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Unravelling Cultural-Historical Activity Theory (CHAT): Leontiev's and Engeström's Approaches to Activity Theory

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ABSTRACT. Activity theory has long been an influential framework in the field of education. However, its theoretical concepts are not easily grasped by scholars, mainly due to difficulties in translation from the original Russian works, the complexity of these concepts and multiple versions embedded within the tradition. The two major approaches within activity theory were established by Leontiev and another version proposed later by Engeström, and they have often been confused and conflated together in the literature. This paper provides a much-needed theoretical comparison between these approaches in regard to the field of education. The criteria for comparison involve their theoretical foundations, central phenomena of interest, key theoretical concepts, units of analysis and explanatory mechanisms. Insights from this paper contribute to establishing a more refined understanding of activity theory and its variants, which in turn allows researchers to make more informed decisions when selecting and using these frameworks. Implications for practical research practices are discussed with examples from the area of teacher professional development.

Keywords: cultural-historical activity theory, Leontiev, Engeström, activity, object, professional learning

Introduction

In recent years, cultural-historical activity theory (CHAT), also known as activity theory, has emerged as an important and pervasive framework in education. For instance, the framework has been developed into the Change Laboratory method, which 'facilitates both intensive, deep transformations and continuous incremental improvement' (Engeström et al., 1996, p. 1). The application of activity theory has penetrated research and practices in different fields, including education, health care (e.g., Engeström, 2001; Kerosuo et al., 2010), medical education (e.g., Morris et al., 2021), law practices (Engeström & Sannino, 2021), change management (Virkkunen & Ahonen, 2011), educational change (Englund & Price, 2018),

technology innovations (e.g., Marwan & Sweeney, 2019; Nardi, 1996) and teacher education and development (e.g., Dang, 2013; Garraway, 2021; Nguyen, 2017).

There exist multiple traditions within activity theory, which were established by Leontiev (1978, 1981) and another version proposed later by Engeström (1987, 1999, 2001). For consistency, Leontiev's activity theory is henceforth referred to as L-CHAT and Engeström's activity theory as E-CHAT. Although commonly considered as the same theory, L-CHAT and E-CHAT feature differential theoretical orientations and applications, the lack of recognition of which often leads to confusion in understanding, adopting and interpreting these frameworks (see Bakhurst, 2009; Kaptelinin, 2005).

The need to revisit activity theory and its concepts has been recognised by many scholars (Bakhurst, 2009; Kaptelinin, 2005; Martin & Peim, 2009; Peim, 2009) though such efforts insofar remain limited. For example, a special issue in the journal *Mind, Culture and Activity* published in 2005 was dedicated to this matter. Kaptelinin (2005), the editor of the issue, summarises the status of the theory in the literature:

> Two approaches in current activity theory-based research can be considered the most well-known and influential: the one developed by Leontiev (1975/1978, 1959/1981) and the one proposed by Engeström (1987, 1990, 1999). As will be shown, these two approaches provide two different views on the object of activity, differences that are often ignored. (p. 8)

He further explains the source of ambiguity in understanding and interpreting CHAT approaches, which are attributed to the 'difficulties related to translation of ideas, originally formulated by Leontiev (1959/1981) in Russian, into English' as well as 'different interpretations of the concept of the object of activity within two contemporary approaches in activity theory' (p. 4). According to Kaptelinin (2005), the difficulty in translations from Russian works and multiple interpretations of key activity theory concepts have resulted in ambiguity and confusion among scholars. As such, clarifying these concepts and the differences between these approaches is necessary to allow for a more refined knowledge and application of these frameworks. Kaptelinin (2005) contends that '[u]nderstanding the differences can help increase awareness that the same concept can have different meanings in different contexts, and thus avoid possible confusion' (p. 8). In addition, being cognisant of the differences between L-CHAT and E-CHAT allows scholars to capitalise on their

respective strengths as well as consider ways to overcome theoretical limitations, thereby better tackling complex research phenomena.

This article sheds light on the differential theoretical assumptions and domain-specific use of L-CHAT and E-CHAT. It starts by comparing their theoretical foundations, then elaborating on the target phenomena, key theoretical concepts (activity, mediation, object and outcomes), units of analysis, and explanatory mechanisms (see Table 1 for a summary). The article ends with a critical discussion of how these activity theory approaches may inform research practices with a particular focus on the professional development of teachers.

Foundations of Activity Theory

The first point of comparison concerns the theoretical foundations of the two activity theory approaches. L-CHAT is rooted in Marxism, a social, political and economic philosophy, which L-CHAT draws upon to emphasise the value of materialistic activity in extrapolating human psychology. Leontiev (2009a) criticises the conventional approach in psychology that treats human mental functions as existing independently of material activities: 'psychology, traditionally, has always studied the activity of thought and the imagination, acts of memory, and so on, since only such internal activity was considered psychological' and 'therefore ignored the study of practical, sensual activity' (p. 5).

