



# Enhancing adaptive transfer of cross-cultural training: Lessons learned from the broader training literature

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## ABSTRACT

Drawing insights from the broader training literature, we argue that evaluation of cross-cultural training effectiveness should adopt comprehensive criteria, including cognitive, skill-based, and affective learning outcomes as well as adaptive transfer. We propose that the integration of an error management supplement in cross-cultural training can enhance trainee acquisition of self-regulation skills and self-efficacy that facilitate adaptive application of learning to novel cultural situations. In addition to the traditional error management training designs (i.e., positive error framing), the current paper describes additional design elements to promote acquisition of cognitive strategies, prevent premature automaticity, alleviate concerns about error occurrence during learning, and enhance readiness to transfer. In addition, we offer propositions regarding the effects of the supplement on learning and transfer outcomes, along with implications for future research and practice on cross-cultural training.

## 1. Introduction

Cross-cultural work has been drastically growing with the ongoing rise in globalization. Expatriates and sojourners, essential to multinational business and usually highly compensated, are vulnerable to failure and difficult to replace (Hechanova, Beehr, & Christiansen, 2003; Littrell, Salas, Hess, Paley, & Riedel, 2006). Without geographic relocation, cross-cultural interactions are becoming increasingly convenient and frequent given the assistance of technology, the reduction in physical barriers (e.g., physical office), and the culturally diversifying workplace (The Economist Intelligence Unit, 2014). Therefore, human resource management faces complex challenges created by various cross-cultural work situations, such as facilitating expatriate and sojourner adjustment (Hechanova et al., 2003), enhancing cross-cultural communication, building relationships among diverse employees (Trejo, Richard, van Driel, & McDonald, 2015), and developing leaders in cross-cultural contexts (House, Hanges, Javidan, Dorfman, & Gupta, 2004; White & Shullman, 2012).

Research has suggested cross-cultural training (CCT), the learning process that improves “cognitive, affective, and behavioral competences” (Littrell et al., 2006, p.356) for successful intercultural interactions, as a viable organizational intervention to facilitate successful cross-cultural adaptation of workers. However, the effectiveness of CCT has been debatable thus far (Bhawuk & Brislin, 2000; Hechanova et al., 2003; Littrell et al., 2006). Early research showed that CCT generally positively predicts various cognitive, skill-based, and attitudinal outcomes of expatriates (Bhawuk & Brislin, 2000; Black & Mendenhall, 1990; Littrell et al., 2006), yet the meta-analytic effects appear to be weak on important behavioral outcomes (i.e., 7% variance in expatriate performance and 0–2% variance in expatriate adjustment; Hechanova et al., 2003; Morris & Robie, 2001). More recent studies have identified several

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boundary conditions that may limit CCT effectiveness (Degens, Hofstede, Beulens, Krumhuber, & Kappas, 2015; Puck, Kittler, & Wright, 2008; Wurtz, 2014). Given the inconsistent effectiveness of CCT and the potential benefit of enhancing cross-cultural adaptability, we turn to the broader training literature to formulate actionable plans to strengthen CCT design.

Our examination of the CCT literature revealed three noteworthy gaps between extant CCT research and the broader training literature. First, the evaluation of CCT outcomes consists of disjointed components that are not well aligned with models from the broader training literature (e.g., Baldwin & Ford, 1988, p. 87; Goldstein & Ford, 2002). There is general consensus in the training literature that training impacts immediate cognitive, skill-based, and affective learning outcomes (Kraiger, Ford, & Salas, 1993), which can further influence transfer of training. Training transfer, consisting of the maintenance of learning over time and the generalization of learning to different work situations, represents the actual return of training investment (Baldwin & Ford, 1988; Baldwin, Ford, & Blume, 2009; Blume, Ford, Baldwin, & Huang, 2010). In contrast, most of the existing CCT evaluations have been focused on declarative knowledge (Bhawuk, 2001; Caligiuri, Phillips, Lazarova, Tarique, & Burgi, 2001; Fiedler, Mitchell, & Triandis, 1971), expatriate adjustment (Hechanova et al., 2003), expatriate performance (Morris & Robie, 2001; Wurtz, 2014), and/or early return (Littrell & Salas, 2005). These outcomes are not likely to adequately capture the direct outputs and transfer of training due to two different reasons. On the one hand, declarative knowledge (i.e., “information about what”), as a component of learning outcomes (Kraiger et al., 1993, p. 313), is much too narrow than the entire spectrum of knowledge, skills, and attitudes covered by CCT. On the other hand, expatriate adjustment, expatriate performance, and early return are usually too distal and broad to cover factors outside of the trainees' control. Thus, a closer examination and critique of extant CCT research vis-à-vis learning outcomes (e.g., cognitive strategies, affective outcomes) and transfer assessment is direly needed.

Second, the context of CCT goes beyond the preparation and adjustment of Western workers to another culture (Littrell et al., 2006; Littrell & Salas, 2005). The workplace is no longer limited to the bicultural interactions and is increasingly multicultural. These multicultural situations can range from day-to-day interactions with diverse coworkers to leading teams consisting of geographically dispersed members. The growth in opportunities for multicultural interactions is accompanied by the increase in needs for adaptability to unfamiliar cultural environments and the restricted utility of CCT that only prepares trainees to directly reproduce acquired behaviors. Therefore, it is critical to move beyond the evaluation of CCT in a single cultural context and instead emphasize trainees' capability to generate adaptive behavioral responses to various cultures (see Degens et al., 2015). The shift toward multicultural adaptation also requires CCT to integrate design elements that can facilitate trainees' effective adjustment in novel cultural situations with a high level of uncertainty.

Third, emerged from the under-emphasis of the comprehensive learning outcomes and adaptive transfer, the design of CCT has been constrained from directly targeting at these desirable objectives. Based on the complex and dynamic nature of cross-cultural situations (Morris & Robie, 2001), we argue that learning does not cease by the end of CCT, but successful trainees should continue acquiring knowledge and refining skills while adapting to novel situations (Huang, Ford, & Ryan, 2016). Ultimately, through continuous practice, CCT trainees can become “experts” who are able to effectively engage in emerging cultural encounters without deliberate preparation (Ericsson, 2008). Among the common designs of CCT, the culture assimilator (Bhawuk, 2001; Fiedler et al., 1971) and met expectation (Caligiuri et al., 2001) approaches primarily aim at developing declarative knowledge. The behavioral modeling approach based on social learning theory enhances the reproduction of desirable behaviors and self-efficacy in analogous situations (Black, Mendenhall, & Oddou, 1991; Morris & Robie, 2001; Wurtz, 2014). Each of these approaches exhibits values with regard to a specific set of objectives yet are insufficient for promoting adaptive transfer. To enhance acquisition of complex skills and achievement of expert performance, CCT should integrate novel theoretical perspectives. We seek to provide one example based on error management training (EMT), which can promote adaptive outcomes by encouraging learners to actively explore in the learning environment without be concerned about making errors (Keith & Frese, 2008). Beyond introducing EMT to promote cross-cultural adaptability, we also contribute to the EMT literature by investigating errors in nontechnical skill acquisition, specifically interpersonal errors in the cross-cultural interactions that stem from values, beliefs, and norms.

Drawing from theories and evidence from the broader training literature, the present paper addresses the three gaps of CCT by a) connecting CCT with the well-developed training framework, including Baldwin and Ford's (1988) model of the transfer process and Kraiger et al.'s (1993) learning outcome taxonomy, and b) integrating the novel theoretical perspective from error management (EM; Keith & Frese, 2008), an approach that utilizes errors constructively to inform learning, to enhance the effectiveness of CCT. In doing so, we offer propositions that link EM to CCT learning and transfer outcomes and provide new perspectives for CCT research and practice in organizations.

## 2. CCT transfer and learning outcomes

To systematically design a training program, one of the most important steps is to assess the needs and derive the objectives (Goldstein & Ford, 2002). According to the model of the transfer process by Baldwin and Ford (1988), the ultimate objective of training is the long-term application of training on the job. In other words, effective training is reflected in improved work performance, and other components of the training system should serve this objective. Moreover, learning outcomes, usually considered the direct outputs of training and assessed immediately after training, transmit the influence of training design characteristics on transfer. Therefore, we first discuss the objective of CCT (i.e., transfer — the successful application of knowledge and skills acquired in training to one's job; Blume et al., 2010) and then turn to the learning outcomes that serve as important linkage between CCT and transfer.

### 2.1. Transfer outcomes of CCT

The evaluations of CCT demonstrate the classic “criterion problem” in organizational research and practice (Austin & Villanova, 1992). Expatriate adjustment, which involves satisfaction and proficiency with the general conditions, social interactions, and job roles in the new cultural environment, is one of the mostly adopted criteria in CCT (Black & Mendenhall, 1990; Hechanova et al., 2003; Morris & Robie, 2001). Along with expatriate performance and early return, these commonly used criteria can be broad and problematic due to the contaminations by various factors outside the scope of CCT, such as the resources and support available at work. Meanwhile, these outcomes are also deficient in terms of evaluating workers in other cross-cultural situations, such as dealing with international coworkers and clients or working in multicultural teams.

