feedback and the problems generated by the tendency of managers to be reluctant to give negative feedback (Fisher, 1979). For these reasons, further research on negative feedback will increase our understanding of the complex process and will likely have practical implications for both managers and employees.

## Hypothesis Development

### Mindset and Motives to Seek Feedback and Improve

Individuals differ in their mindset—that is, their implicit beliefs and assumptions regarding the degree to which human attributes can be changed (Dweck, 1999; Dweck & Leggett, 1988). At one end of the spectrum are those with a fixed or entity mindset; they believe that human

attributes are fixed and cannot be changed. At the other end of the spectrum are those with a growth or incremental mindset; they believe that human attributes can be changed through effort and hard work. Where individuals fall on this spectrum has a significant effect on their thoughts and behaviors (Dweck, 1999; Dweck, Chiu, & Hong, 1995). An extensive body of research suggests that individuals' mindsets influence perceptions and, consequently, motivational and behavioral responses (Dweck & Leggett, 1988; Tabernero & Wood, 1999; Heslin & VandeWalle, 2011; Rattan, Good, & Dweck, 2012; Mathur, Jain, Hsieh, Lindsey, & Maheswaran, 2013; Kam, Risavy, Perunovic, & Plant, 2014; Keating & Heslin, 2015). In particular, whether individuals have more of a fixed or growth mindset often predicts their responses to failure and setbacks; those with a fixed mindset typically have a helpless response to failure, whereas those with a growth mindset typically have a mastery response to failure (Dweck & Leggett, 1988; Dweck, 1996; Tabernero & Wood, 1999; Burnette et al., 2013; Novell, Machleit, & Sojka, 2016).

When individuals with a growth mindset encounter failure, they tend to attribute the failure to a lack of effort rather than a lack of innate ability (Hong et al., 1999; Nussbaum & Dweck, 2008). Because they see failure as something that can be overcome with effort and practice, individuals with a growth mindset have been found to be efficacious and persistent when encountering failure (Henderson & Dweck, 1990; Tabernero & Wood, 1999). They generally accept opportunities to learn about a specific area even after previously experiencing failure in that area (Nussbaum & Dweck, 2008). Furthermore, after experiencing failure, individuals with a growth mindset often seek out upward comparisons to help facilitate the learning process (Nussbaum & Dweck, 2008). In sum, because of their belief that failure is due to a controllable factor, they are driven by a motivation to improve after experiencing a setback or failure.

In contrast, individuals with a fixed mindset attribute failure to a lack of ability, regardless of their level of self-confidence (Hong et al., 1999; Nussbaum & Dweck, 2008). Due to their belief that their level of ability is fixed, increasing effort is not viewed as an effective strategy (Chiu, Hong, & Dweck, 1997). Rather, for those with a fixed mindset, having to exert effort indicates a lack of ability (Chiu et al., 1997). Furthermore, persisting in a task after encountering failure is likely to be avoided because doing so allows for the possibility of further confirming their perceived inability (Henderson & Dweck, 1990; Nussbaum & Dweck, 2008). After experiencing failure, those with a fixed mindset typically seek opportunities to work on things for which they have no previous record of failure and ideally in an area they have had past success with (Nussbaum & Dweck, 2008; Steimer & Mata, 2016).

Feedback is intended to communicate to employees how an organization views their job performance and, because of this, feedback inherently contains information vital to the self-evaluation process. How individuals process and react to information about themselves is a motivated process (Anseel, Lievens, & Levy, 2007). Research in social psychology

has classified these motives into four perspectives, two of which may be reflected in an individual's mindset. Specifically, individuals with a growth mindset, with their focus on learning and improvement, reflect a self-improvement motivation. The self-improvement perspective is characterized by motivational intentions to improve one's abilities and skills and the use of upward comparisons (Taylor, Neter, & Wayment, 1995).

In contrast, those with a fixed mindset, with their focus on verifying their perceived fixed skills and how they compare with others, reflect a self-assessment perspective. The self-assessment perspective is characterized by motivational intentions to gain accurate diagnostic information about themselves. Therefore, taken together, because of the differences in responding to failure and differing self-evaluation motives, those with a growth mindset are likely to indicate a stronger motivation to seek feedback and a stronger motivation to improve than those with a fixed mindset. This suggests the following hypotheses:

> *Hypothesis 1a*: Employees' mindsets are positively related to motivation to seek similar feedback, such that employees with a growth mindset will report higher motivation to seek similar feedback.
> *Hypothesis 1b*: Employees' mindsets are positively related to employees' motivation to improve, such that employees with a growth mindset will report higher motivation to improve.

**Feedback Standard**

An aspect of the feedback message that has received attention in the feedback literature is whether the feedback is relative or absolute (feedback standard). On one hand, there is relative feedback, occasionally called normative feedback (Moore & Klein, 2008), social-comparison feedback (Harackiewicz & Larson, 1986), or evaluative feedback (Taylor, Fisher, & Ilgen, 1984). Relative feedback communicates to individuals how well they performed compared with others (e.g., percentile score). On the other hand, absolute feedback (occasionally called non-normative feedback; Moore & Klein, 2008) or criterion-referenced feedback (Kim, Lee, Chung, & Bong, 2010), informs individuals how well they performed compared with some objective standard (e.g., percent correct; Steele-Johnson, Turban, Pieper, & Ng, 1996).

The influence of relative feedback has its theoretical foundation in social-comparison theory. Festinger (1954) proposed that when objective means to evaluate ability (i.e., absolute or non-normative measures) are not available, individuals will compare themselves with others to evaluate their ability. This argument, that comparative information is sought after only in the absence of objective information, suggests that objective information may be perceived as more valuable than relative information (Moore & Klein, 2008). In contrast, it has been proposed that relative feedback may draw individuals' attention away from the task and more toward the self, negatively affecting performance (Kluger & DeNisi, 1996). In fact, it has been found that absolute feedback has a stronger

relationship with performance satisfaction and self-esteem than relative feedback (Moore & Klein, 2008) and also facilitates greater improvement in performance (Ivancevich & McMahon, 1982).

However, research has also highlighted the value of relative feedback (Atwater & Brett, 2006; Schultz, 1999). Relative feedback is a standard part of the traditional 360-degree feedback format (Dalessio & Vasilopoulos, 2001). Leaders who received traditional 360-degree feedback that included relative feedback reacted more favorably to the feedback than those who did not receive relative feedback. In addition, the leaders who responded favorably to their feedback had fewer developmental needs in the subsequent year (Atwater & Brett, 2006). Furthermore, when individuals receive both relative and absolute feedback at the same time, relative feedback had a strong relationship with intrinsic motivation whereas the absolute type had a strong relationship with personal goals (Steele-Johnson et al., 1996).

Because of the inconsistent findings regarding feedback standard, it may be that individual characteristics interact with feedback standard in determining its effect. Indeed, other research supports the idea that the effects of the feedback standard vary by individuals (Kim et al., 2010; Moore & Klein, 2008). I argue that an employee's mindset may interact with the feedback standard to predict feedback intentions (i.e., to seek similar feedback and to improve).

Employees with a growth mindset may be less sensitive to relative information than are employees with a fixed mindset due to their approach to achievement situations. Employees with a growth mindset approach achievement situations as opportunities to learn and improve their skills, reflecting self-improvement motives. However, those with a fixed mindset view achievement situations as opportunities to validate and compare their perceived fixed level of ability (Dweck, 1999; Dweck & Leggett, 1988), reflecting self-assessment motives. Feedback standard, or more specifically relative information, is likely more instrumental in determining where one stands as compared with others than it is to the learning process. This will lead those with a fixed mindset to be more sensitive to the presence of relative feedback (Butler, 2000). Therefore, I expect that an employee's mindset will moderate the relationship between relative negative feedback and favorable responses to negative feedback. Specifically, employees with a growth mindset will be less sensitive to the presence of relative information as compared with employees who have a fixed mindset. Consistent with the wording used in policy-capturing studies, I offer the following hypotheses:

> *Hypothesis 2a*: For employees with a fixed mindset, relative feedback has greater influence on motivation to seek similar feedback than for employees with a growth mindset.
> *Hypothesis 2b*: For employees with a fixed mindset, relative feedback has greater influence on motivation to improve than for employees with a growth mindset.