He further indicates a unified Marxist-Leninist framework as the theoretical foundation for Soviet psychology and activity theory in particular:

> Soviet scientists countered methodological pluralism with a unified Marxist-Leninist methodology that allowed a penetration into the real nature of the psyche, the consciousness of man. A persistent search for resolutions of the principal theoretical problems of psychology on the basis of Marxism began. (Leontiev, 1978, p. 3)

A point of particular importance here is that Leontiev is critical of the methodological polysemy and instead advocates for the adoption of 'a unified Marxist-Leninist methodology.' In contrast, E-CHAT, a version of activity theory proposed later by Engeström, embraces a multidisciplinary approach. As Hakkarainen (2004) points out, 'Western CHAT [E-CHAT] has adopted a multidisciplinary approach while the Russian activity approach [L-CHAT] is more or less psychological' (p. 4).

E-CHAT, in particular, features multiple theoretical foundations. Kaptelinin (2005) notes that in Engeström's theorisation of E-CHAT, L-CHAT is only used as 'a point of departure [i.e.,] Leontiev's (1959/1981, 1975/1978) view of activity as a mediated 'subject-object' interaction' and that E-CHAT also draws on 'a variety of other sources, including biology, anthropology, and philosophy' (p. 10). Engeström (1999) acknowledges his intention in developing E-CHAT as a multidisciplinary framework:

> Some may fear that activity theory will turn into an eclectic combination of ideas before it has a chance to redefine its own core. Although I realise that such a potential exists, I anticipate that the current expansive reconstruction of activity theory will actually lead to *a new type of theory*. (p. 20, emphasis added)

As such, it would be incorrect to say that E-CHAT is solely developed on the basis of L-CHAT. For Engeström, E-CHAT is 'a new type of theory,' one featured with multiple theoretical traditions. This stands in contrast to Leontiev's view that 'Soviet scientists countered methodological pluralism with a unified Marxist-Leninist methodology' (Leontiev, 1978, p. 3). This is suggestive of a potential theoretical clash between Leontiev and Engeström regarding how a theory should be developed. Leontiev criticises Western scholars' theoretical pluralism, whereas Engeström embraces it. The differential foundations indicate that L-CHAT and E-CHAT are theoretically discernible approaches.

Domain-Specific Approaches

The second comparison criterion is concerned with the domain-specific nature of L-CHAT and E-CHAT. Indeed, they are domain-specific theoretical approaches. As a psychologist, Leontiev attempts to understand human psychology in L-CHAT, whereas as an adult education scholar, Engeström proposes E-CHAT to study change and informal professional learning in organisational settings (Eteläpelto et al., 2013; Kaptelinin, 2005). This is indicated by the fact that in his theorisation of activity theory, Leontiev, in his two seminal books, *Activity, Consciousness and Personality* (Leontiev, 1978) and *Problems of the Development of the Mind* (Leontiev, 1981), extensively discusses psychological processes, particularly motivation, consciousness and personality.

Engeström, on the other hand, considers E-CHAT as a framework for studying *expansive learning* (Engeström, 1987) or, more specifically, informal professional learning

(Engeström, 2001). For instance, Engeström (2001) considers E-CHAT as a 'learning' theory, which can be framed with four heuristic questions:

> Any theory of learning must answer at least four central questions: (1) Who are the subjects of learning, how are they defined and located? (2) Why do they learn? What makes them make the effort? (3) What do they learn, what are the contents and outcomes of learning? And (4) How do they learn? What are the key actions or processes of learning? (p. 133)

However, the proposed questions above are not commonly answered in E-CHAT but require the analysis of the contextual data.

In a nutshell, it can be said that L-CHAT and E-CHAT are developed for domain-specific purposes, i.e., psychology and workplace learning, respectively. This field-specific orientation further informs of the divergences in their conceptualisations of key theoretical concepts to be discussed in the next section.

Fundamental Concepts

1. Activity

Activity is conceivably one of the most fundamental concepts in activity theory. Within E-CHAT, activity is always understood as a collective activity. Kaptelinin (2005) points out 'activities are understood by Engeström (1987, 1990, 1999) as collective phenomena, both in respect to scale (as carried out by communities) and in respect to the form (as carried out collectively)' (p. 10). On the other hand, in L-CHAT, an activity can be either individual or collective, or, in other words, an activity of a concrete individual or of a group.

