3 Transfer of Training and Knowledge Management: Research from Industrial Psychology, Human Resources, and Management

Although writing specialists rarely turn to the fields of human resources and management for research or pedagogical inspiration, scholars in these fields have in fact been researching transfer of learning for several decades as both intra- and inter-personal phenomena. The methods may differ significantly from those valued by writing studies scholars, but the questions asked in human resources and management research are in fact deeply relevant to writing studies. How do the interrelationships of individual characteristics, instructional design, and social context influence transfer of learning? And what obstacles to transfer of learning make it more difficult for individuals or groups to successfully navigate new contexts?

The first portion of this chapter focuses on research conducted on what is known as "transfer of training"—that is, when a company invests in professional development training, do employees actually put those skills and abilities to use? Some writing studies scholars may be vexed by this tradition of research from industrial and organizational (I/O) psychology, because it primarily uses statistical analyses of closed-answer surveys. Nevertheless, we might benefit from understanding several decades of I/O research into dispositions for learning, including self-efficacy. The second portion of the chapter focuses

on research from "knowledge management"—that is, the "transfer" of knowledge *among* employees. In writing studies, transfer is nearly always conceptualized as an intra-personal phenomenon, located within a single individual negotiating their own intellectual and social contexts. Interpersonal contexts are generally seen as teaching, not transfer.[5] However, this chapter explores how management scholars conceptualize the interpersonal dimensions of knowledge transfer and might challenge and expand thinking in the field of writing studies.

Together, research from transfer of training and knowledge management might help writing studies scholars better understand the experiences of individual writers, the influence of instructional design, and the possibility of a more collaborative view of transfer.

Transfer of Training: Focusing on Individuals Within a Workplace

Industrial and organizational (I/O) psychologists have taken an interest in the psychology of training since the 1950s. Early transfer-of-training scholarship was informed by a behaviorist framework that advocated techniques such as overlearning and sequencing identical elements (Gagne, 1962; Kraiger, 2003). Mirroring the arc described in Chapter 2, research on transfer of training took a cognitive turn in the late 1980s, to examine how learners are actively involved in their learning. Central to this turn was Bandura's social cognitive theory, which posits that learners operate at the juncture of three mutually influential forces: internal personal factors, behavioral factors, and environmental factors (Bandura, 1986, p. 18). Also central to Bandura's theory is the belief that human beings can learn not only from direct experience but through observation, which helps people abstract "rules for generative and innovative behavior" (Bandura, 1999, p. 25). Consequently, several lines of transfer-of-training scholarship examine the role of models and articulating general principles that can facilitate transfer. (In this, they echo the concerns of many scholars discussed in Chapter 2 as well as writing studies scholars interested in *imitatio* and generalizing principles of writing across contexts.) Social cognitive theory also posits that human beings exercise agency through processes of self-regulation as well as self-efficacy (Bandura, 1986). Writing studies scholars

---

5. For two exceptions, see Nowacek et al. (2019) and Winzenried et al. (2017).

have already begun to consider the role of Bandura's social cognitive theory—especially self-efficacy—in transfer of learning (e.g., Baird & Dilger, 2018; Driscoll & Wells, 2012; Mackiewicz & Thompson, 2013); this chapter argues that I/O scholarship might be more systematically brought to bear on defining dispositions and understanding how they work in models of the transfer-of-training process.

Less familiar to writing studies scholars is Baldwin and Ford's (1988) foundational transfer-of-training model. Baldwin and Ford synthesized existing scholarship into a model that identified three training inputs: trainee characteristics, training design, and work environment. (See figure 1.)
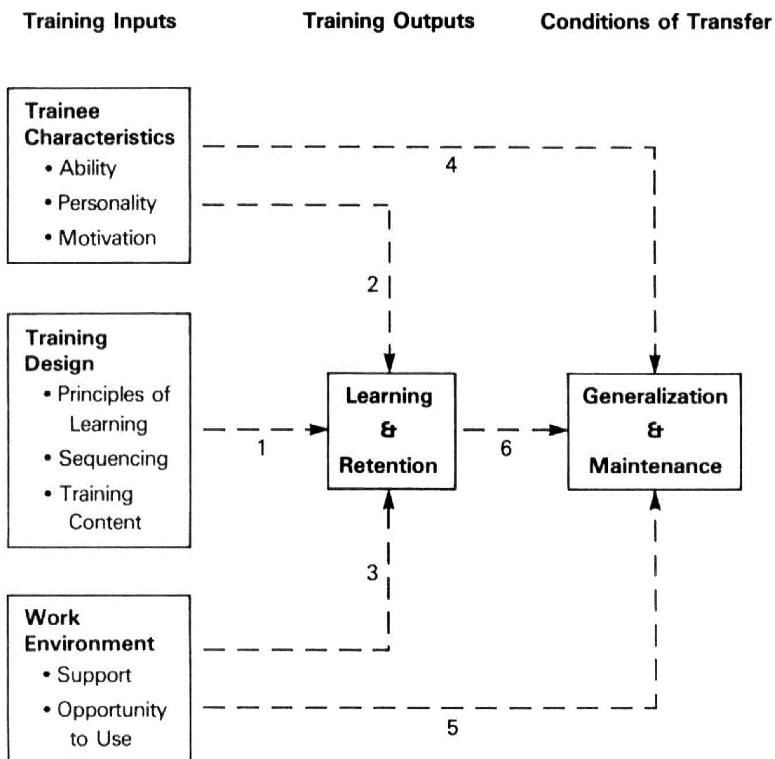

Figure 1: Baldwin and Ford's (1988) model of the transfer process

Writing studies scholars examining this model might note the importance it places on trainee motivation and other characteristics/ dispositions, pedagogical considerations such as sequencing, and the

distinction between generalization and maintenance. What may be less visible but still ultimately valuable to writing studies scholars is the focus in transfer-of-training scholarship on the importance of environment beyond instructional design and this field's commitment to examining how factors in the three categories of trainees, training design, and environment exist in relation to each other, seeking out correlations and possibly even causal relations.

The remainder of this transfer-of-training section is organized around Baldwin and Ford's three domains: trainee characteristics, training design, and transfer climate. Within the section on trainee characteristics, writing studies scholars will find scholarship that readily speaks to current work on dispositions such as self-efficacy, motivation, and locus of control; they might also be encouraged by the ways in which transfer-of-training scholarship persistently contextualizes these dispositions in relation to each other and to other domains of training design and work environment. Within the section on training design, writing studies scholars may be particularly drawn to discussions of behavioral modeling and error management—traditions of research that speak to writing instructors' long-standing interests in the use of sample texts and the framing of struggle and failure. Within the section on work environment, writing studies scholars may be especially interested in the ways I/O scholars operationalize social context not as a question of genre or discourse communities, but as issues of supervisor support, peer support, and opportunity to perform. Within each domain, we highlight foundational studies and draw out connections of interest for readers in writing studies.

Trainee Characteristics

We begin our review of the transfer-of-training research with the personal characteristics of individual trainees. This first dimension of Baldwin and Ford's influential model overlaps significantly with writing studies scholars' abiding interest in how the qualities of individual students might influence their learning and transfer of learning. For instance, central to the *Framework for Success in Postsecondary Writing* (2011) are eight "habits of mind" that overlap with research into the effects of several personality traits known as the Big Five. Similarly, writing studies scholars may be drawn to I/O scholarship on dispositions such as self-efficacy, motivation, locus of control, and goal orientation; these constructs have been examined at length by I/O scholars

and may enrich writing studies scholarship—particularly in terms of how dispositions are defined and identified through diagnostic survey instruments, and how they are understood in relation to one another. Readers from writing studies might also notice that these studies frequently articulate how personality traits and dispositions relate to instructional design and work environments, a move in keeping with Carillo's (2017) call to "go beyond creating curricula and pedagogies that foster the transfer of skills and abilities toward those that also create environments that facilitate the dispositions that are determined to be most germane to transfer" (52).

Big Five Personality Traits. Scholars with an interest in the habits of mind named in the *Framework for Success in Postsecondary Writing* (2011) might consider the longstanding tradition of research into the effects of the Big Five personality traits: openness (a habit explicitly named in *Framework*), as well as conscientiousness, neuroticism, extraversion, and agreeableness. Although research has not established any clear relationships between extraversion or agreeableness and transfer of learning, I/O research does suggest positive relationships with transfer of training for openness, neuroticism, and conscientiousness.

In psychology, openness to experience is defined as "curiosity about one's environment and a willingness to explore new things" as well as a general adaptability to change (Herold et al., 2002, p. 855), which resonates with the *Framework's* definitions of openness and curiosity. Neuroticism is understood as a gauge of emotional stability; low neuroticism is "the absence of feelings of anxiety, insecurity, and nervousness" (p. 856). In their study of the relationship between personality traits and transfer of training for novice pilots, Herold and colleagues tracked participants first in a simulation and then in the actual cockpit. They found that openness to experience combined with emotional stability "accounted for 11.6% of the variance in cockpit performance, even after controlling for . . . the variance explained by previous learning" (p. 864). Furthermore, they found that although emotional stability did not seem to influence performance during the flight simulation, it played a significant role when learners moved to the more anxiety-provoking cockpit. Learners who did well during initial learning and had high emotional stability required 9.4 fewer hours (a reduction of 17%) to obtain their pilot's license (p. 863); however, those with low emotional stability "did only a little better than their colleagues who did poorly in the simulation" (p. 863). Overall, then,

low neuroticism (like openness) seems to have a positive relationship with transfer of training.