**Feedback-Source Credibility**

Feedback-source credibility is a measure of a source's expertise and trustworthiness (Giffin, 1967). Employees perceive a feedback source as highly credible when they perceive the source to have the expertise relevant to the area the feedback is addressing, and they can also be trusted to limit their feedback to actual performance and not be biased by irrelevant factors such as organizational politics (Steelman & Rutkowski, 2004). In general, individuals respond more favorably to highly credible sources than they do to sources with low credibility (Pornpitakpan, 2004). For example, participants rated feedback from a highly credible source significantly more favorable than feedback from a source low in credibility (Albright & Levy, 1995). Steelman and Rutkowski (2004) found that when a feedback source is highly credible, employees are more motivated to improve their performance after receiving feedback. Further, employees have more favorable attitudes toward organizational leaders when the leader is highly credible (Mugny et al., 2000).

Although highly credible sources consistently have a positive influence, research has shown that some individual differences in the recipient of the feedback or message influence how sensitive they are to the credibility of the feedback source and thus their responses to messages from these sources (DeBono & Harnish, 1988; Ritchie & Phares, 1969; Zhang & Buda, 1999). Consistent with other research suggesting that individual characteristics interact with source credibility in determining its effect, I argue that employees' mindsets may interact with source credibility to predict feedback intentions (i.e., to seek similar feedback and to improve).

Regarding employees' mindsets, the credibility of the source of the feedback is likely to have a greater influence when employees have a growth mindset than when employees have a fixed mindset. After experiencing failure, individuals with a growth mindset typically seek out upward comparisons to help facilitate the learning process, reflecting self-improvement motives. This focus on learning how to improve performance after a setback or failure helps restore their self-esteem (Nussbaum & Dweck, 2008). In contrast, those with a fixed mindset seek out downward comparisons after failure. To these individuals, improvement is not possible, and, thus, the knowledge that others have done worse than they have helps restore their self-esteem (Nussbaum & Dweck, 2008). Consequently, because of the drive of those with a growth mindset to improve after failure, they will be more attentive to information that is instrumental to this goal.

As stated previously, a highly credible source is an individual who possesses a high level of expertise in the feedback area. Due to this high level of expertise, highly credible sources' assessments of performance are likely to be viewed as more relevant and instrumental to the learning process. In light of this, the perceived instrumentality of feedback to assist in the learning process is likely to depend on the credibility of the feedback source. Therefore, employees' mindsets will moderate the relationship between feedback-source credibility and favorable responses to negative feedback. Specifically, employees with a growth mindset will

respond more favorably to negative feedback from a credible source than will employees with a fixed mindset. Consistent with the wording used in policy-capturing studies, I offer the following hypotheses:

> *Hypothesis 3a*: For employees with a growth mindset, feedback-source credibility has a greater influence on employees' motivation to seek similar feedback than for employees with a fixed mindset.
> *Hypothesis 3b*: For employees with a growth mindset, feedback-source credibility has a greater influence on employees' motivation to improve than for employees with a fixed mindset.

**Task Complexity**

Task characteristics have received surprising little attention in the feedback literature (Kluger & DeNisi, 1996; Shute, 2008). Although a limited number of studies focus on task characteristics, a meta-analytic review was able to identify several task characteristics that varied across feedback studies, such as the novelty of the task, time constraints for completion, type of task (i.e., motor or verbal), and task complexity (Kluger & DeNisi, 1996). However, a lack of a common definition has hindered research on task complexity's role in the feedback process (Campbell, 1988; Wood, 1986; Wood, Mento, & Locke, 1987). Due to the lack of studies that focus specifically on task complexity, the results from the meta-analytical review by Kluger and DeNisi (1996) offer the clearest information about the influence of task complexity. Their findings suggest that the influence of feedback diminishes as a task becomes more complex. The fact that feedback influences individuals' motivation and that motivation tends to improve performance when the task requires little cognitive resources further supports these findings (Ackerman, 1987; Kluger & DeNisi, 1996; Wood et al., 1987). However, there is value to feedback on complex tasks, given that timely feedback can minimize feelings of frustration experienced by individuals working on complex tasks (Knoblauch & Brannon, 1981; Shute, 2008).

I expect that when they receive negative feedback, employees with a growth mindset will be more sensitive to the task-complexity aspect of the feedback process than will those with a fixed mindset. This phenomenon may partially be due to the differing responses to failure and self-evaluation motives exhibited by those with a growth mindset as compared with those with a fixed mindset. Employees with a fixed mindset may withdraw from the task because the feedback was negative, and the nature of the task itself is not influential to their response. Furthermore, for those with a fixed mindset knowing they were unsuccessful is enough to satisfy their self-assessment motives, so persistence is not likely.

In contrast, employees with a growth mindset are more persistent in their response to failure (Robins & Pals, 2002) and are likely to continue to demonstrate a learning orientation toward their work (Hong et al., 1999), reflecting self-improvement motives. This persistence after failure can cause feelings of frustration, especially on complex tasks. Timely feedback may reduce these feelings of frustration and assist in the learning process,

which leads to employees with a growth mindset viewing this feedback favorably. Therefore, I expect that employees' mindsets will moderate the relationship between task complexity and favorable responses to negative feedback. Specifically, employees with a growth mindset will respond favorably to negative feedback on a complex task, whereas employees with a fixed mindset will not. Consistent with the wording used in policy-capturing studies, I offer the following hypotheses:

> *Hypothesis 4a*: For employees with a fixed mindset, task complexity has greater influence on motivation to seek similar feedback than for employees with a growth mindset.
> *Hypothesis 4b*: For employees with a fixed mindset, task complexity has greater influence on employees' motivation to improve than for employees with a growth mindset.

## Method

### Participants

I tested the hypotheses using a sample of full-time retail branch employees from a bank located in the northeastern part of the United States. Of the 141 employees asked to participate, 121 completed the survey, which yielded an 86% response rate. With regard to demographics, 54% of the participants were female and 51% of participants were Caucasian. On average, participants had 8.2 years of working experience, and 95% had at least some college education.

### Design

I used a policy-capturing approach to examine the influence of three aspects of the feedback process (i.e., task complexity, relativity or absoluteness, and source credibility) to examine how the influence of each of these aspects varies according to each employee's mindset. I operationalized these aspects at two levels each: high or low for task complexity and source credibility and yes or no for relative feedback. Furthermore, I used an orthogonal cue structure because these aspects of the feedback process are independent of each other (Kristof-Brown, Jansen, & Colbert, 2002). Simply stated, all possible combinations of the feedback aspects can exist without compromising the realism of the feedback scenario. In addition, one-item measures were used to minimize the length of the overall instrument to ensure participant engagement.

Because all possible combinations of the variables of interest can realistically occur, I used a full factorial design. For this study, a full factorial design entails eight scenarios. The benefit of a full factorial design is that it allows for the assessment of all primary and higher-order effects (Graham & Cable, 2001; Karren & Barringer, 2002). However, although eight scenarios are sufficient to present all possible combinations of the

variables of interest, this number is below the minimum recommended number of scenarios for a policy-capturing study. Specifically, Cooksey (1996) recommends that researchers use a minimum of five scenarios per independent variable, which results in a minimum of 15 scenarios for this study. Furthermore, researchers have recommended that additional scenarios be included to allow participants to adjust to the policy-capturing instrument (Aiman-Smith, Scullen, & Barr, 2002). In light of these recommendations, I used a base number of 16 scenarios (i.e., the eight possible scenarios each used two times), which satisfies Cooksey's recommendation and presents each possible combination of variables twice. In addition, I included an additional scenario to allow participants to adjust to the instrument, which brings the total number of scenarios to 17.

**Procedure**

To collect the data I met with the regional manager of a northeastern bank to discuss the study's objective and to review the policy-capturing instrument. During this discussion, we determined that no changes to the policy-capturing instrument were necessary. In addition, we discussed the standardized relevant examples I could give the employees while verbally explaining the study. Specifically, I told all employees that an example of a simple task is opening a checking account and that an example of a complex task is closing a loan. For feedback-source credibility, I told all employees that an example of a source of low credibility is a part-time teller, while a senior account representative is an example of a highly credible source.

The regional manager then sent 15 branch managers an email in which he announced his approval of the study and stated that I would be visiting each branch to discuss participation in person. I then visited each branch and reviewed the study's objective and the policy-capturing instrument. After obtaining each branch manager's approval, the policy-capturing instrument was emailed to the full-time branch personnel. All participants received the same scenarios, which were presented in the same order. I than remained on site to verbally explain the study, at which time I used the previously mentioned examples.

