Factors That Support Training Transfer:
A Brief Synopsis of the Transfer Research

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Overview

Learning transfer—or "training transfer" as it is sometimes called—occurs when people learn concepts and/or skills and later utilize those concepts/skills in work situations.[1] Because we invest time, effort, and resources to create learning interventions, we hope to get a return on those investments in the form of some tangible benefit—usually some form of improved work outcome. Transfer, then, is our paramount goal. When we transfer, we are successful. When we don't transfer, we fail.

To be practical about this, it is **not** enough to help our learners comprehend concepts or understand skills. It is **not** enough to get them to remember concepts/skills. It is **not** enough to inspire our learners to be motivated to use what they've learned. These results may be necessary, but they are **not** sufficient. We learning professionals hold transfer sacrosanct because it is the ultimate standard for success and failure.

This research review was conducted to determine factors that can be leveraged by workplace learning professionals to increase transfer success. This effort was not intended to be an exhaustive scientific review, but rather a quick analysis of recent research reviews, meta-analyses, and selected articles from scientific refereed journals. The goal of this review was to distill validated transfer factors—learning design and learning support elements that increase the likelihood that learning will transfer—and make these insights practical for trainers, learning architects, instructional designers, elearning developers, and learning professionals in general. In targeting this goal, this review aligns with transfer researchers' recent admonition to ensure the scientific research on learning transfer gets packaged in a format that is usable by those who design and develop learning (Baldwin, Ford, Blume, 2017).

Unfortunately, after reviewing the scientific articles referenced in this report as well as others not cited here, my conclusion is that many of the most common transfer approaches have not yet been researched with sufficient rigor or intensity to enable us to have full certainty about how to engineer transfer success. At the end of this report, I make recommendations on how we can have a stronger research base.

Despite the limitations of the research, this quick review did uncover many testable hypotheses about the factors that may support transfer. Factors are presented here in two categories—those with strong support in the research, and those the research identifies as having possible benefits. I begin by highlighting the overall strength of the research.

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1. Weak Research Base

Overall, research on transfer is plagued by weak research methodologies—particularly the reliance on learner perceptions in judging factors that enable transfer.

- In a recent overarching research review—one involving a meta-analysis—Blume, Ford, Baldwin, and Huang (2010) found that, *"Put simply, the evidence in support of transfer interventions was not as compelling as either our intuition or prior transfer commentaries would suggest."* Two of the same authors (Ford, Baldwin, & Prasad, 2018) reviewed the transfer research more recently without the benefit of meta-analysis and were a bit more positive, but a bit defensive when they wrote, *"although we would categorically reject any suggestion that transfer scholars have not substantively advanced what is known, there is also legitimate concern that the transfer problem remains acute and there is so much more of value that remains unknown."*

- Yelon, Ford, and Bhatia (2014) lamented, *"Researchers have consistently advocated for clearer concepts and better operational definitions of measures of training transfer."* Taken as a whole, my analysis of the research leads me to conclude that research on learning transfer is able to point with confidence to only a few factors that support or harm transfer. This doesn't mean transfer factors haven't been identified; it means (1) research hasn't yet found factors that produce large changes in transfer and (2) research has identified factors but that research is simply not rigorous enough to be definitive. Finally, researchers are concerned that the transfer research to date has not had much of an effect in real-world learning transfer. As Baldwin, Ford, and Blume wrote in 2017, "*too little of the science of transfer is informing professionals in their design and execution of training initiatives.*"

- Post-training interventions are an obvious opportunity to support transfer. Unfortunately, as Rahyuda, Syed, and Soltani (2014) point out, *"Despite the importance of this topic, there have been only two reviews, so far, of the relationships between post-training transfer interventions and transfer of training."* Moreover, they reviewed two post-training interventions that *"dominate the literature,"* and found *"inconsistent results"* in the research they reviewed.