Conscientiousness reflects "dependability[,] that is, being careful, thorough, responsible, organized, and planful" (Barrick & Mount 1991, p. 4). Some research has questioned the role of conscientiousness in transfer of training. Tziner et al. (2007), for instance, argue that while conscientiousness does have a "direct effect on supervisor evaluation," it has no significant effect on the final training grade (p. 172). This finding raises the question of whether teachers and/or researchers also find their evaluations of students influenced by students' conscientiousness; if so, this may complicate their assessments of students' learning and transfer. On the other hand, conscientiousness may directly impact transfer of training. Herold et al.'s (2002) pilot-training study found that for trainees who struggled during the simulation, high levels of conscientiousness had a positive relationship to performance in the actual cockpit: "conscientiousness acted to compensate for poor earlier performance" (p. 866). In sum, readers extending the implications of this study for writing might consider not only how conscientiousness might influence the evaluations of supervisors, teachers, and researchers, but also how it might influence how the writers themselves experience simulations and internship placements (issues elaborated in Chapters 4 and 10).

Self-Efficacy. Self-efficacy is one of the most commonly studied trainee characteristics in industrial psychology (Judge et al., 2007, p. 107); it has also received considerable uptake in writing studies (Baird & Dilger, 2017, 2018; Bromley et al., 2016; Driscoll & Wells, 2012; Khost, 2017). The I/O tradition of research suggests that writing studies scholars interested in self-efficacy should consider carefully both the nature of the "training" being transferred, as well as the relationship between self-efficacy and motivation.

The construct, first developed by Bandura (1977), indicates an individual's evaluation of their ability to complete a task. The higher the level of self-efficacy, the more strongly that person believes they can accomplish the task at hand. Unlike self-esteem (a more general sense of self [Gist et al., 1991, p. 838]), self-efficacy is tied to the individual's assessment of their ability to complete a *specific* task. Self-efficacy is a self-assessment that often leads people to marshal their resources in strikingly different ways. Indeed, "different people with similar skills or the same person under different circumstances" may perform quite

differently, depending on their sense of self-efficacy (Yamkovenko & Holton, 2010, p. 388). Self-efficacy is not a stable trait, but a judgment that can fluctuate over time.

Within the transfer-of-training literature, many studies claim that higher levels of self-efficacy increase transfer of training. Brown's (2005) naturalistic study of government employees cultivating their managerial skills found that "self-efficacy correlated positively with both goal commitment and subsequent performance of the skills learned in training (maintenance)" (p. 382). Velada's (2007) study of Portuguese grocery store employees found a statistically significant, positive relationship between self-efficacy and transfer of training. Gist et al.'s (1989) study of computer self-efficacy established that higher self-efficacy resulted in better subsequent performance, and Gist et al. (1991) affirmed that "initial levels of self-efficacy contributed significantly to skill maintenance as demonstrated by performance 7 weeks following training" (p. 853). Although readers may wonder about the relevance of these studies for writing-related transfer, Blume et al.'s (2010) meta-analysis found that pre-training self-efficacy had a "moderate" relationship with transfer (p. 1090) and that self-efficacy proved more important when the training focused on open rather than closed skills (p. 1093). That self-efficacy has more influence on the transfer of open skills seems to underline the importance of self-efficacy for writing-related transfer. However, there is also some skepticism about the power of self-efficacy: Judge et al.'s (2007) meta-analysis found that "although self-efficacy is moderately correlated with performance, once the individual differences are taken into account, the predictive validity of self-efficacy shrinks dramatically" (pp. 114–5; see also Axtell et al., 1997, and Yamkovenko & Holton, 2010). A more generative line of inquiry has sought to understand self-efficacy as mediating or mediated by various types of motivation (Chiaburu & Marinova, 2005; Chiaburu & Lindsay, 2008; Colquitt et al., 2000; Kirwan & Birchall 2006). Generally, the suggestion seems to be that increasing self-efficacy will increase motivation, which will increase actual transfer of training.

Before we turn to the individual characteristic of motivation, we pause to consider whether it is possible—and whether it is wise—to focus on increasing levels of self-efficacy. Bandura (1977) identified four methods to increase self-efficacy: mastering new skills (individuals feel more confident as they improve their actual skills), vicarious

experience (individuals can learn and increase their self-efficacy by watching others, especially peers), verbal persuasion (feedback, especially praise) and management of emotional arousal (staying calm). Driscoll and Powell's (2016) work on the value of faculty facilitating positive emotions in the classroom suggests the value of verbal persuasion; future research might interrogate the other methods as well. The first method—mastering new skills—may be especially important because research suggests that in some cases, high levels of self-efficacy may result in lower levels of motivation; if the self-efficacy was inappropriately high, this may result in poorer performance. Based on analyses of how students studied for a test, Vancouver and Kendall (2006) report that "self-efficacy negatively related to planned and reported study time, as well as performance" (p. 1150). Thus, they conclude that "if external efforts were directed at influencing self-efficacy, independent of learning or skill acquisition, individuals might be misled regarding what they needed to do to adequately prepare or plan" (p. 1151). In sum, efforts to increase self-efficacy can "backfire if care is not taken to align increases in self-efficacy with increases in capacities" (p. 1151)—a finding that instructors considering the role of praise in feedback may find helpful.

Motivation and Perceived Utility. Motivation "refers to the processes that account for an individual's intensity, direction, and persistence of effort toward attaining a goal" (Grossman & Salas, 2011, p. 109). Although the field of writing studies has explored the distinction between intrinsic and extrinsic motivation (e.g., DeCheck, 2012; Robinson, 2009; Sullivan, 2014) that distinction has been less prevalent in industrial/organizational psychology. Instead, I/O researchers distinguish between *motivation to learn* and *motivation to transfer.* Generally, researchers have found that *motivation to learn* has a statistically positive relation to training grades (Blume et al. 2010; Gegenfurtner & Vauras, 2012; Tziner et al., 2007, p. 171). Research exploring the role of choice in motivation to learn concludes that trainees given a choice among training programs had greater motivation to learn—but only if they received the preference they expressed. Trainees ostensibly given a choice but then placed in a training module they did not select "were less motivated and learned less" than those given no choice at all (Baldwin et al., 1991, p. 51). Research suggests that *motivation to transfer* is also a powerful predictor of actual training transfer (Grohmann et al., 2014; Kirwan & Birchall, 2006). Devos

et al.'s (2007) study found that motivation to transfer is "the most significant predictor of transfer, and it explained 18.5% of the variance of transfer one to three months after training" (p. 195). Similarly, Axtell et al. (1997) found that motivation to transfer was a "prominent predictor" of individuals' ratings of their training transfer both one month and one year after the training (p. 211).

Certainly, some writing studies scholars have already begun to explore the role of motivation in transfer of learning (see Driscoll, 2011; Driscoll & Wells, 2012). Nevertheless, this review of the research from I/O psychology suggests that writing studies scholarship might helpfully view transfer motivation as a multidimensional characteristic, one that mediates the process of transfer and should be studied over time to fully capture its dynamic nature (Gegenfurtner et al., 2009). It might also suggest the benefit of longitudinal research like Beaufort's (2007) case study of Tim but with a more deliberate focus on dispositions like motivation.

Sometimes also referred to as instrumentality, perceived utility is related to but different from motivation: "an individual's belief that performing a specific behavior will lead to a desired outcome" (Chiaburu & Lindsay, 2008, p. 200). Perceived utility appears to have a positive relationship with transfer of training (Alliger et al., 1997; Velada et al., 2007). More specifically, Chiaburu and Lindsay (2008) found that whereas self-efficacy predicted motivation to learn, instrumentality predicted motivation to transfer—and that instrumentality is "the primary driver" not just of motivation to transfer but also of training transfer (p. 203). Writing instructors often tout the real-world applications of their assignments; writing studies scholars have suggested that increasing the authenticity of assignments in a variety of ways—including a focus on the importance of working with real or imagined clients (see Chapter 10 on simulations and internships) as well as the authenticity of genres assigned in school (Wardle, 2009)—may improve transfer of learning. By focusing on the extent to which a participant's belief that performing a specific behavior may result in a desired outcome, the "perceived utility" construct highlights for writing studies scholars the degree to which participant perceptions matter.

Locus of Control. Locus of control refers to "a stable personality trait that describes the extent to which people attribute the cause or control of events to themselves (internal orientation) or to external environmental factors such as fate or luck (external orientation)" (Kren, 1992,

p. 992). Colquitt et al.'s (2000) meta-analysis found a strong relationship between locus of control and motivation to learn and moderate relationships to declarative knowledge and to transfer; they conclude that "people with an internal locus of control tended to display higher motivation levels" and "people with an external locus of control learned more and had higher transfer levels" (p. 694). Although some writing studies scholars have drawn on the idea of locus of control (Robinson, 2009; see also Baird & Dilger, 2017, on "ownership"), the research from industrial and organizational psychologists suggests that future research might usefully probe the relationships among locus of control, motivation, and transfer of writing-related learning.

Goal Orientation. The trainee characteristic known as goal orientation was first developed and popularized by Dweck's (2008) discussion of mindsets. A goal orientation influences how individuals "construe the situation, interpret events in the situation, and process information about the situation" (Dweck, 1986, p. 1040). Specifically, Dweck and Leggett (1988) identified two goal orientations: learning or mastery oriented and performance oriented. Individuals with mastery goals "are concerned with increasing their competence" while those with performance goals are "concerned with gaining favorable judgments of their competence" (p. 256). Some writing studies scholars have begun to draw directly on Dweck's framework (e.g., Driscoll et al., 2020; Reid, 2017; Sullivan, 2015). Others might be reminded of Wardle's (2012) distinction between problem-exploring and answer-getting dispositions; although their frameworks are not interchangeable, both Dweck and Wardle ask what the genesis and consequences of these goal orientations might be.

I/O scholars have found the performance-goal orientation to be less conducive for both learning and transfer of training. Dweck's early classroom work on goal orientations identified performance goals as "maladaptive" or "helpless" motivational patterns (1986, p. 1040). When researchers gauged how individuals with performance orientations performed on transfer tasks, the results seemed to be mediated by self-efficacy: lower self-efficacy was related to lower transfer performance (Ford et al., 1998) and the higher the self-efficacy the stronger the training program success (Stevens & Gist, 1997). In contrast, many studies have argued for the positive effects of the mastery or learning-goal orientation. Chiaburu and Marinova (2005) argue that a mastery orientation predicts motivation to learn, which in turn

predicts skill transfer. Similarly, when Tziner et al. (2007) evaluated outcomes using supervisor feedback, they found a "significant positive effect" of learning goal orientation and performance (p. 172). With these findings in mind, writing researchers might explore the relationship between teacher feedback and student performance goals.