We draw from the general training literature to suggest transfer of CCT is consistent with adaptive transfer, such that the transfer process involves active adaptation of trained principles and strategies to unexpected, novel situations (Barnett & Ceci, 2002; Ivancic & Hesketh, 2000). We base the argument on two major reasons. One reason is the substantial variability of cross-cultural situations that require CCT trainees to generalize learning from a limited set of scenarios to the unpredictable real life, whereas analogous reproduction of acquired behaviors is inadequate to handle the complex manifestations of cultural differences. The other reason stems from cross-cultural research that suggests cultural adaptability is an antecedent to successful cross-cultural performance (Littrell et al., 2006; Sieck, Smith, & Rasmussen, 2013). Cultural adaptability refers to the capacity to learn new cultural ways (Kim, 1991), “learn how to learn” cross-culturally (Littrell et al., 2006), and modify one’s behavior based on culture-related situational cues (McClosky, 2008). Individuals with a high level of cultural adaptability are also considered to be cross-cultural “experts” (Sieck et al., 2013). Likewise, effective transfer of CCT should be characterized by trainees’ improved capacity to learn new cultural principles and exhibit expert-like behaviors due to CCT.

With regard to the specific components of CCT transfer, we utilize the taxonomy proposed by Barnett and Ceci (2002), which covers content and context of transfer on the analogy-adaptation continuum. For the content of transfer, CCT should help trainees to acquire principles for understanding cross-cultural differences and resolve possible problems, which fall on the more adaptive end of the continuum. Effective trainees tend to apply principles like keeping an open mind in cross-cultural situations, continuing gathering information, and avoiding making judgment too early (Sieck et al., 2013). Trainees must recall cultural knowledge from past experiences, recognize relevant cues from the environment, and choose the most appropriate course of action. During this process, it is often ambiguous about whether a piece of information is culturally relevant, when to stop gather information, and how to use the information to generate solutions. This process can also vary depending on the specific situation, meaning that trainees must flexibly adjust their behaviors rather than fixating on a certain routine or protocol. As the result, transfer of CCT involves advanced skill learning (i.e., principle) and information processing. Measurement of such transfer needs to focus more on how effective a trainee approaches a novel cross-cultural situation compared to how fast and accurately the trainee can carry out a fixed routine (Barnett & Ceci, 2002).

In addition, Barnett and Ceci (2002) discussed variations in transfer contexts as an important factor that makes transfer more distal from training, and CCT transfer encompasses most of these contextual differences between training and transfer. Because every aspect of life is immersed in culture, trainees, when attempting to transfer CCT, can encounter discussions about different subjects (knowledge domain), experience culture in a wide range of physical locations (physical context), interact with diverse people about work and non-work issues (functional context), and/or engage in activities in both individual and group settings (social context). They also need to retain CCT learning for a long period of time (temporal context) and generalize the knowledge and skills in various modes of communication (modality; e.g., face-to-face interaction, written communication, etc.). To ensure that the CCT evaluation sufficiently capture trainees’ capacity to adapt to these diverse contexts, assessment of transfer should incorporate varying degrees of contextual differences from the training. The assessment should also be done repeatedly to observe how trainees maintain and develop the knowledge, skills, and attitudes over time. These repeated assessments can simultaneously serve as post-training interventions for offering feedback that aids trainees’ adaptive transfer (see Ellis & Davidi, 2005; Tews & Tracey, 2008).

In sum, we suggest that the evaluation of CCT should utilize adaptive transfer as the key criterion, which is able to reflect trainee behaviors in various cross-cultural contexts as a direct result of training. To facilitate transfer of CCT, learning outcomes comprise an essential mediating component of training effectiveness (Goldstein & Ford, 2002). Within the taxonomy of learning outcomes by Kraiger et al. (1993), we briefly discuss how CCT can result in cognitive, skill-based, and affective learning.

### 2.2. Cognitive learning outcomes of CCT

Cognitive learning outcomes include declarative, procedural, and strategic knowledge that can be verbalized, knowledge organization or a structure that organizes knowledge, and cognitive strategies related to awareness and regulation of cognition (Kraiger et al., 1993). All of these three types of cognitive learning outcomes serve as important antecedents of adaptive transfer of complex skills (Davis & Yi, 2004; Day, Arthur, & Gettman, 2001; Keith & Frese, 2005).

The existing CCT approaches have a strong emphasis on declarative knowledge about cultures, which refers to knowing information and facts about cultures and is demonstrated by trainees’ verbalization of the information (Anderson, 1982). For instance, the culture assimilator approach aims at training appropriate reactions to critical cultural incidents and knowledge about relevant cultural values through abstract scenarios and verbal feedback (Bhawuk, 2001; Fiedler et al., 1971). Similarly, CCT based on the theory of met expectations covers different life and cultural aspects of a target culture through didactic instruction, so trainees become aware of the cultural differences (Caligiuri et al., 2001). Declarative knowledge is a necessary foundation for CCT learning, especially in the early stage of learning (Kraiger et al., 1993), because it encodes relevant facts and principles to be applied and

generalized to various contexts (Taylor, Russ-Eft, & Chan, 2005).

Nonetheless, the influence of declarative knowledge on transfer tends to decay over time (Blume et al., 2010; Kraiger et al., 1993; Taylor et al., 2005). To develop long-term adaptability, trainees should be expected to grow from a novice to an expert, and knowledge organization and cognitive strategies are the most differentiating characteristics between these two phases (Day et al., 2001; Sieck et al., 2013). According to Kraiger et al.'s model of learning outcomes, knowledge organization, usually described as mental model or knowledge structure, refers to a meaningful structure used by a trainee to store knowledge. Compared to novices, experts are more likely to hold strong and complex links between knowledge elements, such as similarities and differences among concepts (Day et al., 2001). Subsequently, experts can quickly draw from situational cues to retrieve accurate interpretations and solutions of a problem.

Moreover, the existing declarative knowledge and knowledge structure may not be sufficient to handle unpredictable cross-cultural encounters (Klafehn, Li, & Chiu, 2013), which require cognitive strategies as the additional learning objective. Cognitive strategies encompass awareness and regulation of one's own cognition, as well as the strategies associated with this process (Kraiger et al., 1993). In cross-cultural contexts, trainees who adopt effective cognitive strategies do not simply retrieve information from their memory, but they reflect on their own cultural assumptions, actively assess relevant cultural-related cues, and generate novel solutions that fit with the unforeseen situations. Research has begun to recognize the importance of cognitive strategies to CCT. A recent study by Sieck et al. (2013) examined five cognitive strategies frequently used by cross-cultural experts, including noticing differences, considering culture as a contributor to differences, asking “why” questions, avoiding commitment to a particular explanation, and delaying judgment. The authors also found that trainees who learned expert-like cognitive strategies demonstrate higher adaptability to novel cultural situations after CCT. This study shed light on explicitly integrating cognitive strategies as an important CCT learning outcome.

Taken together, we have observed that declarative knowledge has been the primary cognitive learning outcome assessed in existing CCT approaches, but knowledge outcome alone is insufficient for promoting adaptability. Additionally, expert-like knowledge organization and cognitive strategies should be incorporated as critical cognitive mechanisms that facilitate adaptive transfer. Comparison to an expert mental model and the think-aloud method are frequently used assessments of knowledge organization and utilization of cognitive strategies (Davis & Yi, 2004; Day et al., 2001; Keith & Frese, 2005).

### 2.3. Skill-based learning outcomes of CCT

Skill-based outcomes involve composition of small components of behaviors, proceduralization of a behavioral routine, and achievement of automaticity (Kraiger et al., 1993). Among the existing CCT models, the social learning-based framework focuses on behavior acquisition and skill development (Black & Mendenhall, 1990). CCT derived from this approach tends to utilize behavior models who demonstrate culturally appropriate behaviors, resulting in the expectation that trainees will be able to retain and reproduce these behaviors at the end of CCT (Harrison, 1992; Lievens, Harris, Van Keer, & Bisqueret, 2003; Wurtz, 2014). Consistent with the skill-based category of learning outcomes, training performance in these studies have been evaluated using behavioral reproduction in role-play or actual work scenarios.

However, proficiency of behavior reproduction often indicates that trainees engage minimal attentional and cognitive resources (i.e., automaticity), and they lose awareness or consciously monitoring of their behaviors. Taylor et al. (2005) pointed out that skill-based learning from behavior models, compared to cognitive learning, is less likely to be generalizable to various conditions. For developing complex, adaptive skills, premature automaticity can prevent trainees from exerting conscious control over their behaviors, so they remain at a suboptimal level of performance (Ericsson, 2008). To date, the de-emphasis of automaticity has not been discussed in the CCT context.

Cross-cultural adaptability involves complex skill development, which requires continuous, effortful refinement of behaviors over time to achieve expert level performance (Ericsson, Krampe, & Tesch-Römer, 1993). Because automatic behaviors are difficult to unlearn, CCT should not expect trainees to routinize the behaviors. Instead, trainees must intentionally monitor and adjust behaviors to the changing environments (Kraiger et al., 1993) and “counteract tendencies of automaticity” (Ericsson, 2008). Ericsson also indicated that experts who master complex skills do not fixate on a particular routine and instead tend to engage working memory during action, consciously choose behaviors, and continuously strive for skill improvement by setting higher goals and minimizing errors. Therefore, to assess skill-based learning of CCT, purposeful self-regulation during cross-cultural interactions is a more suitable outcome than fluency in reproduction of behaviors. Similar to assessing cognitive strategies (Keith & Frese, 2005), requiring trainees to think aloud during transfer can reveal the degree to which they consciously utilize appropriate principles to generate, monitor, and adjust behaviors.