- Researchers routinely point out the limitations in the field of transfer research. Tews and Burke-Smalley (2017) have recently argued, *"Despite advances in transfer research, we contend that overall the body of research lacks synthesis…and remains principally atheoretical."*

- The most common method used to examine transfer is learner perceptions (see, for example, Holton, Bates, Seyler, & Carvalho, 1997; Burke & Hutchins, 2008). Indeed, the most heralded measure of transfer, the Learning Transfer System Inventory (LTSI), was developed and validated based largely on correlations between learner perceptions of hypothesized transfer factors and learner reports of transfer outcomes (Bates, Holton, and Hatala, 2012). As Blume, Ford, Baldwin, and Huang (2010) rightly noted, because of the biased measurement approach used—asking learners to assess transfer factors and outcomes and asking them to do this in a single session—many of the research findings regarding transfer *"have likely been overstated."*

- A large proportion of research studies on transfer—what I will roughly estimate as well over 80% of studies (apologies, but somebody ought to count all the studies, not just do sampling as I did)—**do not actually measure transfer.** They measure learners' perceptions of transfer. To make this concrete, I've grabbed quotes from four recent research studies from 2017, 2018, and 2019. The quotes below are in the researchers' own words—and clearly highlight the limitations of their studies. I have not identified the researchers because it would be unfair to single them out when it is such a widespread issue. Also, I should point out that searching for these studies was not difficult. I more or less randomly looked at five recent empirical studies to see if they utilized learner perceptions as their sole measure of transfer. Four of the five had this issue. The fifth had a similar issue, but they used learners' supervisor ratings of transfer. Here are quotes of the limitations of the four other studies:

    1. *"Another limitation of the present study is the use of subjective ratings…"*

    2. *"A central limitation of the present study is the use of the trainees as a single source to evaluate [training transfer]. It would be informative and perhaps more accurate to triangulate the measurement of [training transfer] with other sources… A second methodological limitation regards the absence of a learning measure [aka a transfer measure]."*

3. *"Our study did not investigate pre-training or post-training factors, including actual transfer."*

4. *"The limitations of this study are such as the utilization of convenience sampling in data collection, the collection of data solely from the public organizations, somewhat small sample size, and the reliance on self-rating questionnaire to measure training transfer."*

Conclusion:

This leaves us, as learning professionals—as we try to design for transfer—with a limited number of factors in which we can be fully confident. Most of the transfer research conducted so far has been helpful in giving us hypotheses to test further, but it is not yet able to give us definitive guidelines for practice. The truth is that we have a ton more to learn about transfer. As Saks, Salas, and Lewis (2014) wrote recently: *"Clearly, there is still much more to learn about the transfer of training."*

This doesn't mean we should design for transfer willy-nilly. By examining the strong research base on learning and drawing insights from patterns in the transfer research, we can make educated judgments that we can test further in practice. My hope in this report is to provide you—if you're a learning professional—with transfer factors worth piloting in your efforts to create learning interventions and ecosystems.

As Poell (2017) has written: "*While the extensive literature on transfer of training has not always produced consistent and invariable outcomes, enough convincing evidence has been accumulated to conclude that transfer of training matters and needs to be managed in order for training to be effective.*"

We should go forth with both skepticism and confidence. We should have confidence that there are a handful of transfer factors that have reasonable scientific support. We should have skepticism in other transfer factors that have yet to be fully vetted.

The next part of this report is divided into two categories:

- Supported Transfer Factors
- Possible Transfer Factors

After I provide these two lists, I will conclude with two more sections:

- Recommendations to Learning Professionals
- Recommendations to Transfer Researchers

2. Supported Transfer Factors

Here is a list of leverageable factors found to support or enable transfer. Note that non-leverageable factors, such as learner intelligence, are not included.

A. **Learners who develop SKILLS during training will be more successful in transfer.** Note that learning skills seems more potent than just learning concepts. (Huang, Blume, Ford, & Baldwin, 2015).

B. **Learners who learn CONCEPTS during training will be more successful in transfer.** (Huang, Blume, Ford, & Baldwin, 2015; Blume, Ford, Baldwin, & Huang, 2010). Of course, these first two points are probably obvious. People who don't learn skills or concepts in training don't really have anything to transfer! Yet it is important to be explicit about the importance of learning, lest we think—as some have argued—that training isn't important. Training sets transfer in motion. At least it should!

C. **Learners who are motivated to apply what they've learned to their work will be more successful in transfer.** (Huang, Blume, Ford, & Baldwin, 2015; Ng & Ahmad, 2018). Yes. This is obvious. On the other hand, it doesn't give us a prescription for how to motivate learners. We will need to pilot different motivational and persuasive techniques and see what works best with our learners and our topics.