As we conclude this section on the influence of trainee characteristics on transfer of training, we note that the field of writing studies has grown increasingly interested in the role that many of the dispositions reviewed here—self-efficacy, motivation, locus of control, and goal orientation—might play in transfer of learning (e.g., Baird & Dilger, 2017; Driscoll, 2011; Driscoll & Wells, 2012; Wardle, 2012). But the work here also suggests areas for possible research, including the Big Five personality traits and perceived utility. Importantly, the Baldwin and Ford (1988) model of transfer of training—which aims to understand how trainee characteristics interact with training design and with work environment—challenges writing studies scholars to always understand how those individual characteristics exist in a dynamic relationship with social contexts for learning.

Training Design

In addition to the individual characteristics of trainees, a second dimension of transfer of training is training design—that is, how the instruction is organized. Whereas examinations of training design in writing studies tend to qualitatively examine the results of pedagogical interventions like writing about writing (WAW) or teaching for transfer (TFT) on student learning (i.e., Yancey et al., 2014), I/O research generally works to construct quantitative models of the effects of training design. Importantly, these models rarely study training design alone; they are usually multifactor models, including trainee characteristics or the broader work environment. Some principles of training design, such as behavioral modeling and error management, examine the consequences of familiar pedagogical strategies such as building theories of writing and reframing "failure" as an opportunity to learn. Although these theories of training design often focus extensively on conditions for initial learning, scholars in industrial and organizational psychology also draw out implications for subsequent transfer of training; they can thus illuminate for writing studies scholars conditions of initial learning that might facilitate subsequent repurposing of writing-related learning. The remainder of this section

on training design will focus on four learning principles with important implications for transfer of training: (1) identical elements, (2) behavioral modeling, (3) error management, and (4) self-management/relapse prevention.

Identical Elements. The theory of identical elements—discussed at some length in Chapter 2—concluded that "one mental function or activity improves others in so far as and because they are in part identical with it" (Thorndike, 1906/1916, p. 243). Unlike learning strategies that focus on helping trainees grasp the principles underlying the transfer task, an identical elements approach led instructors to design assignments to overlap as much as possible from one task and context to the next. In some instances, researchers have focused on fidelity between the training and workplace situations. This can take the form of simulations (Culpin et al., 2014) or even of conducting training in the actual workplace. Saks and Burke-Smalley (2014), for instance, argue that "on-the-job training was the strongest predictor of transfer of training" (p. 112). In other cases, researchers have focused on trainees' *perceptions* of congruity between the training and their workplace—often measured as a question of relevance or validity (Axtell et al., 1997). Taylor et al. (2005) found that "transfer of training . . . was greatest when at least some of the scenarios that trainees practiced were trainee generated" (p. 701) and attributed the value of those trainee-generated scenarios to the likelihood that trainees would generate scenarios with more identical elements (pp. 704–05). Thus, although identical elements are not nearly as popular as Thorndike's work was in the early twentieth century, in these studies of workplace learning, the argument that a close match between the training and target contexts will result in transfer of training persists; as we discuss in subsequent chapters, this belief has persisted in FYW, WAC/WID, and school-to-work pedagogies as well.

Behavioral Modeling. Behavioral modeling (sometimes also called Behavior Modeling Training or BMT) is an instructional approach grounded in Bandura's social learning theory (Baldwin, 1992); as individuals observe others to learn and replicate behaviors, they grapple with multiple processes including attention, retention, motor reproduction, and motivation. To direct attention, encourage retention, and increase motivation, behavioral modeling generally includes five stages: *overviewing* the component parts of the task or skill to be learned,

modeling, *practicing*, *getting feedback*, and *applying* the training in the workplace (Pescuric & Byham, 1996; Taylor et al., 2005, p. 692). The theory of behavioral modeling assumes that with clear instructions, appropriate models, sufficient practice, and useful feedback, trainees will incorporate new information into their long-term memory and on-the-job practice (Taylor et al., 2005).

Several studies that compare behavioral modeling to other instructional methods have found BMT more effective (Burke & Day, 1986; Gist et al., 1989; Meyer and Raich, 1983) and behavioral modeling also seemed to have a particularly positive effect on trainees with low self-efficacy (Gist et al., 1989, p. 890). On the other hand, May and Kahnweiler (2000), who studied behavioral modeling in interpersonal skills training, questioned whether behavioral modeling can effectively prepare trainees to do complex cognitive or interpersonal work that requires adaptation across contexts (see also Tannenbaum & Yukl, 1992, p. 411)—a finding that raises questions about the relevance of BMT for transfer of writing-related learning.

However, a second dimension of behavioral modeling research that may prove more useful to writing studies scholars is the focus on how exactly people learn from observing, analyzing, and manipulating a model. Researchers of behavioral modeling have noted that the process of symbolic coding—in which "individuals organize and reduce the diverse elements of a modeled performance into a pattern of verbal symbols that can be easily stored, retained intact over time, quickly retrieved, and used to guide performance" (Decker, 1980, p. 628)—can be particularly difficult.[6] To help trainees transform their observations of a model into rehearsable and repeatable actions, learning points— that is, "written description of the key behaviors seen performed by the model"—can be helpful (Decker, 1982, p. 324). Written learning points can help trainees grant salience to and focus their attention on certain aspects of the model and nudge the trainee to symbolically encode the model—in ways that perhaps replicate or perhaps revise the written learning points—for themselves (Decker, 1982, p. 324). More specifically, Decker (1980) found that if the trainees generated rule-oriented learning points themselves (rather than receiving pre-existing

---

6. Readers may notice that this description of symbolic coding resonates with discussions of abstract schemata in the "Cognitive Psychology" chapter. Specifically, work in this area of behavioral modeling closely echoes Gentner et al.'s (2003) work on analogical encoding.

rule-oriented learning points or no learning points at all), generalization was statistically more likely to occur (Decker, 1980; findings affirmed by Decker, 1984.) This line of research on how generating such learning points can help individuals transfer their training may resonate with work in writing studies on how generating theories of writing may foster transfer of learning (Yancey et al., 2014).

Finally, writing instructors who use sample essays in their classrooms may learn from the behavioral modeling inquiries into what types of models to provide: solely positive, solely negative, or a mix of both. Early research indicated that a combination of positive and negative models led participants to "scor[e] significantly higher on a behavior generalization measure, taken 4 weeks after training, than did trainees who viewed only positive models" (Baldwin, 1992, p. 151). A subsequent meta-analysis also found that participants using mixed models (rather than only positive models) demonstrated higher levels of transfer of training as measured by job behaviors (Taylor et al., 2005, pp. 700−701).

Error Management. Whereas behavioral modeling sees errors as "needless and time consuming" (Keith & Frese, 2008, p. 60), the error management approach to transfer of training emphasizes the value of errors along the way as a "learning device" (Keith & Frese, 2005, p. 677). Behavioral modeling ensures at least some exposure to positive models to be analyzed and internalized, while error management withholds models and embraces an immediately hands-on, trial-and-error process. These different methods have important implications for the transfer of training. Assuming that novel transfer contexts are themselves "open, disruptive, and ambiguous" (Heimbeck et al., 2003, p. 336), error management training "reduces the distance between the training and transfer environments as it allows and encourages errors to occur in the training process, teaching skills to deal with errors in the training context" (p. 337). Multiple studies have made strong claims for the value of error management (see Keith & Frese's 2008 meta-analysis), and some argue that error management may be specifically well suited to promoting adaptive, not simply analogical, transfer (Keith & Frese, 2005). Given how these claims resonate with the threshold concept that "Failure Can Be An Important Part of Writing Development" (Adler-Kassner & Wardle, 2015) and Robertson et al.'s (2012) discussion of critical incidents, writing studies instructors may be drawn to three specific findings in this approach.

First, encouragement from instructors may help participants maximize the benefits of the error management approach. Heimbeck et al. (2003) compared two types of error management training—one that included "error management *instructions*" highlighting the value of errors with occasional reminders such as "The more errors you make, the more you learn!" and one that did not—with a third "error avoidant" technique that simply provided detailed instructions. Although results for trainees in the plain error management and error avoidant conditions were not significantly different, trainees in the error management *with instructions* condition produced "sizable" positive effects (p. 349); Heimbeck et al. believed this was a result of the instructions keeping trainees focused on the task rather than their own possible anxieties (p. 354), a finding that resonates with Driscoll and Powell's (2016) finding about the importance of instructor support for facilitating positive emotions.

Second, this error management approach may not be equally effective with all learners. Subsequent research highlights the importance of self-regulation techniques for successful error management learning. Specifically, Keith and Frese (2005) found that emotional control (the skill of "keep[ing] performance anxiety and other negative emotional reactions . . . at bay during task engagement" p. 679) and metacognitive activity (which "involves skills of planning and monitoring as well as evaluation of one's progress during task completion" [p. 679]) mediated the effect of the error management training condition. That is, differences in the performance of the two groups "were fully and independently explained by emotion control and metacognitive activity during training" (p. 687). This second finding again resonates with Driscoll and Powell's discussion of the importance of metacognitive monitoring and control.

Finally, for writing studies readers considering the relative merits of behavioral modeling and error management training, one series of studies suggests they are complementary. Studies of how students develop information search skills suggest that for learners starting from scratch, behavioral modeling produces greater self-efficacy and satisfaction, higher quality performance, and involves less wasted effort. But if learners begin with a baseline of preexisting knowledge, enactive exploration approach to error management allows participants to develop more intrinsic motivation, become more efficient, and produce

better results (Wood et al., 2000, p. 278). This finding may assist instructors designing courses meant to build on each other over time.

