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Making soft skills 'stick': a systematic scoping review and integrated training transfer framework grounded in behavioural science

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ABSTRACT

Soft skills training often does not yield the desired behaviour changes at work – a phenomenon known as the soft skills transfer problem. Meanwhile, behavioural science interventions have proven successful in changing behaviours in various contexts. The aim of the present research is to develop an integrated soft skills training transfer framework grounded in behavioural science. The COMPASS (Capability, Opportunity and Motivation of Professionals' Application of Soft Skills) model integrates two leading frameworks in the fields of professional development and behavioural science: Baldwin and Ford's training transfer framework and the COM-B behaviour change model. To probe the viability of the COMPASS model, we conducted a systematic scoping review, which identified 91 eligible articles derived from 2,632 screened abstracts. From this review, 69 factors emerged that were each assessed for their evidence in promoting soft skills training transfer. Mapping the factors onto the COMPASS model shows that the model captures the literature well. Crucially, we show that all constituent elements of the model likely contribute to training transfer. The COMPASS model provides an overarching theoretical grounding in the literature on behaviour change. We discuss how practitioners can leverage this work to promote soft skills transfer.

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training transfer; soft skills; leadership development; professional development; staff development

Consider two simple questions:

1. Have you attended a workplace training focused on "soft skills" (i.e., inter/intrapersonal skills like leadership, teamwork, or resilience?)

2. Did that training meaningfully change your behaviour?

Given that organizations in the United States and United Kingdom collectively invest over £100 billion on training each year (Training Industry Report, 2021; Winterbotham et al., 2020), your answer to question one is likely "yes". This significant investment is generally made on the presumption that what is learned in training will be applied to work in a way that enhances performance and organizational effectiveness (i.e., *training transfer*). However, our contention, and perhaps your personal experience, is that people are much less likely to answer question two in the affirmative.

Training transfer remains a significant and complex challenge, and there is limited consensus around how, when, and why learning from training initiatives is transferred to the job (Beer, 2011; Ford et al., 2018; Grossman & Salas, 2011). Notably, this "transfer problem" is particularly relevant for the development of *soft skills* (Baldwin & Ford, 1988; Lacerenza et al., 2017; Laker & Powell, 2011), which encompass intrapersonal skills (i.e., one's ability to manage oneself) and interpersonal skills (i.e., one's ability to manage interactions with others; Marin-Zapata et al., 2021). Given the scale of organizational training expenditures, this lack of clarity amounts to a pressing concern.

At its core, training transfer is primarily concerned with changing behaviour – does the learning that results from training lead to meaningful changes in performance? To update the classic proverb, you can teach a man to fish, but whether or not they will successfully bait the hook, cast the line, and reel in their catch in practice is another matter entirely. It is remarkable, then, that an emergent field of research focused on changing behaviour — *behavioural science* — is almost entirely absent from the core literature on training transfer.

This disconnect is even more glaring when one considers the nature of soft skills (sometimes referred to as "open skills" or "transferrable skills"; Yelon & Ford, 1999). These generic, non-technical, transferrable skills focused on intrapersonal and interpersonal behaviours require practice and repetition in various contexts (Marin-Zapata et al., 2021). This contrasts with "hard skills," which tend to establish the core foundation of a role and are job-related, specific, and technical (e.g., analysing financial data or safety procedures). To enhance an employee's soft skills, the associated behaviours need to become automatic, habitual, and effortless (Marteau et al., 2012; Zinsser, 2022). Indeed, Kirkpatrick (1976) argues that complex behaviours such as soft skills require prolonged and consistent development to reap the benefits of training. Essentially, soft skills training aims to develop automatic and effortless intrapersonal and interpersonal behaviour at work (Zinsser, 2022).

This focus on habits and automatic processing will be very familiar to behavioural scientists, who have long relied on dual-process models (e.g., Evans, 1984; Kahneman & Frederick, 2002; Strack & Deutsch, 2004), habits (e.g., Verplanken & Orbell, 2022), and norms (e.g., Reynolds et al., 2015) in designing effective

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behaviour change interventions. Hence, an approach grounded in the behavioural science literature stands to offer valuable insights – both theoretical and practical – that are applicable to soft skills transfer. Of particularly integrative value to the field is the COM-B model developed by Michie et al. (2011), which approaches behaviour change through the lens of three factors: capability, opportunity, and motivation (see Figure 1). These components are interrelated and can either directly impact behaviour or interact with one another to produce the desired behaviours. Crucially, the critical role of capability, motivation and opportunity derived from a synthesis of 33 behaviour change theories that underpin the model (Cane et al., 2012; Michie et al., 2005).

Importantly for the present discussion, the associated behaviour change wheel (Michie et al., 2011) goes on to identify nine behaviour change approaches, along with the circumstances where their use is most appropriate. Figure 1 illustrates this mapping between different COM-B components and behaviour change approaches. This includes "education" and "training" (the most common approaches in organizational learning), but it also includes environmental restructuring, modelling, enablement, incentivization, persuasion, and restriction which are rarely acknowledged in the training literature (see Blume et al., 2019; Bell et al., 2017; see Table S1 in Online Supplemental Materials for definitions). For example, training and education are not the best approaches to overcome opportunity barriers (Michie et al., 2011). Thus, examining the soft skills transfer problem through a behavioural science lens not only provides the necessary theoretical foundation to understand the soft skills transfer problem, but it also encourages us to look beyond training and education as methods to build soft skills at work.

Figure 1 also shows how capability, opportunity, and motivation are further broken down into sub-facets. We return to this below, but for now suffice to say that this breakdown is important because different sub-facets are linked to different behaviour change approaches. For example, environmental restructuring is more suitable to overcome behavioural barriers linked to automatic motivation (emotions and impulses) than barriers linked to reflective motivation (evaluations and plans).

In the training transfer literature, Baldwin and Ford's (1988) training transfer framework has been equally influential. Yet, to our knowledge, there has been no previous attempt to integrate the emerging field of behavioural science with the training literature to address the "transfer problem". To fill this gap, we propose a new conceptual framework for soft skills transfer grounded in theories of behaviour change – the COMPASS model – which integrates the COM-B model and Baldwin and Ford's (1988) transfer framework. By explicating two of the inputs considered in Baldwin and Ford's model in terms of the COM-B model, we develop an integrated framework that captures the key elements of soft skills training transfer. We examine the viability of the model through a systematic scoping review of the literature, identifying the factors that have been linked to training transfer, and assessing the evidence of impact for each factor. Mapping the factors onto the COMPASS model, we establish how well the model captures the literature. We can also ascertain which components of the COMPASS model are consequential for training transfer.

Conceptual background and theoretical framework

'Soft skills' and the transfer problem

Training transfer is defined as the ability to apply skills gained from a training session to daily work resulting in improved performance (Blume et al., 2019; Ford et al., 2018). Baldwin and Ford's (1988) model of the transfer process posits that three main factors influence the transfer of skills at work: trainee characteristics (i.e., ability, personality and motivation), the work environment (i.e., support and opportunity to use skills), and training design (i.e., principles of learning, sequencing and training content). A more recent review incorporated other factors under trainee characteristics (e.g., efficacy and learning states) and training design (e.g., demonstration, errors, retrieval and goals) pointing to a growth of factors that may impact transfer (Ford et al., 2018). For evaluating training efficacy, Holton's (1996) model outlines three main training transfer outcomes: learning, individual performance, and organizational results. Of these, the latter two inherently involve behaviour change.