**Measures**

Employee mindset. I used the eight-item general "kind of person" scale to measure employee mindset (Dweck, 1999). I selected this measure instead of a domain-specific measure (e.g., on the malleability of intelligence or morality) because I was concerned with employees' implicit beliefs across various domains. Additionally, I believe that a general measure is more likely relevant to employee responses to feedback. The scale consists of eight items, including "Everyone, no matter who they are, can significantly change their basic characteristics" and "The kind of person someone is, is something very basic about them, and it can't be changed very much" (reverse-scored). To stay consistent with past research, individuals responded to each item using a 6-point Likert scale,

ranging from 1 (strongly disagree) to 6 (strongly agree). I then averaged the items, such that a higher score indicated a more growth-oriented mindset ($\alpha = .81$).

Motivation to seek similar feedback. Motivation to seek similar feedback was measured with a single item based on Ashford (1986): "In the future, I would ask for more feedback similar to this feedback." Participants responded to this item using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Motivation to improve. Motivation to improve was measured with a single item based on Steelman, Levy, & Snell (2004). This item reads as follows: "Based on this feedback, I would pursue opportunities to help me improve in this area." Participants responded to this item using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

### Analysis

I analyzed the data using hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992). HLM allows for the effective examination of both within-subject and between-subject differences. Furthermore, HLM is the most common statistical approach for policy-capturing studies (e.g., Shepherd, Patzelt, & Baron, 2013; Tong, Reuer, Tyler, & Zhang, 2015). In this study, I focused on determining whether between-subject differences in mindset interacted with different feedback characteristics to influence how employees perceived negative feedback messages. Specifically, for the first level I entered the dichotomous variables (0 or 1) for the three feedback characteristics (i.e., source credibility, task complexity, and absoluteness or relativity). For the second level, I regressed the slope ($\beta 1j$) from level 1 on the grand mean-centered variable—an employee's mindset. I repeated this approach for both dependent variables examined (i.e., motivation to seek similar feedback and motivation to improve).

## Results

Table 1 includes descriptive statistics for and correlations among all study variables. The variables of credibility, absolute/relative, and task were manipulated to ensure that they were presented evenly in the policy-capturing instrument. Participants who indicated a strong motivation to improve also indicated a desire to seek out similar feedback ($r = .42$, $p < .01$). Participants who received feedback from a highly credible source typically indicate a stronger desire to seek out similar feedback ($r = .18$, $p < .001$) and to indicate a stronger motivation to improve ($r = .12$, $p < .01$). Finally, participants with a more growth-oriented mindset generally indicated a stronger desire to seek out similar feedback ($r = .05$, $p < .05$).

**TABLE 1 MEANS, STANDARD DEVIATIONS, AND CORRELATIONS AMONG VARIABLES**

| VARIABLE | *M* | *SD* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1. Employee mindset | 3.41 | 0.90 | | | | | |
| 2. Absolute/relative | 0.50 | 0.50 | .00 | | | | |
| 3. Task complexity | 0.50 | 0.50 | .00 | .00 | | | |
| 4. Credibility | 0.50 | 0.50 | .00 | .00 | .00 | | |
| 5. Motivation to improve | 3.69 | 0.99 | .00 | .10** | –.01 | .12** | |
| 6. Feedback seeking | 3.31 | 1.09 | .05* | .07* | .00 | .18*** | .42*** |

*Note.* N = 121. Absolute feedback = 0; Relative feedback = 1; Low complexity = 0; High complexity = 1; Low credibility = 0; High credibility = 1.
*$p < .05$; **$p < .01$; ***$p < .001$.

**TABLE 2 RESULTS OF HIERARCHICAL LINEAR MODELING ANALYSIS FOR DEPENDENT VARIABLES**

| MODEL | PARAMETER ESTIMATES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $\gamma_{00}$ | $\gamma_{01}$ | $\gamma_{10}$ | $\gamma_{11}$ | $\gamma_{20}$ | $\gamma_{21}$ | $\gamma_{30}$ | $\gamma_{31}$ |
| **Motivation to seek similar feedback** | | | | | | | | |
| L1: Motivated to $seek_{ij} = \beta_{0j} + \beta_{1j}$ $(Relative_{ij}) + \beta_{2j}$ $(Credible_{ij}) + \beta_{3j}(Task_{ij}) + r_{ij}$ | | | | | | | | |
| L2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(mindset_j) + u_{0j}$ | 2.99*** | 0.09 | 0.09 | –0.15** | 0.36*** | 0.26** | –.01 | .01 |
| L2: $\beta_{1j} = \gamma_{10} + \gamma_{11}(mindset_j) + u_{1j}$ | | | | | | | | |
| L2: $\beta_{2j} = \gamma_{20} + \gamma_{21}(mindset_j) + u_{1j}$ | | | | | | | | |
| L2: $\beta_{3j} = \gamma_{30} + \gamma_{31}(mindset_j) + u_{1j}$ | | | | | | | | |
| **Motivation to improve** | | | | | | | | |
| L1: Motivated to $improve_{ij} = \beta_{0j} +$ $\beta_{1j}(Relative_{ij}) + \beta_{2j}$ $(Credible_{ij}) + \beta_{3j}(Task_{ij}) + r_{ij}$ | | | | | | | | |
| L2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(mindset_j) + u_{0j}$ | 3.44*** | 0.21* | 0.10 | –0.13* | 0.18** | 0.18** | –.01 | –.00 |
| L2: $\beta_{1j} = \gamma_{10} + \gamma_{11}(mindset_j) + u_{1j}$ | | | | | | | | |
| L2: $\beta_{2j} = \gamma_{20} + \gamma_{21}(mindset_j) + u_{1j}$ | | | | | | | | |
| L2: $\beta_{3j} = \gamma_{30} + \gamma_{31}(mindset_j) + u_{1j}$ | | | | | | | | |

*Note.* N = 121. L1 = Level 1; L2 = Level 2; Relative = absolute or relative feedback; Credible = credibility of the source of feedback; Task = task complexity; $\gamma_{00}$ = Intercept of Level 2 regression predicting $\beta_{0j}$; $\gamma_{01}$ = Slope of level 2 regression predicting $\beta_{0j}$; $\gamma_{10}$ = Intercept of Level 2 regression predicting $\beta_{1j}$; $\gamma_{11}$ = Slope of Level 2 regression predicting $\beta_{1j}$; $\gamma_{20}$ = Intercept of Level 2 regression predicting $\beta_{2j}$; $\gamma_{21}$ = Slope of Level 2 regression predicting $\beta_{2j}$; $\gamma_{30}$ = Intercept of Level 2 regression predicting $\beta_{3j}$; $\gamma_{31}$ = Slope of Level 2 regression predicting $\beta_{3j}$.
**$P < .01$; ***$P < .001$.

Hypotheses 1a and 1b state that an employee's mindset is positively related to both (a) motivation to seek similar feedback and (b) motivation to improve, such that employees with a growth mindset will report higher motivation to seek similar feedback and to improve. As shown in Table 2, mindset was not significantly positively related to motivation to seek

similar feedback ($\gamma_{01} = .09$, *n.s.*) but was significantly positively related to motivation to improve ($\gamma_{01} = -.21$, $p < .05$). Thus I did not find support for Hypothesis 1a but did find support for Hypothesis 1b.

Hypothesis 2a states that relative feedback will have more of an influence on perceptions of feedback for employees with a fixed mindset than for employees with a growth mindset. Specifically, Hypothesis 2a states that employees with a fixed mindset will be more inclined to seek relative feedback than those with a growth mindset. As shown in Table 2, employee mindset is significantly related to the absolute or relative feedback–feedback seeking intentions slope ($\gamma_{11} = -.15$, $p < .01$). To explicate this interaction for feedback-seeking intentions, I calculated the predicted values for feedback-seeking intentions when employees had a growth mindset (1 standard deviation above the mean) and when employees had a fixed mindset (1 standard deviation below the mean). As shown in Figure 1, the feedback-seeking intentions of employees with a growth mindset are unaffected by relative information (absolute $M = 3.10$; relative $M = 3.02$; $b = -.06$, $p < .57$). In contrast, the intentions of employees with a fixed mindset to seek feedback are significantly positively related to the presence of relative information (absolute $M = 2.91$; relative $M = 3.13$; $b = .23$, $p < .01$). Thus, I found support for Hypothesis 2a.