D. **Learners are more likely to achieve transfer success if they have early opportunities to take what they've learned and utilize it in their work.** (Huang, Ford, & Ryan, 2016; Schramm, Galovan, Futris, & Kanter, 2019). This makes sense from several angles. First, we know that people slide down forgetting curves over time, so the sooner application begins the more our learners will remember. Also, motivation can fade over time, and distractions can multiply.

E. **A learner can learn poorly during training; but, if motivated and engaged in subsequent on-the-job learning, they can be successful in transfer.** (Huang, Blume, Ford, & Baldwin, 2015). This is an eye opener—something we might not have thought about. Of course, while a super-motivated learner might need no support, *somewhat*-motivated learners may still benefit from supports we can provide.

F. **Far transfer rarely happens; only near transfer happens reliably. That is, learning tends to transfer to only those contexts already experienced or practiced.** So, generally, it is more fruitful to train people on specific skills and competencies rather than general ones. (Barnett & Ceci, 2002). There are two possible exceptions to this, both related to a person's breadth of competence in ideation and action. A person's long-term development is likely to benefit from having a range of learning experiences (Epstein, 2019). Similarly, people generate more creative insights when they have been prompted to look beyond the usual (McCaffrey, 2012; Wen, Butler, & Koutstaal, 2013). People who have been cross-trained tend to generate more creative ideas (Simonton, 2000). Note that we are talking about two disparate goals here: transfer and creativity. Learning transfer seems to be boosted by giving people practice in contexts similar to their future work contexts, whereas creative ideation seems to benefit from putting people in contexts that are distinctive. On the other hand, providing people with multiple distinct learning contexts has been shown to support transfer too (Smith, Glenberg, and Bjork, 1978; Smith, 1982)—although we should note that the context manipulations here involved background contexts, not focal task contexts. The basic principle still applies: If you want transfer, give people practice on tasks that are similar to those they will have to perform in the future.

G. **Learners who set goals to transfer what they've learned improve the likelihood they'll achieve transfer.** (Rahyuda, Syed, & Soltani, 2014; Brown & McCracken, 2010). Both research articles point to the benefits of using both short-term goals and long-term goals in a combination strategy, mentioning that short-term goals enable learners to get feedback. On the other hand, the earlier meta-analysis (Blume, Ford, Baldwin, & Huang, 2010) found only small effects with goal setting.

H. **Learners who utilize** [triggered action planning](#) **will be more likely to engage in application activities than learners who have goals alone.** This idea is based on the research on implementation intentions (Gollwitzer & Sheeran, 2006), and verified in a recent study on using triggered action planning to improve training transfer (Friedman & Ronen, 2015). Note that the researchers don't use the term "triggered action planning." That's a term I coined to be more relevant to practitioners (Thalheimer, 2014). Also note that the Friedman & Ronen study is the only one I could find that directly tests triggered action planning (and the only one mentioned in a recent research review by Ford, Baldwin, & Prasad, 2018; however, the general research on implementation intentions produces large effect sizes and very consistent results (Gollwitzer & Sheeran, 2006), although improvements can still be found by tweaking the procedures used in some contexts (Prestwich & Kellar, 2014).

I. **Learners with supervisors who encourage, support, and monitor learning transfer are more likely to successfully transfer.** (Blume, Ford, Baldwin, & Huang, 2010). Note that the meta-analysis did not differentiate between different supervisor support behaviors, as the different studies they reviewed operationalized these differently. The description above—utilizing the words "encourage, support, and monitor"—is a more textured phrasing than the word actually used in the research review cited above. They simply used the phrase "supervisor support." Indeed, Govaerts and Dochy (2014) suggested that supervisors could support transfer using 24 different means. Interviews of 16 Belgium supervisors (Govaerts, Kyndt, Vreye, & Dochy, 2017) supported this claim, finding wide use of the 24 transfer supports for soft-skills training, including 83 unique behaviors associated with supervisor support of transfer. Of course, before these results can be generalized, more research is needed. More importantly, the descriptive research practices used may tell us what supervisors *think* they're doing or maybe even what they are *actually* doing, but the methodology doesn't tell us which behaviors are actually making a difference in transfer. Again, more research will be needed to clarify these issues. In the meantime, workplace learning practitioners would be advised to encourage supervisor support in general, perhaps emphasizing such things as (1) ensuring their employees get the training they need, (2) demonstrating a belief in the value of the training, (3) knowing what the training is about, (4) talking with their employees before and after training, (5) ensuring employees have practice opportunities soon after training, and (6) monitoring progress after training while providing employees with appropriate coaching. And, just to be obvious, the research is not yet clear on which of these supervisor behaviors is most important or whether some combination is the key to success. Moreover, we should expect that some supervisor behaviors may be useful in some situations while others are unhelpful. For example, Freitas, Silva, and Santos (2019) found that supervisor sanctions were perceived to be effective, but supervisor support was not.

