SoftSpace
Academy

Lost in Taxonomy: Rethinking How We Define, Measure, and Train Soft Skills

Introduction

Over the past several decades, researchers and professional organizations have repeatedly emphasized the importance of “soft skills” in professional success. Studies across industries as broad as accounting, engineering, and management consistently conclude that technical expertise alone is insufficient for effective workplace performance (Andrews & Higson, 2008; Weber et al., 2010). For example, a review of managerial competency literature identified **more than 100 distinct soft skills** expected of entry-level managers (Weber et al., 2010). Similarly, analyses of accounting education argue that graduates require communication ability, interpersonal competence, teamwork, leadership, and ethical judgment in addition to technical knowledge (de Villiers, 2010). Despite this apparent consensus, the literature on soft skills suffers from a persistent methodological limitation: most frameworks define skills as **traits, competencies, or attributes**, rather than as **teachable observable behavior**. Competency models frequently enumerate dozens—or even hundreds—of skills without specifying how those skills are operationally demonstrated or measured in real situations (Boyatzis, 2008; Schippmann et al., 2000).

This paper is part of the broader SoftSpace research program, which focuses on defining, measuring, and training professional interaction skills using behaviorally grounded methods. SoftSpace is building our training library based on the idea that when these large taxonomies are translated into **observable workplace behavior**, the hundreds of labeled skills collapse into a much smaller set of **behavioral primitives**—core patterns of action that appear repeatedly across professional contexts.

The Taxonomy Problem in Soft-Skills Research

Soft-skill frameworks often expand rapidly because they mix multiple types of constructs within a single list:

- behaviors (e.g., asking questions)
- personality traits (e.g., confidence)
- values (e.g., integrity)
- emotional states (e.g., empathy)
- outcomes (e.g., leadership effectiveness)

Competency modeling research has long recognized this issue. Schippmann et al. (2000) noted that competency frameworks frequently combine **knowledge, skills, abilities, and personal attributes (KSAs)** without clearly distinguishing which elements represent observable performance. Similarly, Boyatzis (2008) describes managerial competencies as clusters of underlying capabilities rather than discrete behaviors. As a result, many competency lists become **descriptive taxonomies rather than measurable constructs**. This issue is visible in many professional frameworks. For example, de Villiers (2010) identifies five broad soft-skill categories—including communication, problem solving, teamwork, ethics, and self-management—but these categories primarily describe **domains of capability rather than observable actions**.

When researchers convert these conceptual categories into behavioral units—what a person **actually does during a moment of interaction** —the number of distinct skills decreases substantially.

Behavioral Collapse: From Hundreds of Skills to Core Primitives

When soft-skill frameworks are operationalized behaviorally, they often appear to converge around a smaller set of underlying behavioral patterns. Identifying and testing these patterns is a core objective of the **SoftSpace research agenda**, which aims to examine how soft skills are described, measured, and trained across disciplines and to determine whether large competency taxonomies can be reduced to a smaller set of observable behavioral units, which we are describing as behavioral primitives. The behavioral primitives presented below should therefore be understood as **provisional working categories** derived from an early synthesis of the literature reviewed to date. As the SoftSpace research program continues to analyze additional sources and measurement approaches, these categories may be refined, expanded, reorganized, or replaced.

The following primitives represent **initial patterns observed across multiple competency models and behavioral research traditions**, offered here to illustrate how many soft-skill taxonomies may collapse when translated into observable workplace behavior. The five behavioral primitives presented here were derived through an iterative synthesis of competency frameworks across multiple disciplines, including organizational behavior, communication research, and professional training literature. Skill labels were compared across sources and collapsed based on shared observable behaviors, resulting in clusters that reflected recurring patterns of action rather than conceptual categories.

When examined across frameworks, many commonly cited soft skills map onto a smaller set of recurring behavioral patterns. Table 1 illustrates this many-to-one relationship by collapsing frequently used competency labels into broader behavioral primitives defined by observable actions.