Several authors have identified soft skills transfer as a unique challenge (e.g., Marin-Zapata et al., 2021; Mishra & Sahoo, 2021). Laker and Powell (2011) identified 10 areas in which soft skills and hard skills training differ. Soft skills training, as compared to hard skills training, requires greater prior experience and managerial support and faces larger trainee and organizational resistance to learning. The review further contends that, relative to hard skills training, soft skills training

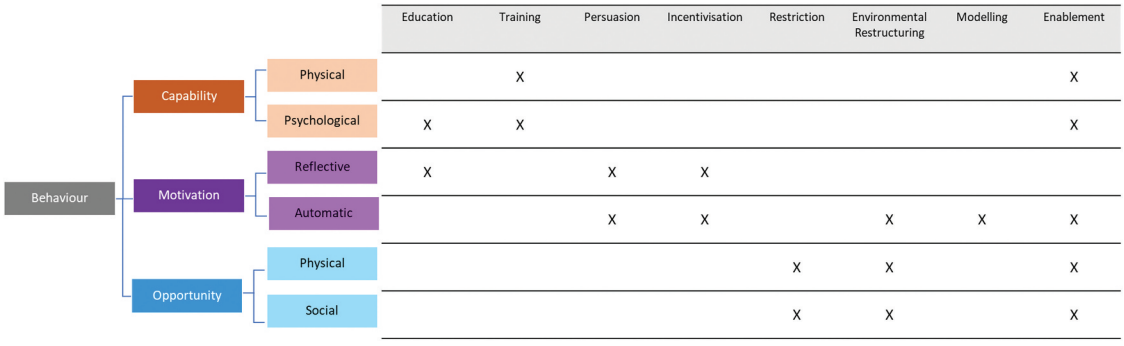


Figure 1. The COM-B model and associated behaviour change approaches. *NB*: Based on Michie et al. (2011). See Table S1 in Online Supplemental Material for definitions of behaviour change approaches.

requires less precision of training needs, less immediacy and salience of feedback, a lower level of similarity between training and the work environment, and a lesser degree of proficiency and self-efficacy achieved during training.

Some of the challenges of soft skills transfer intersect with research on "training enhancement procedures", which includes post-training interventions such as goal setting and relapse prevention (see Rahyuda et al., 2014, for a review). However, these procedures emphasize post-training factors, thereby ignoring pre- and in-training factors that may impact training transfer. Crucially, to our knowledge there is no unifying framework that provides a theoretical foundation for training enhancement procedures. Furthermore, work on training enhancement procedures does not specifically pertain to soft skills transfer.

Several reviews have sought to shed light on the processes involved in soft skills transfer. Mishra and Sahoo (2021) found that motivation to transfer soft skills can act as antecedents, mediators, or moderators of soft skills transfer. Similarly, Botke et al. (2018) review examined the impact of work-related factors at different stages of the transfer process. Their process model closely mirrors Holton's (1996) model but begins with motivation to transfer and proceeds with the use of new skills and individual performance before ending with organizational performance. In addition, a meta-analysis by Blume et al. (2010) found that self-efficacy, motivation and environmental context predicted soft skills transfer more strongly than hard skills transfer. While these insights into various factors that impact soft skills transfer are valuable, they also add further complexity to an already crowded space (cf. Ford et al., 2018). Thus, there remains a need for a comprehensive framework that is grounded in theory to elucidate the factors affecting soft skills transfer.

Behavioural health interventions and developing 'healthy' organizations

Behaviour change models and theories originated primarily (though not exclusively) from attempts to change health-related behaviours (Atkins et al., 2017; Davis et al., 2015; Francis et al., 2012); focusing on behavioural outcomes such as smoking cessation, vaccine hesitancy, and healthy eating choices. Michie et al. (2011) define behaviour change interventions as "coordinated sets of activities designed to change specified behaviour patterns" (p.1). These "patterns" originate from habits, norms, and the environment in which they occur – a statement that applies equally well to intrapersonal and interpersonal behaviours at work. Indeed, "healthy" organizations are workplaces where individuals and teams have developed positive habits to lead, be resilient, work together, be creative, and solve problems (e.g., Quick et al., 2007).

This conceptualization suggests a considerable opportunity to address the transfer problem. By viewing the soft skills transfer problem as the problem of fostering positive (i.e., healthy) behaviours at work, organizations can draw on the theoretical and practical insights gained from the sizable behavioural science literature to conceptualize key elements of soft skills training transfer. There is a precedent for this approach in healthcare settings, where professionals were trained to improve their communication skills with patients (Moore et al., 2018) and equipped with the relevant behaviour change techniques to improve clinical practice (Pearson et al., 2020). Organizations have also begun to draw on behavioural science theory to develop microlearning interventions to enhance psychological safety (Newhouse & Getz-Kikuchi, 2017), and there is a growing recognition that the value of behavioural science models and interventions extends beyond the healthcare sector (Chataway, 2020; Kepinski & Nielsen, 2020).

Recall that the COM-B model outlines three essential barriers that need to be overcome for a behaviour to change: capability, opportunity, and motivation (Michie et al., 2011). Given the volume of theories that underpin the COM-B model, we touch briefly here on three theories – namely the transtheoretical model of change (Prochaska & Velicer, 1997), theory of planned behaviour (Ajzen, 1991), and social cognitive theory (Bandura, 1986) – to illustrate the relevance of capability, motivation, and opportunity as drivers of behaviour. We focus on these theories because they are the three most widely studied behaviour change theories in the field (Davis et al., 2015).

Capability allows individuals to initiate a desired behaviour; it is defined as one's capacity to engage in an activity (Michie et al., 2011). Capability can be further divided into physical and psychological capability (see Figure 1). The theory of planned behaviour posits that perceived capability or behavioural control (i.e., whether a behaviour is easy or difficult to perform) impacts intentions to execute a behaviour (Ajzen, 1991). Similarly, to perform a behaviour, the social cognitive theory emphasizes the critical role of behavioural capability and self-efficacy (Bandura, 1986). Behavioural capability can be enhanced through relevant knowledge and skills while self-efficacy invokes one's confidence in performing a behaviour. This theory also suggests that individuals build their behavioural capability by learning from the consequences of their behaviour which may be positive (e.g., rewarding) or negative (e.g., punishment).

In the training transfer literature, trainee characteristics, such as cognitive ability and efficacy, have been found to impact transfer (Ford et al., 2018). Likewise, personal capacity impacts successful relationship management behaviours (Miiro et al., 2014). Capability becomes a barrier to changing one's behaviour when individuals do not have the basic knowledge, information or behavioural repertoire needed to perform the desired behaviour.