Self-Management and Relapse Prevention. Self-management techniques (also known as behavioral self-management) focus on ways to help individuals use self-regulatory processes such as self-monitoring, judgment, and self-reactive influences to adjust their own actions to achieve intended outcomes. Self-management techniques include multiple stages:

1. identifying and describing a problematic behavior,

2. identifying the circumstances that facilitate the problematic behavior,

3. setting specific goals to overcome the problematic behavior,

4. monitoring progress towards attaining the goal(s), and

5. setting up rewards and punishments to support work towards the goal.

With its focus on problematic behaviors and the situations that trigger them, this self-management approach seems to resonate with writing studies research on negative transfer (e.g., Beaufort, 2007).

Self-management also has a complicated relationship with self-efficacy: some researchers argued that self-management training strengthened self-efficacy (Latham & Frayne, 1989, p. 415), while others found that self-efficacy could have an important moderating effect on self-management interventions (Gist et al., 1991; Stevens & Gist, 1997). Specifically, trainees with low self-efficacy did better maintaining their skills when asked to engage in self-management; they speculate that the self-management program's emphasis on practicing interim behaviors helped those trainees strengthen their skills over time (Gist et al., 1991, p. 857). Trainees with high self-efficacy, however, tended to experience more self-consciousness and reflect on their weaknesses, resulting in "attenuated" (p. 857) performance. Writing studies scholars may reflect on this finding from I/O scholarship as a challenge to further examine how dispositions (like self-efficacy) may have very different consequences in different instructional contexts.

To conclude this section on training design, we observe that writing studies has begun to articulate their own instructional designs meant to promote transfer of learning about writing. Consider, for

instance, Downs and Wardle's (2007) WAW approach or Yancey et al.'s (2014) TFT curriculum. Nevertheless, I/O scholarship on training design—especially studies of modeling behaviors and coaching of error—might inspire further pedagogical innovation.

Work Environment

The third training input in Baldwin and Ford's (1988) model is work environment or transfer climate: those "work-environment factors perceived by trainees to encourage or discourage their use of knowledge, skills, and abilities learned in training on the job" (Cromwell & Kolb, 2004, p. 451). In their influential theorization of transfer climate, Rouiller and Goldstein (1993) identified two dimensions of transfer climate: situational cues that might nudge trainees to notice opportunities to use their new training (such as goals, social cues, task cues, and self control) and consequence cues (such as positive feedback, negative feedback, punishment, and no feedback). Importantly, this term focuses on the *perception* (rather than the objective existence) of those conditions. Multiple studies found that organizational transfer climate has a powerful, positive influence on transfer of training (Blume et al., 2010; Colquitt et al., 2000; Prince et al., 2015; Rouiller & Goldstein, 1993; Tracey et al., 1995), and Lim and Johnson (2002) conclude that "ensuring a supportive work climate may be the single most important requirement for the successful transfer of learning" (p. 46).

This focus on how social contexts (including personal relationships) might cue and facilitate transfer of training resonates with work from the situated learning perspective described in Chapter 2 as well as the vast majority of writing studies scholarship influenced by theories of discourse communities, rhetorical genre theory, and activity theory. We anticipate that writing studies readers may be particularly interested in findings on the importance of relationships with peers and supervisors. But how researchers in industrial and organizational psychology go about studying transfer climate differs significantly from work in situative learning and in writing studies—particularly in terms of the effort to develop a closed-question survey instrument (the Learning Transfer System Inventory) to assess the transfer climate of a given workplace. Although such survey-based research methods may be unfamiliar, and perhaps unpersuasive, to some readers from writing studies, there is precedent for large scale, quantitative analyses of transfer of learning within first-year writing classrooms (e.g., Driscoll

et al., 2017); this instrument might spark a new line of inquiry within writing studies, particularly studies of workplace writing. In the following pages, we synthesize findings on several factors that might encourage transfer of training (including supervisor support, peer support, and opportunity to use), then turn to describe in more depth the methods and intentions of the Learning Transfer System Inventory.

Supervisor Support. The important role supervisors play has been made clear in studies of writing in the workplace (Chapter 10), but parallels to the writing classroom have yet to be examined. Industrial and organizational psychology finds that supervisor support takes many forms, including feedback, provision of time or resources, sanctions, and assistance setting goals. It is, in essence, "the extent to which supervisors reinforce and support use of learning on the job" (Cromwell & Kolb, 2004, p. 452). Consequently, supervisors (not unlike instructors) can play a "dual role," serving both as gatekeepers and as dispensers of encouragement (Holton et al., 2000, p. 355). Although some studies report no significant relationship between supervisor support and transfer of training (Axtell et al., 1997; Awoniyi et al., 2002; Chiaburu & Marinova, 2005; Devos et al., 2007; Homklin et al., 2014; Velada et al., 2007), multiple empirical studies have found a positive relationship between supervisor support and transfer of training. Supervisor support has been described as being "of crucial importance" (Huczynski & Lewis, 1980, p. 235) and supervisors as "key gatekeepers" (Ford et al., 1992, p. 524). Lim and Johnson (2002) identify supervisor support as a "critical influence" on transfer (p. 46), noting that support can take the form of familiarity with the training, willingness to engage in discussions about how to put the training to use, and offering positive feedback.

Peer Support. The positive effects of peer support—defined as the processes through which "peers produc[e] reinforcement for trainee's use of the learning on the job" (Cromwell & Kolb, 2004, p. 454)—have been consistently documented in the I/O scholarship (Burke & Hutchins 2007, p. 281); such research has obvious parallels to writing studies inquiries into peer talk around writing (Nowacek et al., 2019; Winzenried et al., 2017) in classrooms, writing centers, and beyond. While some I/O research has found peer support exercised less influence on transfer than supervisor support (Huczynski & Lewis, 1980, p. 235), others have found that "peer support and change resistance

accounted for significant variance over and above that accounted for by supervisor support and supervisor sanctions" (Bates et al., 2000, p. 32). Both Colquitt et al.'s (2000) meta-analysis and Chiaburu and Marinova's (2005) workplace study found a positive relationship between peer support and motivation to learn, and an even stronger relationship between peer support and transfer of training. Burke and Hutchins' (2007) meta-analysis found that only peer support had a significant relationship with transfer; similarly, Homklin and colleagues' (2014) study found that "only coworker support was significantly positively related to transfer of training" (p. 126) and that co-worker support also served to moderate the relationship between learning and transfer. And although Cromwell and Kolb's (2004) research raised questions about the efficacy of a dispersed "peer network" of other trainees who stayed in touch via a listserv and occasional brown bags, they affirmed that trainees reporting high levels of support from their everyday peers (as well as organization and supervisor support) "also reported applying, to a higher extent, the knowledge and skills learned in the supervisory training program" (p. 463).

Opportunity to Perform. A third element of transfer climate is opportunities to actually use training on the job—opportunities that must be both present and recognized by participants. To the degree that opportunity to perform is seen as part of the environment rather than a quality of the learner, it perhaps resonates with Wardle's (2007) argument that students frequently didn't repurpose knowledge from FYW courses because they didn't feel subsequent courses prompted them to use such knowledge. Opportunity to perform has consistently been theorized as an important contributor to transfer of training (Holton, 1996; Noe, 1986), and much empirical research has demonstrated a positive relationship between opportunities for use and transfer of training (Devos et al., 2007; Gilpin-Jackson & Bushe, 2007; Lim & Johnson, 2002; Rouiller & Goldstein, 1993) and attributed lack of transfer to lack of opportunities to perform (Cromwell & Kolb, 2004). It is generally agreed that supervisors play a crucial role in providing (or not providing) opportunities to perform (Clarke, 2002; Ford et al., 1992); it should also be noted, though, that Ford et al. (1992) found that the importance of supervisor support was somewhat diminished for trainees with higher levels of self-efficacy.

Transfer Climate Instruments and the LTSI. Finally, we conclude this section on work environment by discussing the Learning Transfer System Inventory (LTSI). Holton and colleagues (2000) propose the notion of the transfer *system*, which they define as "all factors in the person, training, and organization that influence transfer of learning to job performance" (p. 335-6)—that is, all three components of Baldwin and Ford's (1988) tripartite model. Holton and colleagues argue that "transfer can only be completely understood and predicted by examining the *entire system* of influences" (p. 336, emphasis added). Noting that "the lack of a well-validated and reasonably comprehensive set of scales to measure factors may be a key barrier to improving organizational transfer systems" (p. 334), Holton and colleagues seek to develop a more consistent means of measuring (and tracking the interactions between) transfer climate, training design, and trainee characteristics.

Towards that goal, Holton and colleagues (Holton & Bates, 1997; Holton et al., 2007; Holton et al., 2000; Holton et al.,1997) have worked to develop the LTSI. They began by drafting a 112-item survey measuring 16 factors from all three components of Baldwin and Ford's (1988) influential transfer of training model, including such constructs as motivation to transfer, peer support, transfer design and opportunity to use, and performance self-efficacy (Holton et al., 2000, p. 340). After piloting the survey, they kept all sixteen factors but reduced the survey to only 68 items (p. 347). Generally, the LTSI has proven consistent across contexts, though some cross-cultural analyses have revealed small but important cultural differences (Bates et al., 2007; Chen et al., 2005; Devos et al., 2007; Khasawneh et al., 2006; Kirwan & Birchall, 2006; Velada et al., 2009; Yamkovenko et al., 2007).

In addition to serving as an instrument to standardize research across studies, Holton and colleagues (2000) concluded that the LTSI might also be used by human resources practitioners (not just researchers) for needs assessments and for program evaluations. Nevertheless, most subsequent studies on the LTSI have focused not on workplace applications, but on the instrument's strengths, limitations (see Tang [1997] and Noe [2000]), and validity. Although many writing studies scholars may find the use of a closed-ended survey questions inappropriate for understanding transfer of learning about writing, the LTSI nevertheless remains one means of examining in a replicable

and aggregable way the interrelationships among the characteristics of individual learners, instructional design, and the social context for learning—interrelationships of significant interest for writing studies scholars.

