# A Transactional Framework for Pediatric Rehabilitation: Shifting the Focus to Situated Contexts, Transactional Processes, and Adaptive Developmental Outcomes

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## Implications for Rehabilitation

- The framework supports practitioners going beyond *person* and *environment* as separate entities, to provide services to the 'situated person' in real-life contexts

- The framework shifts the focus from 'body structures/functions' and 'person in activity' to 'person in changing and challenging life contexts'

- Working from a transactional perspective, practitioner-client conversations will change; practitioners will view client situations through a lens of opportunities and experiences, assess client experiences in real-life contexts, and strive to create context-based therapy opportunities

- The framework suggests the benefit of greater focus on resiliency processes to support client self-efficacy, self-determination, and autonomy, and socialization processes to enhance ability to enact new life roles at times of transition

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Abstract

*Purpose*: A paradigm shift is taking place in pediatric rehabilitation research, practice, and policy—a shift towards the real-life contexts of clients rather than requiring clients to navigate the world of pediatric rehabilitation. This article proposes a conceptual framework to bring about a broader awareness of clients' lives and transactional processes of change over the life course.

*Method*: The framework draws attention to transactional processes by which individuals, situated in life contexts, change and adapt over the life course and, in turn, influence their contextual settings and broader environments. This framework is based on (a) basic tenets derived from foundational theories taking a life course perspective to change, and (b) transactional processes identified from relevant pediatric rehabilitation models that bring these foundational theories into the pediatric rehabilitation sphere.

*Results*: The framework identifies three types of transactional processes relevant to pediatric rehabilitation: facilitative, resiliency, and socialization processes. These processes describe how contexts and people mutually influence each other via opportunities and situated experiences, thus facilitating capacity, adaptation to adversity, and socialization to new roles and life transitions.

*Conclusions*: The utility of the framework is considered for research, practice, service organizations, and policy.

## Introduction

It is commonly accepted that human development arises through *ongoing transactions* involving individuals in the situated contexts of their lives [1-3]. For example, in child-parent transactions, parents influence their child's behavior but the child is also an active agent, influencing his/her parents and family context in return [4].

In pediatric rehabilitation, relevant transactions occur in various life contexts, including among children and parents at home, students and teachers in classrooms and playgrounds, and clients and practitioners in rehabilitation centres and community settings. Transactional theories proliferate in psychology, including theories of development, social interaction, resiliency, adjustment, adaptive functioning, socialization, and inclusion. In contrast, with a few exceptions (most notably the Person-Environment-Occupation model [5]), there has been only recent attention to transaction in the pediatric rehabilitation literature. Recent articles considering transaction include a conceptual analysis of participation-related constructs as transactional [6] and a discussion of the utility of the Lifecourse Health Development Model for individuals with neurodevelopmental conditions [7]. We advance this work by proposing theory- and evidence-based transactional processes that take us beyond transaction as 'person-environment fit' to a view of adaptation as a lifelong process.

Our interest is in transactions occurring over the life course between individuals with disabilities and the *experiences* provided by their *situated life contexts* (see Table 1 for definitions of terms). This is a relatively novel undertaking, with implications for the many stakeholders in pediatric rehabilitation, including clients, families, practitioners, service managers, and policy makers. Pediatric rehabilitation is moving towards the adoption of *system*

*views* of the complex array of factors and processes that influence client change, but the field still operates predominantly from a unidirectional, medical perspective where 'something' is provided to 'fix' the client, rather than operating from more contemporary realist views of change as an evolving, cascading phenomenon that can be mobilized by intervention. In intervening and thinking from a medical perspective, we have been blinkered in our world view.

*Insert Table 1 about here*

According to Sameroff's [8] transactional model, development is a product of continuous dynamic transactions involving the person and the *experiences* provided by a varied set of family and social *contexts* [8]. Transactional processes concern various phenomena (e.g., parenting, peer relationships) and occur in various *situated life contexts*, which refer to activity settings in home, school, community, and organizational environments such as children's treatment centres [9]. These activity settings have several key elements, including people, place, activity, objects, and time [10].

This paper contributes to understanding, practice, and policy in pediatric rehabilitation by proposing a conceptual framework of transactional processes that emerge from 'person-in-situation' experiences across the lifespan. The framework describes how meaningful situated and cumulative experiences lead to capacity development and adaptation to adversity and major life transitions. The goal is to guide and validate rehabilitation stakeholders' thinking, conversations, decision making, and development of services.