### 2.4. Affective outcomes of CCT

Affective outcomes comprise another category of learning outcomes, including attitudinal and motivational components (i.e., goal orientation, self-efficacy, etc.) associated with a specific object (e.g., cross-cultural encounters; Kraiger et al., 1993).

Cross-cultural encounters involve important affective aspects. Due to uncertainty and possible misunderstanding, cross-cultural workers may experience anxiety, frustration, fear, anger, and a lack of confidence and control (Kassar, Rouhana, & Lythreatis, 2015; Trejo et al., 2015). “Culture shock” describes the overwhelming experience when interacting with a novel culture (Oberg, 1960). Thus, CCT generally aims to reduce the negative affect and stimulate positive motivational states (e.g., self-efficacy) in trainees. Along this line, the behavior modeling approach based on social learning theory (Black & Mendenhall, 1990; Harrison, 1992) and

experiential learning (Goldstein & Smith, 1999) addresses the objective of trainee self-efficacy in cross-cultural scenarios. CCT based on the met expectations theory may also mitigate culture shock by instilling accurate mental representation of other cultures (Caligiuri et al., 2001). However, exposure to culture shock in CCT may also over-sensitize trainees and cause elevation in anxiety and maladaptive behaviors (Bhawuk & Brislin, 2000).

Rather than discrete, temporary affective states associated with cross-cultural situations, generalized regulatory skills are more beneficial for adaptive transfer. Emotion control refers to the self-regulatory processes that prioritize task performance over interfering emotions, such as anxiety (Kanfer, Ackerman, & Heggestad, 1996). Emotion control is an important component of cultural adaptability, such that cultural experts are able to manage stressful feelings and focus on the quality of an interaction (Trejo et al., 2015). Emotion control can also be developed through training (Keith & Frese, 2005). An important note is that emotion control does not necessarily reduce negative emotions associated with unfamiliar cultural encounters, but it is a set of processes that minimize the influence of negative emotions on effectiveness of an interaction.

With regard to motivational outcomes, self-efficacy is a malleable characteristic that can be elevated as the result of training (Kraiger et al., 1993). Bandura (1997) defined self-efficacy as one's judgment about his/her own capability to perform tasks and differentiated self-efficacy on three dimensions – level (difficulty of task to be performed), strength (confidence in the performance level), and generality (range of activity domains). According to Bandura's social learning theory, self-efficacy is a positive motivational determinant of performance in a particular domain because self-efficacious individuals tend to devote more attention, effort, and time onto the task. In the context of training transfer, post-training self-efficacy, as a holistic construct at the between-person level of analysis (see Sitzmann & Weinhardt, 2015),<sup>1</sup> can predict trainees' maintenance and generalization of learning (Bell & Kozlowski, 2008; Colquitt, LePine, & Noe, 2000). By examining specific dimensions of self-efficacy, Holladay and Quiñones (2003) showed that all of the three dimensions were positively associated with performance in situations that do not resemble the training scenario. While the authors found self-efficacy level and strength were highly correlated (i.e., load on the same intensity factor), the composite dimension, intensity, was not significantly related to the generality dimension. In addition, only self-efficacy generality was enhanced by the intervention that increases the range of tasks experienced during training (or practice variability). Thus, training interventions that aim at supporting adaptive transfer may explicitly include self-efficacy, especially the generality dimension, as a motivational learning objective.

To summarize, the future CCT literature needs to better integrate adaptive transfer into the evaluation of CCT, and the research also should focus on learning outcomes that promote successful adaptive transfer. In particular, these learning outcomes involve cognitive strategies, purposeful self-regulation skills, emotion control, and self-efficacy. For CCT to better develop these learning outcomes and enhance adaptive transfer, we now offer a novel perspective from error management (EM) to supplement the existing CCT approaches because EM offers a unique opportunity to enhance adaptive transfer and the relevant learning outcomes. These learning outcomes include knowledge structure and cognitive strategies adopted in understanding novel cultures (Keith & Frese, 2005; Sieck et al., 2013), purposeful self-regulation that prevents premature automaticity (Ericsson, 2008), and emotion control and self-efficacy in cross-cultural situations (Keith & Frese, 2005; Lorenzet, Salas, & Tannenbaum, 2005). In doing so, we first explore the relevance of errors to cross-cultural situations, compare the costs and benefits of errors, and then discuss how CCT can integrate errors for successful learning and transfer.

### 3. Errors and cross-cultural training

Errors are inevitable in human behavior and have important implications for organizations (Hofmann & Frese, 2011). Hofmann and Frese continued to define an error as the unintentional yet avoidable discrepancy between the current status and desired goals. Although errors can happen consciously and unconsciously, they are different from intentional violations or unavoidable risks. These characteristics imply that errors can be minimized through increasing the awareness of unintentional error-inducing activities and applying techniques to consciously handle errors.

#### 3.1. Errors in cross-cultural situations

When individuals from different cultures interact, they experience distinctive “programming of the minds”, which share different assumptions, values, and norms for behaviors (Hofstede, 2001; House et al., 2004; Triandis & Suh, 2002). Therefore, cross-cultural situations can create rich opportunities for errors to arise when individuals apply thoughts and behaviors from one culture to another.

Based on the taxonomy recommended by Zapf, Brodbeck, Frese, Peters, and Prumper (1992) and Hofmann and Frese (2011), errors can occur on different levels of self-regulation. Starting from the micro level, movement errors refer to movements performed inaccurately or used in an incorrect sequence. For instance, body gestures in different cultures can indicate different meanings (e.g., Indian versus American headshakes). These automatic and effortless movements may cause errors in communication. Second, habit errors refer to misapplication of actions to situations. This type of errors can be common when a worker wrongfully assumes a set of workplace routines of his/her home country is appropriate in the host country (e.g., being late to meetings). Third, knowledge errors

<sup>1</sup> The present focus on post-training self-efficacy as an affective learning outcome is consistent with the vast body of literature that indicates the positive effect of self-efficacy on transfer (Blume et al., 2010) and performance (Sitzmann & Ely, 2011) at the between-person level of analysis. It should be noted that, at the within-person level of analysis, higher self-efficacy may not necessarily yield greater subsequent performance (e.g., Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver, Thompson, & Williams, 2001) and may “primarily be a product of past performance” (Sitzmann & Yeo, 2013, p. 535). Thus, it is doubtful if any direct attempt to elevate self-efficacy without substantive training can result in successful cross-cultural interactions.

refer to inadequate knowledge for acting accordingly to the situation, and they can happen when individuals are not familiar with another culture's facts, customs, and beliefs (e.g., lacking knowledge about certain taboos). Fourth, metacognitive and heuristic errors refer to problematic uses of principles or processes in setting goals, making decisions, and solving problems (e.g., prioritizing personal goals in a collectivist culture). Under the influence of culture, individuals develop unconscious mental shortcuts based on their own cultural values and assumptions, which may not be compatible with another culture. This type of errors can be especially difficult to detect because of the intangible nature of values and assumptions (Hofmann & Frese, 2011; Zapf et al., 1992).

Regardless of types, these errors are unintentional violations of cultural norms because individuals are not aware of adequate movements, actions, knowledge, and principles in response to a particular cross-cultural situation. These errors can also be avoided if individuals become cognate about and motivated to display appropriate behaviors that fit with the situation. Thus, CCT offers a systematic opportunity that enables workers to minimize cross-cultural errors.

In the CCT context, we argue that error-related learning and error handling should be integrated as major indicators of successful learning and transfer. First, as unfamiliar, dynamic cross-cultural situations do not closely resemble the training context, the potential to err increases. Effective CCT should provide trainees a “realistic job preview” (Premack & Wanous, 1985) about the strong uncertainty they will face in novel situations, such as the anxiety associated with potentially committing errors and the need for error handling. Second, recognition of and recovery from errors is a critical part of adaptive transfer. Novel cross-cultural encounters often occur naturally without hints for transfer, so trainees need to judge when to apply learning (Klafehn et al., 2013). If trainees are unable to match scenarios with the training content, they may overlook or misjudge the cultural differences. If CCT intentionally develops trainees for identifying cues of error occurrence, trainees can quickly recognize and correct these misses before the negative consequences turn substantial. Third, learning from errors is another important component of adaptive transfer. If trainees inevitably commit errors, learning from the experience can help them modify behaviors for preventing repetitive errors. Over time, trainees achieve a higher level of capacity to “learn new cultural ways” (Kim, 1991). In sum, errors are essential targets to tackle during the adaptive transfer of CCT.

### 3.2. Costs and benefits of cross-cultural errors

Errors should be differentiated from their consequences. On the one hand, errors may be associated with poor quality, low efficiency, or even failure (Rybowiak, Garst, Frese, & Batinic, 1999; Zhao, 2011). On the other hand, errors can serve as vivid feedback and lead to learning and innovation (Keith & Frese, 2008; van Dyck, Frese, Baer, & Sonnentag, 2005). The current paper carefully differentiates the learning environment in CCT from actual performance episodes. Errors committed on the job may lead to many negative consequences for the organizations and should be avoided at employees' best effort. However, in CCT, errors demonstrated by trainers or committed by trainees do not have implications for organizational effectiveness, but they function as a path to maximize learning and adaptive transfer. Therefore, an occurrence of error does not necessarily cause negative or positive consequences. The action taken to handle the error is the determining factor of the results.