J. **Learners who work where there is a supportive transfer climate are more likely to successfully transfer.** (Blume, Ford, Baldwin, & Huang, 2010). Transfer climate is said to include the perceptions of learners regarding the support they'll receive from their supervisors and peers, and the perceptions of learners on the likelihood of rewards and sanctions for successfully transferring what was learned. Unfortunately, given that transfer climate appears to be an amalgam of at least four factors, it's not clear how important each of these factors is in enabling transfer.

K. **Transfer outcomes may take time to be realized. That is, they may not be fully realized right away.** (Huang, Ford, *&* Ryan, 2016). We learn at least a handful of things in most good learning interventions. We probably don't apply everything right away. Also, as a learner, it might take time to organize ourselves or enlist support and resources to apply what we've learned.

L. **The longer the time between training and transfer, the less likely that training-generated knowledge create benefits for transfer.** (Blume, Ford, Baldwin, & Huang, 2010; Ford, Baldwin, & Prasad, 2018). This suggests the obvious: that we should train right before the learning is needed. It may also suggest learning refreshers or utilizing learning-design supports for long-term remembering. There is some evidence that this effect is more prominent for cognitive skills than for physical skills (Ford, Baldwin, & Prasad, 2018) and that a sense of self-efficacy can decay with time as well (Blume, Ford, Baldwin, & Huang, 2010).

M. **The more success learners have in their first attempts to transfer what they've learned, the more likely they are to persevere in more transfer-supporting behaviors.** (Blume, Ford, Surface, & Olenick, 2019; Huang, Ford, & Ryan, 2017).

N. **When learners rate both the factors affecting transfer and the transfer outcomes—especially when ratings are gathered in the same context—significant biasing occurs, making transfer effects appear larger than they are in reality.** (Blume, Ford, Baldwin, & Huang, 2010).

O. **It should not be assumed that learners will maintain the same level of motivation (to apply what they've learned) throughout the learning-to-transfer process.** (Blume, Ford, Surface, & Olenick, 2019). Many factors influence learners in their transfer journeys. The upshot is that it is not enough to get people motivated once, but rather consider the many factors that may motivate and enable transfer.

I would add that this is true not just for motivation, but for memory and comprehension as well. Learners' memories and comprehension may weaken or strengthen depending on the stimuli they encounter on their transfer journeys.

P. **Transfer can be influenced at different times during the learning-to-transfer process—most notably before, during, and after training.** (Blume, Ford, Surface, & Olenick, 2019). Many factors influence learners in their transfer journeys. The upshot is that we should look broadly at our opportunities to promote transfer—for example, by not focusing just on after-training transfer supports. During learning we can engage in activities that support remembering and enable learners to overcome obstacles they may face in applying their learning. For example, Ford, Baldwin, & Prasad (2018) highlight the benefits of spaced practice as a method to support transfer. Additionally, before learning, we may be able to engage learners and supervisors in transfer supportive activities.

Q. **While many transfer interventions have shown limited or weak results in the research literature, a large majority of the interventions utilized less than two hours of time. With such limited learner engagement, the weak results may be expected.** (Blume, Ford, Baldwin, & Huang, 2010). This suggests that we must go beyond the transfer research for definitive recommendations—and moreover that we can, and should, treat the research as fodder for hypotheses to be tested. That is, we can use the transfer factors suggested in the research (whether those factors have been fully vetted or not) as factors that may be useful in supporting transfer— then testing them, of course, before making substantial investments in their use. In addition, the limited benefits created by the brief interventions used in the research might point to the need to utilize multiple transfer supports to get additive or multiplicative benefits to reach a threshold of meaningful improvement.