Knowledge Management: Focusing on Relationships Among Individuals Within a Workplace

The interest that management and human resources professionals take in transfer is not limited to transfer of training; there is also a well-established line of inquiry into what is called knowledge management. From a managerial perspective, one of the great challenges of a company's continued success is how it draws on previous experiences when facing new conditions, in ways that learn from but are not constrained by previous failures and successes. This is not unlike the way writing studies scholars frame the problem of learning transfer for writers—but the striking shift here is that knowledge management scholars think of transfer as an inter-personal act, taking place between individuals or even groups of individuals, rather than an intrapersonal act, confined within a single individual. Most knowledge management scholarship has consistently identified four distinct activities that comprise the knowledge management (KM) endeavor: creation of knowledge, storage and retrieval of knowledge, transfer of knowledge, and application of knowledge (Alavi & Leidner, 2001; Nevo & Wand, 2004). In the remainder of this section, we review the scholarship on all four components. Although this knowledge management scholarship, with its focus on the creation and circulation of knowledge among groups within workplaces may seem quite distant from writing studies' usual focus on writing and learning, in fact these studies intersect with several issues of emerging interest within writing studies: tacit vs. explicit articulations of knowledge, material contexts as a prompt for transfer of learning, the relationship between talk and transfer, and how affective, interpersonal relationships may influence transfer of learning.

Knowledge Creation

Some early research into how organizations create knowledge continued to focus on individuals and used constructs developed in cognitive psychology to understand the cognitive activities of individuals

(such as interpretive schemes) to understand organizations (Argote et al., 1990; Walsh & Ungson, 1991). Eventually, theories of knowledge creation began to focus on how organizations as a whole work to build collective knowledge based on the knowledge of individual members. Drawing on his study of multiple Japanese firms, Nonaka (1991, 1994) develops a theory of knowledge creation premised on the "knowledge spiral." Invoking Polanyi's observation that "we can know more than we can tell" (qtd. in Nonaka, 1994, p. 16), he defines tacit knowledge as having both cognitive ("schemata, paradigms, beliefs, and viewpoints that provide 'perspectives' that help individuals to perceive and define their world") and technical elements ("concrete know-how, crafts, and skills that apply to specific contexts" (1994, p. 16). Unlike explicit knowledge, which can be articulated and shared, tacit knowledge "has a personal quality, which makes it hard to formalize and communicate. Tacit knowledge is deeply rooted in action, commitment, and involvement in a specific context" (p. 16).

The crux of Nonaka's theory of knowledge creation is that "an organization cannot create knowledge without individuals" (p. 17); organizations amplify knowledge created by individuals, then crystalize that knowledge in the structure and activities of the organization. To do so, they engage in the "spiral of knowledge" (Nonaka, 1991). It can begin with a socialization mode, in which individuals might have tacit knowledge, which they potentially acquired from other people's tacit knowledge. Or it might begin in the combination mode, in which the explicit knowledge of multiple individuals is compiled. Neither of these instances of knowledge creation, Nonaka notes, extend the firm's knowledge base. The interesting and truly "powerful" (1991, p. 99) elements of knowledge creation take place in the two remaining modes. In the articulation mode (called the externalization mode in Nonaka, 1994), individuals make their tacit knowledge explicit for others to understand. In the internalization mode, that explicit knowledge is shared with others in the firm who "begin to internalize it—that is, they use it to broaden, extend, and reframe their own tacit knowledge" (p. 99).

Furthermore, Nonaka argues that metaphors and analogies serve a crucial role in the process of articulation by helping organizations convert tacit into explicit knowledge:

> first, by linking contradictory things and ideas through metaphor; then, by resolving those contradictions through anal-

ogy; and, finally, by crystallizing the created concepts and embodying them in a model, which makes the knowledge available to the rest of the company. (1991, p. 101)

In this way, Nonaka's model not only draws on notions of tacit and explicit knowledge, but also invokes a long tradition of research in cognitive psychology—specifically, research on analogical thinking and dual processing. For writing studies scholars interested in how analogical thinking, the role of tacit knowledge, and the potentially collaborative nature of knowledge creation might influence future inquiries into transfer of learning about writing, Nonaka's theory of knowledge creation merits further consideration.

Knowledge Storage

How organizations store and retrieve knowledge is frequently referred to as organizational memory (OM) or persistence of learning (Argote et al., 1990, p. 141). It is, in essence, "the way organizations store knowledge from the past to support present activities" (Nevo & Wand, 2004, p. 549). Memories can reside in people, but also in procedures and in material artifacts; OM is, therefore, "both an individual- and organizational-level construct" (Walsh & Ungson, 1991, p. 61).

In their foundational discussion of organizational memory, Walsh and Ungson (1991) identify six retention "facilities" (p. 63). *Individuals* can have particular memories of what has transpired within an organization, while *culture* is the organization's shared stories. *Transformations* include things like administrative systems, such as hiring processes and budget allocations; such systems "are the mechanisms for impounding and preserving knowledge" (Jelinek qtd. in Walsh & Ungson, p. 65). Organizational memories are also embedded in *social roles*, as well as in the *ecology* or "actual physical structure" of a workplace. Transformations, social roles, and ecologies work together, as Walsh and Ungson explain, to retain organizational memories. Finally, organizational memories can also be retained outside the organization, in the form of former employees, media coverage, and competitors. Although there is no exact equivalent to the more transitory organizational space of classrooms, these forms of OM resonate with Smart and Brown's (2002) discussion of how "written genres—with their networks of conventionalized texts and discourse practices often . . . functio[n] as vehicles of shared thinking, knowing, and learning . . .

constitut[ing] a significant resource for 'organizational memory,' providing an historical record of work processes, problems/solutions, accomplished knowledge, and decisions" (p. 119).

In framing organizational memory as informed by material contexts and cultural tools, knowledge management scholars intersect with the scholarship on distributed cognition. Like situated cognition, distributed cognition emphasizes the importance of studying individual cognition not in a lab but in its social context (see Chapter 2), but distributed cognition takes a particular interest in how people think in "partnership with others and with the help of culturally provided tools and implements. . . . In other words, it is not just the 'person-solo' who learns, but the 'person-plus'" (Salomon, 1993, p. xiii). The pioneering study in distributed cognition was Hutchins' (1995) account of navigation on a US Navy ship. Taking the entire navigational team as his unit of analysis, Hutchins attends to the layout of the ship, the various tools the team uses (including chronometers, navigation charts, and traditions of celestial observations), and the interactions of the teams. Both tools and teams of individuals working together on a task are sites of distributed cognition; in Hutchins' view, "all divisions of labor, whether the labor is physical or cognitive in nature, require distributed cognition in order to coordinate the activities of the participants" (p. 176). Much of the book is devoted to developing models of the social organization of distributed cognition (p. 262) and understanding the social formation of competence within that organization (p. 279). Through his cognitive ethnography of work aboard a naval ship, Hutchins shows "just how genuinely distributed (between agents) and reshaped (by the use of artifacts, spatial layouts and simple event-response routines) the ship navigation task has become" (Clark, 2017, p. 510). Certainly, the concept of distributed cognition has already had considerable uptake within the field of writing studies—especially but not limited to studies of workplace writing (e.g., Angeli, 2015; Clayson, 2018). But such studies rarely frame distributed cognition as a matter of transfer (see Alexander & William's [2015] conclusion for an exception).

For a deeper dive into how knowledge may be collectively stored by individuals we turn to transactive memory systems. The idea of transactive memory systems (TMS) was originally developed by Wegner to explain the "cognitive interdependence" of individuals in intimate relationships; by studying communications between spouses, Wegner et

al. (1985) posited the existence of memories that reside not in a single individual but in the dyad. One of the key features of a TMS is differentiation: both partners in the dyad don't each remember everything. Each remembers some higher-order and some lower-order information, but importantly they both remember the *location* of information—that is, who knows what higher- and lower-order information. That "directory," that knowledge of who knows what, is crucial for the transactive memory system. This transactive memory theory of cognitive interdependence, Wegner (1987) claimed, has important implications not only for understanding intimate relationships, but also for understanding health behaviors (communications between physicians, patients, and family/friends), instructional psychology, and organizational management.

Although TMS has received surprisingly little uptake in cognitive or social psychology studies of memory (Michaelian & Sutton, 2013, p. 7), it has garnered a great deal of attention in management scholarship on how memory functions in work groups and teams. Transactive memory systems are, as Lewis and Herndon (2011) explain, "thought to improve performance in workgroups because they facilitate quick and coordinated access to specialized expertise, ensuring that a greater amount of high-quality and task-relevant knowledge is brought to bear on collective tasks" (p. 1254). This scholarly focus on cognitive interdependence in dyads and groups, while generally focused on organizational performance, has great relevance for understandings of transfer of learning. Studies of transactive memory systems (and theories of distributed cognition more generally) argue that memories are not the province of a single mind locked into an autonomous brain—which opens new possibilities for understanding transfer of learning. TMS research prompts a more collaborative view of how knowledge might be acquired, stored, and repurposed and invites radically new studies of how transfer of learning might unfold in interactions.

