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How a New Learning Theory Can Benefit Transformative Learning Research: Empirical Hypotheses

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Transformative Learning research and practice has consistently stalled on three fundamental debates: (1) what transformative learning is, and how it's differentiated from other learning; (2) what the preconditions for transformative learning are; and (3) what transformative learning's predictable and relevant outcomes are. The following article attempts two main feats: (1) to provide a re-organization of transformative learning theory through the work of Vygotskian cultural-historical activity theory, and a newly synthesized meta-theory of learning and development generally, and (2) to use that re-organized model to articulate empirical research questions and hypotheses that are more amenable to observation and analysis than the typical time and cost intensive methods available to most researchers studying transformative learning today. The newly synthesized model draws on historical work in cognitive, social, educational, and clinical psychology, and clearly articulates the dialectical nature between the environment and experience, and what is meant by classical transformative learning concepts such as cognitive-rational frame of reference shifts, self/soul inner work, critical reflection, imaginative engagement, and everything in between.

Keywords: transformative learning, Vygotsky, ZPD, ICBCI, meta-theory, practical-critical

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INTRODUCTION

In the last four decades of transformative learning research, analytical-reductionist psychological science has proliferated characteristics and definitions of transformative learning without doing enough critical-dialectical theoretical work to resolve the inconsistencies between them (Cranton and Taylor, 2013; Howie and Bagnall, 2013). The following article is intended to make progress toward a resolution. Transformative Learning (TL), according to its most cited theorist, Jack Mezirow, is:

> The process by which we transform problematic frames of reference (mindsets, habits of mind, meaning perspectives) – sets of assumption and expectation – to make them more inclusive, discriminating, open, reflective and emotionally able to change. Such frames are better because they are more likely to generate beliefs and opinions that will prove more true or justified to guide action (Mezirow, 2008, p. 92).

In this context, frames of reference are composed of "habits of mind" and "points of view" (2008, p. 92). Habits of mind are defined as "broad, abstract, orienting, habitual ways of thinking, feeling, and acting, influenced by assumptions that constitute a set of codes" (2008, p. 92). Points

of view are defined as "the constellation of belief, memory, value judgment, attitude and feeling that shapes a particular interpretation" (2008, p. 92). An example provided by Mezirow of a habit of mind is ethnocentrism, a resulting point of view being the negative feelings, beliefs, judgments, and attitudes toward individuals or groups with different characteristics than our own (2008, p. 93). Finally, "problematic frames of reference" are those that result in a "disorienting dilemma" for the individual, where their current habits of mind and points of view are inadequate for overcoming some challenge through changing only a point of view or a habit of mind, and can only be resolved through changing the entire frame of reference, or the meaning-making relationships between the habits of mind and the points of view, or *how* habits of mind "result" in points of view (2008, p. 94).

Transformative learning then, is neatly described as occurring in the moment when a point of view transforms not only the habit of mind, but the entire frame of reference (habits of mind as well as resulting points of view and the relationships between them, p. 94; also defined as "structures of assumptions," 1997, p. 5). This deceptively simple illustration of TL has led to its application in diverse but not always easily relatable contexts and conditions (Nohl, 2015), and what exactly is meant by how points of view "result" from habits of mind (i.e., the frame-of-reference process) isn't very clear, and neither are its necessary and sufficient conditions (Dirkx et al., 2018). As a further confusion, frames of reference are alternatively described in Mezirow's later writings as composed by two dimensions (habits of mind and points of view, i.e., greater than the sum of these parts), as well as equated with one of these dimensions (habits of mind), often on the same page (2008, p. 92). Yet in his earlier writings, these concepts are clearly differentiated (1991, p. 5–6).

Not only has Mezirow's own thinking around TL evolved over time (Kitchenham, 2008), his original 10-step critical-dialectical theory (Mezirow, 2000) has been criticized for a lack of generalizability, and alternative models have proliferated within the gap (Taylor, 2007; Hoggan, 2016b). Both factors combined make theoretical differentiation (between TL and not-TL) and linkage (between various observations of TL) challenging. An example of the *ad hoc* proliferation: Taylor (1997) categorizes TL processes as psychocritical, psychodevelopmental, psychoanalytical, or social-emancipatory, which all require a disorienting dilemma but specifying various conditions that produce it and engaging different processes to resolve it. Then, Taylor (2008) adds neurobiological, cultural-spiritual, race-centric, and planetary to the typology, but it isn't clear how any of these new categories demonstrate consistent discriminant or convergent validity beyond loosely and incompletely described content validity (see Taylor, 2007, p. 10). Hoggan (2016b) further complicates this picture by categorizing TL outcomes without regard to the processes that may give rise to one category of outcomes instead of another.

An empirical issue resulting from this theoretical milieu: strategies for measuring TL or TL outcomes have relied on intensive qualitative data collection such as retrospective interviews (Taylor, 1994), focus groups (Hoggan, 2014), written content analysis (Boyer et al., 2006), video content analysis (Burden and Atkinson, 2008), and ethnography (Quinn and Sinclair, 2016), or on crude quantitative methods such as self-report scales (see Romano, 2017 for a review). These methods limit the scope and generalizability of TL research generally due to the time and cost implications of the qualitative strategies (Harder et al., 2021), or the lack of reliability found in self-reports. Further, methods have also tended to impose data collection instruments that probably instigate TL outcomes they hope to observe (e.g., Carrington and Selva, 2010, "reflection logs" p. 1; Harder et al., 2021 *WeValue InSitu;* see also Pernell-Arnold et al., 2012; Dirkx et al., 2018). These characteristics of TL research gate its theoretical advance and understanding by underemphasizing *a priori* hypotheses about what causes transformation in favor of arguing for the expansion of TL theory to include the researcher's domain of practice and/or methodology of choice. While it is important to find the conceptual and practical boundaries of TL, this is impossible to do without an anchored perspective, just as, somewhat ironically, the transformation from one perspective to another isn't possible without first one identified perspective and then a differentiated other perspective to transform to Mezirow (2003, p. 60). The purpose here is to show how previous TL meta-theory attempts have fallen short, and why, before explaining how a new theory of learning generally can boost TL research by providing such an anchor. To do so, I return to Mezirow's original conceptualization of TL, and show how its most mature evolution can be clarified and associated with evidence-based TL outcomes with this new theory. I then specify empirically testable hypotheses that afford broader, faster, and cheaper data collection methods for TL researchers.

What has been missing since the beginning are empirically testable hypotheses concerning:

(1) What is transformative learning, and how is it compared to other kinds of learning (Mezirow, 2000; Kitchenham, 2008; Sessa et al., 2011)?
(2) What are the preconditions for transformative learning to occur (Mezirow, 1978, 1991, 2003; Dirkx et al., 2018)?
(3) What are the predictable outcomes of transformative learning (Hoggan, 2016a,b; for relevant discussions, see Dirkx et al., 2006; Taylor and Cranton, 2012)?

These questions have been addressed in the literature by numerous authors examining qualitative data from their own perspectives with their own biases, resulting in disparate theories that pay minor lip service to one another without critically examining the gaps, overlaps, and confusions across them (Cranton and Taylor, 2013). This trend hampers theoretical development as the meanings of central terms like "perspective," "meaning," "frame of reference," and "habits of mind" are defined in conflict with previous definitions (Howie and Bagnall, 2013).

This article attempts to resolve these issues by applying a newly synthesized theory of learning and development to transformative learning, and then contrasting it with perceptual, adaptive, and generative learning (Goldstone, 1998; Sessa et al., 2011). First, a Vygotskian perspective on cultural-historical activity theory (Roth and Lee, 2007) is presented as the theoretical basis for this new theory of learning, known as

the Introduction-Conflict-Balance-Creation-Identity Theory of Learning and Development (ICBCI), which is then briefly outlined (see Friedman, 2021 for full details). Next, the stubborn challenges of TL research are reviewed in light of this new theory. Finally, ICBCI is used to state empirically testable hypotheses for TL theory as a theory-in-practice of learning-leading-development through human activity (Holzman, 2006; Roth and Lee, 2007).