#### 3.2.1. Costs

In actual cross-cultural interactions, errors can be extremely costly. Cross-cultural errors may be perceived by others as violation of social norms and a lack of competence, which in turn results in misunderstanding, conflicts, and ineffective interactions. Although culture-related errors are unintentional, they can still make the cultural differences salient and exacerbate conflicts (Gelfand, Erez, & Aycan, 2007; Von Glinow, Shapiro, & Brett, 2004). Also, cross-cultural work may involve repeated interactions with the same colleagues or customers over time, so unresolved errors can undermine workers' performance in long-term cross-cultural assignments. A typical example of errors' prolonged detrimental effect is expatriate failure, such as underperformance and premature termination (Harzing & Christensen, 2004). Therefore, workers should strive for minimizing errors and negative consequences of errors in cross-cultural assignments.

#### 3.2.2. Benefits

From another viewpoint, in a learning environment, errors can serve as valuable tools to enhance CCT effectiveness. First, errors can uncover cultural differences. When trainees receive negative feedback, it cues an opportunity to discover erroneous cognition or behaviors and search for ways to minimize the performance-goal discrepancy (Bhawuk, 2001). Second, errors can inform workers about the costly consequences of errors. Without exposure to consequences, novice cross-cultural workers may overlook the seriousness of cultural differences and the need for adaptation to other cultures (Sanchez, Spector, & Cooper, 2000).

Third, errors can teach workers about techniques to cope with them. Because cross-cultural interactions are usually unpredictable, it is impractical to expect individuals to plan and act without errors in any novel situations. If workers have the capacity to monitor errors and recover from them quickly, the negative consequences of errors can be reduced. Also, this capacity can prevent repeated occurrence of the same errors in the future. In other words, the workers successfully demonstrate cultural adaptability through learning from errors (Bhawuk & Brislin, 2000; McClosky, 2008). Across many domains, the capacity of error detection and recovery can differentiate between a novice and an expert (Prumper, Zapf, Brodbeck, & Frese, 1992; Sieck et al., 2013). Thus, CCT that facilitates learning from errors can be more effective in developing trainees into cross-cultural experts.

In sum, to integrate errors in CCT, organizations need to balance between maximizing the positive learning outcomes and preventing the costly consequences. Although counterintuitive, error-focused CCT is valuable for equipping trainees with mindsets and tools to prevent on-the-job errors, as well as negative error consequences. Therefore, we seek such intervention, which can adequately address cross-cultural errors in CCT, and develop a series of propositions about how this error management (EM) supplement

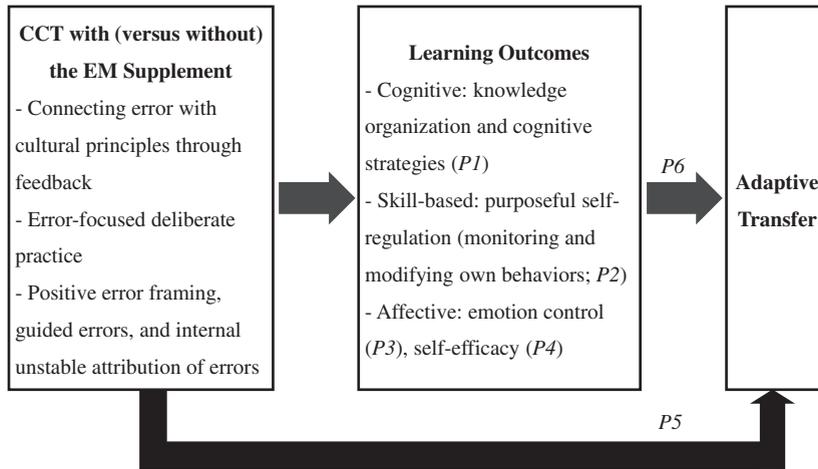


Fig. 1. Summary of the learning and transfer process of cross-cultural training (CCT) with the error management (EM) supplement.

enhances the effectiveness of CCT (see Fig. 1). The propositions, to be discussed in details below, suggest that CCT with the EM supplement will improve adaptive transfer compared to CCT without the supplement, and the cognitive, skill-based, and affective learning outcomes mediate this linkage. In addition, we would like to point out that the intervention to be discussed focuses on cultural errors but not on general error prevention or management (e.g., safety errors, medical errors, etc.) that happens in a cross-cultural context (see Gelfand, Frese, & Salmon, 2011).

#### 4. Error management supplement to CCT

Error management training (EMT), introduced by Frese et al. (1991), refers to the training that encourages trainees to make errors during training and view errors as positive, informative signals to enhance learning. Distinctive from the error prevention or avoidance approach that targets at reducing error occurrence, EM positively frames errors as opportunities to foster learning and transfer (Frese et al., 1991; van Dyck et al., 2005), and it has been linked to better improvement in self-regulation and adaptive transfer (Keith & Frese, 2005, 2008).

Computer skill trainings often adopt this approach, such that trainees are presented with instructions related to a positive mindset of errors when interacting with the computer (Keith & Frese, 2008). These instructions include “You have made an error? Great!” or “The more errors you make, the more you learn!” The objective of these instructions is not making trainees to make more errors per se, but to guide trainees to learn when an error has occurred. With regard to the training environment of EMT, it is usually less structured and without step-by-step instructions, so trainees can be exposed to broad situations during training and discover relevant solutions (Keith & Frese, 2005, 2008).

EMT is different from trial-and-error, pure explorative training, or active learning (Bell & Kozlowski, 2008), which provides trainees with minimal information about the topic but do not necessarily utilize errors as learning tools. Also, EMT is the opposite of proceduralized or error avoidance training, which directs trainees to follow closely to tutorials and learn what is being delivered by the trainer. In error avoidance training, errors become a signal of not accurately following the instructions and are considered detrimental to learning (Keith & Frese, 2008).

EMT is superior to pure active exploration or error avoidance training in promoting adaptive transfer (Bell & Kozlowski, 2008; Keith & Frese, 2008). Keith and Frese (2005) examined the mechanisms of EMT and found that positive error framing, compared to negative framing, can enhance trainees' self-regulation (i.e., emotion control and metacognitive activity), which in turn leads to better active application and reconfiguration of learning to novel situations. An error occurrence also presents a possibility for trainees to develop accurate attribution of the error, which is beneficial for them in dealing with similar situations in the future (Hommsma, van Dyck, De Gilder, Koopman, & Elfring, 2007). Because of these benefits, research has considered EMT as a viable intervention to improve acquisition and transfer of skills beyond computer operation, such as negotiation and music performance (Cullen, Muros, Rasch, & Sackett, 2013; Kruse-Weber & Parncutt, 2014). The current paper explores if an EM component can also help improve the effectiveness of CCT.

Considering the costs and benefits of cross-cultural errors, it is unwise to directly attach the existing EMT to CCT due to one noticeable limitation. That is, cross-cultural errors and principles are not as apparent as those in computer-human interface (Keith & Frese, 2008) or music performance (Kruse-Weber & Parncutt, 2014). As such, trainees are unlikely to detect errors and recover from them without guidance. Moreover, they may be subject to frustration, confusion, and exhaustion due to the ambiguity. That may be the reason why the effectiveness of EMT is highly dependent on trainee personality in training of skills without inherent feedback of errors, such as negotiation (Cullen et al., 2013). Therefore, we will explore how the EM approach can be adapted to the CCT context to maximize learning and adaptive transfer.

#### 4.1. EM and cognitive learning outcomes

Compared to step-by-step tutorials or didactic instructions, a key feature of EM is the prompt to bring errors to awareness and direct trainees to gain relevant cultural principles through errors. When an error occurs, trainees are instructed to stop, attend to the discrepancy between their current and the desired judgments about a cultural situation, generate explanations for the error, and then engage in mental activities to minimize the discrepancy (Ivancic & Hesketh, 2000; Keith & Frese, 2005).

High clarity feedback is necessary for providing trainees with information to correct and refine behaviors in error-based learning (Keith & Frese, 2008). In some computer trainings, the screen can immediately reflect errors, but cultural errors, particularly misunderstandings of values and assumptions, are unlikely to be directly shown to trainees. Thus, specific and relevant feedback should be incorporated into the training to guide trainees' acquisition of cultural principles. The feedback can be organized along the following levels: First, the feedback can raise trainees' awareness of error occurrence. CCT can adopt a simple signal to direct trainees' attention to uncover a cultural-related error. To ensure accurate recognition of the performance-goal discrepancy (Lord, Diefendorff, Schmidt, & Hall, 2010), the specificity of the feedback can be adjusted to complement trainees' existing knowledge on culture.