3. Possible Transfer Factors

While the research on transfer cannot yet provide a definitive set of transfer factors to utilize, it does offer a rich array of methods we can consider transfer-factor candidates. Indeed, given the focus here on finding factors that can be leveraged by workplace learning professionals, many variables are not even being considered here. The following factors seem reasonable for exploration:

A. **Training Supports for Long-Term Remembering.** While not tested in the transfer research, it seems likely that training that helps learners support remembering and minimize forgetting will have transfer benefits. Certainly, learners who remember skills and concepts are more likely to use them—and use them successfully—than learners who have forgotten them. Good candidates for remembering supports include the use of realistic contexts, retrieval practice, and the spacing effect (Thalheimer, 2013).

B. **Post-Training Coaching.** Coaching seems like an obvious facilitator of transfer, but very few studies have looked at it—only five, according to Spencer (2011). One of the problems with studying coaching is that it is composed of many potential learning/transfer factors, including (1) goal setting, (2) goal monitoring, (3) feedback, (4) prioritization, (5) reminding, (6) learning, (7) reinforcement, and (8) personalization. If coaching can be shown to make a difference, what aspects of coaching produce its effects?

C. **Pretraining Interventions.** As pointed out in Ford, Baldwin, & Prasad (2018), not much research has evaluated pretraining interventions. Theoretically, there appears to be a belief that learners may develop an intention prior to training about whether to exert energy (or how much energy to exert) in learning and in later applying the learning. The most common research in this area has focused on providing realistic previews of training, which has produced small benefits. While this analysis suggests a fairly weak basis for recommending pretraining interventions, we should keep in mind that benefits have been found when there is a supportive transfer culture and where supervisors are supportive—contextual factors that don't magically appear after training, but must somehow be integral in the organizations where the training is conducted.

D. **Learners who feel able, after the training, to succeed in applying their learning will be more successful in transfer—the "self-efficacy" hypothesis.** (Huang, Blume, Ford, & Baldwin, 2015; Ford, Smith, Weissbein, Gully, & Salas, 1998). This finding still begs the question: What caused or enabled this feeling of self-efficacy? It's reasonable to assume that an unrealistic sense of competence may not lead to transfer success, although optimism resulting from a feeling of self-efficacy could prompt getting-started behaviors that might lead to successful transfer. Ideally, we'd want both—efficacy based on competence and a strong likelihood of initiating learning application. However, there is some evidence that competence and a sense of self-efficacy do not always go hand in hand. Talsma, Schüz, & Norris (2019) found, with school students, the learners who felt most self-efficacious performed worse than students who rated themselves less self-efficacious. Similarly, there is some evidence that self-efficacy doesn't lead to performance; it is caused by performing well (Sitzmann & Yeo, 2013). Interestingly, Talsma, Schüz, Schwarzer, & Norris (2018) found that good performance led to self-efficacy in both adults and children; but, in adults, the reciprocal relationship held as well, though at a much lower level. That is, for adults, self-efficacy contributed a little to performance but not as much as performance contributing to feelings of self-efficacy. Finally, to demonstrate that self-efficacy is a tricky factor, self-efficacy has been found to be sometimes beneficial and sometimes harmful in promoting performance (Vancouver & Purl, 2017). Obviously, from a practical point of view, some caution is warranted.

E. **Learner Perceptions.** Learner motivation has been shown to affect transfer (for example, see Item 2C in the "Supported Transfer Factors" section above, on page 6). Learner perceptions certainly must influence their motivations. Indeed, as we've seen, transfer climate is defined by learners' perceptions of support and the outcomes possible if they *do* apply their learning. There are certainly other learner perceptions that may have relevance as well. Indeed, the Learning Transfer System Inventory (LTSI) is fundamentally a list of learner perceptions (Bates, Holton, & Hatala, 2012). In addition to the learner perceptions that have already been found to influence transfer, the following factors from the LTSI may also be worth targeting as transfer factors.

    1. Learners Perceive Content as Relevant.
    2. Learners Perceive Themselves Ready to Engage in Learning.
    3. Learners Believe They Have Time and Resources and Mental Energy to Apply What They Have Learned.
    4. Learners' Judgment of How Well the Training Design Enabled Them to Apply the Learning to Their Jobs.