VYGOTSKIAN CULTURAL-HISTORICAL ACTIVITY THEORY

As early as the 1930s, Russian psychologist Lev Vygotsky expressed frustration with educational psychology as employing "atomistic and functional modes of analysis. . .[that] treated psychological processes in isolation" (Vygotsky, 1986, p. 1). In the time since, numerous psychologists have taken up the charge to integrate psychological processes with one another with varying degrees of analytical-reductionism. While the various threads of this work go by many names, Vygotsky's colleagues and students developed what is known generally as cultural-historical activity theory (CHAT; Roth and Lee, 2007). Vygotsky's original emphasis on engaging critical-dialectical methods to discover the processes involved in human learning and development spurred his students, particularly Alexander Luria and A. N. Leont'ev, to develop his work further, culminating in what is today considered "third-generation CHAT" (Roth and Lee, 2007, p. 188). The roots of CHAT can be traced back to dialectical materialism (e.g., Marx, 1967), classical German philosophy (e.g., Hegel, 1991; Wittgenstein, 2010), and Vygotsky's (1978, 1986) writings. Vygotsky's work, considered the genesis of first-generation activity theory, emphasized activity, rather than the individual person, as the appropriate unit of psychological analysis (Newman and Holzman, 2013, p. 52), a revolutionary act amongst dominant Western constructivist theory (Loughlin, 1992, p. 791). In the second generation, students of Vygotsky incorporated societal, cultural, and historical dimensions into the dialectical materialist focus on activity (Roth and Lee, 2007, p. 189). And in its third generation, Leont'ev (1978) specifically argued for historically evolving object-practical activity as the fundamental unit and the explanatory principle for human learning and development (Langner, 1984).

Put simply, Vygotsky posited that psychological science was far more insightful and productive when viewing activity, rather than individuals, under definite conditions; his contemporaries and immediate students expanded these observations of definite local conditions, such as a teacher working with a student to learn language or mathematical operations, to global conditions, incorporating the cultural-historical dimensions of that activity, such as who was culturally welcome to learn math (e.g., largely wealthy men and boys) and by what historically embedded method (e.g., direct instruction). Finally, Vygotsky's intellectual descendants in Soviet Russia as well as Europe and the United States (e.g., Leont'ev, 1978; Cole, 1995) discovered the value and relevance of *cultural tools*, or objects and methods of practice under definite conditions. These tools develop and change through *praxis*, or the moments of real human activity that occur only once (Bakhtin, 1993), distinguished from *practice*, or the patterned form of action over time. For Vygotsky, what mattered was the activity engaged; for his students, the activity plus its contextualized expectations and norms; and for his descendants, that activity in normed context around stable tools also under development and change themselves, including but not limited to objects, theories, and spaces for and of activity. The development from first generation activity theory to present day CHAT is easily traced back to Vygotsky's work, and its reliance on Marxist dialectical materialism (applied to educational psychology). For this reason, CHAT is interchangeably referred to below as "Vygotskian" theory.

Actions in Activity

More recently, researchers pursuing further theoretical advancement of these Vygotskian ideas have emphasized the important distinction between *activity* as opposed to *behavior* (Newman and Holzman, 2013, p. 46). Activity is defined by conscious awareness of, and contribution to, dialectical-critical learning and development, in a radically monistic sense, *in history*, rather than *for society* (p. 49). In other words, human *activity* changes the conditions that define it while being defined by them (i.e., a *tool-and-result*, p. 47), or capable of making tools to remake itself with, similar to a dye-maker machine in a machine shop, which can produce parts to repair or enhance the dye-maker, essentially constituting a machine that constructs itself (an imperfect analogy to neurobiological systems such as the human brain). This is fundamental human activity, where the products (cultural tools in Vygotskian theory) of that activity redefine the activity itself in their construction and use (p. 87).

A simple example of activity under definite conditions would be when a group of people agree on norms for creating norms in the group, such as deciding to use voting to make decisions on what tasks to prioritize in completing a project. Another: a classroom of students deciding to improve the ecosystem of a local creek to learn about scientific observation techniques (e.g., Roth and Lee, 2004). While subtler, this example highlights the *radical monism* (Newman and Holzman, 2013, p. 137) of Vygotskian theory: in praxis (i.e., the exact same moment that is never repeated), students are learning (acquiring) and developing (evolving) scientific cultural tools as their unique perspective participates in the activity, adopting some pieces wholesale (e.g., velocity is equal to distance over time) while also adapting provided tools (e.g., exchanging Styrofoam balls for oranges to counter the wind's confounding effect; Roth and Lee, 2007, p. 204), the nature of their own interactional stance (child/observer to student/actor), and the nature of interaction generally believed to be culturally appropriate (direct instruction in dialogue with project-based learning). The refusal to engage in dualistic thinking (subject/object, individual/collective, and learning/development) in Vygotskian theory forces the theorist to think dialectically, which is:

> Equivalent to saying that any part that one might heuristically isolate within a unit [of activity] *presupposes all other parts*; a unit can be analyzed in terms of its component parts, but none of these

> parts can be understood or theorized apart from the others that contribute to defining it (p. 196).

Roth and Lee's (2004) study is a radically monistic description of humans engaged in activity under definite conditions, as "they not only contribute to the ultimate reproduction of society, but also increase action possibilities for themselves" (p. 205), and what is meant below by "learning-and-development," in the sense that *activity* is the cause-and-effect, dialectically, of simultaneous individual and societal learning within praxis (a single moment that occurs only once).

Critically, for ICBCI (see below), Vygotskian theorists characterize various forms activity by the nature of their motives (Leont'ev, 1981), realized by adopting the general object or motive of the activity itself (Roth and Lee, 2007, p. 201). ICBCI clarifies this motive as the *purpose* of the activity, useful for anchoring critical-dialectical analysis of human activity under definite conditions (i.e., in pursuit of an implied or identified purpose; Friedman, 2021, p. 6–7). Thus, preliminarily for the discussion below, [one form of] activity is praxis that reciprocally defines, and is defined by, the purpose (or motive) for which it is conducted (Leont'ev, 1981; Newman and Holzman, 2013, p. 148), such as when children engage in imaginative play, and develop a world where each child's assertions and contributions through word and action both change the nature of their own understanding and the nature of the imagined world itself *in the same moment and with the same act* (p. 99; Vygotsky, 1978, p. 102–103). The theoretical advancement made by the ICBCI model is to extend and clarify how purpose (such as "imagine a world to play imagination in") is a dialectical unity with the norms, goals, and meaning of praxis as well (Friedman, 2021, p. 5–6; also see **Figure 1** and section "ICBCI: A Learning Theory on its Frontier" below). Before discussing ICBCI in more detail, it is necessary to clarify what is not activity, *behavior*.

Actions in Behavior

When human actions are not dialectical in praxis (e.g., not simultaneously defining and defined by their definite conditions), they are instrumental, in service of a particular purpose (i.e., function) and are being defined by their conditions, but not defining them, referred to here as *behavior* (Newman and Holzman, 2013, p. 46). Behavior (i.e., *a tool-for-result*), implies a constellation of actions in service of societal conditions, with no access or capacity to change those conditions themselves, like using a screwdriver and a screw (Roth and Lee, 2007, p. 201–202). A screwdriver can make use of a screw because conditions allow for that, but it cannot change the norms of the screw-screwdriver relationship itself. In fact, it can only entropically deteriorate in service of those norms, such as stripping the head of the screw. Behavior can only change conditions defined by the purpose of the tool itself. In this example, the tool secures one material to another with the use of the screw. Behavior, as the term is used here, is akin to what has also been called *operations* (p. 202). Leont'ev (1978) viewed them as emergent "in the objective-object conditions of [goal] achievement" (p. 65), such as turning the screw "left-loosey" or "right-tighty." Deciding to do so is, potentially, conscious and goal-directed (e.g., "I want to tighten/loosen"), but given the overt goal (e.g., "tighten that screw"), is relegated to subconscious instrumental action taken for granted and barely attended. Instead, the action is assumed and conditioned over time. Thus, behavior (as opposed to activity) is defined entirely by its conditions, and cannot change the conditions themselves (e.g., the direction of the screw's helix, or what screws are for). An example relevant to education: a teacher simply assigning basic workbook problems "to teach math" and students completing those problems "to learn math." Activity in this case may involve arithmetic word problems the students write for each other or going shopping on a budget with various calculation requirements (see Lave, 1988).