Motivation is defined as various brain processes that direct behaviour either consciously or unconsciously towards a desired end-state (Michie et al., 2011). The transtheoretical model posits that motivation is key in developing new habits or automatic behaviours through a series of cyclical and iterative steps (Prochaska & Velicer, 1997). This model fundamentally focuses on the decision-making process of changing one's behaviour as new behaviours do not immediately and definitively occur. The theory of planned behaviour argues that intention – which is influenced by behavioural, normative and control beliefs – is crucial in realizing the desired behaviour (Ajzen, 1991). In essence, the stronger the intention or motivation to perform a behaviour, the higher the likelihood that a behaviour will be executed.

Motivation can be further divided into automatic and reflective motivation (Michie et al., 2011; see Figure 1). Reflective motivation comprises one's conscious and active thought processes, which involve deliberations, beliefs about capabilities, intentions and goals, while automatic motivation represents the unconscious and passive thought processes that arise from associative learning or innate dispositions, such as emotional reactions, habits, and instincts. Within the context of soft skills transfer, studies show that motivation to apply soft skills at work is key to building new automatic behaviours (Axtell et al., 1997).

Finally, opportunity is defined as factors beyond an individual's control – or environmental factors – that impact the likelihood of a behaviour occurring (Michie et al., 2011). This can be further segmented into physical opportunity and social opportunity (see Figure 1). The social cognitive theory highlights the importance of dynamic, shared interaction between an individual, environment, and behaviour (Bandura, 1986). This theory emphasizes social influence processes and contexts that are crucial in changing behaviour through various forms of internal or external reinforcements. The theory of planned behaviour also incorporates environmental factors as key to changing behaviours. Specifically, "perceived power" centres on the perception that external factors can either facilitate or impede the performance of the behaviour (Ajzen, 1991). These theories concur that contextual factors impact the likelihood of developing new behaviours.

The literature on training transfer recognizes the importance of opportunities as a determinant of behaviour change (Gilpin-Jackson & Bushe, 2007; Hillsman & Kupritz, 2010). This includes opportunities to apply skills at work and having the support of supervisors or peers. A review of post-training work-related factors further segments factors related to the work environment into job-related factors, social support, learning culture and transfer-enhancing interventions (Botke et al., 2018).

The COMPASS (Capability, Opportunity and Motivation of Professionals' Application of Soft Skills) model

We propose a new conceptual framework for soft skills transfer by integrating the COM-B model (Michie et al., 2011) and Baldwin and Ford's (1988) training transfer framework. This model integration is depicted in Figure 2. As can be seen, the three pillars of training characteristics, work-environment, and training-design factors in Baldwin and Ford's framework are mapped onto the COM-B components.

The first pillar of trainee characteristics includes ability or skill, motivation, and personality factors (Baldwin & Ford, 1988). Evidently, ability and skill overlap with the capability component of the COM-B model. Personal motivation features in both models. Some personality factors have been linked to training *motivation* (e.g., Rowold, 2007). Personality factors such as extraversion can also determine individuals' capabilities to transfer certain soft skills, for example through enhanced self-efficacy beliefs (e.g., Wilmot et al., 2019). Thus, a separate personality factor (alongside capability and motivation) seems unwarranted.

The second pillar of work-environment includes workplace-related constraints and opportunities to perform behaviours on the job. This aligns closely with the *opportunity* component of the COM-B model, which encompasses environmental factors.

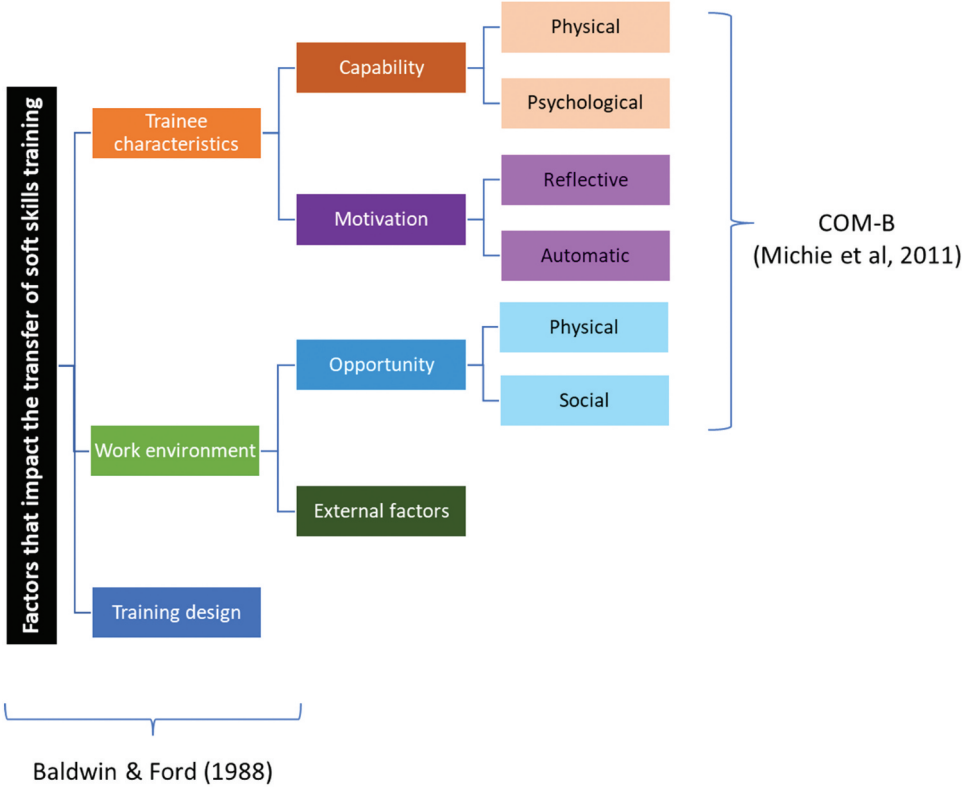


Figure 2. Integration of Baldwin and Ford (1988) and COM-B (Michie et al., 2011).

For completeness, we have added "external factors" as a subdivision to work-environment, acknowledging that training transfer may also be affected by macro-level factors that are largely or wholly beyond an organization's or individual's control, including government policies and geopolitical events (e.g., Tessema et al., 2012). Since our focus lies on finding (tangible) ways to solve the transfer problem, external factors are not discussed further.

The third pillar in Baldwin and Ford's framework pertains to training-design factors, which includes learning principles, the sequence of training materials, and the job relevance of training contents (Baldwin & Ford, 1988). From a behaviour change perspective, training-design factors intersect with the behaviour change approaches depicted in Figure 1, providing clues as to what methods may be most useful to encourage training transfer. At the same time, training-design features are conceptually distinct from trainee characteristics and the work environment encapsulated via *capability*, *opportunity*, and *motivation*. Consequently, we decided to accommodate training-design factors as a standalone component in our integrated model.

Research objectives

Our research objective is to infuse the literature on soft skills training transfer with behavioural insights, seeking to (1) identify factors that impact the transfer of soft skills training at work across different research domains, and (2) develop an integrated soft skills training transfer framework grounded in behavioural science.