Hypothesis 2b states that employees with a growth mindset will be less motivated to improve after receiving negative feedback with relative information than will those with a fixed mindset. As shown in Table 2, employee mindset is significantly related to the absolute or relative feedback motivation to improve slope ($\gamma_{11} = -.13$, $p < .05$). Once again, I explicate these interactions for motivation to improve in the manner described previously. As shown in Figure 1, employees with a growth mindset are not significantly affected by whether the feedback was absolute or relative (absolute $M = 3.64$; relative $M = 3.62$; $b = .02$, $p < .67$), whereas employees with a fixed mindset are significantly more motivated to improve after receiving relative feedback ($M = 3.40$) than after receiving absolute feedback ($M = 3.23$; $b = .22$, $p < .05$). Thus, I found support for Hypothesis 2b.

Hypotheses 3a and 3b state that the credibility of the feedback source will have a greater influence on perceptions of feedback when employees

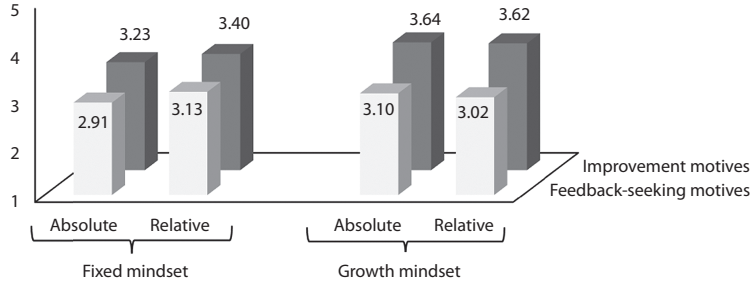


**FIGURE 1.** MOTIVATION TO IMPROVE AND SEEK SIMILAR FEEDBACK FOR ABSOLUTE AND RELATIVE NEGATIVE FEEDBACK FOR EMPLOYEES WITH FIXED AND GROWTH MINDSETS

have a growth mindset than when they have a fixed mindset. Specifically, Hypothesis 3a states that when the source of feedback is highly credible, employees with a growth mindset will have greater feedback-seeking intentions than employees with a fixed mindset. As shown in Table 2, employee mindset is significantly related to the feedback-source credibility feedback-seeking slope ($\gamma_{21} = 0.26$, $p < .01$). Once again, I explicate this interaction for feedback seeking in the manner described previously. As shown in Figure 2, employees with a growth mindset indicated greater intentions to seek feedback from a highly credible source (high credibility: $M = 3.70$, low credibility: $M = 3.10$; $b = .61$, $p < .001$) than employees with a fixed mindset (high credibility: $M = 3.00$, low credibility: $M = 2.90$; $b = .11$, $p < .47$). Thus, I found support for Hypothesis 3a.

Hypothesis 3b states that the credibility of the feedback source will have a stronger influence on an employee's motivation to improve when the employee has a growth mindset rather than a fixed mindset. As shown in Table 2, employee mindset is significantly related to the feedback-source credibility motivation to improve slope ($\gamma_{21} = 0.18$, $p < .05$). Once again, I explicate this interaction for motivation to improve in the manner described previously. As shown in Figure 2, employees with a growth mindset indicated greater motivation to improve from a highly credible source (high credibility: $M = 4.00$, low credibility: $M = 3.63$; $b = .35$, $p < .001$) than employees with a fixed mindset (high credibility: $M = 3.35$, low credibility: $M = 3.33$; $b = .01$, $p < .87$). Thus, I found support for Hypothesis 3b.

Finally, Hypotheses 4a and 4b state that task complexity will have a greater influence on perceptions of feedback when employees have a growth mindset than when they have a fixed mindset. However, as observed in Table 2, employee mindset is not a significant influence on the relationship between task complexity and the slope of either of the dependent variables (feedback seeking $\gamma_{31} = .01$, $p < .90$.; motivation to improve $\gamma_{31} = -.00$, $p < .98$.). Thus, I did not find support for Hypotheses 4a and b.

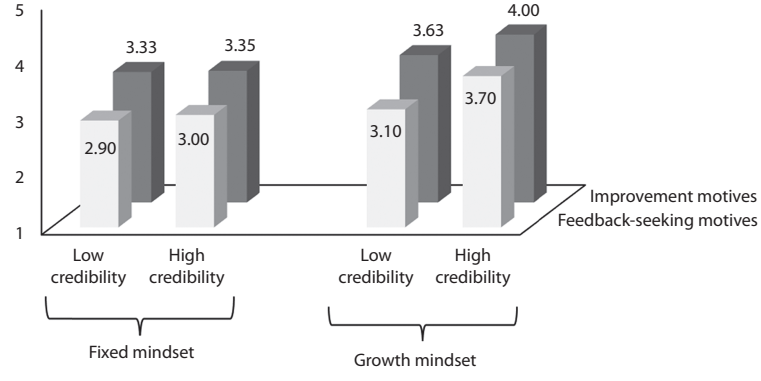


**FIGURE 2.** MOTIVATION TO IMPROVE AND SEEK SIMILAR FEEDBACK FOR NEGATIVE FEEDBACK FROM HIGH AND LOW CREDIBILITY SOURCES FOR EMPLOYEES WITH FIXED AND GROWTH MINDSETS

## Discussion

The primary aim of this study was to examine whether employee mindset systematically explains differences in the influences feedback characteristics (i.e., task complexity, relativity or absoluteness, and source credibility) have on their responses to negative feedback. The results indicated that the presence of relative information in feedback had a greater influence on employees with a fixed mindset as compared with employees with a growth mindset. Specifically, my findings indicated that compared with absolute feedback, employees with a fixed mindset had stronger intentions to seek more feedback and had a higher level of motivation to improve when feedback was relative. In contrast, employees with a growth mindset were not significantly influenced by the presence or absence of relative information.

Although employees with a growth mindset are not significantly sensitive to the presence of relative information in feedback, my results suggest that these employees are sensitive to the credibility of the feedback source. The credibility of the feedback source had a stronger influence on the feedback-seeking intentions and motivation to improve of employees with a growth mindset than on those with a fixed mindset. Overall, this helps to resolve the mixed results in the feedback literature (Atwater & Brett, 2006; Ivancevich & McMahon, 1982; Moore & Klein, 2008) by examining how different feedback and situation characteristics interact with employees' mindsets in influencing stated motivations. Furthermore, the findings of this study contribute to a growing body of research that examines the influence of mindset in the workplace (Heslin & VandeWalle, 2010, 2011; Heslin, VandeWalle, & Latham, 2006; Tabernero & Wood, 1999; Bandura & Wood, 1989; Keating & Heslin, 2015; Novell et al., 2016) by highlighting the influence of mindset in the feedback process.

### Strengths, Limitations, and Future Research Directions

Although this study has notable strengths (such as its use of a sample of working professionals and a policy-capturing approach in the feedback literature), it also has limitations. First, respondents indicated their motives to seek similar feedback and to improve, but I do not know how much these stated motives correlate with their future behavior. Future research should examine how these feedback and feedback-related characteristics combine with employee mindset to determine actual behavioral responses to feedback such as pursuing remedial activities or giving up.

Second, the participants in this sample worked in the banking industry and because of this their jobs were sales oriented. Future research, should examine whether these results are generalizable to other industries and professions. Third, I examined one feedback source factor (i.e., source credibility) here, but I have limited information about the cues that employees use to determine source credibility. Future research should examine factors that may help to determine how much employees believe that they are receiving feedback from a credible source. For example,

managers who provide negative feedback may be considered more or less credible depending on their own behavior; their sex, race, or age; and the way in which they deliver the feedback, among other potential cues. Finally, my results suggest that employee mindset combines with feedback and other feedback-related factors in determining responses to feedback. Future research should investigate additional factors that might interact with employees' implicit beliefs about the mutability or fixedness of human attributes. For example, feedback that praises the person rather than the behavior may be less effective for those with a growth mindset.

### Practical Implications

My findings have several practical implications in regard to performance management. Specifically, they suggest that managers should strategically alter the format of the feedback for different employees. Informally using the statements in the "kind of person" scale during conversation could help managers diagnose an employee's mindset. Then when providing feedback to employees with more of a growth mindset, managers should find ways to establish their credibility in providing this feedback. For example, they could point to other instances when their feedback enabled employees to become more successful and attain desired outcomes. When providing feedback to employees with a more fixed mindset, managers should use comparisons with others, because these comparisons fulfill these employees' need for diagnostic information about the self. They may also wish to point to examples of employees who put in more or less effort to help to establish the connection between effort and performance.