Knowledge Transfer

Although early scholarship assumed transfer of knowledge between members of an organization was an automatic and costless process (Szulanski, 2000), later managerial scholarship began to explore the difficulties in knowledge transfer. Szulanski's (2000, 2003) process model identified difficulty, or stickiness, as a "characteristic feature" of transfer (p. 10). Building on four established stages of knowledge trans-

fer—initiation, implementation, ramp-up and integration—Szulanski argued that all four stages "can be difficult in [their] own way" (2000, pp. 12–13) and identified challenges particular to each. Ultimately, Szulanski identified nine causes of stickiness: causal ambiguity, unproven knowledge, source of the information lacks motivation, source lacks credibility, recipient lacks motivation, recipient lacks absorptive capacity, recipient lacks retentive capacity, barren organizational context, and a difficult relationship between source and recipient. He then tested his theoretical framework empirically by surveying employees at eight firms and found that "*Causal Ambiguity* and the lack of recipient's *Absorptive Capacity* appear to be the most important predictors of stickiness" (2000, p. 21). Although scholarship in writing studies has looked at the pedagogical context for transfer of learning, Szulanski's research on phases of transfer and causes of stickiness might invite new types of analysis; for example, interpersonal dimensions such as "source lacks credibility" and "difficult relationship between source and recipient" might encourage researchers to extend Driscoll and Powell's (2016) inquiries into the influence of instructors on writers' emotions and transfer of learning.

In the remainder of this section, we focus on three other trends in scholarship on knowledge transfer. The first has focused on affective dimensions related to some of the challenges Szulanski identified, including the credibility of the source, the motivation of both source and recipient, and the relationship between the two. Lucas (2005), for instance, focuses on how issues of trust and reputation influence transfer of knowledge.

> Knowledge transfer involves asking employees to change the way they do things without any guarantees of success. For employees to adopt new ways of doing things, they must have confidence in the information provided about the new practices. Such confidence . . . is a consequence of the trust employees have in each other, as well as their respective reputations. (p. 88)

Similarly, Haas and Park (2010) and Jarvenpaa and Majchrzak (2008) focus on information withholding in contexts where transfer of knowledge might be possible. For readers outside the field of management, one important take-away from this line of research might be how it draws attention to the role that interpersonal relationships might play

in the subsequent transfer of knowledge: to what degree are these same dynamics at play in learning about writing in workplaces—or in classrooms?

Another strand, which takes a particular interest in organizational innovation, has focused on boundaries, boundary objects, and boundary brokers. Carlile (2004), for instance, argues that boundaries sometimes require not just transfer or translation, but transformation of understandings. When such transformations are necessary, Carlile notes the importance of boundary objects. A boundary object—which may be something like a prototype or a process map—"establishes a shared syntax or language for individuals to represent their knowledge . . . . provides a concrete means for individuals to specify and learn about their differences and dependencies across a given boundary, . . . [and] facilitates a process where individuals can jointly transform their knowledge" (2002, pp. 451–2). While boundary objects are not a "magic bullet" (p. 452), they do play an important role in innovation within organizations. (See Chapter 10 for a discussion of how boundary objects may play an important role in transfer of learning within activity systems.)

A third strand of research has focused on knowledge brokering and the "recombinant nature of innovation" (Hargadon, 2002, p. 49). Individuals or organizations who work as knowledge brokers "span multiple markets and technology domains and innovate by brokering knowledge from where it is known to where it is not" (Hargadon, 1998, p. 210), moving established insights or techniques into new contexts. Five key activities allow knowledge brokers to innovate: access, bridging, learning, linking, and implementing. The specific activity of linking in organizations, Hargadon argues, is the same type of analogic thinking studied by cognitive psychologists like Gick and Holyoak (1980, 1983) in individuals. Although Hargadon acknowledges that analogic thinking in organizations requires "intensive interaction between individuals" (p. 220) facilitated by their geographic placement across the country or in the office, his findings largely mirror those from studies of individual cognition. Ultimately, Hargadon is more interested in building a model of knowledge brokering than an understanding of how linking might happen differently for organizations than for individuals.

As we conclude this section, we wish to acknowledge that although the management scholarship brings to writing studies a powerful chal-

lenge in its focus on a potentially collaborative dimension of transfer of learning, it also remains mired in some of the earlier problems faced by research in cognitive psychology. For instance, Orlikowski (2002) argues that the field's focus on identifying "best practices" reveals the deeply problematic assumption that "competence [is] something to be 'transferred'" (p. 253). She notes that if practices are understood as "the situated recurrent activities of human agents, they cannot simply be spread around as if they were fixed and static objects" (p. 253). She prefers the term *useful practices* because usefulness is "a necessarily contextual and provisional aspect of situated organizational activity" (p. 253). With this critique, Orlikowski challenges management scholars to move past the two-problem paradigm, beyond the idea that knowledge can be acquired in one context and simply applied in a subsequent context.

Knowledge Application

Knowledge management scholarship tends to assume that "the source of competitive advantage resides in the application of the knowledge rather than in the knowledge itself" (Alavi & Leidner, 2001, p. 122). Explorations of how *exactly* organizational knowledge gets applied, though, seem difficult to tease out from discussions of acquisition, storage, and retrieval. When summarizing existing research on application and implementation, Hargadon (1998) points to Nonaka's work, noting that it provides "a rich description of how the process of implementation turns much of what is tacit about an idea into something explicit that can be shared with the rest of the organization" (Hargadon, 1998, p. 222); however, Nonaka's discussion of tacit-to-explicit knowledge was originally framed as an issue of knowledge *creation*. Perhaps the relative dearth of work in this area reflects a lack of interest from researchers—or perhaps it suggests that "application" is never fully separable from knowledge creation, storage, and transfer.

Conclusion

Our goal in this chapter was to provide readers with an introduction to the various ways in which research in human resources and management is relevant to scholars in writing studies. In terms of research agendas and methods, we identify at least four areas of exploration.

Perhaps most obviously, the I/O tradition of research on trainee characteristics encourages writing studies scholars to grow more precise when studying the role dispositions may play in transfer of learning. Methodologically, I/O scholarship uses survey instruments to identify "high" and "low" presentations of various dispositions, often testing them over time. Although these instruments are not always consistent or validated—a fact that motivates the Learning Transfer System Inventory, which would facilitate replicable and aggregable data over time and various research sites—this tradition of I/O research encourages writing studies scholars to be increasingly precise in their definitions and means of measuring dispositions such as self-efficacy, motivation, and locus of control. Furthermore, although there is a growing discussion of self-regulation as a disposition (Driscoll et al., 2017; Featherstone et al., 2019), future work might helpfully tease out the differences among discussions of self-regulation, self-efficacy (sometimes understood to be a disposition and a part of self-regulation), and self-management (understood in the I/O scholarship to be a matter of training design rather than individual disposition).

Second, although writing studies scholars may not be entirely convinced by the efforts of I/O scholars to use statistical analyses of closed-answer surveys to determine correlations and speculate on causal relationships, writing studies scholars might also be motivated to use different methods to achieve the same goal of better understanding the interrelationships of individual characteristics, instructional design, and social context. Third, work in human resources and management suggests the importance of further exploring the role of affect in transfer of learning—both as a personality trait such as neuroticism and (shifting to the interpersonal perspective of knowledge management research) as a dimension of the relationships between instructors and students, supervisors and employees, or among peers. Finally, knowledge management's view of knowledge transfer as an interpersonal accomplishment suggests the importance of expanding the unit of analysis within writing studies. To some degree, Engeström's (2014) cultural historical activity theory—with its focus on mediational tools and divisions of labor (see more in Chapter 10) has already moved writing studies scholars in this direction. Nevertheless, Hutchins' work on distributed cognition and Wegner and colleagues' work on transactive memory systems suggests that this is a ripe line of inquiry, in work-

places, writing centers (Nowacek et al., 2019), classrooms (Winzenried et al., 2017), and elsewhere.

Many of the obvious links to pedagogy are explored in Chapter 10, which focuses on transitions from writing in school to writing at work. The transfer-of-training inquiries into training design do, however, suggest several additional pedagogical implications for writing instruction. Writing instructors might, for instance, turn to the behavioral modeling research to learn more about how to choose examples and how to scaffold students' interactions with those examples. Writing instructors might also draw on error management research to refine their strategies for responding to drafts. Finally, while research from the transfer of training tradition suggests the important role both peers and supervisors may play in promoting transfer of learning, research from the knowledge management traditions may be especially fertile ground for instructors wishing to consider how the specific issue of trust might influence transfer of learning within and beyond the classroom.

References

Adler-Kassner, L., & Wardle, E. (Eds.). (2015). *Naming what we know: Threshold concepts of writing studies*. Utah State University Press.

Alavi, M., & Leidner, D.E. (2001) Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, *25*(1), 107–136.

Alexander, K. P., Williams, D. M. (2015). DMAC after dark: Toward a theory of distributed invention. *Computers and Composition*, *36*, 32–43.

Alliger, G. M., Tannenbaum, S. I., Bennett Jr, W., Traver, H., & Shotland, A. (1997). A meta-analysis of the relations among training criteria. *Personnel Psychology*, *50*(2), 341–358.

Angeli, E. L. (2015). Three types of memory in emergency medical services communication. *Written Communication*, *32*(1), 3–38.

Argote, L., Beckman, S. L., & Epple, D. (1990). The persistence and transfer of learning in industrial settings. *Management Science*, *36*(2), 140–154.

Awoniyi, E. A., Griego, O. V., & Morgan, G. A. (2002). Person-environment fit and transfer of training. *International Journal of Training & Development*, *6*(1), 25–35.

Axtell, C. M., Maitlis, S., & Yearta, S. K. (1997). Predicting immediate and longer-term transfer of training. *Personnel Review*, *26*(3), 201–213.

Baird, N., & Dilger, B. (2017). How students perceive transitions: Dispositions and transfer in internships. *College Composition and Communication*, *68*(4), 684.

Baird, N., & Dilger, B. (2018). Dispositions in natural science laboratories: The roles of individuals and contexts in writing transfer. *Across the Disciplines*, *15*(4), 21–40.

Baldwin T.T. (1992). Effects of alternative modeling strategies on outcomes of interpersonal-skills training. *Journal of Applied Psychology*, *77*, 147–54.

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *41,* 63–105.