The confusion is attributed to Engeström's misinterpretation of Leontiev's notion of activity. Kaptelinin (2005) reiterates this point: '[t]he above distinction between collective activities and individual actions is not consistent with the general framework developed by Leontiev' (pp. 11-12). The confusion here may be due to how the term 'social' is understood. Within E-CHAT, 'social' tends to be understood merely as 'collective.' However, within the general cultural-historical tradition, 'social' has a broad meaning of *genetically social* or *socially rooted* (e.g., Vygotsky, 1978), which extends beyond the common 'collective' meaning of the world. An activity such as reading in isolation can still be considered a *social* activity from a cultural-historical perspective (Lantolf, 2021). Leontiev's use of 'social' is

consistent with the general cultural-historical framework, i.e., suggesting the *genetically social* nature of activity, not its mode:

> the activity of concrete individuals that takes place either in conditions of open association, in the midst of people, or eye to eye with the surrounding object world – before the potter's wheel or behind the writing desk. Under whatever kind of conditions and forms human activity takes place, whatever kind of structure it assumes, it must not be considered as isolated from social relations, from the life of society. (Leontiev, 1978, p. 51)

L-CHAT underscores the social nature of human activity regardless of its mode of performance, 'open association, in the midst of people, or eye to eye with the surrounding object world – before the potter's wheel or behind the writing desk.' However, since developed as a psychological theory, activity in L-CHAT is meant to belong to 'concrete individuals' rather than to groups or organisations. Kaptelinin (2005) clarifies this point: 'Leontiev's (1975/1978) analysis was predominantly dealing with activities taking place at the individual level, that is, activities as units of life of individual human beings, individual subjects' (p. 9).

Another discrepancy lies in the theoretical value of activity for these activity theory approaches. L-CHAT capitalises on activity as an explanatory principle. Hakkarainen (2004) remarks, '[i]n the Russian approach [L-CHAT], activity is, first of all, an explanatory principle' (p. 4). According to Leontiev (2009a), through engaging in life activities, the subject transforms the object or materialistic world and at the same time, transforms themselves:

> In activity, there does take place a transfer of an object into its subjective form, into an image; also, in activity, a transfer of activity into its objective results, into its products, is brought about. Taken from this point of view, activity appears as a process in which mutual transfers between the poles 'subject-object' are accomplished. (p. 84)

In E-CHAT terms, activity signifies a collective system of elements, which involves at least six elements: subject, tools, object, rules, community and division of labour (see

Figure 1). Figure 1 illustrates the third generation of E-CHAT, which includes at least two activity systems with a shared object (see Engeström & Sannino, 2021 for a discussion of other generations). Engeström and Sannino (2021) elaborates on the conceptualisations of the activity elements:

> In the model, the subject refers to the individual or subgroup whose position and point of view are chosen as the perspective of the analysis. Object refers to the raw material or problem space at which the activity is directed. The object is turned into outcomes with the help of instruments, that is, tools and signs. The community comprises the individuals and subgroups who share the same general object. Division of labour refers to horizontal division of tasks and vertical division of power and status. Rules refer to the explicit and implicit regulations, norms, conventions and standards that constrain actions within the activity system. (p. 8)

An activity system in E-CHAT normally indicates one general professional activity under examination (e.g., teaching, professional development), which reflects the focus of the research. For L-CHAT, the activity system refers to a system of relations or a system of multiple hierarchical activities of the individual examined together in the analysis. Leontiev (2009a) posits 'the life of each individual is made up of the sum-total or, to be more exact, a system, *a hierarchy of successive activities'* (p. 3, emphasis added).

In short, L-CHAT theorises activity as an explanatory principle meditating the relation between subject and materialistic world, whereas E-CHAT understands activity in terms of a system of elements, one with the potential to produce 'culturally new patterns' or 'new forms of activity' (Engeström, 2001, p. 139).

2. Object

Similar to activity, object is also considered a cornerstone concept in activity theory. Yet, it is not an unambiguous concept and will serve as our next point of comparison. Kaptelinin (2005) indicates the need to reflect further on the meaning of the concept:

> The concept of 'the object of activity' plays a key role in research based on activity theory. However, the usefulness of this concept is somewhat

undermined by the fact that a number of problems related to its meaning and its contexts of use remain unsolved. (p. 4)

The object is defined differently by the two strands of activity theory. Object is conceptualised in E-CHAT as 'the raw material or problem space at which the activity is directed' (Engeström & Sannino, 2021, p. 8). Accordingly, object signifies a concern that attracts the subject's attention and motivates them to act for resolution. According to Engeström (2009), '[o]bjects are concerns; they are generators and foci of attention, motivation, effort, and meaning' (p. 304). It can also refer to shared understanding developed from an initial raw material:

> [T]he object moves from an initial state of *unreflected*, situationally given 'raw material' (object 1; e.g., a specific patient entering a physician's office) to a *collectively meaningful object* constructed by the activity system (object 2, e.g., the patient constructed as a specimen of a biomedical disease category and thus as an instantiation of the general object of illness/health), and to a potentially shared or jointly constructed object (object 3; e.g., *a collaboratively constructed understanding* of the patient's life situation and care plan). (Engeström, 2001, p. 136, emphases added)

In another explanation for his conceptualisation of object, Engeström refers to it as the whole activity system: 'The object of expansive learning activity is the entire activity system in which the learners are engaged' (Engeström, 2001, p. 139).