In addition, these findings highlight the value of an incremental mindset. Research has demonstrated that mindset can be changed using training and persuasive information (Aronson, Fried, & Good, 2002; Heslin, Latham, & VandeWalle, 2005). An organization could take steps to cultivate a growth mindset in their employees. For example, managers could highlight not only *top performers* but also *most improved performers*. This practice would emphasize to employees that change and improvement are possible, which in turn could encourage the presence of an incremental mindset. Finally, because it is possible to alter employees' mindsets through training and other interventions, an organization may attempt to establish a training program that addresses employees' mindsets in hopes of making employees better equipped to respond positively to the negative feedback they receive.

## Conclusion

The results of this study indicate that an employee's mindset does influence the relationship between characteristics of feedback and subsequent responses to feedback. In particular, employees' mindsets

**Employees' mindsets interact with characteristics of the feedback process (i.e., feedback standard and feedback-source credibility) to predict their motivational intentions to seek similar feedback as well as their motivational intentions to improve.**

interact with characteristics of the feedback process (i.e., feedback standard and feedback-source credibility) to predict their motivational intentions to seek similar feedback as well as their motivational intentions to improve. Overall, these findings make contributions to both the feedback literature and the mindset literature and show that an employee's mindset is an important influence on the feedback process.

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# Core Judgments of Instructional Designers in Practice

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The tacit beliefs that affect all the judgments made during the design process (core judgments) of 11 practicing instructional designers were studied via their discussions of strong and weak designs during interviews. Transcripts were analyzed from a phenomenological perspective. The study demonstrates that while designer judgment is rarely discussed in the field, these designers do appear to bring core judgments to bear on their designing, and these judgments are complex in nature. Researchers argue that core judgment, unaccounted for in rational models of instructional design, requires further attention from scholars and design educators.

Instructional designers carry out "the practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2007). Scholars offer prescriptive guidance to practitioners in the form of instructional design theories (Reigeluth & Carr-Chellman, 1999; Reigeluth, Beatty, & Myers, 2016), principles (Merrill, 2002; Silber, 2007) and models (Branch, 2010; Magliaro & Shambaugh, 2006).

In spite of all these conceptual tools, however, the designers themselves still must make judgments to do their jobs (Nelson & Stolterman, 2012; Smith & Boling, 2009). At the minimum they have to select models, apply principles, and adapt instructional theories; in fact, they exercise multiple forms of design judgments continuously as they work and in every phase of their work (Gray et al., 2015). Little guidance is provided for these judgments (Smith & Boling, 2009) and comparatively little attention is paid to design judgment as an object of direct study by scholars in the field (Boling & Gray, 2014).

Of 102 studies involving collection of data and focused on instructional design practice that were surveyed by Sugar in 2014, eight concerned decision making; and of those, two focused on philosophies of instructional designers: one on their general philosophical beliefs (Sheehan & Johnson, 2012) and one on teaching philosophies (Kanuka, Smith, & Kelland, 2013). The rest examine activities, collaboration, competencies, and roles of designers. Furthermore, evidence shows repeatedly that designers in practice do not use the conceptual tools academics prescribe for their guidance (Rowland, 1992; Liu, Gibby, Quiros, & Demps, 2002;



PERFORMANCE IMPROVEMENT QUARTERLY, 30(3) PP. 199–219

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/piq.21250

Christensen & Osguthorpe, 2004; Visscher-Voerman & Gustafson, 2004; Kenny, Zhang, Schwier, & Campbell, 2005; Ertmer, York, & Gedik, 2009).

Scholars who focus on design as the object of their study (many of them in architecture, product design, and Human Computer Interface) portray it as a complex activity including distinctive modes of thought (Cross, 2011; Lawson, 2004; Lawson, 2006), difficult to capture in a single model (Lawson & Dorst, 2009), and legitimately involving both the human character and the disciplined judgment of the designer (Nelson & Stolterman, 2012). Design theory holds that studies of design practice are critical for creating tools that actually support designers (Stolterman, McAtee, Royer, & Thandapani, 2009), with the concurrent supposition that designers will not use tools mismatched to the actual practice of design. While much of the work in general design theory is carried out in fields of design other than instructional design, scholars within the field consider it applicable to their own work (Gibbons, 2013; Tracey & Boling, 2014; Fortney & Boling, 2017; Parrish & Nelson, 2017; Boling & Smith, 2017) as do the authors of this study.

This study furthers a research agenda that addresses the components of design theory and seeks to establish that instructional designers may be well served when scholars within the field understand more about how they actually do their work rather than developing tools for them without this understanding. Of the components to be investigated, core judgment—tacit beliefs regarding design, its role in the world, and how it should be carried out—is important because it is considered fundamental to all design decisions (Nelson & Stolterman, 2012), and because it has not yet been studied empirically among instructional designers. This form of judgment is part of the designer's character, not readily reflected on because it forms something like the basic perspective of the designer rather than a propositional set of principles.

With our heavy reliance on tools external to designers, can we show that practitioners in the field actually bring core judgments with them to the design enterprise? Can we begin to glimpse those core judgments or beliefs? The risk of not answering these questions as well as many more regarding the actual (versus the hypothetical or imagined) practice of design is that we will fail to understand fully how design actually operates. We will continue to see tools developed for instructional designers underutilized, with the waste of time and money that entails; miss opportunities for continual improvement in the education of our designers; and face difficulties in cross-disciplinary collaboration with professionals from game, interface, media, product, and other fields of design.

## Instructional Design and Design Judgment

Smith and Boling demonstrated in 2009 that, in the conception of design conveyed through major textbooks and published definitions of the field, instructional designers are expected to choose appropriate

instructional design models or theories for their current projects or to adapt such models to fit their needs, but they are not provided the guidance to do so. Efforts at providing such guidance, notably the Reigeluth and Carr-Chellman (1999) instructional-design theories, still leave designers short of the point where a design has been realized or even made concrete in its description. This is recognized explicitly in the discussion of the methods specified by these theories as probabilistic, meaning that their goal is "to attain the highest possible probability of desired results [but] do not guarantee… desired instructional and learning outcomes" (p. 11).

**Instructional designers are expected to choose appropriate instructional design models or theories for their current projects or to adapt such models to fit their needs, but they are not provided the guidance to do so.**

The specific probability that methods prescribed by theories will result in desired outcomes cannot be determined, however, because of the "formidable problem of empirically determining or validating all the probabilities for all the qualitatively different situations" in which they would be used as well as the acknowledged interactions between multiple methods being used (p. 11). In other words, as they must do with instructional design models, instructional designers must choose and adapt methods or combinations of methods that are situational and that may each be carried out in multiple ways (p. 10), if they are to arrive at an appropriate design. Instructional design theories do not, therefore, remove the problem of what Merrill, Drake, Lacy, Pratt and The ID2 Research Group characterized in 1996 as "too much reliance on designers' judgment." Multiple efforts by scholars in the field to provide guidance to instructional designers may be observed (Merrill, 2002; Reigeluth & Carr-Chellman, 1999; Silber, 2007; van Merriënboer, Clark, & de Croock, 2002), as may be the occasions when each of them still relies on the designers' judgment.

It is surprising, therefore, to note the lack of scholarship in the field that addresses design judgment directly, rather than simply noting that it is a requirement for effective instructional design. One detailed theoretical treatment of how instructional designers exercise judgment (although this term is not used) is presented by Yanchar and Gabbitas (2011). They discuss the unexamined eclecticism (pragmatically using what works) or theoretical orthodoxy (using one single, rigidly applied method of designing) that many designers fall back on when the tools of the field fail them (Rowland, 1992). They argue that "eclectic" designers are actually using "conceptual design sense, [which] entails a designer's assumptions and values—often unarticulated and unexamined—about diverse aspects of the enterprise of instructional design" (p. 385) and recommend *critical flexibility*, a process whereby designers engage in critical reflection to explicate their underlying assumptions and values. Other studies have shown that instructional designers appear to refer to tacit philosophies in their design work (Rowland, 1992; Cox & Osguthorpe, 2003), but overall, efforts to describe these tacit philosophies have been minimal.