For the present discussion, this distinction between activity (tool-and-result) and behavior (tool-for-result) lays the theoretical foundation for Mezirow's (2008) transformation in the context of ICBCI. For transformative learning to occur, activity is necessary, as the tools applied in the learning context are necessarily changed by the actions (i.e., tool use) of those experiencing transformation. In Mezirow's (2008) terminology, this is a point of view changing not only a habit of mind, but an entire frame of reference, or the relationships between points of view and habits of mind. ICBCI helps clarify this notion by connecting learning tools (predicting, trying, doing, and reflecting, i.e., habits of mind) to the products of tool use (purpose, norms, goals, and meaning, i.e., points of view), and further, by describing exactly what the relationships between points of view and habits of mind are: *connections between purpose*, and norms, goals, and meanings (i.e., Introduction, Conflict, Balance, Creation, and Identity activity and behavior). To clarify the meaning of this statement, a general outline of the ICBCI model is necessary.

INTRODUCTION-CONFLICT-BALANCE-CREATION-IDENTITY: A LEARNING THEORY ON ITS FRONTIER

See **Figure 1** for a reduced presentation of the ICBCI model of learning-and-development. ICBCI is a meta-theory that synthesizes historical work from cognitive, social, educational, and clinical psychology (Friedman, 2021). It posits that "zones of proximal development" (ZPDs; Vygotsky, 1986, p. 208–209) define-and-are-defined-by five "spheres of activity" (or behavior): Introduction, Conflict, Balance, Creation, and Identity (the hyphens here denote activity-like reciprocity between the constructs, i.e., are in dialectical unity). These spheres of activity (or behavior) are qualified by four "balance tools": Purpose, Norms, Goals, and Meaning; and two "imbalance forces": Rigidity and Chaos, resulting in Balance (i.e., activity/integration) or imbalance (i.e., behavior/trauma), whose interaction defines-and-is-defined-by learning-and-development. Each of these constructs is briefly explained below, and full details of the model can be found elsewhere (e.g., Friedman, 2021).

These spheres, tools, and forces are always in dynamic interplay in human activity under definite conditions (e.g., during all forms of learning). In other words, the purpose, norms, goals, and meaning (i.e., conditions) of an activity (or behavior)

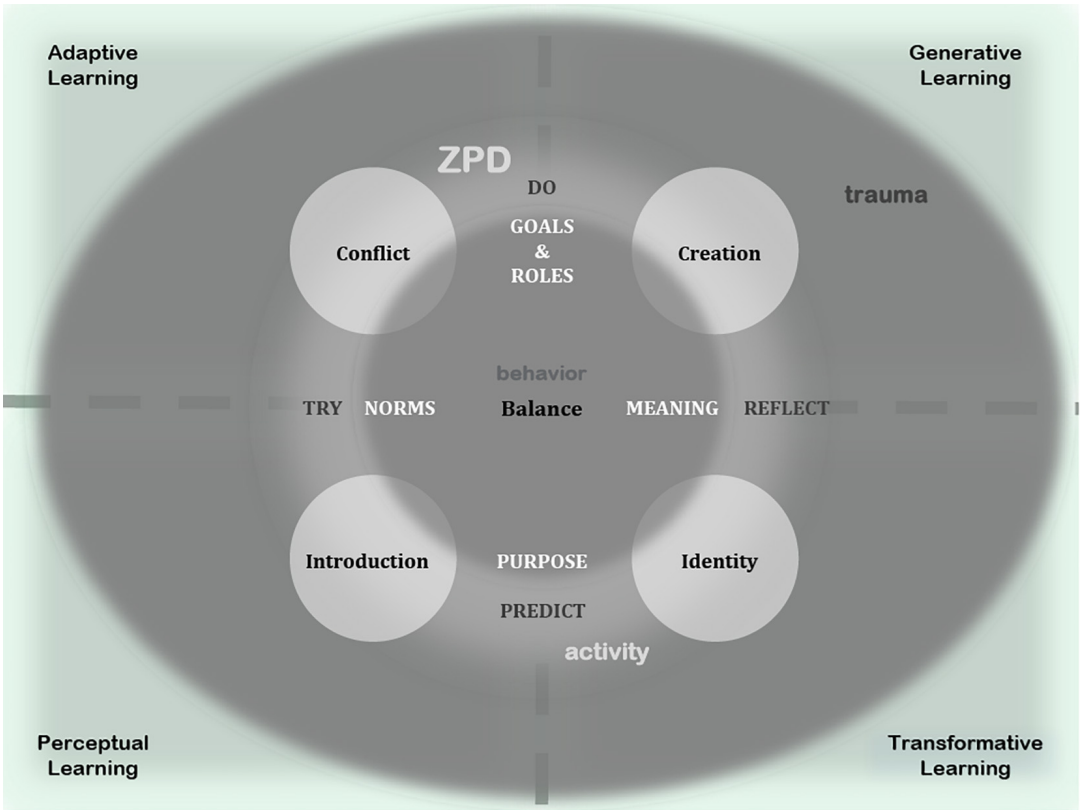

FIGURE 1 | Introduction-Conflict-Balance-Creation-Identity (ICBCI) model of transformative learning (TL). See full model details in Friedman (2021).

meet the rigidity| chaos present in the individual| group and the environment| purpose and produces either a ZPD (i.e., activity), behavior, or trauma. Note that here and below, the Sheffer stroke ("|") corresponds to the NAND operation in classical Boolean logic to denote the dialectical nature of these categories (Roth and Lee, 2007, p. 197). The terms on either side of the stroke *presuppose the other* and are understood as mutually exclusive terms of the same entity that together explain what neither alone does. While the rigidity| chaos unity isn't discussed at length in this paper, all that matters for the present discussion is that it explains the natural and unknowable forces of change that we, in praxis, affect, and affect us. The rigidity| chaos unity thus explains the infinite milieu of conditions in history humans contend against in their own processes of learning-and-development.

Under conditions ZPDs emerge, learning-and-development is perceptual, adaptive, generative, and/or transformative, depending on the spheres of activity that are defining-and-being-defined-by the ZPD (see **Figure 1**). Under conditions that ZPDs do not emerge, learning takes the form of conditioning, which is to say that the individual| group engages in behavior primed and enforced by the conditions that they have no power to change; they simply execute expectations, perfectly or imperfectly, without conscious access to the conditions' development, or their own. Before describing how this theoretical shift can aid TL research in section "Theoretical and Real Obstacles to Current TL Theory," the main constructs of the model relevant to the present discussion are briefly described.

Spheres of Activity or Behavior

Introduction-Conflict-Balance-Creation-Identity posits five modes of activity (or behavior; depicted as spheres in **Figure 1**) extended from the integration of classical group dynamics theory (Tuckman and Jensen, 1977) and the Kolb Experiential Learning Cycle (Kolb, 2014; for details of this integration, see Friedman, 2021). Each mode is defined by the interaction between two spectra: (a) perception-action, and (b) internal-external. The distinction between perception and action is related to common sense notions of observing or sensing and acting or doing, respectively. The distinction between internal and external is related to whether perception and/or action is directed to the outside world or inner milieu of the individual| group.