The concept of object is defined more broadly in L-CHAT as involving both material and mental entities. In particular, Leontiev stipulates two categories of the object:

> Thus, the object of activity is twofold: first, in its independent existence as subordinating to itself and transforming the activity of the subject; second, as an image of the object, as a product of its property of psychological reflection that is realised as an activity of the subject and cannot exist otherwise. (Leontiev, 1978, p. 52)

In the first definition, object exists in a materialistic sense, i.e., anything that has 'its independent existence,' which should include an unlimited range of potential objects in the world. For instance, students can be theoretically considered a type of object toward which the teachers' activity is oriented (see also Dang, 2013). In its second meaning, object exists in a psychological sense as 'an image of the [materialistic] object' or its 'psychological reflection.' In a general sense, the two types of object understood in L-CHAT are psychologically reflected and non-reflected objects.

However, within L-CHAT, the object of primary interest is the one that corresponds to a specific need of the subject. The relationship between the subject and this need-corresponding object constitutes the *motive* of the activity. This object of need has an important function of directing and regulating the activity:

> The main thing that distinguishes one activity from another, however, is the difference of their objects. It is exactly the object of an activity that gives it a determined direction. […] The main thing is that behind activity there should always be a need, that it should always answer one need or another' (Leontiev, 1978, p. 62).

In short, in L-CHAT, the object, especially the *need-corresponding* object, has the psychological function of regulating the individual's activity, whereas the object in E-CHAT is a site of concerns or problems, the transformation of which can generate new forms of activity.

3. Mediation

Meditation is a widely acknowledged premise in cultural-historical traditions. Within E-CHAT, meditation is concerned with tools, including materialistic and conceptual tools (Johnson, 2006; Smagorinsky et al., 2004). E-CHAT underscores the need for the subject to utilise mediational tools distributed in the activity system, for example, drawing on others' resources as well. Whether and how the subject develops their own tools has received little theoretical discussion.

Regarding L-CHAT, mediation concerns the role of activity as the mediator of the relationship between subject and object. The subject acts upon the object world with their activities and transform themselves in the process. L-CHAT postulates activity as 'a process in which mutual transfers between the poles 'subject-object' are accomplished' or that both

subject and object are dynamically shaped as the result of the former's activity. During the process of carrying out the activity, the subject gains a better understanding of his object, which in turn promotes the development in how the subject performs the current activity (Kaptelinin, 2005). To put it simply, E-CHAT and L-CHAT interpret meditation as tool-mediated and activity-mediated processes, respectively.

4. Outcomes

According to L-CHAT, activity generates both mental and materialistic outcomes. The subject psychologically perceives the object and then acts upon the surrounding environment to create real material products. Leontiev (2009a) postulates:

> It is in activity that the transition or 'translation' of the reflected object into the subjective image, into the ideal, takes place; at the same time, it is also in activity that the transition is achieved from the ideal into activity's objective results, its products, into the material. (p. 3)

As indicated, both 'ideal' and 'objective results' are part of the outcomes of an activity. Yet, as a psychological theory, the outcomes of interest to L-CHAT are necessarily psychological products, for instance, concepts, consciousness and personality (Leontiev, 1978, 1981). In other words, for L-CHAT, the outcome is closely associated with the development of the human subject.

On the other hand, outcomes in E-CHAT terms relate to the transformation of the whole activity system. This notion is reflected in its fifth principle, proclaiming the possibility of expansive transformations in activity systems' in 'a radically wider horizon of possibilities than in the previous mode of the activity' as well as 'new forms of activity which are not yet there' (Engeström, 2001, pp. 137-138). E-CHAT is more driven toward the transformation of the activity system (i.e., the collective professional activity) than psychological outcomes pertaining to individual development. This is despite the fact that Engeström considers E-CHAT as a theory of (expansive) learning (Engeström, 1987).
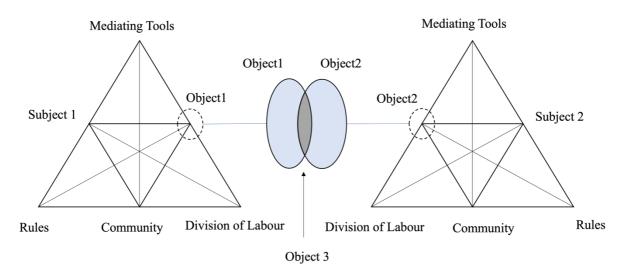
The differential outcomes of these approaches are reiterated by Hakkarainen (2004): 'Classical activity theory [L-CHAT] emphasises psychological aspects and personality development and the third generation [E-CHAT] stresses work processes and organisational development' (p. 6).