Baldwin, T. T., Magjuka, R. J., & Loher, B. T. (1991). The perils of participation: Effects of choice of training on trainee motivation and learning. *Personnel Psychology*, *44*(1), 51–65.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (1999). Social cognitive theory: An agent perspective. *Asian Journal of Social Psychology*, *2*, 21–41.

Barrick, M., & Mount, M. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, *44,* 1–26.

Bates, R. A., Holton, E. F. III, Seyler, D. L. and Carvalho, M. A. (2000). The role of interpersonal factors in the application of computer-based training in an industrial setting. *Human Resource Development International*, *3*(1), 19–42.

Bates, R., Kauffeld, S., & Holton, E. F. (2007). Examining the factor structure and predictive ability of the German-version of the Learning Transfer Systems Inventory. *Journal of European Industrial Training*, *31*(3), 195–211.

Beaufort, A. (2007). *College writing and beyond: A new framework for university writing instruction*. Utah State University Press.

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management*, *36*(4), 1065–1105.

Bromley, P., Northway, K., & Schonberg, E. (2016). Transfer and dispositions in writing centers: A cross-institutional, mixed-methods study. *Across the Disciplines*, *13*(1), 1–15.

Brown, T.C. (2005). The effectiveness of distal and proximal goals as transfer of training interventions: A field experiment. *Human Resources Development Quarterly*, *16*(3), 369–387.

Burke, M. J., & Day, R. R. (1986). A cumulative study of the effectiveness of managerial training. *Journal of Applied Psychology*, *71*(2), 232–245.

Burke, L., & Hutchins, H.M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review 6*(3), 263–296.

Carillo, E. (2017). The evolving relationship between composition and cognitive studies: Gaining some historical perspective on our contemporary moment. In P. Portanova, M. J. Rifenburg, & D. Roen (Eds.), *Contemporary perspectives on cognition and writing* (pp. 39–55). The WAC Clearinghouse; University Press of Colorado.

Carlile, P. R. (2002). A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, *13*(4), 442–455.

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, *15*(5), 555–568.

Chen, H.C., Holton, E.F. III, & Bates, R. (2005). Development and validation of the Learning Transfer System Inventory in Taiwan. *Human Resource Development Quarterly*, *16*(1), 55–84.

Chiaburu, D. S., & Lindsay, D. R. (2008). Can do or will do? The importance of self-efficacy and instrumentality for training transfer. *Human Resource Development International*, *11*, 199–206.

Chiaburu, D. S., & Marinova, S. V. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports. *International Journal of Training & Development*, *9*(2), 110–123

Clark, A. (2017). Embodied, situated, and distributed cognition. *A companion to cognitive science*, 506–517.

Clarke, N. (2002). Job/work environment factors influencing training transfer within a human service agency: Some indicative support for Baldwin and Ford's transfer climate construct. *International Journal of Training & Development*, *6*(3), 146–162.

Clayson, A. (2018). Distributed cognition and embodiment in text planning: A situated study of collaborative writing in the workplace. *Written Communication*, *35*(2), 155–181.

Colquitt, J. A., LePine, J. A., & Noe, R. A. (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.

Cromwell, S. E., & Kolb, J. A. (2004). An examination of work-environment support factors affecting transfer of supervisory skills training to the workplace. *Human Resource Development Quarterly*, *15*, 449–471.

Culpin, V., Eichenberg, T., Hayward, I., & Abraham, P. (2014). Learning, intention to transfer and transfer in executive education. *International Journal of Training and Development*, *18*(2), 132–147.

DeCheck, N. (2012). The power of common interest for motivating writers: A case study. *Writing Center Journal*, *32*(1), 28–38.

Decker, P. J. (1980) Effects of symbolic coding and rehearsal in behavior-modeling training. *Journal of Applied Psychology*, *65*(6), 627–634.

Decker, P.J. (1982). The enhancement of behavior modeling training of supervisory skills by the inclusion of retention processes. *Personnel Psychology*, *35*(2), 323–332.

Decker, P.J. (1984). Effects of different symbolic coding stimuli in behavior modeling training. *Personnel Psychology, 37*(4), 711–720.

Devos, C., Dumay, X., Bonami, M., Bates, R., & Holton III, E. (2007). The Learning Transfer System Inventory (LTSI) translated into French: Internal structure and predictive validity. *International Journal of Training & Development*, *11*(3), 181–199.

Downs, D., & Wardle, E. (2007). Teaching about writing, righting misconceptions: (Re)envisioning "First-Year Composition" as "Introduction to Writing Studies." *College Composition and Communication*, *58*(4), 552–584.

Driscoll, D. L. (2011). Connected, disconnected, or uncertain: Student attitudes about future writing contexts and perceptions of transfer from first year writing to the disciplines. *Across the Disciplines*, *8*(2). https://wac.colostate.edu/docs/atd/articles/driscoll2011.pdf

Driscoll, D. L., Gorzelsky, G., Wells, J., Hayes, C., Jones, E., & Salchak, S. (2017). Down the rabbit hole: Challenges and methodological recommendations in researching writing-related student dispositions. *Composition Forum*. *35*. https://compositionforum.com/issue/35/rabbit-hole.php

Driscoll, D. L., Leigh, S. R., & Zamin, N. F. (2020). Self-care as professionalization: A case for ethical doctoral education in composition studies. *College Composition and Communication*, *71*(3), 453–480.

Driscoll, D. L., & Powell, R. (2016). States, traits, and dispositions: The impact of emotion on writing development and writing transfer across college courses and beyond. *Composition Forum*, *34*. https://composition-forum.com/issue/34/states-traits.php

Driscoll, D. L., & Wells, J. (2012). Beyond knowledge and skills: Writing transfer and the role of student dispositions. *Composition Forum*, *26*. https://compositionforum.com/issue/26/beyond-knowledge-skills.php

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, *41*(10), 1040–1048.

Dweck, C. S. (2008). *Mindset: The new psychology of success*. Random House Digital.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, *95*(2), 256–273.

Engeström, Y. (2014). *Learning by expanding: An activity-theoretical approach to developmental research*. Cambridge University Press.

Featherstone, J., Barrett, R., & Chandler, M. (2019). The mindful tutor. In K. G. Johnson, & T. Roggenbuck (Eds.), *How we teach writing tutors: A WLN digital edited collection*. https://wlnjournal.org/digitaleditedcollection1/Featherstoneetal.html

Ford, J. K., Quinones, M., Sego, D. & Sorra, J. (1992), Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology*, *45*, 511–27.

Ford, J. K., Smith, E. M., Weissbein, D. A., Gully, S. M., & Salas, E. (1998). Relationships of goal orientation, metacognitive activity, and practice strategies with learning outcomes and transfer. *Journal of Applied Psychology*, *83*(2), 218–233.

Framework for success in postsecondary writing. (2011) Council of Writing Program Administrators, National Council of Teachers of English, and National Writing Project. https://files.eric.ed.gov/fulltext/ED516360.pdf

Gagne, R. M. (1962). Military training and principles of learning. *American Psychologist*, *17*, 83–91.

Gegenfurtner, A., Veermans, K., Festner, D., & Gruber, H. (2009). Motivation to transfer training: An integrative literature review. *Human Resource Development Review*, *8*(3), 403–423.

Gegenfurtner, A., & Vauras, M. (2012). Age-related differences in the relation between motivation to learn and transfer of training in adult continuing education. *Contemporary Educational Psychology*, *37*(1), 33–46.

Gentner, D., Loewenstein, J., & Thompson, L. (2003). Learning and transfer: A general role for analogical encoding. *Journal of Educational Psychology*, *95*(2), 393–408.

Gick, M. L., & Holyoak, K. J. (1980). Analogical problem solving. *Cognitive Psychology*, *12*(3), 306–355.

Gick, M. L., & Holyoak, K. J. (1983). Schema induction and analogical transfer. *Cognitive Psychology 15*(1), 1–38.

Gilpin-Jackson, Y. & Bushe, G. R. (2007). Leadership development training transfer: A case study of post-training determinants. *Journal of Management Development*, *26*, 980–1004.

Gist M.E., Schwoerer C, Rosen B. (1989). Effects of alternative training methods on self-efficacy and performance in computer software training. *Journal of Applied Psychology, 74*(6), 884–891.

Gist, M., Stevens, C. and Bavetta, A. (1991). Effects of self-efficacy and post training interventions of the acquisition and maintenance of complex interpersonal skills. *Personnel Psychology*, *44*, 837–861.

Grohmann, A., Beller, J., & Kauffeld, S. (2014). Exploring the critical role of motivation to transfer in the training transfer process. *International Journal of Training & Development*, *18*(2), 84–103.

Grossman, R., & Salas, E. (2011). The transfer of training: What really matters. *International Journal of Training & Development*, *15*(2), 103–120.

Haas, M. R., & Park, S. (2010). To share or not to share? Professional norms, reference groups, and information withholding among life scientists. *Organization Science*, *21*(4), 873–891.

Hargadon, A. B. (1998). Firms as knowledge brokers: Lessons in pursuing continuous innovation. *California Management Review*, *40*(3), 209–227.

Hargadon, A. B. (2002). Brokering knowledge: Linking learning and innovation. *Research in Organizational Behavior*, *24*, 41–85.

Heimbeck, D., Frese, M., Sonnentag, S. and Keith, N. (2003). Integrating errors into the training process: The function of error management instructions and the role of goal orientation. *Personnel Psychology, 56*, 333–361.

Herold, D. M., Davis, W., Fedor, D. B., & Parsons, C. K. (2002). Dispositional influences on transfer of learning in multistage training programs. *Personnel Psychology*, *55*(4), 851–869.

Holton, E.F. (1996). The flawed four-level evaluation model. *Human Resource Development Quarterly, 1*, 5–21.

Holton, I., E., & Bates, R. A. (1997). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly*, *8*(2), 95–113.

Holton III, E. F., Bates, R. A., Bookter, A. I., & Yamkovenko, V. B. (2007). Convergent and divergent validity of the Learning Transfer System Inventory. *Human Resource Development Quarterly*, *18*(3), 385–419.