Below, we report a systematic scoping review, chosen as the best method to provide an overview of factors linked to soft skills training transfer. We then proceed to map the factors onto the COMPASS model to establish how well the model captures the literature, and where relevant to refine the model. Finally, based on quantitative information gleaned from the review, we assess the evidence of impact for each factor, thereby ascertaining which components of the COMPASS model are likely consequential for training transfer.

The COMPASS model provides an overarching theoretical grounding for soft skills training transfer in the literature on behaviour change. Through the model, we can distil key components of training transfer – something that has eluded the organizational development literature so far. As discussed in more detail below, we can also capitalize on the literature on behaviour change to identify suitable approaches to encourage training transfer.

Methodology

Overview

Our systematic scoping review was guided by the PRISMA-ScR framework (Page et al., 2021) and the guidelines of the Joanna Briggs Institute (Peters et al., 2021). A protocol was pre-registered on the Open Science Framework (OSF) at https://osf.io/psx47. Any updates based on the iterative nature of this review are discussed below.

Eligibility criteria

Population

"Professionals" were the population of interest and were defined as healthy adults working in a company, organization, or institution. Individuals who were owners of a company or enrolled in postgraduate business school courses (e.g., Master of Business Administration or distance learning) were also included. Studies involving undergraduate student populations learning about soft skills in preparation for their professional careers were excluded.

Concepts

The concepts in this review involved "training transfer" and "soft skills". Training transfer was defined as a professional's application of skills gained from a training session to their daily work. Within these broad themes, we identified several other relevant terms that were sometimes used interchangeably, including "learning transfer," "knowledge transfer" and "behaviour change". Studies without formal or informal training components were excluded. Skills denote one's ability to perform a specific task to achieve a particular outcome (Marin-Zapata et al., 2021). We focused on "skills" and "competencies" to find relevant studies since the terms are often used interchangeably (Marin-Zapata et al., 2021).

Recall that soft skills are defined as generic, non-technical and transferrable skills covering both intrapersonal and interpersonal skills (Laker & Powell, 2011; Marin-Zapata et al., 2021; Yelon & Ford, 1999). Other terms commonly used to describe a class of soft skills include "people skills," "emotional skills/intelligence," "leadership skills," "social skills," "strategic skills" and "personal skills" (Marin-Zapata et al., 2021). Despite the importance of "interpersonal" and "intrapersonal" components to conceptualize soft skills, the two terms are too broad as a basis for a systematic literature review. Thus, based on multiple sources (see Table S2 in Online Supplemental Material), we identified specific soft skills to inform our search. These were communication skills, leadership skills, decision-making or problem-solving skills, self-management skills, management skills, organizational skills, analytical or critical thinking skills, creativity, persuasion or negotiation skills, emotional intelligence, building resilience, and coaching. Mental health training within the context of a work setting was included in this review since "building resilience" or "managing stress" can be considered soft skills and generalizable in multiple contexts. Mental health training which involved treatments, however, was excluded.

Context

We included studies that discussed training transfer or behaviour changes at work and factors that impact this transfer. Some skills may appear as soft skills at first but were later determined to be job-specific skills or techniques required as part of a professional's role to work effectively with a group of individuals. For example, communication skills training for individuals with neurological conditions such as aphasia (e.g., Shrubsole et al., 2021) was considered job-specific – even though this training relates to interpersonal skills, soft skills must also be generic, non-technical, and transferrable (Marin-Zapata et al., 2021; Yelon & Ford, 1999). As job-specific training like the example above does not fit the

established definition of soft skills, these papers were subsequently excluded from this review.

Sources of evidence

Studies were included if they were peer-reviewed and published in the public domain with either quantitative or qualitative approaches. Unpublished manuscripts, grey literature and articles not available electronically were excluded from this scoping review. Articles had to be written in English and published from 1988 onwards as the field of training transfer only became established after Baldwin and Ford's (1988) review.

Search strategy

Based on the eligibility criteria, a systematic database search for all eligible papers was conducted using four electronic databases: EBSCO, Web of Science, ProQuest and Scopus. The search strategy was developed iteratively using the EBSCO database due to its multidisciplinary publications and subject-relevant databases (e.g., Business Source Ultimate and APA PsycInfo). Search terms appeared in the title, abstract or keywords of the article and were grouped into four categories – training transfer, soft skills, factors, and professional settings. Detailed descriptions of the search terms can be found in the Online Supplemental Material.

Study selection

All main steps were completed by one reviewer and cross-validated by a second reviewer. The EndNote Team (2013) was used to identify relevant studies with duplicates immediately removed. Titles and abstracts were independently assessed by the first author with 5% of papers screened by the third author. Full text screening for all papers also followed the same approach. Disagreements were resolved through discussions at each stage to reach a consensus. The PRISMA-ScR reporting flow chart (Page et al., 2021) was used to report the overall study selection process.

Our prospectively registered protocol included assessing the risk of bias using the Mixed Methods Appraisal Tool developed by Ford et al. (2018). However, the tool did not allow us to assess the quality of review papers ($k = 22$). The Joanna Briggs Institute Scoping Review Manual stipulates that quality assessment of studies is less relevant for scoping reviews that generally focus on the nature and diversity of the available knowledge (Peters et al., 2021). Therefore, we did not conduct a quality assessment.

As noted, we included review papers (e.g., systematic reviews; meta-analyses), given that review papers can be included in scoping reviews (Peters et al., 2021). This matches the aims of our review; namely, to develop an integrated framework with capability, opportunity, and motivation at the centre of the soft skills transfer problem.

Data extraction

Data were extracted into a pre-planned spreadsheet, which was continuously updated. As recommended by Peters et al. (2021), the following information, if applicable, was extracted from each study: author(s), year of publication, location of publication, aim, population and sample size, methodology, intervention details, details of the outcomes and key findings that relate to the research questions. In addition, the type of soft skills examined was also recorded. Most papers either used a qualitative methodology or failed to report effect sizes or statistics that would have allowed us to calculate effect sizes. In light of this, for primary studies reporting quantitative results we recorded whether the effects were significant or not at the *p*-value defined in each paper. In extracting these data, we adopted a vote-counting method to count the number of significant and non-significant findings (Allen, 2017). Following Lewis and Pattanayak (2012), we counted each relationship between factors (predictors) and training transfer (outcome) individually for papers that had multiple outcome variables or used several sub-components of the same factor. Details of individual studies can be found in Online Supplemental Materials.

Data synthesis

Firstly, we performed a descriptive analysis of the results, breaking down articles by the year of publication, geographic region, methodology, sector, and type of skill. Next, factors were thematically analysed using the COMPASS framework. As described in more detail below, this led to some refinement of the "training design" component of the model. Finally, we classified the factors based on the evidence for each factor's effectiveness.