The second feedback level is that trainees should be guided to reflect on the cultural principles behind a particular error, such that the trainees will consider why culture has played a role in the error. This explanation generation process can expand and strengthen trainees' knowledge structure by connecting both correct and incorrect concepts with a particular cultural error (Gardner & Wood, 2009). Lastly, without providing correct answers, trainees should receive feedback about effective and ineffective cognitive strategies adopted in recognizing, explaining, and handling errors. While an inquiry-based, less-structured approach increases the engagement in metacognitive activities and adoption of cognitive strategies (Keith & Frese, 2005; Sieck et al., 2013), feedback can be tailored to improve individual trainees' styles of thinking. In training of complex skills, feedback that matches trainees' specific deficits positively influences their subsequent strategies applied in learning (Bell & Kozlowski, 2002).

To achieve these goals through feedback, we recommend the EM supplement to include the following additional/modified error framing instructions: a) "You made an error, great! That means people from X culture think in a different way, and we can learn from it;" b) "Errors tell you about how people from different cultures think differently about X;" c) "The more errors you make, the more cultural principles you will learn! What may be some possible explanations for this error?" and d) "You can explore more alternative explanations/solutions for this error." Additionally, to achieve the anticipated learning outcomes, the training needs to allow sufficient time and opportunities for trainees to reflect on errors and relevant strategies.

Through several iterations of feedback, not only can trainees develop a deeper understanding of the relevant cultural principles, they also become more aware of their own cultural assumptions and thought process (i.e., cognitive strategies) in making decisions about behaviors. Moreover, trainees actively develop a stronger mental model about appropriate and inappropriate behaviors and gain more experiences in applying effective cognitive strategies in recognizing, explaining, and handling errors in the cross-cultural context.

In fact, without the EM supplement, a CCT can also cover all scenarios and principles through instructions and exercises. By the end of either approach, trainees may equally acquire the declarative knowledge about culture. However, the paths taken to reach the outcome are dissimilar. Trainees experiencing the EM supplement are encouraged and supported to engage in advanced cognitive learning (i.e., knowledge organization, cognitive strategies), whereas knowledge acquisition is more passive without the EM supplement (Bell & Kozlowski, 2008; Keith & Frese, 2005; Sieck et al., 2013). Therefore, we offer the first proposition regarding the EM supplement and the cognitive learning outcomes of CCT:

**Proposition 1.** EM supplement can improve culture-related knowledge organization and cognitive strategies acquired in CCT, although EM supplement is not expected to improve declarative knowledge.

#### 4.2. EM and skill-based learning outcomes

We discussed above that transfer of CCT is closely related to developing expert-like adaptability, so the primary skills-based learning outcome should involve purposeful self-regulation rather than automaticity (Ericsson, 2008; Kraiger et al., 1993). The development of purposeful self-regulation is two-fold. On the one hand, CCT should reduce the tendency of trainees to fixate on particular routines, including trainees' own cultural assumptions and habits. On the other hand, CCT should provide trainees with tools to consciously monitor and modify behaviors to meet the demands of unfamiliar cultural situations. Deliberate practice, widely studied in the development of music, sports, and medical expertise, is an essential condition to acquire expert performance (Ericsson, 2008; Ericsson et al., 1993). According to Ericsson and colleagues, deliberate practice is a prolonged process to refine performance through setting challenging goals, feedback, error correction, and purposeful repetition.

Different from music, sports, and medical performance, cross-cultural performance shows a unique characteristic in terms of the physical demands. As proficiency in physical movements require time to achieve, cross-cultural behaviors have a stronger emphasis on the psychological processes, such as cognition, affect, and social interactions (Chiu, Lonner, Matsumoto, & Ward, 2013; Trejo et al., 2015). Therefore, rather than monitoring and modifying physical movements, CCT should prepare trainees to focus their deliberate practice on self-regulation of the psychological processes.

The EM supplement, as an adaptation of deliberate practice to the CCT context, can facilitate purposeful self-regulation in different ways. First, an error explicitly signals a discrepancy between trainees' current and desired levels of performance, which points out areas of skill improvement. According to the model of deliberate practice (Ericsson, 2008; Ericsson et al., 1993), a coach or trainer plays a critical role in complex skill development to point out the discrepancies to address, such as errors to be corrected. For

example, a study on Gaelic football players showed that the expert players focus more on improving weaknesses during deliberate practice in relation to intermediate players (Coughlan, Williams, McRobert, & Ford, 2014). The EM supplement serves this feedback function by directing trainees' attention to errors (or weaknesses), so their effort is inclined toward correcting errors and away from automaticity.

Additionally, the error-related feedback facilitates refinement of skills based on trainees' authentic needs. Under the framework of deliberate practice, immediate feedback derived from trainees' performance is an informative tool to motivate skill refinement (Ericsson, 2008; Ericsson et al., 1993). Rather than utilizing common positive or negative behaviors, the EM supplement utilizes errors committed by trainees shortly after the error occurrence, prompts trainees to analyze these errors, helps trainees to gain insights about their own inaccurate cultural assumptions, and generate solutions to correct the error. This “customized” feedback is also described as “adaptive guidance” by Bell and Kozlowski (2002). They found supportive evidence for the positive effect of adaptive guidance on self-regulation in complex skill development, which in turn increases the proficiency of strategies applied in the subsequent error correcting process.

Another advantage of the EM supplement is based on the variability of practice opportunities. While no limit is imposed on the number or types of errors that trainees can commit, the EM supplement increases the variability of the problematic situations to be monitored, analyzed, and solved. As such, trainees are exposed to various aspects and manifestations of cultural differences, each of which incrementally contributes to trainees' development toward expert performance. Therefore, we argue that the EM supplement enables CCT to incorporate effective components of deliberate practice and enhances trainees' readiness to monitor and modify behaviors accordingly to various cross-cultural situations, such that:

**Proposition 2.** EM supplement can improve skills of purposeful self-regulation acquired in CCT.

#### 4.3. EM and affective learning outcomes

The link between EM and emotion control is well-documented in the general training literature (Keith & Frese, 2005). Positive error framing is the main feature of the general EMT. Similar to the general EMT, at the beginning of CCT, the EM supplement would state positive framing of errors and connect the positive framing to learning, such as “Errors are a positive side of learning” and “The more errors you make, the more you learn” (Frese et al., 1991; Keith & Frese, 2008; Nordstrom, Williams, & Wendland, 1998). The positive framing of error can help trainees to prioritize learning over anxiety and frustration associated with errors (Keith & Frese, 2005), leading to the third proposition:

**Proposition 3.** EM supplement can improve emotion control acquired in CCT.

However, the positive framing also interacts with trainee characteristics to determine the other affective outcomes of EMT, such as self-efficacy (Cullen et al., 2013; Gully, Payne, Koles, & Whiteman, 2002). If asked to commit errors, some trainees may feel that they are violating norms, forfeiting control, and/or displaying incompetence (Gully et al., 2002; Homsma et al., 2007). Thus, to alleviate the influence of individual differences, trainees can be guided to error situations and believe errors are intentionally designed to aid learning (Lorenzet et al., 2005). In particular, subject matter experts create specific scenarios that contain errors, and then trainees go through these scenarios to generate solutions. In this case, trainees do not personally commit the errors, but they are let to experience the errors and observe the consequences, which serve a context for generating error solutions. The approach shares a similar strength with behavioral modeling training that utilizes negative models, which enable trainees to recognize and unlearn inappropriate behaviors (Taylor et al., 2005). Guided errors also prevent trainees from attributing errors to their own ability, so Lorenzet et al. (2005) found that trainees develop better learning and higher self-efficacy in guided error training than training without an error element.

In the meantime, one weakness of this approach is its inadequate psychological fidelity in the error experience, so it is difficult for the trainees to feel the “a-ha” moment of culture shock, leading to limited motivation to learn (Bhawuk & Brislin, 2000). For maintaining the benefits of authentic error feedback, we suggest guided errors be incorporated in the early stage to demonstrate the advantages of EM. After the initial guided error phase, trainees should be instructed to freely generate responses to other training scenarios. This “brainstorm” phase will result in a list containing both appropriate and inappropriate responses, and then the training will shift to detecting, analyzing, and correcting the possible errors. In addition, the training can reduce the concern about committing errors in front of others through anonymous submission of responses or technology-mediated methods (Pissarra, 2005).

Moreover, stimulating internal unstable attribution of culture errors can also result in stronger post-training self-efficacy. While receiving frequent feedback about one's cultural assumptions and mental templates, a trainee may develop an internal stable attribution about cultural errors, such that they believe culture may be permanently “programmed” into their own minds. However, research showed that internal stable attribution can harm trainees' motivation to learn (Homsma et al., 2007). Due to the malleable nature of attribution patterns (Weissbein, Huang, Ford, & Schmidt, 2011), CCT that utilizes instructions to boost trainees' internal unstable attribution can increase expectancy of successful performance (Homsma et al., 2007). The training instructions, for instance, may include the following priming instructions: “Cultural principles are not mysterious; you just learned a new one!”, “The more you learn, the more flexible your thoughts will be.”, and/or “The feedback can help you develop a new way of thinking.” Taken together, we propose:

**Proposition 4.** EM supplement can improve post-training self-efficacy in CCT.

#### 4.4. Transfer outcomes

The EM supplement directly contributes to more successful adaptive transfer. First, the EM training structure resembles critical features of the transfer situation, including a high level of uncertainty and a high risk for errors. Trainees have experienced the process of making and correcting errors, as well as receiving feedback and applying strategies to prevent them. The similarity between the training design and the work environment with regard to error-related experiences is consistent with the learning principle of identical elements, which is associated with increased psychological fidelity and the subsequent transfer (Baldwin & Ford, 1988).