Thus, external perception describes the "Introduction" mode, wherein individual| groups observe and get a sense of their environment| purpose. Following clockwise around **Figure 1**, internal action describes "Conflict" wherein individual| groups act on the internal milieu of themselves, essentially to organize and resolve apparent contradiction or tension. "Creation" is described as "external action," the mode individual| groups engage while acting on their environment| purpose. Internal perception describes "Identity," or the mode wherein individual| groups observe and get a sense of their own being within the

environment| purpose. Finally, "Balance" describes the mode of any unity between (i.e., co-occurrence of) Introduction, Conflict, Creation, and/or Identity. Further, the model borrows Vygotskian theorists' discovery of activity as defining-and-defined-by learning-and-development and extend the discovery of this unity (and it's disunity, behavior) to activity as defining-and-defined-by the five modes (as each is a form of learning; see **Figure 1**), while behavior is simply defined by them (see above, Newman and Holzman, 2013, p. 46). The actions that support (i.e., create the potential for) activity, and thus learning-and-development, are called "balance tools" [note their places on the border between the Balance sphere and ZPDs (i.e., activity) in **Figure 1**].

Balance Tools

The balance tools – Purpose, Norms, Goals, and Meaning – are derived from the integration of the five spheres in **Figure 1** with the Kolb Experiential Learning Cycle actions: Predict (also referred to as Think; i.e., abstract conceptualization), Try (i.e., active experimentation), Do (i.e., concrete experience), and Reflect (i.e., reflective observation; Kolb, 2014), and serve as supports between the spheres (i.e., the more developed the balance tools, the more capable the activity or behavior). By taking the Vygotskian view of *activity* rather than *the individual* as the proper unit of psychological analysis (see Roth and Lee, 2007, Figure 4, p. 198; Newman and Holzman, 2013, p. 52), ICBCI recasts actions individual| groups engage in as tools (tools-for-results and tools-and-results depending on the definite conditions) that human activity (and behavior) requires to function. Sometimes these tools are explicit and conscious (i.e., articulated, acknowledged, and intentional), such as when the purpose of the learning activity, the methods engaged in pursuing that purpose, the goals (i.e., objectives) those methods aim to achieve, and the meaning of the resulting experience for that purpose are articulated. Other times they are implicit and subconscious (i.e., assumed, taken-for-granted, unknown potentially to both teachers and students), as is their negotiation. An example of activity at the conscious level are project-based learning environments where actions (and their environment| purpose) are co-constructed by both teacher and student. The unconscious level is common in apprenticeships where shifting balance tools may not be articulated or recorded but are nonetheless evolving through reciprocal activity between the apprentice and the expert. This evolution does not occur in behavior, where the tools are inaccessible to definition by the learner. Note here that these tools (purpose, norms, goals, and meaning) are also postulated to be the "definite conditions," and thus, while they *can* each define-and-be-defined-by one another, they do not need to be in praxis, and this is the distinction between activity and behavior, one of the crucial points of the argument presented here.

Given the focus of this article on transformative learning, the balance tools (i.e., conditions) most important for the present discussion are Meaning and Purpose. Or, as Vygotskian theorists consider it – the unity – human-activity-as-meaning-making-as-learning-and-development (Newman and Holzman, 2013, p. 198–199). ICBCI furthers this Vygotskian discovery by clarifying the unity's definite conditions and in so doing defines TL phenomena: when Meaning (i.e., the reflective observation of experience such as an appraisal, judgment, or metaphor) is engaged in as *activity* (i.e., meaning is made in such a way as to transform meaning-making, i.e., reflection), and *that activity* transforms Purpose (i.e., the conceptual abstraction of experience into a model or prediction) under those [transforming] definite conditions which further, is engaged in as an activity itself (i.e., transforms concept-building activity, i.e., thinking/predicting). Thus, the Vygotskian discovery of meaning-making-as-learning-and-development is, in ICBCI's theory of TL, further elucidated as meaning-making-transforming-purpose-as-learning-and-development (see also Immordino-Yang et al., 2019 for a discussion of this phenomenon from educational neuroscience). It is that meaning-making activity that transforms purpose of human activity under definite conditions (i.e., the balance tools, including purpose) that ICBCI identifies as transformative learning, in a radically monistic account. This is only a slight clarification of Mezirow's (2003) point of view (i.e., meaning) that transforms a frame of reference (i.e., purpose), but, as shown below, a crucially important one.

To preview, since human activity under definite conditions describes reciprocity between human actions and the conditions that define them, and those conditions are balance tools, and one of those balance tools is Purpose, and Purpose most powerfully influences the other three tools (Norms, Goals, and Meaning; see Leont'ev, 1981; Friedman, 2021), ICBCI shows how TL, in making Meaning that transforms Purpose that transforms Norms, Goals, and Meaning can lead to radical and irreversible change in individual| groups within their [transformed] environment| purpose: it transforms points of view (constellations of purpose, norms, goals, and meaning), habits of mind (predicting, trying, goal-setting, reflecting processes) and frames of reference (quality and capacity of Introduction, Conflict, Balance, Creation, and Identity activity and behavior). In other words, it is a radically monistic account of TL. The goal of the following section is to suggest that the most intractable issues of TL research and practice can be at least chipped away at if not alleviated by making exactly this relationship (meaning-making-transforming-purpose-transforming-conditions) clear, and amenable to observation, without the need for mountains of time and data to do so.

THEORETICAL AND REAL OBSTACLES TO CURRENT TRANSFORMATIVE LEARNING THEORY

Despite 30 years of work, theoretical progress on TL has stalled in the same places (Cranton and Taylor, 2013; Howie and Bagnall, 2013; Dirkx et al., 2018): what *exactly* is being transformed, what are the predictable consequences of this transformation, and how is this transformation an example of learning [processes] (i.e., how is transformative learning related to other, non-transformative, forms of learning)? The following section attempts to show how these obstacles can be resolved by a Vygotskian perspective of education and the

role of educational psychology. It is not the author's view that researchers today are unaware of Vygotskian cultural-historical activity theory, but rather that this work and Vygotsky's life-as-lived are often misinterpreted to fit a dominant, institutionalized concept of the bounds of psychology and its appropriate unit of analysis (the individual, or in less Westernized traditions, the collective). The following is an attempt to return to Vygotsky's discovery of human-activity-as-meaning-making-as-learning-and-development to show how ICBCI makes TL processes and outcomes observable across sets of conditions (i.e., Purpose, Norms, Goals, and Meaning). First, a brief review of the history of learning research is presented, before describing how ICBCI, in following Vygotskian cultural-historical activity theory, articulates TL's necessary and sufficient conditions as re-organizing [revolutionary] activity.

Before Vygotsky's and his contemporaries' work from the early 20th century was widespread in the West in the 1970s and 1980s, "learning," was first conceived by James et al. (1890), Thorndike (1927), and another Russian psychologist, Pavlov (1957; later championed most strongly by the American, Skinner, 1965), as innumerable stored Locke (1847) representations of stimulus-response (S-R) links, and all that mattered was how many times the S-R link had been "occasioned." Later, thanks publicly to Chomsky (1959), and privately to numerous passionate researchers (e.g., Newell and Simon, 1972; Neisser, 2014, among many others), the quality, rather than solely the quantity, of information processing was discovered as a factor in determining learning processes and outcomes. Only very recently in the West, biopsychosocial approaches to educational psychology and cognitive neuroscience (those that consider the biophysiological and social environment of learning in the process of research and practice) have strongly argued with tantalizing neural and behavioral evidence that while the information processing approach was certainly an improvement over behaviorism's S-R links, it still lacks much in the way of explaining learning phenomena, and is improved in this capacity by accounting for the motor, emotional, and social (i.e., the nature of the group and individual relationships present) contexts of the learning environment, and the surrounding socio-cultural-historical environment (i.e., the dominant culture(s) present; see Bandura, 1997 for a classical argument; Barsalou, 2008; Barrett, 2017, and Immordino-Yang et al., 2019 for modern perspectives).