*The Issue*

Although this is changing, pediatric rehabilitation has been guided by (a) linear 'intervention' perspectives ('fixing' the child rather than 'facilitating capacity-in-context'), (b) a

focus on factors rather than processes (as seen in the proliferation of 'supports and barriers' research), and (c) a truncated (foreshortened) view of time in the client's life—that is, a focus on a specific life point, rather than a longitudinal life course view. Biopsychosocial models such as the International Classification of Functioning, Disability, and Health (ICF) [11] have contributed to a shift in thinking about disability from medical paradigms that describe disability as residing in the person, to more recent understandings of disability as resulting from the *interaction* of environmental and personal factors. However, the focus remains on the impact of person and environment as separate factors ('person-environment fit') rather than on *transactions* with bidirectional influences. Thus, there is a risk that we simply try to fix the environment or fix the child—ignoring the transactional aspect.

In reality, childhood disability is complex and highly variable with respect to the nature of relevant intervention contexts for children/youth (hereafter referred to as 'children'). As shown in the immense literature on transitions, living with a chronic disability requires multiple, ongoing adjustments and adaptations across the life span. These include adjustments to context, such as the provision or selection of new activities, the modification of activities or objects to enable functioning, the selection of new contexts or life niches, and changes to people, policies, and processes to provide more welcoming contexts [12].

In pediatric rehabilitation, there is often an emphasis on socializing clients to the rehabilitation world rather than explicitly and directly facilitating change in their situated contexts and experiences. The following quote illustrates the issue of who should be socialized into what world: "A key gap in family-centred care literature … is lack of explicit acknowledgment of the dominant culture of the healthcare system and providers. … The

question that is not asked loudly enough is whose culture is getting in the way? Is it only the culture of the family that needs to be considered? What about the culture of the healthcare provider(s), the organization, and the system?" (p. 65-66) [13]. This 'two world' situation is difficult for many clients and families, as they need to learn how to navigate services and understand therapy 'language', as well as how to cope, adjust, and modify their own life situations.

*The Paradigm Shift Underway in Pediatric Rehabilitation*

Converging movements in many fields are leading to the adoption of more dynamic, process-oriented perspectives, realization of the contextualized and situated nature of phenomena, and a pragmatic focus on everyday practices or social contexts [4,14-16]. This broader shift in thinking is also influencing pediatric rehabilitation research and practice. A paradigm shift is underway in pediatric rehabilitation, supported by three recent trends: (a) a broader view of health, (b) greater understanding of the need to facilitate change and capacity in real-life contexts, and (c) a shift towards ecological and experienced-based interventions.

First, there is a broader view of health as a positive state, with a focus on capacity and strengths, which is encouraging practitioners to view clients from a more inclusive, healthy, functional, and capacity-oriented perspective. Contemporary views of health and disability have been promoted by the ICF (a biopsychosocial framework that considers person-environment 'interaction'), setting us on the path to transactional understanding. In this paper, we focus on the bidirectional arrows between core domains in the ICF framework, as our interest is in the transactional processes that connect the framework elements [6].

Second, there is growing recognition that the changing contexts of people's lives need to

be acknowledged and be a focus of intervention efforts. There is increasing interest in realist views of how change and capacity can be facilitated, as seen in interest in identifying context-mechanism-outcome linkages [17]. These linkages help to make sense of the multiple ways in which contextual elements may affect outcomes. There is much to be gained by examining *processes* and *contexts*, and not reducing real-world complexity into overly simplistic terms.

Third, there is growing understanding of *how* to most effectively support and facilitate client change in their desired directions—not only gaining skills but living a meaningful life. There is an emerging focus on intervening on the level of the environment and real-world experience, reflected in a shift towards ecological and experience-based intervention [6,18]. There is evidence that intervention needs to directly address participation in life situations as well as function [19]. If the desired outcome is participation, then interventions *must* address this level [20]. Participation-based services not only provide children with experiences for skill development and self-discovery, but can bring about changes in family and community members, thus being more systemic in their influence. Examples include functional therapy (context-focused interventions) [21], solution-focused coaching [22], and participation-based approaches [23,24]. These approaches articulate new primary roles for practitioners as collaborators, consultants, facilitators, educators, and coaches. Practitioners individualize their strategies to create ideal conditions for client-directed change towards client-identified goals.