Unit of Analysis

This section deals with the methodological aspect of activity theory, that is, the unit of analysis. E-CHAT postulates an activity system (Figure 1) as its standard unit of analysis: 'The first principle is that a collective, artifact-mediated and object-oriented activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis' (Engeström, 2001, p. 136). This system includes seven elements, namely subject, tools, object, rules, community, division of labour and outcomes. The analysis of the activity system involves the revelation of its contradictions, defined as 'historically accumulating structural tensions within and between activity systems' (Engeström, 2001, p. 137). The theoretical value of contradictions will be further discussed in the next section, where the explanatory mechanism of E-CHAT is elaborated.

Figure 1

Third generation in Engeström's activity theory

Note. Adapted from Engeström (2001)

For L-CHAT, each activity of the subject constitutes a unit of analysis. Yet, this activity (system) is not defined by the seven elements as in E-CHAT but rather is a system of relations within and between activities. Within an activity, major relations involve the relationship between the subject and the need-corresponding object (i.e., motive), between motive and goals and between actions and operations. Between activities, there exist hierarchical relationships, a point to be discussed further in the next section.

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As for the analysis of the activity, Leontiev (1978) stipulates that 'a systemic study of human activity must also be an analysis according to levels' (p. 74). He further describes how such a level-based analysis can be achieved:

> [A]nalysis isolates separate (specific) activities in the first place according to the criterion of motives that elicit them. Then actions are isolated – processes that are subordinated to conscious goals, finally, operations that directly depend on the conditions of attaining concrete goals. (pp. 66-67)

L-CHAT thus considers an activity (e.g., of an individual) as a standard unit of analysis, 'analysis isolates separate (specific) activities in the first place according to the criterion of motives.' Such an analysis must be done at three levels, namely activity, action and operation. Multiple activities can be differentiated by examining their motives, then actions by conscious goals and finally, operations by methods and contextual conditions.

The Explanatory Mechanism

This section discusses how L-CHAT and E-CHAT extrapolate their phenomena of interest, i.e., human psychology and the development of professional activity systems, respectively.

1. E-CHAT

Within E-CHAT, change and development of professional activity are explained primarily with the concept of contradiction, particularly postulated in its fourth theoretical principle: 'The fourth principle is the central role of contradictions as sources of change and development' (Engeström, 2001, p. 137). Yet, within E-CHAT, contradictions are not problems or conflicts in the theoretical sense. They are defined as 'historically accumulating structural tensions within and between activity systems' and are not directly observable (Engeström, 2001, p. 137). As such, it is necessary to analyse their manifestations (e.g., conflict, dilemma, double-bind) to identify these underlying contradictions (Engeström & Sannino, 2011).

The explanatory mechanism of change and development in E-CHAT is closely associated with this premise of contradictions, which 'generate disturbances and conflicts, but also innovative attempts to change the activity' (Engeström, 2001, p. 137). Four types of contradictions involve primary, secondary, tertiary and quarternary contradictions (see Engeström, 1987). For instance, in teaching activity, a secondary contradiction between tool

and object can occur due to the inefficacy of the textbook for the accomplishment of the object of the lesson.

The transformation of an activity system requires collective efforts, i.e., 'collaborative envisioning and a deliberate collective change effort' where 'the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity' (Engeström, 2001, p. 137). A seven-stage stepwise process is proposed to further account for the mechanism of activity system transformation, starting with (1) the subject's questioning of the existing standard practice, (2) analysis of the situation, (3) modelling the new solution, (4) establishing a new model, (5) implementing a new model, (6) reflection on the process and finally, (7) consolidating a new practice (Engeström, 2001). This process is normally initiated and facilitated in Change Laboratory, an intervention framework drawing on E-CHAT.

However, previous scholars have raised concern that E-CHAT's extrapolation of development seems to be oversimplified and that there lacks an account for subjectivity and individual agency in this system-based framework (Billett, 2006; Cong-Lem, 2021; Edwards & Mackenzie, 2005; Eteläpelto et al., 2013).

2. L-CHAT

As for L-CHAT, there are conceivably four general theoretical tenets involving (1) the common structure of external and internal activity, (2) need satisfaction with the corresponding object, (3) the dynamic movement of relations of activity system and (4) the relationship between internal and external activities.