Results

Study selection

The database search was conducted on 30 March 2022 and produced 6,352 records across four databases. After removing duplicates and irrelevant records, 2,632 records were screened based on titles and abstracts. Five-hundred and one records were selected, of which 45 could not be accessed electronically and 11 records were excluded for miscellaneous reasons such as being a conference abstract (with no full text). The remaining 446 papers were available electronically and assessed based on their full text. During full-text screening, studies were excluded if they did not discuss either training transfer or soft skills, did not involve professionals, did not identify factors impacting transfer, were in a language other than English, or due to other miscellaneous reasons (e.g., non-peer-reviewed). Ninety-one papers were retained (see Figure 3 for the overall selection).

General characteristics of papers

Across the 91 records, articles were published between 1991 to 2022 with nearly 70% of the papers published from 2011 onwards. Full details of the paper characteristics (including geographic representation, methodological approach, industry sector, and type of soft skill) are reported in Table 1. Table S3 in Online Supplemental Material provides details on all 91 articles.

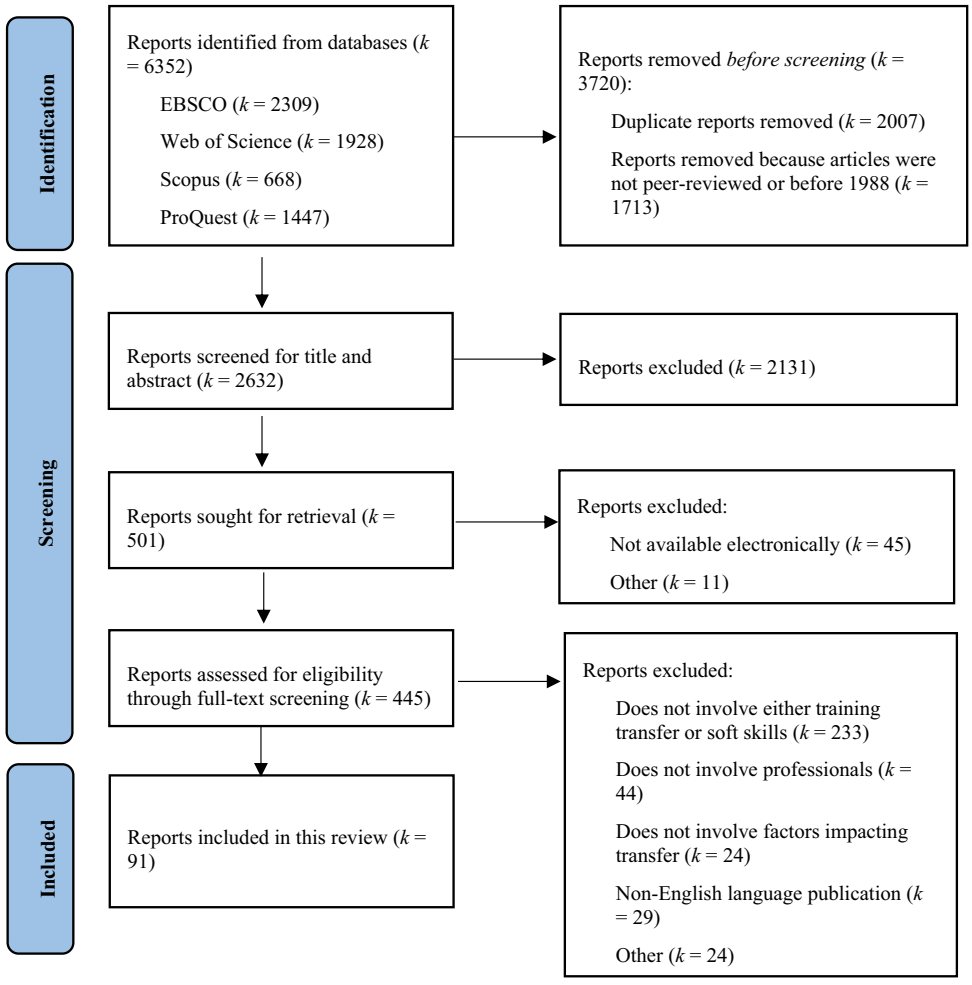


Figure 3. PRISMA flowchart of study selection.

Factors that impact the transfer of soft skills development

The review unveiled 69 factors (denoted as *n*) studied as predictors of soft skills transfer across the 91 papers reviewed (denoted as *k*). "Management support" was the most studied factor ($k = 28$), followed by "motivated to transfer" ($k = 25$) and "feedback or debrief" ($k = 21$). The least studied factors, with only one report each, were "post-training materials", "work engagement", "familiarity with behaviour", "training with a significant academic component" and "micro-learning". "Feedback or debrief" ($k = 13$), "simulation or practice" ($k = 12$) and "management support" ($k = 8$), appeared in most reviews. "Management support" was mostly studied qualitatively ($k = 13$), followed by "physical opportunities to practice" ($k = 12$) and "motivated to transfer" ($k = 9$).

Factors studied most frequently using quantitative approaches were "prior knowledge or experience" ($k = 12$), followed by "motivated to transfer" ($k = 10$) and "management support" ($k = 7$) and "mentoring or coaching or supervision" ($k = 7$). Eight factors, which include "factors beyond an organization's or individual's control", "(training that) improves saliency of skills", "organizational learning culture" and "work politics" did not have any quantitative findings. See Figure S1 in Supplemental Material for a mapping of all factors and papers, and Table S4 for a summary of the number of papers providing quantitative, qualitative, and review evidence for each factor.

One key step in ensuring clarity and consistency in classifying factors was to ensure that all factors were defined according to the papers that discussed these factors. These definitions were used to determine which factor(s) each study should be assigned to. The full list of definitions is shown in Table S5 in Online Supplemental Material.

Model development

We mapped the 69 factors onto the COMPASS model, including the six sub-themes discussed earlier and shown in Figure 1 and Figure 2 (i.e., physical and psychological capability, physical and social opportunity, and reflective and automatic motivation). While most factors were easy to classify, some factors required expert knowledge of psychological processes. For instance, Noe (1986) defined motivation as one's "desire to use knowledge and skills mastered in the training programme to the job" (p.743), whereas Atwood et al. (2010) equated motivation to "level of interest" and "inclination towards (leadership) opportunities" (p. 584). Both definitions entail reflective processes and were thus mapped onto "reflective motivation".

A disproportionally large number of factors ($n = 27$) fell into the "training design" component taken from Baldwin and

Table 1. Paper characteristics.