Second, after being exposed to cultural errors during the training phase, trainees are more likely to be aware of cues that hint opportunities for error occurrences on the job. As such, recognition of these opportunities prompts trainees to attempt transfer (Huang et al., 2016), such as actively looking out for cultural differences and taking another culture's perspective. According to Huang and colleagues, these attempts allow trainees to continue practicing and refining knowledge and skills, resulting in an increasing transfer trajectory over time. Overall, when at work, EM trainees become better prepared at recognizing potential issues and circumventing actual costly errors, leading to the following proposition:

**Proposition 5.** EM supplement can directly enhance adaptive transfer of CCT.

Moreover, learning outcomes can explain some indirect influence of the EM supplement on adaptive transfer. Cognitive strategies and emotion control is essential for applying learning to novel situations. When encountering an unfamiliar cultural scenario, application of cognitive strategies can help trainees delay judgment of puzzling situations, attend to plausible cultural differences, and generate solutions (Sieck et al., 2013). Also, trainees who focus on applying learning more than negative emotions are less likely to be discouraged by stress and setbacks, which in turn encourages application attempts (Huang et al., 2016; Keith & Frese, 2005; Trejo et al., 2015). The skill of purposeful self-regulation is directly applicable to tackling unforeseen challenges in real life cross-cultural encounters. Without a trainer to provide error feedback, trainees' can draw from their experiences in monitoring and correcting errors during training to continue engaging in deliberate practice on the job (Ericsson, 2008). Self-efficacy, as the key motivational outcome, provides the forces for trainees to continue exerting effort to adaptive transfer (Colquitt et al., 2000).

We also observe two major overlaps among the cognitive, skill-based, and affective mechanisms that are beneficial for adaptive transfer. The first overlap concerns the positive effect of emotion control on other processes due to a greater level of mental resources to spare on cognitive activities and skill development (Fredrickson, 2001). For individuals who deliberately practice toward becoming experts, the iterative process of correcting errors is often not enjoyable (Eskreis-Winkler et al., 2016). Therefore, the positive experiences of errors during training do not only yield greater affective learning, but they also facilitate a more enjoyable and rewarding practice experience post-training (Keith & Frese, 2005; Trejo et al., 2015).

For the other overlap, the variability of practice from EM can expose trainees to a wide range of cultural principles and their interconnections. This contributes to a better-developed structure of relevant knowledge (Day et al., 2001) and self-efficacy generality (Holladay & Quiñones, 2003), each of which has been shown to mediate the influence of training interventions on transfer. Therefore, although we have discussed how different aspects of the EM supplement can separately facilitate cognitive, skill-based, and affective learning outcomes, these learning objectives are interrelated to influence more successful adaptive transfer. In sum, the EM supplement can indirectly enhance adaptive transfer, leading to the final proposition:

**Proposition 6.** EM supplement can indirectly enhance adaptive transfer of CCT partially due to cognitive, skill-based, and affective learning.

## 5. Discussion

Fig. 1 summarizes the learning and transfer process of CCT with the error management (EM) supplement. Stemming from the need for more effective CCT and the broader training literature, the current paper synthesizes the seemingly disjointed research and offers a novel perspective that views errors as a critical challenge to be addressed by CCT. As such, we introduce the EM supplement to facilitate adaptive transfer of cross-cultural knowledge and skills. It contains design elements that connect errors to positive learning about cultural principles, expose trainees to deliberate practice based on unrestricted and genuine error scenarios, and utilize various framing techniques to support trainees to perceive and act control over cultural errors.

The proposed EM supplement is distinct from some traditional approaches. Compared to the general EMT (Keith & Frese, 2008), the EM supplement to CCT adds the need for culture-based feedback, the importance of resisting automaticity, and additional design elements to boost self-efficacy. In relation to the existing CCT models, culture assimilator (Fiedler et al., 1971; Harrison, 1992) directly offers explanations about correct or incorrect alternatives without the deliberate error detection and correction practice. In behavioral model training with negative models (Taylor et al., 2005), trainees are also passive recipients of required behaviors and learning points. In contrast, the EM supplement actively engages trainees in experiencing, explaining, and extracting useful principles from errors. Meanwhile, the rationale of directing trainees to engage in self-regulatory activities is similar to the inquiry-focused framing (Sieck et al., 2013), but EM has a specific emphasis on error handling, which is particularly effective in revealing cultural differences and letting trainees to practice self-correction skills.

Thus, compared to the existing CCTs, we expect such EM supplement to exhibit incremental values in terms of training cultural experts, who adopt flexible thinking processes, choose appropriate behaviors at ease, and continue learning new knowledge, skills, and attitudes cross-culturally. Several learning mechanisms serve this purpose. Some of the mechanisms tap into trainees' capacity to

self-regulate cognitively, behaviorally, and emotionally in cross-cultural tasks. Other mechanisms concern trainee motivation (e.g., self-efficacy) to apply these self-regulation capacities in practice. We would like to note that although EM adds great values to CCT, it is not the only approach that can improve the effectiveness of CCT. Great variability exists within different configurations of the EM supplement, and research may identify more alternative approaches of CCT. In the following section, we will bring the proposed intervention in the broader contexts of research and practice.

### 5.1. Implications for research

The current paper demonstrates that, by connecting the literature on CCT to general training, we can gain a more comprehensive view of learning and transfer outcomes of CCT. Furthermore, the error perspective offers a novel and promising understanding of how to achieve these desirable outcomes. Based on this integrative framework, we suggest CCT research to further investigate the role of different errors in complex skill acquisition and culture as boundary conditions that may moderate the effectiveness of the EM design elements.

#### 5.1.1. Error types

Beyond our investigation on EM and the acquisition of cross-cultural adaptability, it is unclear about how various errors may operate differently in the training and transfer process. Different types of errors correspond to varying levels of conscious control. Based on the taxonomies of errors along the self-regulation levels (Hofmann & Frese, 2011; Lord et al., 2010), habit and knowledge errors are more influenced by conscious choices, implying that these errors can be corrected when trainees consciously choose an alternative goal or path of behaviors to fit a particular situation. Regarding these two types of errors, the objective of CCT should focus on offering behavioral options, providing guidance on how to evaluate these options in the cross-cultural context, and elevating motivation for adaptation.

In contrast, movement and metacognitive errors are more likely to be caused by unconscious tendencies because people immerse in their culture and become unaware of the automatic templates applied in their movements and thoughts. On the micro level of self-regulation, movement errors due to cultural differences are easy to observe and usually do not demand unusual physical ability. As such, once trainees gain the knowledge about how culture affects movement choices, they can deliberately practice certain movements to attain physical fluency. On the other end of the cycle, metacognitive errors are not directly visible, indicating the necessity of quality feedback during skill acquisition. These high level errors are also strongly associated with trainees' own values, so we speculate that feedback about these errors may trigger negative reactions, such as resistance to change, cynicism, or disbelief. Thus, we expect the EM supplement is particularly effective in handling metacognitive errors due to the incorporation of constructive framing and feedback about errors. Future research should explore the differential learning processes associated with various types of errors in CCT.

#### 5.1.2. Culture as boundary conditions

CCT effectiveness can be moderated by numerous boundary conditions (see Littrell et al., 2006), and we, additionally, would like to highlight culture as unique conditions that shape trainees' views about error and their subsequent receptiveness to the EM supplement.

Gelfand et al. (2007) discussed how various cultural value dimensions are associated with the general error process. They concluded with a critical cultural paradox that a culture cannot simultaneously value error prevention, detection, and management. In general, when a culture tolerates errors (e.g., low uncertainty avoidance, high humane orientation), members tend to detect errors but put low emphasis on prevention and/or management. In contrast, error-intolerant cultures concentrate heavily on prevention instead of error detection and management.

This means that when trainees from a certain culture participate in CCT with the EM supplement, they already hold certain assumptions about the nature of errors and preferences about error handling. We speculate that, for trainees from a highly error-tolerant culture, the positive error framing can have limited incremental value for them, and they may also demonstrate limited pre-training motivation to learn from them. Meanwhile, the positive framing instructions may have a backlash effect on trainees from a highly error-intolerant culture, but they can be highly motivated to learn about strategies to correct errors. Therefore, positive error framing may be more effective in cultures without strong tolerance or intolerance for errors. For the tolerant extreme, specific and rich feedback should be prioritized, whereas guided error occurrence and correction can be beneficial to emphasize for the intolerant extreme. To take a closer look at the mechanisms, more research is needed to reveal how specific cultural values moderate the configuration of EM design elements for maximizing CCT effectiveness.

### 5.2. Implications for practice

Organizations can adapt their current CCT system by including the EM supplement. In addition to utilizing the discussed design elements, an organization should consider several bigger picture issues regarding their overall learning system.

#### 5.2.1. Avoiding over-emphasis on cultural errors

Errors are only one of the many effective learning methods. Trainees can also learn from successful experiences (Ellis & Davidi, 2005). Likewise, culture is one of the many reasons that contribute to poor performance on cross-cultural assignments. Therefore, CCT cannot ignore positive reinforcement of appropriate behaviors or recognition of universal principles. Overall, CCT design should

not be restricted to a single approach or with a single focus.