First, L-CHAT provides a dynamic explanatory mechanism to understand psychology through the study of external activities. The central basis for this approach is the disposition that internal mental activity still retains the structures of its external activity: 'it must be stressed that internal activity is genuine activity, which retains the general structure of human activity, no matter in what form it takes place' (Leontiev, 2009a, p. 5). For this reason, by studying the dynamics of external activities, we can tap into the nature of internal mental activity. Leontiev (2009a) explains:

> Once we acknowledge *the common structure of external, practical activity*
> *and internal, mental activity*, we can understand the exchange of elements that
> constantly takes place between them, we can understand that certain mental
> actions may become part of the structure of direct practical, material activity

and, conversely, external-motor operations may serve the performance of mental action in the structure of purely cognitive activity. (pp. 5-6, emphasis added)

Second, need satisfaction with the corresponding object is postulated as the motivational basis of human activity. Leontiev (2009a) contends that '[i]n reality, however, we have to deal with concrete, specific activities, each of which satisfies a definite need of the subject, is oriented towards the object of this need, [and] disappears as a result of its satisfaction' (p. 6). Once meeting its object, need starts to possess the specific function of directing and regulating the activity:

In the first place, need appears only as a condition of the need of the organism and is in itself not capable of evoking any kind of positively directed activity…. Only as a result of its 'meeting' with an object that answers it does it first become capable of directing and regulating activity…. This extraordinary act is an act objectifying need, 'filling' it with content derived from the surrounding world. (Leontiev, 1978, p. 54).

Third, L-CHAT stipulates the need to account for the dynamics of relations within and between activities to understand their development. Before discussing such dynamics, we need to clarify again what 'activity system' means within this approach. As discussed above, E-CHAT theorises an activity system as a system of minimally six *elements* (i.e., subject, tools, object, rules, community and division of labour). However, for L-CHAT, activity system refers to the system of *relations*, for instance, the relation between subject and object (i.e., motive), between motives and goals and between action and operation. The understanding of the human psyche as stipulated by L-CHAT involves the examination of these relations and their dynamic movements and transformations.

Let us now consider the development of activities. Two fundamental questions to be asked here are: (1) what is the nature of development? And (2) how do activities develop in relation to one another? These questions are interrelated and will be considered together in our discussion. According to L-CHAT, development cannot be understood or sufficiently expressed as the *expansion* of the current activity. As Leontiev (2009a) points out, '[t]he development and multiplication of an individual's types of activity do not lead simply to an

expansion of their 'catalogue' (p. 160). Instead, there occurs 'a centring of them around several major activities to which the others are subordinated' (Leontiev, 2009a, p. 160). Conceivably, the development of activity is not simply an expansion of its existing relations but is a radical restructuring of the existing system where a new hierarchy of relations is established with certain activities and/or motives becoming prominent (or moved to the front) and others subordinated.

Likewise, the motives for activity also undergo similar dynamic developments. Leontiev (2009a) postulates that 'behind the relationship of activities there is a relationship of motives' and thus we need to account for 'their development, their transformation, the potential for splitting their function, and such of their displacements as take place within the system of processes that form the life of an individual as a personality' (p. 160). Accordingly, the motives of activities must be understood and analysed developmentally. To illustrate this point, let us consider an example. A teacher may initially participate in a professional development program with the motive to merely satisfy the institution's requirement. Yet, along the participation process, her motive develops into a genuine interest to improve professional competencies for the benefit of the learners. As such, to understand activity, we also need to trace the development of its motive over time.

Finally, the fourth theoretical principle in L-CHAT concerns the relationship between external and internal activities. Specifically, L-CHAT postulates that psychosocial development features a process of 'turning inward' external social processes, which is known as *interiorisation*. According to Leontiev (1978),

> Interiorization is, as is known, a transition that results in processes external in form, with external material objects, being transformed into processes that take place on the mental plane, on the plane of consciousness; here, they undergo a specific transformation – they are generalised, verbalised, condensed, and, most important, they become capable of further development which exceeds the boundaries of the possibilities of external activity. (p. 58, emphasis added)

From this disposition, an internal mental development should be studied developmentally, tracing its previous genetically external/social forms. Yet, interiorisation is by no means a direct transfer of the external activity inside. As Leontiev (1978) accentuates, 'the process of interiorisation is not external action transferred into a preexisting internal 'plan of

consciousness'; it is the process in which this internal plan is formed' (p. 60). Development occurs because of the internal psychological system being comprehensively restructured. A new internal development is non-reducible to the initial external/social activity.

Overall, while E-CHAT explores change through the study of how an activity system is transformed through collaborative effort to resolve contradictions, L-CHAT stipulates the need to understand human psychology by studying activity relations and their dynamic development or subordination over time.