Paper characteristics ($k = 81$)		Count	%
Year of publication	<1996	2	2.20%
	1996–2000	4	4.40%
	2001–2005	5	5.49%
	2006–2010	17	18.68%
	2011–2015	21	23.08%
	2016–2020	23	25.27%
	2021–2022	19	20.88%
Geographic region	North America	30	32.97%
	Europe	27	29.67%
	Australia and New Zealand	12	13.19%
	Asia	12	13.19%
	Africa	8	8.79%
	South America	2	2.20%
Methodology	Quantitative	30	32.97%
	Review	25	27.47%
	Qualitative	20	21.98%
	Mixed method	16	17.58%
Sector/Industry	Healthcare	29	31.87%
	Education	13	14.29%
	Public sector	5	5.49%
	Construction	3	3.30%
	Athletics	3	3.30%
	Social work	2	2.20%
	Agriculture	2	2.20%
	Finance/Banking	2	2.20%
	Social enterprise	1	1.10%
	Technology	1	1.10%
	Law enforcement	1	1.10%
	Engineering	1	1.10%
	Non-profit organization	1	1.10%
	Not specified or involved multiple sectors	27	29.67%
Type of soft skills	Leadership skills	32	35.16%
	Communication skills	8	8.79%
	Interpersonal skills	8	8.79%
	Coaching skills	5	5.49%
	Emotional intelligence	4	4.40%
	Resilience and mental health-related skills	3	3.30%
	Conflict management skills	2	2.20%
	Innovative behaviour	2	2.20%
	Critical thinking skills	1	1.10%
	Involved more than one skill	4	4.40%
	Did not specify a skill (e.g., transferrable skills, professional skills, life skills etc.)	22	24.18%

Ford's (1988) framework. A closer inspection of the factors suggested that a breakdown into further sub-categories could be warranted. Thus, we created a third pillar – "training features" – with three subthemes: 1) training content, 2) training design, and 3) training implementation. The definitions of these and all other sub-themes can be found in Table 2 together with examples of factors. The final COMPASS model is shown in Figure 4.

Table 2. Definitions of sub-themes within the COMPASS model.

Sub-theme	Definition	Example factors
Physical capability	A professional's stable attributes, such as demographic characteristics, and skills levels.	Managerial position; Personality; Prior knowledge/experience
Psychological capability	A professional's capacity to engage in relevant comprehension and reasoning, and to plan and execute a desired behaviour. These characteristics can also be considered flexible.	Self-confidence; Self-efficacy; Self-management behaviours
Reflective motivation	A professional's conscious volition, and associated deliberations, plans, and beliefs about capabilities.	Being motivated to transfer; Positive attitude; Voluntary participation
Automatic motivation	A professional's actions or impulses driven by automatic responses, including habits, emotions, and instincts operating largely outside conscious awareness.	Cues or prompts at work; Familiarity with behaviour; Reward/recognition
Physical opportunity	The inanimate parts of the environment, which include resources and time, that can provide the right opportunity to transfer the skills learnt from training.	Availability of resources; Low workload; Organizational support
Social opportunity	The environmental context provided by people and organizations, and related social and cultural processes, that impact opportunities to practise.	Autonomy; Supervisor support; Knowledge sharing
External factors	Factors beyond an organization's or individual's control	Governmental policies and legislations etc.
Training content	Materials or information used in a specific soft skills training	Pre-training materials; Relevance of training; Significant academic component
Training design	Specific design elements of a training intervention that can improve the transfer of soft skills training	Multiple instructional methods; Time-spaced training; Trainer effectiveness
Training implementation	Specific methodologies or techniques used to deliver training	On-the-job training; Reflection; Role play

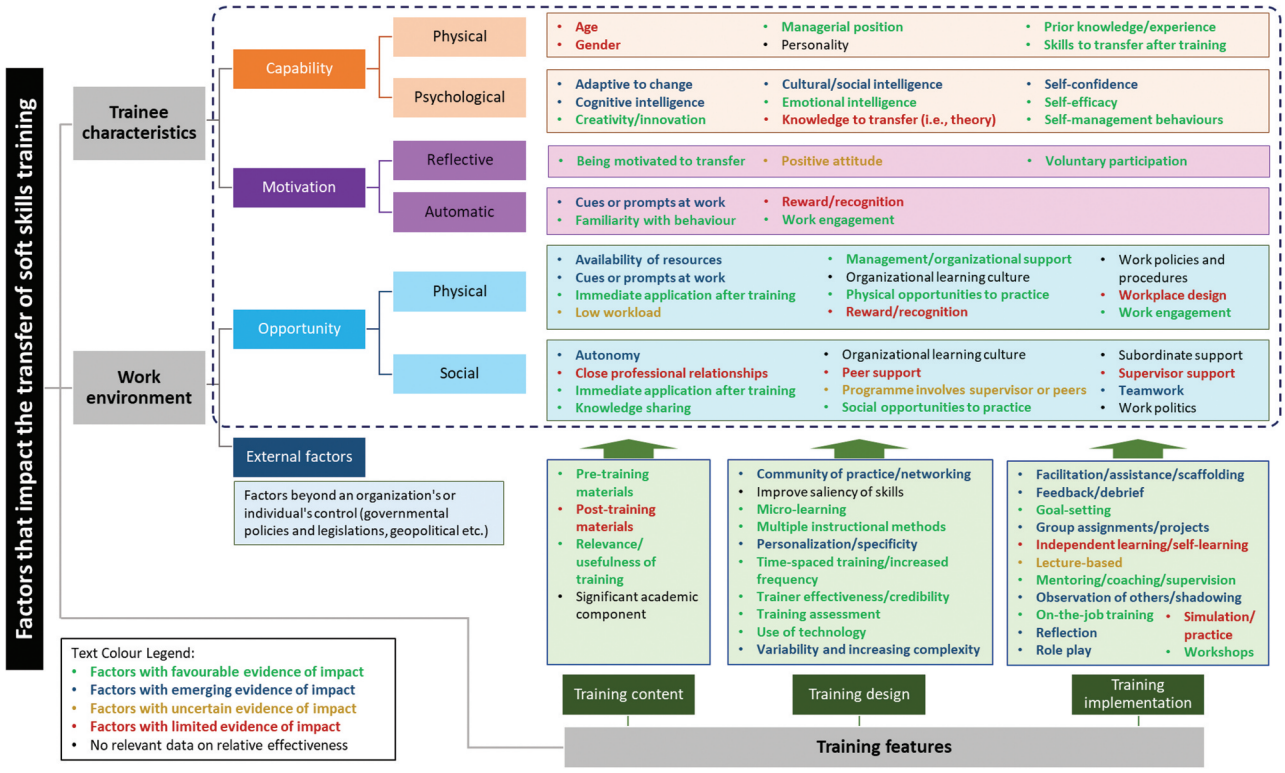


Figure 4. The COMPASS (capability, opportunity and motivation for professionals' application of soft skills) model.

All 69 factors could be allocated to at least one of the components of the COMPASS model. Five factors were classified into two sub-themes due to their co-dependencies. Specifically, "cues or prompts at work", "work engagement" and "reward or recognition" were mapped to both automatic motivation and physical opportunity considering that to elicit one's automatic motivation, changing elements in the environment may be necessary. "Immediate application after training" and "organizational learning culture" were also considered relevant for physical opportunity and social opportunity as soft skills can either be intrapersonal or interpersonal skills, whereby social opportunity would be important for the latter, but may not be necessary for the former. Overall, the COMPASS model appears to capture the literature well.