### 5.2.2. Trainee characteristics

One size does not fit all. Different trainees can benefit from the same training intervention to different degrees (i.e., attribute-treatment interaction; Snow, 1992). Research has documented that trainees high on cognitive ability, openness to experience, and extraversion are more likely to benefit from EMT (Cullen et al., 2013; Gully et al., 2002; Loh, Andrews, Hesketh, & Griffin, 2012). Therefore, organizations should assess trainee ability and personality prior to training design (i.e., needs assessment; Goldstein & Ford, 2002) and judge whether the EM supplement can be effective for most trainees.

### 5.2.3. Post-training interventions

When trainees apply learning to actual cross-cultural tasks, errors may lead to real negative consequences. To prevent trainees from carrying over the positive framing of errors, they should be reminded about the difference between the training and performance contexts. In addition, 360 degree feedback that includes self, superior, and subordinate perspectives can be a valuable tool to reflect on successful or unsuccessful cultural adaptation (Ellis & Davidi, 2005; Tews & Tracey, 2008). One challenge that should be addressed in the feedback system is related to self-efficacy. Because past performance can determine the subsequent perceived self-efficacy at the within-person level of analysis (Heggestad & Kanfer, 2005; Sitzmann & Yeo, 2013), unsuccessful experience can undermine trainee motivation to continue engaging in transfer, whereas successful experience may cause trainees to become overly optimistic and less invested in transfer (Vancouver, More, & Yoder, 2008). Balancing positive and negative feedback is the key to help trainees sustain a desirable level of self-efficacy during transfer, so that they devote sufficient effort in applying learning. Also, the feedback can be more effective when the providers are from diverse cultural backgrounds than from a single background (Gelfand et al., 2011).

### 5.3. Limitations

The most salient limitation of the proposed EM supplement is its practicality. If the training involves a facilitator, he or she should be very knowledgeable about a wide range of possible errors, as well as the related explanations and solutions. If the training relies on technology, the system may need to be exceptionally sophisticated in order to provide a large volume of customized feedback. The implementation may also be costly for some organizations.

Another limitation is that the current paper does not cover language training in CCT; however, language training is a common component of CCT and language skills comprise an important predictor of cross-cultural performance (Hechanova et al., 2003; Littrell & Salas, 2005). Future research should continue exploring the applicability and effectiveness of the EM supplement in language-focused CCT.

### 5.4. Conclusion

The increase in the amount and the complexity of cross-cultural work imposes great practical challenges for organizations. Aiming to strengthen the design and evaluation of CCT, we discuss the integration of cognitive, skill-based, and affective criteria to assess learning and further evaluate adaptive transfer of CCT. We also propose the addition of error management strategies to facilitate adaptive transfer of CCT. By better connecting CCT with the broader training literature, our framework has the potential to inform cross-cultural training practice and lead to future research opportunities.

## References

- Anderson, J. R. (1982). Acquisition of cognitive skill. *Psychological Review*, *89*, 369–406.
- Austin, J. T., & Villanova, P. (1992). The criterion problem: 1917–1992. *Journal of Applied Psychology*, *77*, 836–874.
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *63*–105.
- Baldwin, T. T., Ford, J. K., & Blume, B. D. (2009). Transfer of training 1988–2008: An updated review and agenda for future research. In G. P. Hodgkinson, & J. K. Ford (Eds.), *International review of industrial and organizational psychology* (pp. 41–70). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Barnett, S. M., & Ceci, S. J. (2002). When and where do we apply what we learn? A taxonomy of far transfer. *Psychological Bulletin*, *128*, 612–637.
- Bell, B. S., & Kozlowski, S. W. J. (2002). Adaptive guidance: Enhancing self-regulation, knowledge, and performance. *Personnel Psychology*, *55*, 267–306.
- Bell, B. S., & Kozlowski, S. W. J. (2008). Active learning: Effects of core training design elements on self-regulatory processes, learning, and adaptability. *Journal of Applied Psychology*, *93*, 296–316.
- Bhawuk, D. P. S. (2001). Evolution of culture assimilators: Toward theory-based assimilators. *International Journal of Intercultural Relations*, *25*, 141–163.
- Bhawuk, D. P. S., & Brislin, R. W. (2000). Cross-cultural training: A review. *Applied Psychology: An International Review*, *49*, 162–191.
- Black, J. S., & Mendenhall, M. (1990). Cross-cultural training effectiveness: A review and a theoretical framework for future. *Academy of Management Review*, *15*, 113–136.
- Black, J. S., Mendenhall, M., & Oddou, G. (1991). Toward a comprehensive model of international adjustment: An integration of multiple theoretical perspectives. *Academy of Management Review*, *16*, 291–317.
- Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management*, *36*, 1065–1105.
- Caligiuri, P., Phillips, J., Lazarova, M., Tarique, I., & Burgi, P. (2001). The theory of met expectations applied to expatriate adjustment: The role of cross-cultural training. *International Journal of Human Resource Management*, *12*, 357–372.
- Chiu, C., Lonner, W. J., Matsumoto, D., & Ward, C. (2013). Cross-cultural competence: Theory, research, and application. *Journal of Cross-Cultural Psychology*, *44*, 843–848.
- Colquitt, J., LePine, J., & Noe, R. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, *85*, 678–707.