Table 1

Comparison of key theoretical dimensions between E-CHAT and L-CHAT

Dimensions	E-CHAT	L-CHAT
Theoretical foundation	multidisciplinary	Marxism
Phenomenon	change and development in a professional setting	psychological processes
Activity system	a system of minimally six components, namely subject, tools, object, rules, community and division of labour	a system of internal and external relations of the activity (e.g., social relations)
Mode of activity	collective	individual and collective
Object	raw materials or problem space	object corresponding to a specific need
Unit of analysis	a collective activity system	an activity
Explanatory mechanism	contradiction and its resolution	social relations and internalisation of external social/cultural processes
Data analysis approach	contradictions within and between activity systems and their resolution	three levels of analysis: activity with its motive, action with goal and operation with methods and local conditions

Implications for Practice: The Case of Teacher Professional Learning

The theoretical discrepancies between E-CHAT and L-CHAT (see Table 1), as discussed throughout this paper, in turn, have implications for practical research practices. This section illustrates how the knowledge of these activity theory strands in this paper can inform concrete research practices, focusing on the case of teacher professional development in

education. The implications to be discussed involve (1) the choice of the framework, (2) the value of the explanatory mechanism and (3) the approach to data analysis.

1. Choice of the Activity Theory Approach

First, regarding the choice of the activity theory approach, researchers need to consider the purpose of their study and the characteristics of the activity under investigation. Theorised in collective terms, E-CHAT is more suitable for examining changes and development expected to be generated from collaborative professional activities. For instance, it has been effectively utilised to examine (preservice) teachers' collaborative professional learning practices (e.g., co-teaching, paired teaching, mentoring) and professional collaboration to develop educational artefacts or handle a professional issue (e.g., Dang, 2013; Nguyen & Dang, 2020).

On the other hand, L-CHAT attends more to the psychological processes (e.g., motivation, personality) of concrete individuals through their engagement in external activities. Leontiev (2009a) points out the need to focus on the analysis of the individual to understand his or her activity: 'A representation of the connections between activities as rooted in the individuality and wholeness of their subject is confirmed *only at the level of the individual*' (p. 158, emphasis added). For example, two teachers may implement a similar pedagogy but with different levels of engagement and motivation. To understand their behaviours, it is necessary to examine the motives of their activity at the individual level. For instance, one teacher may do it merely to fulfil the institution's requirement, whereas the other genuinely aims to improve their professional learning.

2. Explaining the Phenomenon

Second, scholars necessarily examine their phenomenon drawing on specific theoretical principles in line with the framework they adopt. For E-CHAT, change and development are mainly extrapolated based on contradictions and their resolution, leading to an expansion of the object and the generation of a new form of activity (Engeström, 2001). The explanatory mechanism of L-CHAT for development is not reducible to contradiction, which is only one of the potential expressions of internal relations of activities. As stipulated by Leontiev (2009a), '[t]he development and multiplication of an individual's types of activity ... involves a *centring of them* around several major activities to which the others are *subordinated*' (p. 160, emphases added). As such, rather than only focusing on contradiction, we also need to

examine other dynamic relations of activities, including how certain activities may become more dominant while others are subordinated.

Additionally, change in E-CHAT terms is understood as a systemic transformation of the activity system, which occurs when 'the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity' (Engeström, 2001, p. 137). On the other hand, according to L-CHAT, change materialises more dynamically and is possible without a modification to the object of the activity. In other words, the modification of the object is not a prerequisite for change to occur. For instance, change in an operation or the method of implementation can be triggered by the local conditions. According to Leontiev (2009b), an operation is determined by 'the real, object conditions and not simply by the aim as such' (p. 337). Let us consider an example where a teacher organises a workshop, planning to implement pair work for the participants, and yet, due to too many students attending her workshop, she must ask them to work in groups instead. In this case, it is unnecessary for the teacher to modify the goals of her workshops.

Here we can briefly comment on the meaning of change and development in these approaches. Change and development seem to be identified as similar phenomena in E-CHAT, whereas this is not the case in L-CHAT. The teacher's adoption of a new teaching method in the example above cannot inform us much about the quality of his or her teaching, for it is simply a pedagogical act to be responsive to the immediate classroom conditions. Additionally, in reality, a contradiction can be resolved in different ways, which may not warrant an expansion of the object and transformation of the activity system as theorised in E-CHAT (Lilley & Hardman, 2017). For instance, when faced with a professional conflict, some teachers may choose to ignore it, deal with it superficially or comply with the more powerful figures (i.e., the institutional leaders). As such, a more nuanced and dynamic understanding of contradictions and their resolution is needed to reflect the complexity of professional reality and to better inform relevant stakeholders. Change and development should be considered related but not identical phenomena.