During all this time, Vygotsky and his contemporaries published their work and passed away, largely ignored by the West. Also, during this time, Mezirow (1978) began his research program to investigate a particularly important sort of learning that seems to transform the very people who experience it, rather than simply provide another tool in their toolbelt (i.e., the learning experience re-organizes the entire structure of what they already know, rather than learning a new tool to simply apply or extend the structure already known). It is relevant to consider what Mezirow would have thought or what direction his work would have taken if Vygotsky's work was more well known in his time, but more pertinent to the present goal is how Mezirow's work can be understood in terms of the radical monism championed by Vygotskian scholars. In other words, Mezirow's classic 10 steps of TL (and learning more generally by Mezirow's descendants and colleagues) will be described as a dynamic emergent process in ICBCI, before describing the concrete predictable consequences of TL according to ICBCI. First, a broad overview of learning as conceived of by TL researchers generally is presented in dialect with Vygotskian ideas.

What Is Learning?

Though the actual attention to non-transformative learning by Mezirow waxed and waned over his career, it was clear to him that TL was a separable kind of learning from other kinds of learning (Mezirow, 2000). Particularly, TL according to Mezirow is a form of Habermas's (1984) "communicative learning" as compared to "instrumental" (learning to manipulate or control the environment or other people to enhance performance), "impressionistic" (learning to enhance one's impression on others), or "normative" (learning oriented to common values and a normative sense of entitlement to expect certain behavior) learning (Mezirow, 1997). "Communicative learning," or learning to understand the meaning of what is being communicated, is exactly what Vygotskian theorists had in mind when describing the unity of imitation-as-revolutionary-activity-as-learning-and-development, when they described how children imitate adults (and peers) in performing the activity they observe in others – and this is crucial – *only the activity*, and *not the behavior* (Bloom et al., 1974; Newman and Holzman, 2013, p. 56). In other words, Mezirow (and Habermas) are pointing at the tip of the Vygotskian iceberg: that learning to understand meaning is necessarily communicative, necessarily *an activity between* rather than *of*, individuals.

For Vygotskian cultural-historical activity theory, instrumental, impressionistic, and normative learning are not learning-leading-development, or revolutionary *activity*, but rather, *behavior*, or development leading learning, also, just plain "acting" (Newman and Holzman, 2013, p. 176; i.e., *operations,* Roth and Lee, 2007, p. 202). Behavior, and acting out behaviors, despite any learning's newness to a given individual| group, won't enable them to maintain that behavior outside the present conditions, unless those conditions are recreated *for* that individual| group. Vygotskian scholars contrast this kind of learning with the revolutionary activity of learning-leading-development, where individuals can transfer that activity to new sets of conditions (within limits, see Lave, 1988; Bransford and Schwartz, 1999; and Immordino-Yang et al., 2019 for discussions).

For Mezirow, TL occurs when a new "point of view" (as the result of cumulative progression toward that point, or sudden situational experience of it) changes not just a present habit of mind but the over-arching and determining frame of reference (1991), and this is contrasted with non-transformative forms of learning where the new points of view don't change anything (i.e., a new point of view), or change only a habit of mind or other points of view (i.e., both new meaning schemes), rather than the entire frame of reference (i.e., a new meaning perspective, 1991, p. 93–94; also described as content, process, and premise reflection, respectively, p. 107–108). For example, in the ethnocentric example earlier, a new point of view (e.g.,

"that person of a different ethnicity is more intelligent than I thought") experienced within an old habit of mind (e.g., "persons of different ethnicities are less intelligent") may lead a learner to adopt a only a new habit of mind (e.g., "my ethnicity's peoples are more intelligent for other reasons than ethnicity, like our culture"), or a new frame of reference (e.g., "all individuals exist on the same scale of intelligence regardless of origin"). Only the latter is an example of TL (related: Bateson's (1972), "Learning III" p. 293).

This is what makes TL irreversible for Mezirow: the shift in the frame of reference *as a result of* the new point of view, because the new frame of reference transfers to new and old points of view (e.g., "many people I thought inferior before are actually not"). For Vygotskian theory, this (tool-and-result activity: points of view defining-and-defined-by frames of reference) is what makes activity learning-and-development, or adapting to history, and behavior simply acting, or adapting to society (i.e., the adoption of a point of view, or a habit of mind, without understanding *why*, or *how*, i.e., without having access to the conditions; Newman and Holzman, 2013, p. 187–188). In this sense, behavior can be thought of as the expression of a point-of-view or the expansion or application of a current habit of mind. Activity, on the other hand, is either the adoption of a new habit of mind (when norming, goal-setting, and meaning-making processes are accessible and changed in accessing them) or a new frame of reference (when meaning-making-as-activity defines-and-is-defined-by purpose which then transforms habits of mind: norming, goal-setting, and meaning-making processes) resulting in reorganized points of view (constellations of norms, goals, meaning, and purpose).

For both TL and CHAT research programs, there is something unique about dynamic and reciprocal activity between humans and their conditions, and ICBCI attempts to articulate this uniqueness by clarifying what a "point of view" and "frame of reference" are (meaning and purpose, respectively), how they prime transformative experiences (meaning-making-transforms-purpose), and the product that is transformed (meaning-making-transforming-purpose-transforming-conditions). In the case of a TL experience relative to ethnocentrism, an old purpose (e.g., "maintain assumption of natural superiority over other humans") is transformed through a meaning-making process (see above) to a new one (e.g., "recognize common humanity regardless of ethnicity"), which then proliferates through new norms, goals, and meanings (i.e., conditions and points of view), and norming, goal-setting, meaning-making, and purpose-identifying processes (i.e., balance tools, or habits of mind). A final briefing note on learning perspectives in TL theory of learning generally will help interpret this claim (and **Figure 1**) before elaborating on transformative learning in ICBCI terms.

TL researchers since Mezirow have embarked on diverse directions to define learning, and transformative learning as a special case thereof (for a relevant dialogue on divisions within TL research itself, see Dirkx et al., 2006). Probably the most well-known taxonomy of this work within the TL literature (besides the Mezirow/Habermas taxonomy above) is described in detail by Sessa et al. (2011), who, working in a team learning space, define TL as:

> Re-shaping or altering the team's purpose, goals, structure, or processes. . .and requires experiencing disorientation and then reorientation for an entirely new direction for growth. . .produc[ing] a new team, structure, strategy, goals, and identity (p. 149).

Sessa et al. (2011) anchor this definition of TL by comparing Transformative Learning to Adaptive Learning ("reacting almost automatically to stimuli to make changes in process and outcome as a coping mechanism") and Generative Learning ("proactively and intentionally applying new skills, knowledge, behaviors, and interaction patterns to improve. . .performance") processes (2011, p. 149). Focusing on activity here as the appropriate unit of analysis rather than the individual vs. group distinction, this tool-and-result aspect of TL, and the tool-for-result character of adaptive and generative learning, clearly emerges. This suggests that for Sessa et al. (2011), adaptive and generative learning are forms of behavior [according to Newman and Holzman (2013)], and transformative learning is a form of activity (as defined by CHAT; Roth and Lee, 2007). ICBCI disagrees.

Relying on Vygotskian cultural-historical activity theory, ICBCI defines learning as *increasing capacity to act on a specified purpose under definite conditions*. Note the use of "act" here, rather than activity or behavior. The increased capacity is independent of any definite future reciprocity between actions and conditions. Some learning increases capacity for activity, some for behavior, and some for both. Some learning is learning-leading-development, and some learning is development-leading-learning. A key insight that follows this formulation is how all types of learning can be activity (tool-and-result) or behavior (tool-for-result), including TL (see above, and **Figure 1**).