- Coughlan, E. K., Williams, A. M., McRobert, A. P., & Ford, P. R. (2014). How experts practice: A novel test of deliberate practice theory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *40*, 449–458.
- Cullen, M. J., Muros, J. P., Rasch, R., & Sackett, P. R. (2013). Individual differences in the effectiveness of error management training for developing negotiation skills. *International Journal of Selection and Assessment*, *21*, 1–21.
- Davis, F. D., & Yi, M. Y. (2004). Improving computer skill training: Behavior modeling, symbolic mental rehearsal, and the role of knowledge structures. *Journal of Applied Psychology*, *89*, 509–523.
- Day, E. A., Arthur, W., Jr., & Gettman, D. (2001). Knowledge structures and the acquisition of a complex skill. *Journal of Applied Psychology*, *86*, 1022–1033.
- Degens, N., Hofstede, G. J., Beulens, A., Krumhuber, E., & Kappas, A. (2015). Don't be a stranger – Designing a digital intercultural sensitivity training tool that is culture general. *IEEE Transactions on Learning Strategies*, *1382*, 1–14.
- van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *Journal of Applied Psychology*, *90*, 1228–1240.
- Ellis, S., & Davidi, I. (2005). After-event reviews: Drawing lessons from successful and failed experience. *Journal of Applied Psychology*, *90*, 857–871.
- Ericsson, K. A. (2008). Deliberate practice and acquisition of expert performance: A general overview. *Academic Emergency Medicine*, *15*, 988–994.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*, 363–406.
- Eskreis-Winkler, L., Shulman, E. P., Young, V., Tsukayama, E., Brunwasser, S. M., & Duckworth, A. L. (2016). Using wise interventions to motivate deliberate practice. *Journal of Personality and Social Psychology*, *111*, 728–744.
- Fiedler, F. E., Mitchell, T., & Triandis, H. C. (1971). The culture assimilator: An approach to cross-cultural training. *Journal of Applied Psychology*, *55*, 95–102.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*, 218–226.
- Frese, M., Brodbeck, F. C., Heinbokel, T., Mooser, C., Schleiffenbaum, E., & Thiemann, P. (1991). Errors in training computer skills: On the positive function of errors. *Human Computer Interaction*, *6*, 77–93.
- Gardner, D., & Wood, R. (2009). Errors, feedback, learning and performance. *The Australian and New Zealand Journal of Organisational Psychology*, *2*, 30–43.
- Gelfand, M. J., Erez, M., & Aycan, Z. (2007). Cross-cultural organizational behavior. *Annual Review of Psychology*, *58*, 479–514.
- Gelfand, M. J., Frese, M., & Salmon, E. (2011). Cultural influences on errors: Prevention, detection, and management. In D. A. Hofmann, & M. Frese (Eds.), *Errors in organizations* (pp. 273–315). New York: Routledge.
- Goldstein, I. L., & Ford, J. K. (2002). *Training in organizations* (4th ed.). Belmont, CA: Wadsworth.
- Goldstein, D. L., & Smith, D. H. (1999). The analysis of the effects of experiential adaptability. *International Journal of Intercultural Relations*, *23*, 157–173.
- Gully, S. M., Payne, S. C., Koles, K. K. L., & Whiteman, J. K. (2002). The impact of error training and individual differences on training outcomes: An attribute-treatment interaction perspective. *Journal of Applied Psychology*, *87*, 143–155.
- Harrison, J. K. (1992). Individual and combined effects of behavior modeling and the cultural assimilator in cross-cultural management training. *Journal of Applied Psychology*, *77*, 952–962.
- Harzing, A., & Christensen, C. (2004). Expatriate failure: Time to abandon the concept? *Career Development International*, *9*, 616–626.
- Hechanova, R., Beehr, T. A., & Christiansen, N. D. (2003). Antecedents and consequences of employees' adjustment to overseas assignment: A meta-analytic review. *Applied Psychology: An International Review*, *52*, 213–236.
- Heggestad, E. D., & Kanfer, R. (2005). The predictive validity of self-efficacy in training performance: Little more than past performance. *Journal of Experimental Psychology: Applied*, *11*, 84–97.
- Hofmann, D. A., & Frese, M. (2011). Errors, error taxonomies, error prevention, and error management: Laying the groundwork for discussing errors in organizations. In D. A. Hofmann, & M. Frese (Eds.), *Errors in organizations* (pp. 1–43). New York: Routledge.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage.
- Holladay, C. L., & Quinones, M. A. (2003). Practice variability and transfer of training: The role of self-efficacy generality. *Journal of Applied Psychology*, *88*, 1094–1103.
- Homsma, G. J., Van Dyck, C., De Gilder, D., Koopman, P. L., & Elfring, T. (2007). Overcoming errors: A closer look at the attributional mechanism. *Journal of Business and Psychology*, *21*, 559–583.
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations. The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage.
- Huang, J. L., Ford, J. K., & Ryan, A. M. (2016). Ignored no more: Within-person variability enables better understanding of training transfer. *Personnel Psychology*, *1–40*.
- Ivancic, K., & Hesketh, B. (2000). Learning from errors in a driving simulation: Effects on driving skill and self-confidence. *Ergonomics*, *43*, 1966–1984.
- Kanfer, R., Ackerman, P. L., & Heggestad, E. D. (1996). Motivational skills & self-regulation for learning: A trait perspective. *Learning and Individual Differences*, *8*, 185–209.
- Kassar, A. N., Rouhana, A., & Lythreathis, S. (2015). Cross-cultural training: Its effects on the satisfaction and turnover of expatriate employees. *SAM Advanced Management Journal*, *3*, 4–11.
- Keith, N., & Frese, M. (2005). Self-regulation in error management training: Emotion control and metacognition as mediators of performance effects. *Journal of Applied Psychology*, *90*, 677–691.
- Keith, N., & Frese, M. (2008). Effectiveness of error management training: A meta-analysis. *Journal of Applied Psychology*, *93*, 59–69.
- Kim, Y. Y. (1991). Intercultural communication competence. A systems-theoretic view. In S. Ting-Toomey, & F. Korzeny (Eds.), *Cross-cultural interpersonal communication* (pp. 259–275). Newbury Park, CA: Sage.
- Klaffehn, J., Li, C., & Chiu, C. (2013). To know or not to know, is that the question? Exploring the role and assessment of metacognition in cross-cultural contexts. *Journal of Cross-Cultural Psychology*, *44*, 963–991.
- Kraiger, K., Ford, J. K., & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology*, *78*, 311–328.
- Kruse-Weber, S., & Parncutt, R. (2014). Error management for musicians: An interdisciplinary conceptual framework. *Frontiers in Psychology*, *5*, 1–14.
- Lievens, F., Harris, M. M., Van Keer, E., & Bisqueret, C. (2003). Predicting cross-cultural training performance: The validity of personality, cognitive ability, and dimensions measured by an assessment center and a behavior description interview. *Journal of Applied Psychology*, *88*, 476–489.
- Littrell, L. N., & Salas, E. (2005). A review of cross-cultural training: Best practices, guidelines, and research needs. *Human Resource Development Review*, *4*, 305–334.
- Littrell, L. N., Salas, E., Hess, K. P., Paley, M. P., & Riedel, S. (2006). Expatriate preparation: A critical analysis of 25 years of cross-cultural training research. *Human Resource Development Review*, *5*, 355–388.
- Loh, V., Andrews, S., Hesketh, B., & Griffin, B. (2012). The moderating effect of individual differences in error-management training: Who learns from mistakes? *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *55*, 435–448.
- Lord, R. G., Diefendorff, J. M., Schmidt, A. M., & Hall, R. J. (2010). Self-regulation at work. *Annual Review of Psychology*, *61*, 543–568.
- Lorenzet, S. J., Salas, E., & Tannenbaum, S. I. (2005). Benefiting from mistakes: The impact of guided errors on learning, performance, and self-efficacy. *Human Resource Development Quarterly*, *16*, 301–322.
- McClosky, M. J. (2008). *Measuring learning and development in Army cross-cultural competence*. Arlington, VA: U. S. Army Research Institute for the Behavioral and Social Sciences.
- Morris, M. A., & Robie, C. (2001). A meta-analysis of the effects of cross-cultural training on expatriate performance and adjustment. *International Journal of Training and Development*, *5*, 112–125.
- Nordstrom, C. R., Williams, K. B., & Wendland, D. (1998). "To err is human": An examination of the effectiveness of error management training. *Journal of Business and Psychology*, *12*, 269–282.
- Oberg, K. (1960). Cultural shock: Adjustment to new cultural environments. *Practical Anthropology*, *7*, 177–182.
- Pissarra, J. (2005). Idea generation through computer-mediated communication: The effects of anonymity. *Journal of Managerial Psychology*, *20*, 275–291.
- Premack, S. L., & Wanous, J. P. (1985). A meta-analysis of realistic job preview experiments. *Journal of Applied Psychology*, *70*, 706–719.
- Prumper, J., Zapf, D., Brodbeck, F. C., & Frese, M. (1992). Some surprising differences between novice and expert errors in computerized office work.

- Behaviour & Information Technology*, 11, 319–328.
- Puck, J. F., Kittler, M. G., & Wright, C. (2008). Does it really work? Re-assessing the impact of pre-departure cross-cultural training on expatriate adjustment. *International Journal of Human Resource Management*, 19, 2182–2197.
- Rybowiak, V., Garst, H., Frese, M., & Batinic, B. (1999). Error Orientation Questionnaire (EOQ): Reliability, validity, and different language equivalence. *Journal of Organizational Behavior*, 20, 527–547.
- Sanchez, J. J., Spector, P. E., & Cooper, C. L. (2000). Adapting to a boundaryless world: A developmental expatriate model. *Academy of Management Executive*, 14, 96–106.
- Sieck, W. R., Smith, J. L., & Rasmussen, L. J. (2013). Metacognitive strategies for making sense of cross-cultural encounters. *Journal of Cross-Cultural Psychology*, 44, 1007–1023.
- Sitzmann, T., & Ely, K. (2011). A meta-analysis of self-regulated learning in work-related training and educational attainment: What we know and where we need to go. *Psychological Bulletin*, 137, 421–442.
- Sitzmann, T., & Weinhardt, J. M. (2015). Training engagement theory: A multilevel perspective on the effectiveness of work-related training. *Journal of Management*, 1–25. <http://dx.doi.org/10.1177/0149206315574596> (Advance online publication).
- Sitzmann, T., & Yeo, G. (2013). A meta-analytic investigation of the within-person self-efficacy domain: Is self-efficacy a product of past performance or a driver of future performance? *Personnel Psychology*, 66, 531–568.
- Snow, R. E. (1992). Aptitude theory: Yesterday, today, and tomorrow. *Educational Psychologist*, 27, 5–32.
- Taylor, P. J., Russ-Eft, D. F., & Chan, D. W. L. (2005). A meta-analytic review of behavior modeling training. *Journal of Applied Psychology*, 90, 692–709.
- Tews, M. J., & Tracey, J. B. (2008). On-The-Job supplements for enhancing the effectiveness of interpersonal skills training. *Personnel Psychology*, 61, 375–401.
- The Economist Intelligence Unit. Evolution of work and the worker. (2014).** <https://www.shrm.org/about/foundation/shapingthefuture/documents/2-14%20theme%201%20paper-final%20for%20web.pdf> (Accessed 16.06.28).
- Trejo, B. C., Richard, E. M., van Driel, M., & McDonald, D. P. (2015). Cross-cultural competence: The role of emotion regulation ability and optimism. *Military Psychology*, 27, 276–286.
- Triandis, H. C., & Suh, E. (2002). Cultural influences on personality. *Annual Review of Psychology*, 53, 133–160.
- Vancouver, J. B., More, K. M., & Yoder, R. J. (2008). Self-efficacy and resource allocation: Support for a nonmonotonic, discontinuous model. *Journal of Applied Psychology*, 93, 35–47.
- Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology*, 87, 506–516.
- Vancouver, J. B., Thompson, C. M., & Williams, A. A. (2001). The changing signs in the relationships among self-efficacy, personal goals, and performance. *Journal of Applied Psychology*, 86, 605–620.
- Von Glinow, M. A., Shapiro, D. L., & Brett, J. M. (2004). Can we talk, and should we? Managing emotional conflict in multicultural teams. *Academy of Management Review*, 29, 578–592.
- Weissbein, D. A., Huang, J. L., Ford, K. K., & Schmidt, A. M. (2011). Influencing learning states to enhance trainee motivation and improve training transfer. *Journal of Business and Psychology*, 26, 423–435.
- White, R. P., & Shullman, S. L. (2012). Thirty years of global leadership training: A cross-cultural odyssey. *Consulting Psychology Journal: Practice and Research*, 64, 268–278.
- Wurtz, O. (2014). An empirical investigation of the effectiveness of pre-departure and in-country cross-cultural training. *International Journal of Human Resource Management*, 25, 2088–2101.
- Zapf, D., Brodbeck, F. C., Frese, M., Peters, H., & Prumper, J. (1992). Errors in working with office computers: A first validation of a taxonomy for observed errors in a field setting. *International Journal of Human Computer Interaction*, 4, 311–339.
- Zhao, B. (2011). Learning from errors: The role of context, emotion, and personality. *Journal of Organizational Behavior*, 32, 435–463.