To ascertain that all components of the COMPASS model are consequential for training transfer, in a final step we examined the evidence for the effectiveness of each factor. First, we plotted the total sample size against the percentage of significant findings for each factor. This procedure is akin to a vote-counting method but addresses the problem that vote counting is mute to sample sizes, which is critical to ascertain the robustness of empirical findings (Allen, 2017). Eight factors were excluded from this analysis due to the absence of any inferential statistics. The total sample size was calculated from the sum of all samples of individual studies that report quantitative findings for a given factor. The percentage of significant findings was calculated based on the total number of significant results over the sum of significant and non-significant results for a given factor. Second, using cut-off points of 50% for the percentage of significant findings and 250 for the total sample size (Habibzadeh et al., 2016; Schönbrodt & Perugini, 2013), we classified factors into four groups (see Figure S3 and Table S6 in Online Supplemental Material for the full data and a scatterplot):

(1) Group A ($n = 29$): Factors with favourable evidence of impact. These factors have a high percentage of significant findings (>50%) and a sizable total sample size ($n > 250$). Examples include "prior knowledge or experience" and "familiarity with behaviour".
(2) Group B ($n = 17$): Factors with emerging evidence of impact. These factors have a high percentage of significant findings (>50%), but a fairly small sample size ($n \leq 250$). Examples include "cues or prompts at work" and "availability of resources".
(3) Group C ($n = 4$): Factors with uncertain evidence of impact. These factors have a low percentage of significant findings (≤50%) and a small sample size ($n \leq 250$). Examples include "lecture-based (training)" and "positive attitude".
(4) Group D ($n = 11$): Factors with limited evidence of impact. These factors have a sizable total sample size ($n > 250$), but a low percentage of significant findings (≤50%). Examples include "knowledge to transfer after training" and "reward/recognition".

Finally, we regressed the four groups representing different levels of effectiveness (i.e., Groups A-D) onto the four components of the COMPASS model (capability, opportunity, motivation, and training features) to examine the distribution of the effectiveness of the various factors. The ordinal regression found no evidence for any significant difference between the four

Table 3. Cross-tabulation between COMPASS domains and evidence groupings.

	COMPASS areas				
Relative effectiveness	Capability	Opportunity	Motivation	Training features	Total
Group A: Factors with favourable evidence of impact	7	5	4	13	29
Group B: Factors with emerging evidence of impact	4	3	1	9	17
Group C: Factors with uncertain evidence of impact	0	2	1	1	4
Group D: Factors with limited evidence of impact	3	4	1	3	11
Total	14	14	7	26	61

components of the COMPASS model, $\chi 2(3, n = 61) = 2.11$, $p = .549$. Furthermore, all components of the COMPASS model included Group A factors with favourable evidence of impact (see Table 3). This suggests that all components of the model are likely integral to addressing the soft skills transfer problem.

Discussion

While the unique challenges associated with soft skills transfer have been noted in both Baldwin and Ford's (1988) seminal work and in various research pieces that followed (e.g., Lacerenza et al., 2017; Laker & Powell, 2011), there remains room for further progress in this area (Marin-Zapata et al., 2021; Mishra & Sahoo, 2021). In pursuit of developing theoretically grounded methods to change the sort of automatic, effortless, and transferrable skills that underlie soft skills (but also, notably, many health behaviours), another field – behavioural science – has made steady progress. In the present research, we sought to develop a framework that conceptualizes the soft skills transfer problem as a behaviour change challenge. In integrating Baldwin and Ford's (1988) model with Michie et al. (2011) COM-B framework, the COMPASS model retains the emphasis on training features prevalent in the former, while providing the theoretical depth that underpins the latter.

To probe the viability of the integrated COMPASS model, we performed a systematic scoping review of the literature, which unveiled 69 factors linked to soft skills training transfer. Mapping the factors onto an initial formulation of the COMPASS prompted some minor modifications. Specifically, the "training design" theme adopted from Baldwin and Ford's (1988) model was converted into a "training features" theme with three subdivisions: "training contents", "training design" and "training implementation". The final model captured the literature well, with all factors allocated to a theme, and only five factors requiring cross-classifications. We also examined the evidence for the effectiveness of each factor in promoting training transfer. All themes in the COMPASS model (including the sub-themes) had factors that likely promote training transfer, and no cluster of factors was found to be more effective than other clusters. This suggests that all elements of the COMPASS model play a role in softs skills transfer.

The fact that we were able to distil 69 factors into four overarching themes (capability, opportunity, motivation, and training features) is a testament to the COMPASS model's integrative powers. This is particularly noteworthy when considering that leadership, communication, and other soft skills are characterized by complex sets of behaviours. The COMPASS model affords a detailed understanding of the key components of soft skills transfer – a requisite to create meaningful behaviour change. The model encourages us to consider different

Table 4. List of factors in the capability, opportunity, and motivation domains with favourable (Group A) and emerging (Group B) evidence of impact, mapped onto recommended behaviour change approaches.

	Capability		Opportunity		Motivation	
	Physical	Psychological	Physical	Social	Reflective	Automatic
Group A factors						
	Skills to transfer after training; Prior knowledge/experience; Managerial position	Self-management behaviours; Creativity/ innovation; Emotional intelligence; Self-efficacy	Physical opportunities to practise; Immediate application after training; Organizational support	Social opportunities to practise; Knowledge sharing	Being motivated to transfer; Voluntary participation	Familiarity with behaviour; Work engagement
Group B factors						
		Adaptive to change; Cognitive intelligence; Self-confidence; Social intelligence	Availability of resources	Autonomy		Cues or prompts at work
Recommended behaviour change approach						
	Training; Enablement	Education; Training; Enablement	Environmental restructuring; Enablement; Restriction	Environmental restructuring; Enablement; Restriction	Education; Persuasion; Incentivisation	Persuasion; Incentivisation; Environmental restructuring; Modelling; Enablement

NB: All factors have a high (>50%) percentage of significant findings, but only Group A factors were examined with a sizable combined sample size ($n > 250$). See in text for further details.

determinants of training transfer, including social and environmental factors, that can impact trainees' capability, motivation, and opportunity to apply their learnings at work.

A closer examination of the factors likely conducive to training transfer suggests that there is no silver bullet for applying soft skills training at work. Rather, as shown in Tables 4 and 5, there are a multitude of factors that training providers and organizations need to consider. The challenge begins with the question of who to select as factors such as voluntary participation, prior exposure to specific tasks or responsibilities, or creative dispositions appear to be conducive to training transfer. The training itself likely benefits from the use of technology, micro-learning, time-spaced training, and other learning innovations. Post-training, there should be timely opportunities for trainees to apply their learning at work, and they need to be given resources and support.

Our analysis also identified factors that may have intuitive appeal but may not be effective. Consistent with the notion that soft skills entail automatic, habitual behaviours, merely acquiring knowledge through lectures or similar forms of learning appears to be insufficient to promote soft skills transfer. Interestingly, while pre-training materials may be useful, post-training materials may be less effective. Furthermore, there was also limited evidence for the effectiveness of independent learning, suggesting that developing and applying leadership, communication, and other soft skills is a collective effort that benefits from professional input.