To be clear, the transformative learning process that Mezirow (1991) describes is, to ICBCI, transformative learning-and-development (i.e., activity, or more specifically: meaning-making-transforming-purpose-transforming-conditions), but this is not the only kind of TL, because sometimes individual| groups "act out" TL, and are thus able to recreate the consequences of that TL experience in *those conditions*, but not in others (Newman and Holzman, 2013, p. 176). Their transformed frame-of-reference, in the case of Identity as behavior, is relevant to *only* that environment| purpose it was transformed in, and not others (e.g., being able to take a humanistic meaning perspective, or purpose, with a group of colleagues after an anti-racist workshop but reverting to egotistic perspectives with family). Remember, for ICBCI, conditions and balance tools are essentially the same, what matters is if they're accessible to individual| groups' actions. If they are, *activity* results; if not, *behavior*. The theoretical existence of TL activity doesn't preclude that of TL behavior [the "acting out," or unaware pretending of transformation, in Newman and Holzman's (2013) language, p. 176]. TL behavior is meaning-making-that-transforms-purpose (but isn't transformed, or to use Vygotskian language, reorganized, by it). In other words, the environment| purpose is transformed, but the individual| group's capacity for Identity, is not. This is also akin to Mezirow's (1991) point of view that changes a habit of mind (in this case, how

purpose is identified, or "process reflection," p. 107–108), but not the frame of reference (how identified purpose establishes conditions, or "premise reflection," p. 108). Before describing this difference in detail, it will be helpful to review the TL literature's response to the second stable obstacle: what is transformed.

What Is Transformed?

As mentioned above, for Mezirow (2008), problematic frames of reference are what's transformed. Also referred to as meaning perspectives, and defined as the "structures of culture and language through which we construe meaning by attributing coherence and significance to our experience," these frames of reference are transformed when those structures encounter a "disorienting dilemma," instigating a practical-critical process of reflection, identification, communication, and integration of changes in perception and action that culminate in a novel point of view from which an entirely re-organized frame of reference propagates (p. 92). This cohering and signifying structure of experience, for human activity, is Purpose, or more specifically, tool-and-result activity-as-identifying-purpose-transforming-conditions. The relationships between and among the individual's points of view are themselves reorganized to reflect a new meaning perspective (i.e., frame of reference). For ICBCI, Purpose constructs (i.e., is) the frame of reference, and is also the primary condition for the activity [or behavior] engaged in, framing every other condition (Norms, Goals, and Meaning). This *formation of perspective* (i.e., Purpose) for human activity sets the stage for transformative experiences, serving as the landmark for meaning-making activity to transform, in so doing transforming every other condition for the individual| group. Purpose has a special place in ICBCI, and in human activity (Leont'ev, 1981; Friedman, 2021).

No matter the typology of the transformation itself (or the typology of its outcomes), it can be described by ICBCI. Taylor (1997, 2008) identifies eight types of TL processes (see section "Introduction"). ICBCI can anchor every kind under the umbrella of a relevant and articulated Purpose of human activity under definition conditions without the need for eight categories overlapping to different extents with one another. To simultaneously echo and update Taylor (2008), the exciting part of the diversity offered by the Purpose concept emulates the diversity of human learning-and-development, and thus helps us get that much clearer on the more fundamental question of what *exactly* develops – the capacity for [revolutionary] activity (itself enabling behavior) within the reach of present definite conditions – and how that development occurs: activity-as-meaning-making-transforming-purpose. When conditions (Purpose, Norms, Goals, and Meaning) are such that individual| groups can change their conditions through their actions (i.e., engage in activity) and one of those actions is a meaning-making process that transforms their purpose in that environment| purpose (transforming the rest of their conditions), we can say that TL, as Mezirow (2008) described, occurs.

The infinite number of purposes that may be identified (and their context-bound necessity) provides scope and structure to TL research by enabling taxonomic efforts to focus on the nature of the change itself, rather than its antecedents and consequences. Thus far, the codification effort of TL has proliferated in walled gardens within the taxonomy all claiming a unique kind of transformation (e.g., psychocritical, cultural-spiritual, race-centric, etc.), for which the list of necessary and sufficient conditions for a "disorienting dilemma," "critical reflection," or "imaginative engagement" to occur has rarely simplified, and far more often compounded on itself in the effort to answer critics and broaden the umbrella TL theory covers (e.g., Taylor, 2008; Hoggan, 2016b).

In contrast to these efforts to categorize disparate content, ICBCI focuses on the dynamic and continuous process of emergent transformational activity (or behavior), making clear what exactly is transformed: Purpose (and as a result: balance tools, as well as the capacity of their interactions, Introduction, Conflict, Balance, Creation, and Identity); how it is transformed: tool-and-result meaning-making-transforming-purpose; and what enables, or instigates this *activity*: a set of conditions (i.e., purpose, norms, goals, and meaning) that *don't have the capacity to fulfill the current Purpose*. This can be mapped onto the model and compared to other forms of learning-and-development (i.e., activity, not behavior), that are not transformative (see **Figure 1**): *perceptual activity* transforms the Norming process through trying new norms (based on present purpose); *adaptive activity* transforms the Goal-setting process through setting new goals (based on present norms and purpose); *generative activity* transforms the Meaning-making process through making new meaning (based on set goals, norms, and purpose); and finally, transformative *activity* transforms the purpose-identification process through identifying new purpose (based on made meaning, in pursuit of a goal, through norms, hinged on purpose), that, due to the environment| purpose unity (i.e., the conditions-defining nature of purpose), transforms perceptual, adaptive, and generative *activity*, or the relationships between norms, goals, meanings, and their formation processes. In this way, ICBCI's definition of learning can be further elucidated as taking the shape of *either* (a) learning-and-development, or transferable learning (to new sets of definite conditions) when engaged as *activity*; or as (b) development-leading-learning, or non-transferable learning when engaged as *behavior*. This is a very Vygotskian idea: that the development we are in search of in the process of education is that which can be carried around, and this is only made possible when the learning individual| group has access to reshaping (through activity) the conditions of their environment| purpose, or what Vygotsky described as the ZPD (Vygotsky, 1978). See **Table 1** for examples of activity and behavior for each kind of learning.

What makes TL truly unique in the pantheon of learning phenomena tends to be its emphasis on *its* changes changing everything else. Again, ICBCI models exactly this, as it is only through transforming Purpose, through transformative activity that one "re-Introduces" their "entire self" (purpose in this set of definite conditions) to a new set of definite conditions from a new meaning perspective, or purpose. Further, for the purposes of TL research, that newly transformed purpose can be anchored to a set of meanings before, after, and within any particular meaning-making process, the changes in those meanings can be

TABLE 1 | Examples of activity vs. behavior for various learning types.

Learning type	Definite conditions	Activity	Behavior
Perceptual	Purpose and norms	A wandering adventurer attending to the smells of flora and fauna, given a guidebook with only images and descriptions of texture	A wandering adventurer attending to the textures of the flora and fauna and comparing them with the guidebook's descriptions and images
Adaptive	Norms and goals	A group deciding to follow their own chosen leader's instructions, rather than the leader assigned by a teacher or supervisor	A group following the assigned or implicitly elevated leader's instructions as closely as possible, despite personal grievances
Generative	Goals and meaning	A grade school teacher assigning a free choice research project to help students study for the end of year standardized test	A grade school teacher creating as many questions as similar to the standardized test questions as possible to help their students study
Transformative	Meaning and purpose	A policeman, upon seeing a young person using substances on the street deciding, for the first time, and thereafter, to take them to the local safe injection site instead of the police station	A policeman, upon seeing a young person using substances, tries to get to know them and their struggle while taking them to the police station

Learning types are not mutually exclusive.

identified, and any resulting changes in activity or behavior under new conditions (i.e., new norms, goals, meaning, and purpose), integrated and observed to build a theory of what potentiates TL experiences. Finally, the complexity of any given environment| purpose: its depth, breadth, and coherent integration (or rigidity| chaos) can be interrogated with systematic clarity compared to the transformed environment| purpose. Before an illustration of this potential, the TL predictions ICBCI makes beg elaboration.

What Are the Predictable Consequences of Transformation?