## Design Judgment in Design Theory

Dubberly (2005) dates the earliest design model he has identified to the 1920s, and his collection demonstrates that instructional design has no monopoly on design models. Close examination will also show that, as Bruce Archer (1965) makes explicit in the text accompanying his general design model,

> When all has been said and done about defining design problems and analyzing design data, there still remains the real crux of the act of designing—the creative leap from pondering the question to finding a solution… . [T]here is no escape for the designer from the task of getting his own creative ideas. After all, if the solution to a problem arises automatically and inevitably from the interaction of the data, then the problem is not, by definition, a design problem. (p. 75)

That is, all models are dependent for their successful use on the human beings involved in the process of applying creativity as Archer puts it, or "throwing of a bridge across the chasm between problem and solution" as Cross (2007, p. 439) argues, or exercising *design judgment*, the complex construct elaborated by Nelson and Stolterman (2012).

In their comprehensive philosophy of design as a tradition of building and using knowledge, Nelson and Stolterman (2012) make a convincing case for a view of design in which the designer's character is considered integral and critical to designing. In this view, the professional character of a designer allows him or her to act as the integrating, synthesizing, and acting instrument that structures and takes responsibility for designing as well as the outcomes of design (Boling, 2008). The character of a designer includes a complex construct termed *design judgment* (Nelson & Stolterman, 2012), within which multiple forms of judgment are developed and exercised. Character and judgment are not viewed as innate, however, or as fixed. Holt (1997) states that "good judgment is an art … art is defined as a human skill to be exercised … it is something that can be developed in a purposive way" (p. 123), bringing a "complex relativism" to bear on the complex task of design and the oftentimes ill-structured, poorly defined tasks that designing requires (Rittel & Webber, 1973).

Central to the construct of design character and design judgment is core judgment, described as the point at which "value and meaning are fixed … in the sense that creating, modifying or rejecting [them] takes a great deal of effort" (Nelson & Stolterman, 2012, pp. 200–201). Core judgments are not separate from the character of the designer and are influenced only by inborn character and life experience, by creative action and its most meaningful consequences, and by experience of the sublime—"an experience that moves us and transcends senses, feeling, and emotions" (p. 155). From these statements we infer that core judgments exercise a profound influence on all other forms of design judgment and of designers' actions, the more so because they are not formed or exercised intentionally.

While the judgments required to adapt a design model or an instructional-design theory to one's current design situation may be accessible for discussion, justification, and revision, design theory holds that those judgments are influenced by and are bounded by core judgments. Instructional designers have been shown to exercise observable designerly judgments continuously in their practice (Gray et al., 2015); it is, therefore, important to begin asking about the core judgments they may hold.

Every individual may be assumed to hold a general set of core beliefs, but the research team was concerned in this study with core judgments in the context of designing. Given the lack of attention to this dimension of designing in the field's explanations of design (Smith & Boling, 2009), we did not feel we could assume that core judgments were in play for our participants. For this reason we began by asking whether these designers appeared to hold core judgments, although we expected that they would. More critically, we intended to describe the core judgments we might be able to infer to bring to light (and do so concretely) a dimension of designing that receives little attention in our field. Our research questions were, therefore:

- Do instructional designers appear to hold core judgments as they discuss design artifacts (designed objects, experiences, or systems)?
- If so, what is the nature of core judgments that may be inferred from their discussion of design artifacts?

## Method

This is a multiple case study carried out from an interpretive phenomenological perspective. The research team adopted this perspective because core judgment is an interior phenomenon and one requiring interpretation because it is not easily accessible to those experiencing it (Chapman & Smith, 2002; Moran, 2000). The team elected to limit this study to description because the phenomenon of design judgment is not well recognized in the field of instructional design, either by scholars or by practitioners, and is therefore not to be treated in a causal or comparative mode of inquiry. In fact, while the design team expected, based on design literature, that instructional designers would be found to hold core judgments, it was not known whether these would be readily discernible or what their nature might be.

## Participants

Participants for the study were recruited via listserv and social media posts. From the approximately 20 expressions of interest that we received, 10 instructional design practitioners from three countries, each employed for a minimum of two years (average = 11.2; range = 4–29) in the private sector were selected. The team considered that two years of experience was

**TABLE 1 EDUCATION, TITLE, AND YEARS OF EXPERIENCE OF PARTICIPANTS BY PSEUDONYM (INSTRUCTIONAL DESIGN ABBREVIATED TO "ID" IN THIS TABLE TO CONSERVE SPACE)**

| PARTICIPANT | KEY CHARACTERISTICS |
|---|---|
| **Sharma** | BS in biotechnology |
| | MS in industrial microbiology |
| | Does content/media development |
| | 7 years of ID practice experience |
| **Pearce** | Master's in educational psychology |
| | Specialist degree in IST |
| | 20 years of ID practice experience, mainly in distance education |
| **Halim** | BS in computer management |
| | MS in computer science |
| | 4 years of ID practice experience in for-profit educational settings |
| **Gordon** | BA in economics |
| | In graduate school pursuing master's in linguistics |
| | Has completed the "Ruth Clark certification" |
| | 29 years of ID practice experience (since 1986) |
| **Darmadi** | BA degree in adult education |
| | Master's in long-life learning |
| | Training certificate focused on ADDIE |
| | Learning development specialist and ID consulting |
| | 5 years of ID practice experience |
| **Mills** | BA in broadcasting television and English |
| | MA in English |
| | Teacher for 5 years |
| | Technical writer, then ID job |
| | 7 years of ID practice experience |
| **Luis** | BA in chemistry |
| | Master's in instructional design |
| | 8 years of ID practice experience |
| **Lopez** | BA and master's in elementary education |
| | "Some certifications in ID" |
| | 7 years of ID practice experience |
| **Watson** | Bachelor's in technology studies |
| | Did media-design part of the instructional design work |
| | 7 years of ID practice experience |
| **Edwards** | Master's in ID in 1997 |
| | Currently working on PhD |
| | Worked on projects in UX interface design |
| | 18 years of ID practice experience |

the minimum that would provide respondents with sufficient basis to identify and discuss designs largely from the viewpoint of practice versus that of their education. The team screened out respondents working inside public universities to avoid situations in which an individual might feel obliged to speak in the academic vocabulary of instructional design or to be careful to reflect ideas they might presume the team would expect to see.

Although it was not a requirement, the individuals in the sample all held bachelor's- or master's-level degrees, two in the field of instructional design and the rest in other areas of study (English, elementary education, economics, technology, computer science, and microbiology). This is an exploratory study, so we appreciated the variety in our respondents but did not attempt to achieve a representative sample across the field of practice.

## Instruments and Procedure

A 60-minute, semi-structured interview was carried out with each participant via audio, followed by a short interview to ask clarifying questions and gather any additional thoughts participants had after about a week. These interviews were recorded via applications working in conjunction with Skype™ or with microcassette recorders; recordings were stored in the university's secure university digital document space. The main interview protocol included a short warm-up exchange asking the participant to recall any thoughts that came to mind regarding the main two questions, which had been sent to participants in advance, then the primary questions, and brief concluding questions about job title, years of experience, types of design experience, and education (see Figure 1). Our intention was *not* to arrive at any conclusions regarding the actual strengths or weaknesses of the artifacts described to us by participants. Those artifacts served as vehicles for discussion, during which we anticipated the participants' statements would be informed by their core judgments and, further, that the concrete nature of their descriptions of the designs would provide data from which core judgments might be interpreted via phenomenological interpretive analysis (Chapman & Smith, 2002).

Before carrying out the interviews, team members watched several demonstration interviews, debriefing afterward. They practiced with

**PRELIMINARY QUESTIONS**

–Think of an example of a design, not created by you but which you have used, that you consider to be a strong design. What makes you consider this a strong design?

–Think of an example of a design, not created by you but which you have used, that you consider to be a weak design. What makes you consider this a weak design?

**FIGURE 1.** INITIAL QUESTIONS INCLUDED IN THE EMAIL SENT TO PARTICIPANTS (THAT ALSO FORMED THE BASIS FOR INTERVIEWS)

each other, emphasizing reflective listening (i.e., restating a respondent's main points and listening for adjustments and agreement). Then they each practiced interviewing individuals outside the research team and debriefed this experience as a group. This preparation emphasized comfort with prompting participants to elaborate on ideas stated, ensuring participants were understood and, for many on the team, building confidence for carrying out the interview in English.