Implications for practice

Practitioners can boost soft skills transfer by incorporating a range of factors into their staff development training, ideally drawing on all themes of the COMPASS model. For example, looking at the Group A factors listed in Table 4, practitioners could ensure that trainees are exposed to relevant tasks or situations before attending a formal skills training (sub-theme: physical capability). Development assignments can be one way to accomplish this (e.g., Lombardo & Eichinger, 1989). Boosting trainees' self-management skills to cope with stressors is also likely to promote skills transfer (sub-theme: psychological capability). Voluntary participation (sub-theme: reflective motivation) is similarly beneficial, and so is the experience of comfort and confidence that can be achieved through familiarity with a given behaviour (subtheme: automatic motivation). Lastly, practitioners would do well to ensure that there are timely opportunities for trainees to use their skills (sub-theme: physical opportunity), and/or encourage trainees to share their experiences with peers, supervisors, or supervisees to reinforce learning (subtheme: social opportunity). These are of course only examples. Table 4 provides a full list of factors that practitioners can use to incorporate COMPASS components into their trainings.

Addressing all components of the COMPASS model in a single training has cost implications and may not always be feasible. Practitioners can use the COMPASS model alongside a job and/or training needs analysis to identify specific barriers of training transfer. Practitioners can then design training interventions that address those specific challenges. It is important to note that from the perspective of the COMPASS model, training needs do not solely arise from a skills gap between actual and desired *capabilities*. Rather, a skills gap can also arise from barriers associated with *motivation* and/or *opportunity*. While a detailed discussion of needs assessments is beyond the scope of the present paper, suffice to say that the Theoretical Domains Framework (TDF; Atkins et al., 2017) is popular amongst implementation scientists and often used alongside the COM-B model in intervention design (e.g., Fahim et al., 2020). The TDF provides greater granularity than the COM-B model, which can be useful to pin down facilitators and barriers to behaviour change. Crucially, TDF components can then be mapped onto the COM-B model for a higher-level analysis and to identify suitable behaviour change interventions (e.g., Younas et al., 2023).

Related to the previous point, the COMPASS model encourages practitioners to reflect on how best to promote skills transfer. In addition to the common approaches of education and training, practitioners should also explore other approaches such as persuasion, incentivization, restriction, environmental restructuring, modelling, and enablement (see Table S1 in Online Supplemental Material for definitions). Figure 1 shows which approaches are most effective for the different COMPASS domains, and Table 4 shows which approaches are most suitable for Group A and B factors. For instance, as can be seen, the factor "immediate application after training" related to opportunity can be leveraged using environmental restructuring (i.e., changing

Table 5. List of training features with favourable (Group A) and emerging (Group B) evidence of impact.

Factors	
Group A	
• On-the-job training	• Trainer effectiveness/credibility
• Relevance of training	• Multiple instructional methods
• Time-spaced training	• Use of technology
• Micro-learning	• Workshops
• Pre-training materials	• Goal-setting
• Training assessment	• Mentoring/coaching/supervision
Group B	
• Community of practice	• Feedback
• Personalization	• Group assignment
• Variability and increasing complexity	• Observation of others
• Facilitation or assistance	• Reflection
	• Role play

NB: All factors have a high (>50%) percentage of significant findings. However, only Group A factors were examined with a combined sample size of $n > 250$. See in text for further details.

the physical or social context), enablement (i.e., increasing means or decreasing barriers) or restriction (i.e., limiting the opportunity to engage in competing behaviours; Michie et al., 2011). Google's "whisper courses" are a good example of an email-based intervention that uses a combination of education, environmental restructuring, and enablement to "nudge" managers to apply their skills (Newhouse & Getz-Kikuchi, 2017). This example also illustrates how any given intervention can capitalize on multiple behaviour change approaches.

The COMPASS model extends beyond the COM-B model by explicating training features that are conducive to training transfer. As noted earlier, training features include training contents, training design, and training implementation. Table 5 provides an overview of the most promising training features uncovered in our scoping review. Practitioners can use this information to develop or procure trainings that are most likely to yield training transfer. Training features can be geared towards the capability, motivation, and opportunity elements of the COMPASS model. For example, on-the-job training (subtheme: training implementation) can provide timely opportunities for professionals to apply skills (subtheme: physical opportunity).

Limitations and future directions

The scoping nature of this review resulted in the exclusion of grey literature and unpublished manuscripts together with records that were not available electronically. Thus, the list of factors uncovered in our review is likely not exhaustive. Some factors may have been studied more frequently because they were easier to operationalize or more aligned with the zeitgeist. The present research provides a starting point, but there is an urgent need for further, high-quality studies, ideally using experimental research designs, to determine the effectiveness of the various factors linked to soft skills training transfer. Future research should ensure that best practice is followed when reporting statistics, to enable systematic investigations of the size and range of effects.

Relatedly, at present we do not know why some factors yielded stronger, and some factor weaker, evidence of impact. For example, our literature review uncovered favourable evidence that *management support* impacts training transfer, whereas *peer support* yielded limited evidence of impact. The more readily factors can shift trainees' capabilities, opportunities, and/or motivation, the more those factors should be effective in promoting soft skills transfer. The COMPASS model may thus be useful to generate hypotheses as to why some factors may be more effective than others. Returning to our previous example, management support may be more consequential for creating opportunities to apply skills at work when compared to peer support. Future research should test these conjectures.

Some relevant research did not feature in our literature review because it did not differentiate between hard and soft skills (e.g., Burke & Hutchins, 2007; Salas & Cannon-Bowers, 2001). This includes work on training enhancement procedures (see Rahyuda et al., 2014), although note that our review identified several factors that are focal points in training enhancement (e.g., goal setting, self-management behaviours). This raises the allied question whether the COMPASS model is applicable to hard skills training transfer. Researchers have used the COM-B model to encourage medical practitioners to perform technical procedures and administer alcohol screenings and interventions (Jeggle et al., 2019; Rosário et al., 2022) – both examples of hard skills. While these initial results are promising, empirical research is needed to ascertain if and how the COMPASS model extends to hard skills.

The present work did not attempt to differentiate between different soft skills. It is possible that some soft skills are more difficult to change than others, although we are not aware of any comparative research on this topic. We would encourage future work to apply the COMPASS model to specific soft skills and assess transfer in a comparative manner. The model may also be useful to conceptualize other organizational processes, beyond training transfer. For example, Lepak et al. (2006) segmented HR practices into skill-enhancing practices, motivation-enhancing practices, and opportunity-enhancing practices. Future research should probe the viability of the COMPASS model in informing organizational change initiatives.

Conclusion

Despite the large investment, soft skills training often does not yield desired behaviour changes at work. The aim of the present research was to develop an integrated soft skills training transfer framework, building on Baldwin and Ford's seminal training transfer framework and the COM-B behaviour change model. To probe the viability of the COMPASS model, we conducted a systematic scoping review, which identified 69 factors that have been linked to soft skills training transfer. The COMPASS model captured the literature well, and there is evidence that all constituent elements of the model contribute to training transfer. The model can guide future studies on soft skills transfer, assist training providers to refine their offerings, and provide insights for organizations seeking to invest in staff development training.

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Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article and in Online Supplemental Materials.

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