The final stubborn stumbling block to TL theory and practice that ICBCI can help resolve are the predictable consequences (i.e., evidence) of transformative learning. Here, the challenge is collecting practical and observable data from TL phenomena. Because it hasn't been clear what the antecedents to transformation are systematically (other than "disorienting dilemma"), data is typically sampled from settings considered dramatic enough to make TL likely (e.g., breast cancer survivors, Hoggan, 2014; outdoor adventure education, Meerts-Brandsma et al., 2020; developing cultural competency as members of historical majorities, Taylor, 1994; and the women's liberation movement, Mezirow, 1978), rather than observing TL under definite conditions where TL is theoretically potentiated for some actions, but not all actions, and the hypotheses determining which are tested empirically.

In other words, in TL's fragmented theoretical landscape, researchers can study who transforms *when they do transform*, why *they* transformed, and what the consequences of *their* transformation are, but they cannot study who *doesn't* transform, or what actions or conditions prime transformation vs. don't, because the experimental contexts engaged assume that transformation is inevitable for at least someone under those conditions (and researchers focus on *them*). The limitations of these contexts restrict researchers' ability to understand the boundaries of what TL is and what it isn't (Nohl, 2015). TL research today can't study why certain actions don't lead to transformation unless one or more of Mezirow's 10 steps didn't occur, or the active frame of reference wasn't "problematic," but these are vague and insufficient negative definitions (Apte's (2009) dialectical model is an interesting practical-critical exception that hasn't been noticed much by TL researchers). Further, the theoretical models available for collecting systematic data on a TL experience (i.e., transformative activity and its consequents) remain sparse, and require an intensive amount of qualitative data collection and analysis to draw conclusions (see Harder et al., 2021 for a relevant discussion and attempted technological solution resulting in similar limitations). These limitations in scope and efficiency can be overcome if conducting TL research based on ICBCI.

Regardless of the setting observed, TL outcomes are often categorized in terms of their depth, breadth, and stability (e.g., Hoggan, 2016b). ICBCI further clarifies "stability" as "integration" (differentiation *and* linkage; Siegel, 2001), or increasingly greater capacity of modes of activity (i.e., ICBCI; Friedman, 2021). Every TL experience, according to ICBCI, leads to a sweeping activity period where meaning-making-transforms-purpose, and that *made meaning* propagates through *transforming purpose* which then re-organizes norms, goals, and meanings related to that environment| purpose. This is what ICBCI means by a transformed re-introduction to definite conditions. Those definite conditions are defined by the identified purpose. The introduction (or any other) mode can be either of activity or behavior. In both cases, the perceptual learning (or any mode of learning) and the formation of norms (or any balance tool) are based on, or related to, the environment| purpose. Engaging in activity (rather than behavior) in any form of learning extends the environment| purpose to which that learning will transfer. However, it is only when the introduction mode (or any mode) is engaged in *as activity,* as the direct result of the Identity mode *as activity,* that there is evidence of TL (i.e., if perceptual, adaptive, and generative activity transforms as a result of meaning-making-transforming-purpose). If perceptual, adaptive, and generative activity (and behavior) is a spontaneous propagation of that meaning-making-transforming-purpose process, there is evidence of TL. When there *is* evidence of TL, ICBCI predicts that, in Siegel's (2010) language, the [transformed] definite conditions (purpose, norms, goals, meanings) will be more flexible, adaptive, coherent,

energized, and stable across and within the environment| purpose (p. 69–71). In essence, their capacity for [revolutionary] activity (as opposed to [societally expected] behavior), will be greater, and challenges that used to be more difficult are now less, achievements that were impossible before will now be possible. Wondrously, this claim of course, is an empirically testable one, because we can anchor on each environment| purpose and test each individual| group within it.

Thus, the 30 year-old questions: what are the consequences of transformation, and how do they differ from consequences of non-transformation, can finally be answered. The consequences of transformation are contained in the dialectical unity: Meaning-making| Purpose| Norms| Goals| Meaning (i.e., a meaning-making process that transforms purpose results in a new purpose, or meaning perspective, that requires transformations of Norms, Goals, and Meanings, *and their formative processes,* to align with the transformed Purpose). This means that no matter the content of the outcomes (e.g., Hoggan, 2016b, p. 70), they can be described in terms of Purpose, and its transformation under definite conditions (of norms, goals, and meaning). This focus on Purpose allows individual| groups (be they researchers or learners) to identify specific changes relevant to history (i.e., their activity), rather than society (i.e., their behavior; acting out what is expected). Additionally, each purpose can be seen both as what is transformed: from the previously identified purpose to the newly identified one; and the outcomes of that transformation: new purpose propagated through new norms, goals, and meanings, *as well as* new norming, goal-setting, and meaning-making processes. An identical formulation of the consequences of TL: "triple-loop" learning (Peschl, 2007), or that which re-organizes itself, is re-organized by, and reorganizes its container in the process of its performance. The consequences of non-transformative learning-and-development (i.e., perceptual, adaptive, and generative activity): "double-loop" learning (Argyris, 1977), or that which re-organizes itself in the process of its performance. These are the predictable consequences and key pieces of evidence TL theory has been searching for: new meanings re-organizing purpose, which then re-organizes norming, goal-setting, and meaning-making processes to align with the historical direction of activity for each individual| group experiencing TL.

DISCUSSION

Thus far, this theoretical proposal has suggested that TL theory has faced the same obstacles since Mezirow's formulation of the topic: a lack of clarity on what exactly learning is, what transformative learning specifically transforms, and what the predictable consequences of these transformations are. These obstacles have kept TL research largely in a qualitative case-study space, only tentatively inching forward into experimental and generalizable methods until a stringent criterion for dramatic enough change gadflies researchers and hampers further progress (Cranton and Taylor, 2013).

Introduction-Conflict-Balance-Creation-Identity offers the following resolutions: (1) learning conceived of in Vygotskian terms as tool-and-result activity, or tool-for-result behavior. While the latter is still learning, it isn't capable of re-organizing its conditions, only being defined by them, and thus can't be transformative activity (or transferable to new sets of conditions), though might be "acting out" transformative behavior (in which case we would expect meaning to shape purpose, but not purpose to re-shape meaning, losing any holistic transformation, or "breaking the loop"); (2) TL as transforming purpose through meaning-making processes that are also transformed through transforming that purpose of activity under definite conditions. It is the unity, meaning-making-transforming-purpose that is itself transformed during TL activity. Finally, (3) the predictable consequences of transformation are (so far discovered) transformed Norming, Goal Setting, and Meaning-making *activity* (tool-and-result change, and their ICBCI interactions) related to Purpose-identifying activity for the environment| purpose. Given these tool-and-result methods for investigating TL, researchers can be more efficiently equipped to observe necessary and sufficient conditions for TL *for every*

TABLE 2 | ICBCI empirical transformative learning (TL) questions and hypotheses.

Research question		Hypotheses
(1)	Under what conditions does activity emerge? How do these conditions differ when emerging from behavior vs. activity?	(a) Activity emerges when reorganizing purpose, norms, goals, and/or meaning, as opposed to other things
		(b) Activity emerges from behavior by reorganizing at least one balance tool
		(c) Activity emerges from activity by reorganizing at least two balance tools
(2)	How does activity change as a result of TL experiences [of activity-as-meaning-making-transforms-purpose-transforms-norms-goals-meaning]?	(a) Activity occurs more often under similar (but reorganized) conditions as a result of TL experiences
		(b) Activity under similar conditions is more complex in depth, breadth, and integration after TL experiences under definite conditions
(3)	Within groups, how does "meaning-making-transforms-purpose" vary by role in the group?	(a) TL will occur earlier, more readily, and it will change more meanings for individuals central to the activity of the group as compared to individuals less involved in the group activity [and behavior]
(4)	What are the differences between TL outcomes that transfer across environment|purposes individual|groups engage in and TL outcomes that don't?	(a) Transferable TL outcomes result when individual|groups are able to reorganize meaning-making processes that transform their environment|purpose, whereas non-transferable TL outcomes do not have access to reorganize these processes

purpose under definite conditions. An example of what this could look like follows before presenting final thoughts and empirically testable hypotheses based on ICBCI for TL.