3. Approach to Data Analysis

This section provides further illustrations on how scholars should approach their data analysis for exploring teacher development from E-CHAT and L-CHAT approaches. Within E-CHAT, the data analysis necessarily revolves around the identification of teachers' contradictions within and between activity systems and in what ways they are resolved or not.

This is commonly performed by examining manifestations of contradiction, for example, teachers' dilemmas and conflicts. The researchers then investigate whether and how the teachers handle these tensions, which may lead to a reconceptualisation of the object or activity and the development of a new activity.

On the other hand, L-CHAT requires a level-based data analysis with a more dynamic understanding of the phenomenon. Leontiev (1978) warns against the type of analysis that categorises data into elements: 'The special feature of the analysis that serves to isolate them is that it does so not by means of breaking human activity up into elements *but by disclosing its characteristic internal relations*' (p. 67, emphasis added). The analysis of activity must be performed at three levels, namely activity, action and operation:

> Analysis isolates separate (specific) activities in the first place according to the criterion of motives that elicit them. Then actions are isolated – processes that are subordinated to conscious goals, finally, operations that directly depend on the conditions of attaining concrete goals. (Leontiev, 1978, pp. 66-67)

Accordingly, the ultimate task of data analysis is to reveal the dynamic internal relations underlying the activity. For example, imagine that we are analysing data to reveal how the teaching practices of a teacher transforms over time. The teacher participant has two specific motives and thus activities, that is, to teach knowledge for real-life purposes and to teach for examination. It should be noted that activity here is understood as a system of relations rather than a system of elements as understood in E-CHAT. By analysing these activities and their relations, we can understand why the teacher may teach in certain ways. For instance, if the motive is to teach for practical knowledge and application, the teacher will probably implement learning tasks that strengthen students' capacities to deal with real-life situations. On the other hand, if the motive of preparing for the upcoming examination is stronger, then her lesson would probably involve knowledge of the structure of the test, examples of the types of questions that will be asked and possible test-taking strategies. However, the motives of the activity, as discussed above, can be dynamic and transformative over time. For instance, it is possible that the teacher starts the course with the goal to teach for practical knowledge but then at the middle of the course realises the need to prepare students for the upcoming examination and thus modifies her actions or teaching practices in class. Overall, the task of the analysis is to reveal the development of these internal relations, which in turn can extrapolate the change and development of the activity and thus of the participant.

In summary, as demonstrated in this section, the theoretical differences between E-CHAT and L-CHAT further drive their discrepancies in informing concrete research practices. However, since L-CHAT is often conflated with E-CHAT, there has been rather limited research that truly draws on L-CHAT as an independent framework. This gap certainly warrants further research in the future.

Conclusions

The current paper provides a comparison between two versions of activity theory, L-CHAT and E-CHAT, which are commonly conflated together. Several criteria for comparison involve their theoretical foundation, target phenomenon, fundamental concepts (activity, object, mediation and outcomes), their unit of analysis and explanatory mechanism. Although this paper has largely focused on the differences, L-CHAT and E-CHAT certainly share similarities in theoretical assumptions such as the object-orientedness of human activity. The discrepancies between L-CHAT and E-CHAT, as pointed out in this paper, should be attended to by scholars for a more refined understanding and application of these activity theory approaches.

E-CHAT, in particular, can serve as a general multidisciplinary framework to study change and transformation in professional learning and practices. However, since E-CHAT is collective-focused, further theorising is needed to account for subjectivity and individual agency and the dynamic relations among components of the activity system. Integrating these frameworks has been highlighted as a promising approach to empower empirical research in education. As Kaptelinin (2005) points out, L-CHAT and E-CHAT have 'different scopes and can be fruitfully applied for solving different types of research and practical tasks' (p. 11).

It is also fruitful to consider the value of integrating concepts from Vygotsky's cultural-historical theory, conceivably one of CHAT's founding theories, into these approaches to establish a holistic cultural-historical framework. Indeed, there have been efforts to complement E-CHAT with Vygotsky's concepts, for instance, the concepts of zone of proximal development and *perezhivanie* (e.g., Dang, 2013; Yang, 2012). Such an integrative framework is believed to enable scholars to capitalise on the strengths of these theories. Whilst Vygotsky's theory capitalises on the *internalisation* process for psychological development, activity theory extends the study of mind to *externalisation* processes (Edwards, 2005), and their integration has the potential to bridge the study of mind and the study of social change.

Since activity theory is widely acknowledged as an unfinished theory, further theoretical and empirical research to substantiate it is certainly warranted. It is also doubtlessly possible that other scholars may have different interpretations of the theory as to what is presented in this paper. Yet, it is hoped that this paper can stimulate further scholarly discussion of the theory and raise awareness of discernible strands embedded within the general activity theory tradition.

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