Table 1

Common Skill Labels	Behavioral Primitive
Teamwork, collaboration, leadership, influence	Social coordination
Communication, persuasion, listening	Information exchange
Decision making, critical thinking	Problem framing

1. Information Exchange

Information exchange behaviors include:

- asking questions
- explaining reasoning
- summarizing information
- checking understanding
- providing feedback

These behaviors form the foundation of effective professional communication. Communication research consistently identifies questioning, clarification, summarization, and feedback as fundamental interaction processes within collaborative work (Rogers & Farson, 1957; Salas, Reyes, & McDaniel, 2018;). Within professional competency frameworks, these behaviors correspond to skills labeled as:

- communication
- persuasion
- negotiation
- rapport building
- listening

However, these constructs ultimately depend on the same underlying behavioral mechanisms of **information sharing and interpretation**.

2. Problem Framing and Decision Behavior

Decision science and management research have long emphasized the importance of **problem framing and structured decision processes** in complex environments (Kahneman, 2011; Simon, 1977). Core behaviors include:

- defining the problem
- identifying constraints
- generating options
- evaluating tradeoffs
- selecting an action

Competency models often label these behaviors using terms such as:

- analytical thinking
- strategic thinking
- decision making
- creativity
- critical thinking

Although these terms appear distinct, they generally describe variations of the same behavioral sequence: **identifying, structuring, and resolving uncertainty**.

3. Social Coordination

Team effectiveness research consistently identifies coordination and communication behaviors as central to group performance (Salas, Sims, & Burke, 2005). Social coordination behaviors include:

- clarifying roles
- coordinating tasks
- resolving disagreements
- acknowledging contributions
- facilitating discussion

Competency frameworks often describe these capabilities using labels such as:

- teamwork
- collaboration
- leadership
- facilitation
- influence
- conflict resolution

However, these labels typically refer to the same underlying behaviors that regulate group interaction and shared task execution.

4. Self-Regulation Under Pressure

Professional interactions often occur in emotionally charged situations. Effective performance depends on behavioral regulation, including:

- pausing before responding
- regulating tone or affect
- asking clarifying questions rather than reacting
- maintaining engagement during disagreement

Research on emotional regulation demonstrates that individuals can deploy strategies that alter how they respond during emotionally activating situations (Gross, 1998; Gross, 2015). In professional interactions, these regulatory processes often manifest as **observable behavioral adjustments**, such as pausing before responding, moderating tone, or maintaining engagement during disagreement. Closely related research on **response inhibition** further shows that individuals can learn to suppress or delay prepotent responses in order to produce more context-appropriate behavior (Logan, Cowan, & Davis, 1984). Together, these lines of research suggest that effective professional conduct in emotionally charged situations often depends on the ability to regulate immediate reactions and substitute deliberate behavioral responses.

Competency frameworks often label these behaviors using terms such as:

- emotional intelligence
- resilience
- adaptability
- professionalism
- composure

However, these constructs ultimately describe variations of **behavioral self-regulation**.

5. Integrity Under Pressure

While the first four primitives describe interactional behaviors that occur within conversations, ethical decision making behavior often involves actions that extend beyond a single interaction and may unfold over longer timeframes. It is included here because it still requires observable behavioral responses under social or organizational pressure. Professional integrity manifests through observable behaviors such as:

- disclosing conflicts of interest
- reporting problems
- refusing improper requests
- documenting decisions transparently

Research on moral development and behavioral ethics suggests that ethical reasoning alone does not ensure ethical conduct; behavior ultimately depends on whether individuals translate judgments into action within specific situations (Rest, 1986; Treviño, Weaver, & Reynolds, 2006). In professional settings, ethical competence therefore manifests through observable behaviors such as disclosing conflicts of interest, refusing improper requests, documenting decisions transparently, or reporting misconduct despite social or organizational pressure.

Competency frameworks frequently describe these behaviors using broader terms such as:

- integrity
- honesty

- professional ethics

Yet ethical conduct ultimately requires **specific behavioral actions in response to situational pressures**.

Why This Matters for Skill Measurement

Most soft-skills frameworks focus on identifying desirable traits or competencies. While these models provide useful conceptual categories, they rarely specify:

- what counts as performing the skill
- what counts as failure
- how the behavior can be measured
- how the skill can be practiced

Consequently, traditional soft-skills training often emphasizes **discussion, awareness, or conceptual understanding** rather than observable performance. This gap has significant implications for professional development systems.