An Illustration of Transformative Learning According to Introduction-Conflict-Balance-Creation-Identity

Outdoor adventure education (OAE) is known for its TL potential so much so that a large part of the field's research and practice is focused on TL theory and outcomes (e.g., Meerts-Brandsma et al., 2020). Briefly, OAE typically involves a stable group of learners spending a significant amount of time together engaged in challenge-based problem solving (usually, but not always, outdoors in nature). The significance of each element of these conditions can't be easily overstated. The group primes dialogue, the environmental challenge primes practical-critical activity, and the significant time together, reflection and conceptualization. Typical TL examples in these environments are when individuals see themselves as more capable and competent as a result of overcoming an obstacle they thought impossible for them to overcome (usually following a challenge they saw themselves as incapable to accept, but then, through activity, through imitation-learning-leading-development in a ZPD, they realize they are actually quite capable; Newman and Holzman, 2013, p. 176). And this new point of view, that they are more capable than they realized, propagates through their frame of reference (who they are as a person, what they as a person are capable of) and habits of mind (responding "oh, I can do this" to a tall tower to climb or long hike instead of "get me out of here") across contexts, or sets of definite conditions (i.e., feeling capable of public speaking as a result of completing a long hike, not because long hikes make you good at public speaking, but because the frame of reference, individual competence judgment, has re-organized to prime confidence in the face of challenge rather than insecurity). While basic, this is, in a general sense, the archetypical TL trajectory in Mezirow's (2008) language.

Introduction-Conflict-Balance-Creation-Identity can help define what is observed in this example and what can be predicted about similar purposes under definite conditions. The "disorienting dilemma" can be further clarified in terms of Norms (e.g., as the normative belief: "I am incapable of doing things that scare me") that didn't support the capacity of articulated Goals (e.g., "I am going to climb this tower") that instigated Meaning-making activity that transformed Purpose (e.g., "If I can climb this tower, I was wrong about being incapable, I wonder what else I thought myself incapable of that I might actually be quite able to do. . ."). In this case, Purpose has shifted from, for example, "I am here to climb towers", to "I am here to increase my self-confidence, in climbing towers as well as doing many other things." Each of these four conditions can be identified prior to and in the moment of disorientation, what ICBCI refers to as imbalance, to interrogate the dynamic interrelationships that prime TL *for every purpose* (in our current example, what is stated above, or perhaps "to increase feelings of competence in the face of challenges"). Importantly, this shift in purpose is *only possible* in activity, as in behavior, these conditions cannot be accessed or negotiated, and likely take the form of "to climb a tower as a group" (Newman and Holzman, 2013, p. 194–195).

Introduction-Conflict-Balance-Creation-Identity can also further clarify the shift in meaning perspective by anchoring on the pre-transformational meanings and interrogating meanings post-transformation, or during TL activity, to better explain the mechanisms of TL (i.e., Norms-Goals-Meanings in conflict with Purpose under conditions of activity, which is to say Purpose-Norms-Goals-Meaning constellations that are accessible to the learner). This allows researchers and educators to peer inside the black box of "shifts in meaning perspective." In this case, pre-dilemma meanings had to do with maintaining norms related to the purpose of competence that interpret the environment as threatening, overwhelming, and beyond the competence of the individual| group. Since the hypothetical post-transformation norms are observed as "interpret challenging environment| purposes as welcoming and tantalizing," the TL activity itself, the during-imbalance meanings can be interrogated for change processes with clarity. For example, imagine that in the moment of struggle, the individual| group [potentially] undergoing transformation is probed for their current meaning of the environment| purpose; this is surely more reliable and less expensive than extensive retrospective interviews.

Purpose, and its transformation – in this case, first to increase competence by going on an OAE trip, and then, to feel competent in the face of challenge – is what helps anchor TL theory, research, and practice according to ICBCI. What norms were meaningfully related to the imbalanced purpose, and what norms are now meaningfully related to the balanced purpose? What goals? What meanings? Was there Norming, Goal Setting, and Meaning-making *activity* preliminary to Purpose-identifying *activity*, or only norming, goal setting, and meaning-making behavior? These are empirically testable hypotheses. As the articulated purpose changes, and as activity supplants behavior, hypotheses can also be articulated as to the direction of that purposeful change, and the effect of its direction and magnitude on consequent Norming, Goal-setting, Meaning-making, and Purpose-identifying activity processes. These empirical hypotheses can then help potentiate activity that reorganize TL (and ICBCI) theory itself to understand the lifespan of TL, activity under definite conditions that create capacity for TL, and the resulting impact on the lives-as-lived individual| groups who experience TL. Nothing is more important in a world with so much integral change to make so quickly.

Conclusion

Vygotsky and his descendants' discovery that all [revolutionary] learning-and-development is a dialectical unity (meaning-making-as-learning-and-development) necessarily embedded in history (human activity under definite conditions) helps us clarify, through a synthetic meta-theory of learning, ICBCI, and the organization of classical features of TL, and further clarifies *exactly* what they are: disorienting dilemmas

are threads of Norming, Goal-setting, and Meaning-making activity (or behavior) incapable of fulfilling articulated (or implicit) Purpose (i.e., are imbalanced), instigating Purpose-identification activity, or tool-and-result meaning-making-transforming-purpose. Dialogue, imaginative engagement, and critical reflection are more integrated Norming, Goal-setting, and Meaning-making activity propagating from Purpose-identification activity, and *not* behavior; and transformed frames of reference are more capable and complex, which is to say deeper, broader, and more integrated meaning perspectives, or Purpose under definite conditions. A final example from development: consider a baby's environment| purpose to understand utterances shifting to the application of utterances in communication. It is an open question whether this is identical to TL in the adult context (i.e., that transforming purpose is instigated by meaning-making activity) or whether it is simply behavior. ICBCI-based experiments can help sort this out by pursuing methods to probe the concept of "meaning-making" itself, and how the activity of it develops.

Future Directions

With ICBCI and its tool-and-result methods covering the entire TL trajectory, TL researchers and practitioners can now readily articulate sets of concrete empirical hypotheses. Some examples are summarized in **Table 2**, many are in the preceding text. It is the hope that this clarification of TL theory and concepts will enable researchers to interrogate deeper relationships between activity and behavior, between perceptual, adaptive, generative, and transformative learning, and most importantly, between activity and exactly what develops as humans digest experience. Additionally, some classic lines in the sand for TL researchers such as whether TL is a qualitative or quantitative phenomenon, an individual or group process, or has social or individual sources of disorientation can be wiped away by recognizing activity, rather than an individual, as the appropriate unit of analysis, and can specify the conditions of that activity (i.e., Purpose, Norms, Goals, and Meanings) in terms of both its qualitative and quantitative characteristics, its differences when observed in individuals, groups, entire cultures, or some individuals in groups or cultures but not others, and how these levels interact. For example, an open empirical question is whether transformational learning on behalf of a leader primes transformational learning across the culture that they lead (Friedman, 2021). This shift in the unit of analysis is itself revolutionary activity in the service of psychology-in-history's Purpose-identification: to describe and predict human activity under definite conditions, rather than to describe and objectify a human, as humans are not objects, in their transformation or otherwise, and don't behave well or act naturally when studied or interacted with as such. Recognizing activity as the appropriate unit of analysis opens the door to agency on behalf of those studied in the context of transformation, for which agency is crucial according to Vygotskian theory. The purpose above has been to show how recognizing agency as such can move TL beyond the stumbling blocks currently on its treadmill. In Vygotsky's words, "the method is simultaneously prerequisite and product, the tool and the result of the study" (1978, p. 65), and it's time transformative learning research methods engage in transformative activity themselves, rather than simply attempting its description. Cultural-historical activity theory, and ICBCI as a revolutionary progression of it, provide one such option for doing so.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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