## Data Analysis

Once the interviews were transcribed, each team member was paired with another one, and this pair traded off listening to the other's interview before proceeding to a close reading of the transcript. The interviews and notes from them were then shared with the full research group and were opened for interpretive discussion. Rounds of discussion focused on probable descriptions of how the participants perceive and make meaning of design (i.e., their likely core judgments). These were not considered to be definitive descriptions but were to encompass possibilities that the group considered through intensive discussion to be possible. These discussions served as a means for the whole team to become well acquainted with the entire body of data, and repeated discussions of ongoing analysis with the entire group served to help surface and set aside our personal core judgments, particularly when they conflicted with those of the participants. The team responded sometimes more positively, and sometimes less so, to the various judgments we interpreted from respondents' statements. However, our intention in this study was not to evaluate the core judgments we identified. We attempted to understand them as the respondents did and describe them accordingly. The team did not assess inconsistent judgments as poor judgments.

The team then conducted a meaning field analysis, based on Carspecken (1996), yielding "a bounded set of possible meanings for the given communicative act [which] can be explored, not to determine the 'true' meaning intended by the actor, but rather a paradigmatic set of meaning possibilities" (Gray, Toombs, & McKay, 2016, p. 4). The ability of the researchers to interpret meaning fields during an analysis of this kind depends either on immersion in the context of study (here, instructional design practice) or on sufficient prior experience to allow for well-informed interpretations to be made.

Members of the group included individuals holding project-intensive master's-level degrees in the field of instructional design and individuals who have served internships of six months to a year working in the field as instructional designers. Individuals currently working as instructional designers and those who had worked previously as instructional designers or designers of instructional materials brought experience in commercial, government, higher education, K12 education, and NGO domains to the analysis. Additional expertise in human–computer interface design and graphic design was represented.

Each team reviewed three to four transcripts and identified the statements with potential for relevant meanings, discussing these with the full group periodically. Analysis was guided by the conceptual question, "What judgment or belief might need to be in place for a designer to make these statements?" Segments of analysis were then reviewed by the primary investigator to move from a full set of meaning fields for each participant to a profile of the possible core judgments that individuals had implied during their interviews. Table 2 shows the process as applied to one statement from one interview.

**TABLE 2 SAMPLE OF ANALYSIS OF A SINGLE INTERVIEW STATEMENT**

| | | |
|---|---|---|
| **Original Statement** | So I, any project I undertake anymore, it starts with that. If I don't do a really good evaluation of what my audience is, what their capabilities are, what their ability to understand the material is… if I don't do that well, it's just gonna fail. Like I said that was a horrible lesson to learn. I mean I suppose it was good in its own way, I don't make that kind of mistake anymore. But, to make the assumption that, because it's easy for you, that it's going to be easy for somebody else, isn't true. So that was the one that didn't work. | |
| **Restatement (superficial clarification)** | I didn't do a really good evaluation of what my audience is, what their capabilities are, what their ability to understand the material was. That's why the project was a failure. That was a horrible lesson to learn. But I don't make that kind of mistake anymore. | |
| **Meaning Field** | **Foregrounded Meanings** | **Underlying Meanings** |
| | I didn't do a really good evaluation. | Good evaluations are guarantors of success. |
| | AND | AND |
| | Knowing about my audience, their capabilities, and their ability to understand the material are important. | Good evaluations prevent incorrect assumptions. |
| | AND | AND |
| | Without such understanding, projects fail. | Design mistakes are process mistakes. |
| | AND | AND |
| | That was a horrible lesson to learn. | Mistakes in design lead to failure. |
| | AND | AND |
| | But I don't make that kind of mistake anymore. | Design failure prevents future mistakes. |
| | AND | AND |
| | Because it is easy to make wrong assumptions. | Designers can expect to fail if they do not follow process. |
| **Candidate Core Judgments** | Design is rational. | |
| | Design is process. | |
| | Process is deterministic. | |

## Findings

The result of our analysis describes the possible core judgments that could be inferred from the statements of each participant. It was possible to infer such judgments for every participant, which answers the first research question; these designers clearly do hold core design judgments. The inferences made by the research team with regard to the nature of those core judgments are stated (summarized in Table 3), and narrative discussion of several selected participants follows.

The core judgments of several participants, selected for similarity and contrast, that illuminate discussion are detailed in the following subsections.

### Lopez

The potential core judgments of Lopez address learning, artifacts, and principles. As such, they might be seen to represent an integrated tacit view of design strongly consistent with that apparently held by

**TABLE 3 INFERRED CORE JUDGMENTS BY PARTICIPANT (PSEUDONYMS ASSIGNED BY RESEARCHERS)**

| PARTICIPANT | INFERRED CORE JUDGMENTS |
|---|---|
| **Sharma** | Design is rational. |
| | The purpose of design originates with the designer. |
| | Artifacts will behave as users and designers intend them to. |
| | Less is more. |
| **Pearce** | Design is rational. |
| | Design is responsive. |
| | The designer–user boundary is important in design. |
| | Artifacts (the result of designing) are central to design. |
| | Artifacts evoke anticipated results. |
| **Halim** | Design is rational. |
| | Design is "in service to." |
| | Methods are valuable. |
| | Designers control methods. |
| | Design value resides in artifacts. |
| | Artifacts create effects in the world. |
| **Gordon** | Design is rational. |
| | The focus of design is the artifact. |
| **Darmadi** | Design is rational. |
| | Design is process. |
| | Process is deterministic (of outcomes). |
| | Design knowledge is propositional. |

**TABLE 3 CONTINUED**

| PARTICIPANT | INFERRED CORE JUDGMENTS |
|---|---|
| **Mills** | People all learn similarly. |
| | Attention is core to human behavior/learning. |
| | Propositional knowledge is central to design. |
| | Artifacts are deterministic. |
| **Luis** | Design is rational. |
| | Mechanisms of learning are well known. |
| | Learning is individual. |
| | Learning theories are guarantors of design. |
| | Design is problem-solving. |
| | Design is deterministic. |
| **Lopez** | Design is rational. |
| | The mechanisms of learning are known. |
| | Artifacts are deterministic. |
| | Principles constitute comprehensive support for designing. |
| **Sanjeey** | Design is rational. |
| | Less is more. |
| | Artifacts are the central object of designing. |
| | Design is in service to, or design serves people. |
| | People's needs are known. |
| | Simplicity serves people's needs. |
| **Edwards** | Design is rational. |
| | Artifacts are not the central focus of design. |
| | Design is deterministic. |
| | Principles are generally sufficient to design. |
| | Design is benevolent manipulation. |

the field itself (Smith & Boling, 2009). They include *design is rational, the mechanisms of learning are known, artifacts are deterministic,* and *principles constitute comprehensive support for designing.* Altogether his core judgments reflect what may be called a fully rational view of design (Stolterman, 2008; Tripp, 1991) in which design is considered to be a form of problem solving, the dimensions of a problem are assumed to be knowable in advance of developing a solution, problem definitions do not change during the design process, and the match between a problem and a solution is made in propositional (i.e., fully explicit) terms. Further, and consistent with this view, Lopez views artifacts as deterministic (our term), meaning that the design of materials or experiences are seen as determining the responses people will have to them; no unforeseen alternative uses of designed materials or experiences are anticipated by designers.

### Sanjeey

Repeated statements made by Sanjeey convey a strong adherence to the well-known design philosophy that *less is more,* a philosophical position associated with minimalist design (Savvi, 1989). This core judgment implies another, which is that *artifacts are the central object of designing.* At the same time this designer appears to hold the judgment that *design is in service to*, or *design serves people*, a position inconsistent with core values of minimalist design, which suffered a large-scale, public failure through focusing on artifacts to the exclusion of people's needs and desires (Holston, 1989). Taken together with *people's needs are known* and *simplicity serves people's needs,* however, we see the possibility that this designer's view of service is also rational and consistent with the judgment *design is rational*.