Holton, I., E., Bates, R. A., & Ruona, W. E. A. (2000). Development of a generalized Learning Transfer System Inventory. *Human Resource Development Quarterly*, *11*(4), 333–360.

Holton III, E. F., Bates, R. A., Seyler, D. L., & Carvalho, M. B. (1997). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly*, *8*(2), 95–113.

Homklin, T., Takahashi, Y., & Techakanont, K. (2014). The influence of social and organizational support on transfer of training: Evidence from Thailand. *International Journal of Training & Development, 18*(2), 116–131.

Huczynski, A. A., & Lewis, J. W. (1980). An empirical study into the learning transfer process in management training. *Journal of Management Studies*, *17*(2), 227–240.

Hutchins, E. (1995). *Cognition in the wild*. MIT Press.

Jarvenpaa, S. L., & Majchrzak, A. (2008). Knowledge collaboration among professionals protecting national security: Role of transactive memories in ego-centered knowledge networks. *Organization Science*, *19*(2), 260–276.

Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A. & Rich, B. L. (2007). Self-efficacy and work-related performance: The integral role of individual differences. *Journal of Applied Psychology*, *92*, 107–127.

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*(4), 677–691.

Keith, N. and Frese, M. (2008). Effectiveness of error management training: A meta-analysis. *Journal of Applied Psychology*, *93*, 59–69.

Khasawneh, S., Bates, R. A., & Holton, E.F. III. (2006). Construct validation of an Arabic version of the Learning Transfer Systems Inventory for use in Jordan. *International Journal of Training and Development*, *10*(3), 180–194.

Khost, P. H. (2017). Researching habits-of-mind self-efficacy in first-year college writers. In P. Portanova, J. M. Rifenburg, & D. Roen (Eds.), *Contemporary Perspectives on Cognition and Writing* (pp. 271–289). WAC Clearinghouse.

Kirwan, C., & Birchall, D. (2006). Transfer of learning from management development programmes: Testing the Holton model. *International Journal of Training & Development*, *10*(4), 252–268.

Kraiger, K. (2003). Perspectives on training and development. *Handbook of Psychology*, 171–192.

Kren, L. (1992). The moderating effects of locus of control on performance incentives and participation. *Human Relations*, *45*(9), 991–1012.

Latham, G. P., & Frayne, C. A. (1989). Self-management training for increasing job attendance: A follow-up and a replication. *Journal of Applied Psychology*, *74*(3), 411–416.

Lewis, K., & Herndon, B. (2011). Transactive memory systems: Current issues and future research directions. *Organization Science*, *22*(5), 1254–1265.

Lim, D., & Johnson, S. (2002). Trainee perceptions of factors that influence learning transfer. *International Journal of Training and Development*, *6*(1), 36–48.

Lucas, L. M. (2005). The impact of trust and reputation on the transfer of best practices. *Journal of Knowledge Management*, *9*, 87–101.

Mackiewicz, J., & Thompson, I. (2013). Motivational scaffolding, politeness, and writing center tutoring. *The Writing Center Journal*, *33*(1), 38–73.

May, G. L., & Kahnweiler, W. M. (2000). The effect of a mastery practice design on learning and transfer in behavior modeling training. *Personnel Psychology*, *53*(2), 353–373.

Meyer, H. H., & Raich, M. S. (1983). An objective evaluation of a behavior modeling training program. *Personnel Psychology*, *36*(4), 755–761.

Michaelian, K., & Sutton, J. (2013). Distributed cognition and memory research: History and current directions. *Review of Philosophy and Psychology*, *4*(1), 1–24.

Nevo, D., & Wand, Y. (2005). Organizational memory information systems: A transactive memory approach. *Decision Support Systems*, *39*(4), 549–562.

Noe, R. (1986). Trainee's attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, *11*(4), 736–749.

Noe, R. A. (2000). Invited Reaction: Development of a generalized Learning Transfer System Inventory. *Human Resource Development Quarterly*, *11*, 361–365.

Nonaka, I. (1991, November–December). The knowledge creating company. *Harvard Business Review*, 96–104.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, *5*(1), 14–37.

Nowacek, R., Douglas, J., Fitzsimmons, W., Hausladen, K., Knowles, M., Bodee, B., & Nugent, M. (2019). "Transfer talk" in talk about writing: How writers engage with prior learning. *Composition Forum*, *42*. https://compositionforum.com/issue/42/transfer-talk.php

Orlikowski, W. J. (2002). Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science*, *13*(3), 249–273.

Pescuric, A., & Byham, W. C. (1996). The new look of behavior modeling. *Training & Development*, *50*(7), 24–31.

Prince, M., Burns, D., Lu, X., & Winsor, R. (2015). Knowledge and skills transfer between MBA and workplace. *Journal of Workplace Learning*, *27*(3), 207–225.

Reid, E. S. (2017). Defining dispositions: Mapping student attitudes and strategies in college composition. In P. Portanova, J. M. Rifenburg, & D. Roen (Eds.), *Contemporary Perspectives on Cognition and Writing* (pp. 291–312). WAC Clearinghouse.

Robertson, L., Taczak, K., & Yancey, K.B. (2012). Notes toward a theory of prior knowledge and its role in college composers' transfer of knowledge and practice. *Composition Forum, 26*. https://compositionforum.com/issue/26/prior-knowledge-transfer.php

Robinson H. M. (2009). Writing center philosophy and the end of basic writing: Motivation at the site of remediation and discovery. *Journal of Basic Writing, 28*(2), 70–92.

Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Resource Development Quarterly*, *4*(4), 377–390.

Saks, A. M., & Burke-Smalley, L. (2014). Is transfer of training related to firm performance? *International Journal of Training & Development, 18*(2), 104–115.

Salomon, G. (1993). Editor's introduction. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations*, (pp. xi–xxi*)*. Cambridge University Press.

Smart, G., & Brown, N. (2002). Learning transfer or transforming learning?: Student interns reinventing expert writing practices in the workplace. *Technostyle*, *18*(1), 117–141.

Stevens, C. K., & Gist, M. E. (1997), Effects of self-efficacy and goal-orientation training on interpersonal skill maintenance: what are the mechanisms? *Personnel Psychology*, *50*(4), 955–78.

Sullivan, P.A. (2014). *New writing classroom: Listening, motivation, and habits of mind*. Utah State University Press.

Sullivan, P. (2015). "Ideas about human possibilities": Connecticut's PA 12–40 and basic writing in the era of neoliberalism. *Journal of Basic Writing*, 44–80.

Szulanski, G. (2000). The process of knowledge transfer: A diachronic analysis of stickiness. *Organizational Behavior and Human Decision Processes, 82*(1), 9–27.

Szulanski, G. (2003). *Sticky knowledge: Barriers to knowing in the firm*. SAGE Publications Ltd.

Tang, T.L. (1997). Invited reaction: Theory, research, and practice. *Human Resource Development Quarterly*, *8*(2), 137–143.

Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, *43*, 399–441.

Taylor, P. J., Russ-Eft, D. F. and Chan, D. W. L. (2005). A meta-analytic review of behavior modeling training. *Journal of Applied Psychology*, *90*, 692–709.

Thorndike, Edward Lee. (1916). *The principles of teaching*. AG Seiler. (Original work published 1906)

Tracey, J. B., Tannenbaum, S. I., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, *80*(2), 239–52.

Tziner, A., Fisher, M., Senior, T. & Weisberg, J. (2007). Effects of trainee characteristics on training effectiveness. *International Journal of Selection & Assessment*, *15*(2), 167–174.

Vancouver, J. B., & Kendall, L. N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, *91*, 1146–53.

Velada, R., Caetano, A., Bates, R., & Holton, E. (2009). Learning transfer—validation of the Learning Transfer System Inventory in Portugal. *Journal of European Industrial Training*, *33*(7), 635–656.

Velada, R., Caetano, A., Michel, J. W., Lyons, B. D., & Kavanagh, M. J. (2007). The effects of training design, individual characteristics and work environment on transfer of training. *International Journal of Training & Development, 11*(4), 282–294.

Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of Management Review*, *16*(1), 57–91.

Wardle, E. (2009). "Mutt genres" and the goal of FYC: Can we help students write the genres of the university? *College Composition and Communication*, *60*(4), 765–789.

Wardle, E. (2012). Creative repurposing for expansive learning: Considering 'problem-exploring'and 'answer-getting'dispositions in individuals and fields. In *Composition Forum, 26*. https://compositionforum.com/issue/26/creative-repurposing.php

Wegner, D. M. (1987). Transactive memory: A contemporary analysis of the group mind. In *Theories of group behavior* (pp. 185–208). Springer.

Wegner, D. M., Giuliano, T., & Hertel, P. T. (1985). Cognitive interdependence in close relationships. In W. J. Ickes (Ed.), *Compatible and incompatible relationships* (pp. 253–276). Springer.

Winzenried, M. A. et al. (2017). Co-constructing writing knowledge: Students' collaborative talk across contexts. *Composition Forum*, *37*. https://compositionforum.com/issue/37/co-constructing.php

Wood, R., Kakebeeke, B., Debowski, S., & Frese, M. (2000). The impact of enactive exploration on intrinsic motivation, strategy, and performance in electronic search. *Applied Psychology*, *49*(2), 263–283.

Yamkovenko, B., & Holton, E. (2010). Toward a theoretical model of dispositional influences on transfer of learning: A test of a structural model. *Human Resource Development Quarterly*, *21*(4), 381–410.

Yamkovenko, B.V., Holton, E.F. III, & Bates, R.A. (2007). The Learning Transfer System Inventory (LTSI) in Ukraine: The cross-cultural validation of the instrument. *Journal of European Industrial Training*, *31*(5), 377–401.

Yancey, K., Robertson, L., & Taczak, K. (2014). *Writing across contexts: Transfer, composition, and sites of writing*. Utah State University Press.