5. Learners' Perceptions of Whether They Will Have Time, Energy, and Resources to Enable Their Application.
6. Learners' Expectations That Effort Will Lead to Improvements in Job Performance.
7. Learners' Expectations That Job Improvements Will Create Valued Outcomes.
8. Learners' Feelings of Self-Efficacy in General (not based on training, but based on their normal sense of their ability to get things done).
9. Learners' Perception of Whether They'll Receive Valuable Feedback as They Work to Apply What They've Learned.

In an interesting parallel, Burke and Hutchins (2008) asked training-and-development practitioners for their perceptions of what works in enabling transfer. As they wrote, *"Activities garnering top attention from trainers as best practices included (starting with most frequently reported) supervisory support activities, coaching, opportunities to perform, interactive training activities, transfer measurement, and job-relevant training."* Note that many of the ideas generated by the practitioners have been captured in this report. Burke and Hutchins focused both on training design and after-training activities, though they weren't nearly as exhaustive as the full list suggested by researchers. On the other hand, they were more emphatic about the importance of figuring out ways to measure transfer and hold learners and supervisors accountable to transfer.

F. **Transfer Measurement and Accountability.** Burke and Hutchins (2008), in their section on the practical implications of their research findings, highlight the importance training-and-development practitioners place in measuring transfer and holding learners accountable for transfer. This seems like great advice, but measurement of transfer has not yet been studied as a factor in promoting transfer. Certainly, there is much emphasis in the workplace learning field on wanting to measure on-the-job behaviors (e.g., Brinkerhoff, 2005; Thalheimer, 2016, 2018), but research seems nonexistent regarding how measurement and accountability might impact transfer results. A recent proposal by Grossman and Burke-Smalley (2018) offers a theoretical case for accountability, but their proposals have yet to be tested.

4. Recommendations to Learning Professionals

When we provide our learners with learning interventions, we hope they can use what they've learned—in their work or in their lives. Such is the essence of transfer. Research on transfer has a long history, with many worthwhile results—but transfer research is still a work in progress.

Despite this, both research on transfer and the wisdom of practitioners have provided us with numerous factors that may improve our transfer results. Our job as workplace learning professionals is to utilize these factors thoughtfully and monitor our results, preferably in ways that can tease apart the benefits of the individual transfer factors.

As learning designers, trainers, elearning developers, and teachers, we should do the following:

A. Take the transfer factors listed above and ensure you are using them or doing more of them—as appropriate given your goals and constraints.

B. Periodically get an unbiased review of your learning interventions and your learning-support infrastructure, preferably from those with a background providing practical research-based recommendations.

C. Utilize an agile approach, pilot testing new and varied transfer factors, gathering valid feedback, making improvements, and essentially creating a system that enables a virtuous cycle of continuous improvement.

D. Build better learning evaluation systems into your learning-and-development process. For example, utilize LTEM (the Learning-Transfer Evaluation Model, Thalheimer, 2018) to help you conceptualize and encourage the transformation of your learning efforts—moving from a focus on content to a focus on deep learning and transfer to contexts where learning creates its greatest benefits.

5. Recommendations to Transfer Researchers

Let me start with a warning for any researchers who might read this. I'm going to be rather stern in my recommendations—with the hope that I get your attention and push us to a place where transfer research can be more useful in impacting learning practice. The work you do is critical—and I am in awe of your knowledge, thoughtfulness, and effort. But my gut and experience as a research translator and as a full-time consultant in the workplace learning-and-development field tell me that, without significant improvement in the way transfer research is conducted, things will remain stuck in a revolving swirl of idea generation—without progress toward a reasonably definitive set of practical recommendations for learning professionals.

Some of you—leading transfer researchers Baldwin, Ford, and Blume—in 2017 noted that the number of research studies on transfer has exploded in the past three decades. They further encouraged you—their fellow transfer researchers—to help translate and convey that research to the practitioner community by (1) doing a better job in describing learner and organizational context information while writing research articles, (2) focusing on how to optimize transfer—not just learning, and (3) "*expanding the measurement and reporting of transfer outcomes*." These are excellent recommendations.

To these, I will add two more recommendations for your consideration.