### Sharma

Sharma's possible core judgments are for the most part internally consistent, with *design is rational* seeming to be central. This designer expresses the implicit rationality of design in many ways, including emphasis on analysis, systematic design, a cognitive approach to design, and efficiency in design as well as in artifacts. Related to rationality are the core judgments that *the purpose of design originates with the designer* and that *artifacts will behave as users and designers intend them to*. Artifacts are further seen to embody the designer's purpose, meaning that design decisions are taken with the expectation that the reason for them will be conveyed—and conveyed through the artifact. Sharma also appears to hold the core judgment *less is more.* In the light of the other core judgments interpreted from this designer, *less is more* seems to be an extension of *design is rational*. Expressions indicating this judgment center on efficiency of design, on the notion that clarity created through simplicity will be perceived as clarity by a learner and that concise design is assumed to be clear design.

### Edwards

For Edwards the core judgment *artifacts are not the central focus of design* is interpreted from a notable absence of statements referencing artifacts. A related group of judgments, *design is rational, design is deterministic*, and *principles are generally sufficient to design*, can be seen as consistent with each other and with the lack of attention paid to artifacts. An additional core judgment interpreted from this designer's statements is that *design is benevolent manipulation*; attention to users' needs, work habits, and comfort are paired with requiring user activities and designing to *make* learners accept knowledge.

## Clustering Core Judgments

For individual designers, core judgments often cluster together in a way that feels expected. *Design is rational* and *design is deterministic*

seem to express a consistently scientific view of designing. *Less is more* and *design should be flexible and adaptable* likewise seem to express core judgments consistent with each other and with what might be termed a "least-harm" view of designing. If core judgments include fundamental orientations that extend beyond design, permeating the lives and actions of the designers who hold them, we would expect this to be the case.

However, core judgments are not inevitably clustered together in outwardly logical ways. They may be consistent with a particular designer's character, represent core judgments not strongly integrated via experience, or simply signal that our study method did not provide for a full expression of that designer's beliefs. Pearce's case illustrates this; design is discussed in such a way as to suggest the core judgments *designer/user boundary is important in design, design is responsive*, and *artifacts evoke anticipated results*. While these judgments are not fully irreconcilable, they do not smoothly interlock. The first two suggest that this designer's view of design's place in the world lies between designer and user and making adjustments in response to the user. Coupling these points with the judgment *artifacts evoke anticipated results* could suggest that this designer views human beings as invariant in their behavior, meaning that responding to a defined human need via design is expected to result in a known response. It might imply that the designer views design itself as capable of constraining responses from users to only those anticipated in advance. Or it could mean that the designer holds imperfectly reconciled judgments that have not as yet risen to consciousness and therefore have not been resolved.

## Discussion

While the finding that instructional designers *do* hold core judgments may seem too obvious to discuss, it bears some examination here. With the exception of Yanchar and Gabbitas (2011), a presumption of conscious intention is assumed in the language most often used to describe instructional design. Although this study was not evaluative, it may be clear that some of the core judgments interpreted here are consistent with some explicit views of design in the field and inconsistent with others. In fact, the view that *design is rational* and the view that design is pervasively affected by core judgments, which are by definition not rational (Nelson & Stolterman, 2012), are distinctly incompatible. (Note that although most of these designers hold the core judgment that *design is rational*, we are making the point that core judgments are not themselves rational; they are tacit beliefs.) Therefore, simply acknowledging that practicing instructional designers hold core judgments begs the question of the role of philosophy in our practice. If our tools and models are developed on the presumption that designers' core

**Simply acknowledging that practicing instructional designers hold core judgments begs the question of the role of philosophy in our practice.**

judgments are irrelevant (because they are not recognized to exist), the risk is that those tools may not be accepted or used by designers, or that their benefits may be limited through unconscious conflicts with those core judgments.

Many of the core judgments inferred from our discussions with practicing instructional designers echoed explicit perspectives familiar to academic instructional designers (e.g., *design is rational* and *design is deterministic*). It was tempting, given our collective educational experience, to assume that education in the field instilled these beliefs in the participants, but we are not able to do so. The educational experiences of the participants are varied, and we did not collect sufficient detail about them to establish a non-obvious commonality between them. We would also expect some interplay between innate character, life experience, design experience, and moments of profound impact as theorized by Nelson and Stolterman (2012) to form and affect core judgments. It may be that individuals are drawn to, or remain in, design communities where frequently espoused values are consonant with their own deeply held views. It may also be that early learning experiences, or profound ones, shift core judgments in the direction of the perspectives held by educators in various domains of design. For experienced designers, it is also possible that their own practice (including practice with peer designers and as members of design teams) along with the outcomes of that practice have influenced their core judgments. We are also unable to claim, based on the small number of participants, that most or even many instructional designers hold core judgments consistent with those presumed by the scholars who develop tools for them.

## Implications

From the perspective of design studies in the field, this glimpse of the core judgments held by practicing instructional designers demonstrates the applicability of design theory to exactly how design is accomplished in the gap between models or theories and action. Development of tools by scholars—instructional theories and strategies, conceptual and process models, principles and guidelines—should, for example, take into account the fact that use of these tools is influenced by the core judgments of individuals. Those judgments or beliefs about design cannot be taken for granted, and our tools should, perhaps, seek to leverage them as an irrational contributor to disciplined design rather than replace them with prescriptive guidance.

With more comprehensive understanding of design practice and how its tacit as well as its visible and explicit dimensions function, design educators can begin to consider how core judgments can be developed and shaped. What aspects of the curriculum and of educational experiences should be emphasized to acknowledge core judgments and encourage

reflection on them? Can propositional methods address this aspect of designer development (Boling & Merrill, 2017)?

Practicing instructional designers as well as those who teach and train instructional designers can review the core judgments found in this study and reflect on their own. Are the decisions they make daily during practice consistent with these judgments? A designer who holds the core judgment that design is *in service to* but recognizes she is making decisions in an effort to create a "perfect" or polished artifact (i.e., focusing on the artifact to the detriment of its user) can consider explicitly whether she wants to work on adjusting her core judgments or on adjusting the kinds of decisions she is making. This designer will improve her practice through such targeted reflection (Schön, 1984).

## Limitations of the Study

This is a small-scale study and, without knowing in advance what to expect from a stratified or even a comprehensive sample of instructional designers, the team recruited from likely sources of respondents, accepting those who reported having several years of experience. We did not screen for their educational backgrounds or the context of their practice, except for excluding those practicing in higher education. Therefore, we are not able to comment in any way on the possible influence their personal characteristics, education, or experiences in general may have had on the core judgments we inferred that they hold.

We did not watch the participants working nor did we ask them about their own design decisions. Knowing that studies in our field have sometimes taken an evaluative stance toward practicing designers and being concerned that the suggestion of such a stance might prompt some participants to constrain their discussion, we elected to ask them instead about designs they had used but not designed themselves.

## Future Research

We saw a general orientation toward design as a predominately rational enterprise, which is only one of multiple, viable orientations toward design (Nelson & Stolterman, 2012; Parrish & Nelson, 2017), but we interpreted these core judgments in individuals with different educational backgrounds. We cannot assume, therefore, either that instructional design attracts individuals holding these core judgments or that the field demands such judgments from instructional designers. Future studies need to focus on which factors affect the formation of such judgments among instructional design practitioners. What role do instructional design education, culture of the field, and the practitioner's own precedent knowledge play in shaping instructional design core judgments?

This study, along with others that have focused on design practice and those yet to be conducted, are all necessary steps toward considering how design may be accomplished as disciplined, rigorous thoughts and actions under the control of designers for whom models and theories are viewed as tools that are subordinate to designers and their judgments.

## Acknowledgments

Two team members involved in interviews and part of the analysis who were not involved in writing this manuscript, Orneal Brown and Roosevelt Faulkner, are gratefully acknowledged for their contributions to the research.

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# Corrigendum

**Applying Tablet-Based Performance Support Application for Technicians' Training at the Israeli Air Force: A Case Study**

In Gal, Meishar-tal, Non, Ben-Basat, and Paikin, 2017, the second author's name was published incorrectly.

"*Hagit Meishar-Tal*" has been corrected as follows:

*Eran Gal, PhD | Hagit Meishar-Tal, PhD | Ronit Ben Non | Adar Ben-Basat | Lisa Paikin*

We apologize for this error.

## Reference

Gal, E., Meishar-Tal, H., Non, R. B., Ben-Basat, A., and Paikin, L. (2017). Applying tablet-based performance support application for technicians' training at the Israeli Air Force: A case study. *Performance Improvement Quarterly*, *30*, 121–136. https://doi.org/10.1002/piq.21243



PERFORMANCE IMPROVEMENT QUARTERLY,30(3) PP. 221

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/piq.21258