A Behavioral Alternative: Skills as Performance

A behavioral framework requires that each skill be defined in terms of observable actions that can be reliably identified across contexts. This allows performance to be measured directly, rather than inferred from self-report or global ratings. It also enables the identification of specific behavioral errors, which can be targeted through feedback and practice. Instead of evaluating whether a learner "possesses" a competency such as leadership or communication, the focus shifts to measurable questions such as:

- Did the person ask clarifying questions?
- Did they summarize the other person's position?
- Did they propose options before deciding?

This approach reflects a principle that has been established across multiple scientific traditions for nearly a century: complex skills develop through **repeated opportunities to perform the behavior with feedback in relevant contexts**. Early learning research demonstrated that behavior strengthens through its consequences (Thorndike, 1927), a principle later expanded within behavior analysis to emphasize the shaping of observable behavior through reinforcement and repeated practice (Skinner, 1953) and an entire approach to skills training based on modeling, practice, feedback, and repetition known as behavioral skills training (BST; Miltenberger 2004; Parsons, Rollyson, & Reid, 2012). Cognitive models of skill acquisition similarly describe how repeated performance transforms declarative knowledge into procedural skill (Anderson, 1982). Research on expert performance has reached comparable conclusions, showing that high-level expertise develops through structured practice targeting specific performance behaviors and providing immediate feedback (Ericsson, Krampe, & Tesch-Römer, 1993).

Despite this long-standing convergence across disciplines, **organizational training practices have not consistently reflected these principles**. Many professional development programs continue to rely primarily on **discussion, reflection, or conceptual explanation** rather than repeated behavioral practice. Research on workplace training has repeatedly documented that instructional approaches emphasizing information delivery alone rarely produce reliable changes in job performance (Baldwin & Ford, 1988; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012).

Several factors likely contribute to this gap. Practice-based learning often requires substantially more time and resources than lecture or discussion formats. It also introduces social risk, as practicing interpersonal behavior in front of others can feel uncomfortable or exposing. In addition, practice requires learners to exert sustained response effort, while explanation-based instruction allows participants to engage passively while still appearing to complete training. These practical and social constraints may help explain why training approaches that emphasize explanation over behavioral rehearsal continue to dominate professional development programs.

Consider a supervisor asked to evaluate an employee's "communication skills" using a standard rating scale. The supervisor may assign a score (e.g., 3 out of 5), but this rating provides little guidance about what the employee is doing well or what should change. The term "communication" may refer to multiple behaviors, including asking clarifying questions, explaining reasoning, summarizing information, or providing feedback. Without specifying which behaviors are present or absent, the rating does not translate into a clear training plan.

In contrast, a behavioral framework allows the supervisor to identify specific observable actions. For example, the supervisor may note that the employee rarely asks clarifying questions and does not summarize others' positions before responding. These observations point directly to trainable behaviors. A targeted development plan can then be constructed, focusing on practicing question-asking and summarization within realistic scenarios, with feedback provided on each attempt. In this way, evaluation becomes directly linked to intervention, and improvement can be measured in terms of observable changes in performance rather than changes in abstract ratings.

Table 2

Dimension	Traditional Competency Rating	Behavioral Evaluation Approach
Skill definition	Broad label (e.g., "communication")	Specific observable behaviors
Example rating	"Communication: 3/5"	"Rarely asks clarifying questions; does not summarize others' input"
Interpretability	Ambiguous	Clear and specific
Feedback quality	General ("improve communication")	Actionable ("practice summarizing before responding")
Training plan	Unclear or generic	Targeted behavioral practice
Measurement of progress	Change in rating score	Change in observable behavior
Link to performance	Indirect	Direct

Implications for Scenario and Simulation-Based Skill Development

Simulation-based learning provides a way to operationalize professional skills as **observable behavioral performance rather than conceptual knowledge**. In simulation environments, learners engage with realistic scenarios that require them to respond, receive feedback, and attempt alternative responses. This allows training to target the behaviors that occur during real interactions rather than focusing solely on abstract discussion of what effective behavior should look like.

Scenario-based and simulation training are not new approaches. High-stakes fields such as aviation, medicine, and military operations have long relied on simulation to train complex performance skills that cannot be developed through explanation alone. Professional sports organizations similarly invest heavily in structured practice environments that allow athletes to repeatedly rehearse performance under controlled conditions. In these domains, repeated exposure to realistic scenarios allows learners to practice decision making, coordination, and behavioral regulation in environments where mistakes are safe but informative.