A. **Avoid Subjectivity.** De-emphasize or avoid methodologies that rely on subjective reports (including surveys of learners, practitioners, and other stakeholders). Subjective data is inherently open to ambiguity and bias and is especially problematic for transfer research because learning application can be largely subconscious and non-intentional—making people's subjective assessments dubious. There is very compelling evidence that learners don't always know what makes learning effective (Kirschner & van Merriënboer, 2013; Brown, Roediger, & McDaniel, 2014), nor do learners make the best learning choices when given control of their own learning pathways (Karich, Burns, & Maki, 2014). Clearly, then, relying on learner intuitions is a very dubious enterprise in transfer research.

   These misgivings should give us pause since prior transfer research has relied almost exclusively on subjective assessments of both independent and dependent variables. On the other hand, these worries should not dissuade us completely from using subjective inputs in our research designs, but rather that surveys and other subjective metrics should not be the foundational element of transfer research. Indeed, there are hopeful signs that new technologies will enable objective measures to be gathered. As Blume, Ford, Surface, and Olenick (2019) say, *"although*

much of the prior work in transfer has utilized self-report measures, with the advancement of technology it is becoming easier to overcome the limitations of self-report data and to collect objective indicators of trainee behavior."

Indeed, as someone focused on how to make research relevant for real-world practice, I can't help but recommend that you, as transfer researchers, stop being lazy and begin to (1) do more experimental research—introducing transfer factors and assessing their impact in contrast to comparison groups and/or treatments, and (2) use objective rather than subjective measures—especially in operationalizing transfer. Given the biases and difficulties in assessing learning outcomes, it seems reasonable to say that measuring perceptions of transfer as the sole dependent variable—instead of measuring actual transfer—is just damned foolish.

I know I have no right to judge, and that the real-world research you do is done under massive constraints from the organizations you are researching. On the other hand, I'm not saying anything you haven't already said yourself. Maybe my position outside the academy allows me to be more incendiary. That's my hope—that I can help light a fire to push the transfer research to where it needs to go. But feel free to yell and curse me!

B. **Connect with Research Translators.** Ironically, given my provocative remarks just above, I ask you to consider doing more to proactively reach out to the research-translator community. There is a growing community of research translators in the workplace learning field. Notable research translators embedded in workplace learning include me (Will Thalheimer), Ruth Clark, Julie Dirksen, Clark Quinn, Patti Shank, Mirjam Neelen, Jane Bozarth, and Donald Clark, and others I'm sure I'm missing. Research translators have the advantage of spending more time with the practitioner community than is typically afforded you in the academy. We have all worked as practitioners for large chunks of our careers. This familiarity enables us as research translators to know the practical challenges faced by practitioners and the leverage points in their work where transfer factors can have practical impacts.

We research translators also have extensive experience translating research findings in ways that resonate and influence practitioners. Certainly, the best of you are consulting and doing research in organizations. However, you have less experience sharing research-based recommendations with practitioners. You have not failed as often as we have in attempting to convey research wisdom to practitioners. You have not agonized and reworked (and eventually improved) your approaches to conveying the research-based recommendations you make. You don't have the

visibility in the practitioner community that research translators have. You don't get invited to do keynotes or webinars. In comparison to we research translators, you simply don't have as much expertise in being persuasive and credible with practitioners. Nor should you expect to have it. As we know, true expertise takes time, and your time is better spent doing great research.

Likewise, we research translators don't have your expertise and experience in research design, statistics, and scientific conventions—nor do we have your breadth of knowledge about the many research studies relevant to a particular body of knowledge. Nor, of course, do we have your vast experience doing dispiriting committee work (sorry, couldn't resist!).

It is a catastrophic mistake to see the world as divided into researchers and practitioners. In reality, there is the potential for a full research-practice ecosystem involving researchers, research translators, and practitioners (Thalheimer, 2001). The incentives and interests of each group are different, but everybody wants faster dissemination of research to practice and more and better research focused on leverage points that really matter in practice.

Research

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Endnotes

[1] (From Page 2)

There are at least two definitions of learning transfer—related but not exactly the same. The one we use in the workplace learning industry is defined by the application of learning to some future work situation. Another usage for the term "learning transfer" is common in experimental psychology and refers to the application of something learned to a novel context—in a context reasonably dissimilar from the learning context. This report focuses only on the first type of learning transfer—learning applied to future work.