Despite these advantages, simulation-based approaches have historically been difficult to implement widely in professional development programs. Traditional simulations often require extensive facilitation, specialized equipment, or trained actors to portray realistic scenarios. Role-play exercises used in workshops attempt to approximate this model but are typically brief, socially uncomfortable, and difficult to repeat or vary systematically. Research in professional education has also noted that some learners report discomfort with role-play or simulated interaction exercises, particularly when they occur in front of peers or involve evaluation of interpersonal behavior (Nestel & Tierney, 2007). These reactions may contribute to resistance toward simulation-based activities even when they produce measurable improvements in performance.

In addition, organizational training budgets are often vulnerable during economic contractions, and training programs are frequently designed to minimize time demands on participants. Both leaders and learners may therefore favor formats that allow passive participation or multitasking, even when those formats provide fewer opportunities for behavioral rehearsal.

Recent technological developments have begun to question these constraints (Cheng et al, 2020). Advances in artificial intelligence and interactive digital environments now make it plausible to create private, repeatable simulations that adapt to learner responses and allow multiple attempts under varying conditions. Emerging work in artificial intelligence and education suggests that these technologies can support adaptive learning environments capable of responding dynamically to learner behavior (Holmes, Bialik, & Fadel, 2022). These environments may reduce the social risk associated with public role-play, lower the logistical burden of facilitation, and make repeated practice more feasible within scalable learning systems. By allowing learners to practice difficult interpersonal behaviors privately and repeatedly, simulation environments may address several of the factors that historically limited adoption of simulation-based training. Research across multiple domains suggests that simulation-based learning can produce improvements in both knowledge and behavioral performance (e.g., Holmes et al., 2022; McGaghie et al.,2011) . Meta-analyses of simulation training in healthcare education, for example, have found that simulation-based instruction leads to stronger knowledge acquisition and improved skill performance compared with traditional instructional methods (Cook et al., 2011). Other research has shown that simulation training can enhance behavioral performance and facilitate transfer of skills to real-world environments (Bell et al., 2008; Elendu et al., 2024). Simulation environments are also frequently associated with high levels of learner engagement and satisfaction when they are designed to support repeated practice and feedback (Issenberg et al., 2005).

Within a behavioral training framework, simulation-based learning can therefore focus on three measurable dimensions:

1. **Knowledge of the skill**
   Understanding what behaviors are appropriate in a given situation.
2. **Fluent performance in realistic scenarios**
   Demonstrating the behavior reliably across multiple contexts.
3. **Comfort performing the behavior**
   Increasing willingness and confidence to engage in the behavior under pressure.

Taken together, these elements shift the focus of professional development from **identifying desirable traits** to **developing behavioral capability through repeated practice**.

Conclusion

Soft-skills research has produced extensive taxonomies of competencies across industries and professions. These frameworks consistently emphasize the importance of interpersonal capabilities, yet they frequently lack operational definitions that allow reliable measurement, training, or evaluation of performance. As a result, many soft-skill initiatives rely on conceptual descriptions of desirable traits rather than observable behavioral criteria. When these competency frameworks are translated into **observable workplace behavior**, many of the hundreds of labeled skills converge into a smaller set of recurring behavioral patterns that appear across professional contexts. Recognizing these patterns provides a foundation for developing training systems that emphasize **behavioral rehearsal, feedback, and fluency across varied situations** rather than conceptual understanding alone.

Decades of research across behavioral science, expertise development, and simulation-based training have demonstrated that complex skills develop through repeated performance in relevant contexts with corrective feedback. Despite this convergence, most professional development systems continue to rely on passive instructional formats that provide limited opportunities for behavioral practice. The research agenda behind **SoftSpace Academy** focuses on addressing this gap by translating soft-skill constructs into **observable behavioral anchors that can be practiced, measured, and refined within realistic scenarios**. By combining behavioral definitions of skill with scenario-based learning and adaptive simulation environments, this approach seeks to make interpersonal skill development more measurable, repeatable, and scalable than traditional training models have allowed.

Continued research is needed to refine the behavioral structure underlying professional interaction, evaluate the effectiveness of scenario-based practice environments, and identify the conditions under which interpersonal skills generalize from simulated contexts to real-world settings. Advancing this work may help shift the study of professional skills from descriptive competency lists toward **behaviorally grounded systems for developing and measuring real-world performance**.

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