We contribute to this emerging paradigm shift by proposing a transactional framework describing processes by which children with lifelong conditions develop capacity, adapt to adverse situations, and negotiate major transitions. The intent is to transform thinking, increase awareness of the importance of focusing on clients' life contexts and situated transactions, and

inform and change stakeholders' conversations.

*Objectives*

1. To describe an integrated conceptual framework of transactional processes to guide and validate rehabilitation stakeholders' thinking, conversations, decision making, and development of services;
2. To articulate the contribution of underlying foundational life course theories and related pediatric rehabilitation models to the framework; and
3. To identify and describe core types of processes of transactional change relevant to the life journey of children with disabilities.

Part 1 presents tenets of life course change and identifies types of transactional processes. Part 2 presents the framework and illustrates its application using a clinical vignette. Part 3 considers implications of the framework for various stakeholder groups.

**PART 1. Tenets of Life Course Change and Transactional Processes for Pediatric Rehabilitation**

As shown in Figure 1, we derived tenets from theories of life course development, and identified types of transactional processes relevant to pediatric rehabilitation from pediatric rehabilitation models. To enhance clarity for the reader, we present the tenets before describing their basis in the theoretical literature on life course change. As well, we present the identified transactional processes and then discuss the models from which they were derived.

*Insert Figure 1 about here*

*Tenets of Life Course Change*

We propose four tenets (Figure 1) reflecting the changing person in changing life

contexts over time. These tenets concern *transactional processes,* changing *opportunity structures* and *experiences* due to changing life conditions*, pathways* to positive developmental outcomes, and *periods of differential sensitivity* of person-environment relations. These tenets were based on a review of four contextual (ecological) and dynamic (process-oriented) theories and approaches taking a life course and systems perspective to change in the individual: life course development theories, developmental contextualism, resilience theories, and acculturation theories and ethnographic approaches.

*Life course development theories*. These theories view development as both a capacity and as an adaptive, life-long process involving complex transactions between individual and context, which can be characterized in terms of dynamic processes of development, sensitive periods, environmental exposures, and resiliency. In transactional models, relations between person and context are considered to be mutually constituent (i.e., part of one another), and *development* is considered in terms of the adaptiveness of the relationship between individual and context. As well, a transactional approach draws attention to ways in which *experiences* modify individuals' selection of contexts and ways they actively change contexts.

Examples of these theories include Sameroff's [4] life course development model, an example of a transactional model, and Halfon's [25] Lifecourse Health Development model, which applies a transactional approach to health, viewing it as a set of *developmental capacities* that emerge continuously over the life time, enabling individuals to successfully interact within their environments and realize their potential and wellbeing. Health development is seen as an *adaptive process* encompassing strategies to promote *resilience* and plasticity in the face of changing and often constraining environmental contexts [25]. The health development process

is viewed as *complex and non-linear* (occurring in multiple dimensions and at multiple levels and phases) and *sensitive to the timing* and social structuring of *environmental exposures and experience* (including time-specific transitions and turning points, and time-dependent *pathways* that reflect the cumulative influence of different factors that occur over time).

*Developmental contextualism*. The key principles of developmental contextualism [26] are that *context* plays an important role, development can be described in terms of *processes*, and things work as a *system*.

*Context* (i.e., components of the environment) is seen to interact in a bidirectional manner with the person to account for development. These bidirectional relationships consist of multiple levels (biological, psychological, social, and sociocultural) characterized as a *system*. This viewpoint encompasses multiple levels of causality and considers the combined influence of a system of variables. *Adaptive development* [27] occurs when there is a balance of the effects of person-on-context and the effects of context-on-person in a way that supports healthy and positive change. From a *developmental systems* perspective, people actively contribute to their own development, and there is attention to the processes by which the sociocultural world provides opportunities and contexts for development [28,29]. This approach provides a contextualized understanding of human development, describing it as a consequence of varied actions of the individual on the world and the world on the individual [3].

*Resiliency theories*. These theories consider adversity as a trigger of adaptational processes that are transactional in nature. They indicate the importance of processes that enable the person to negotiate *within* contexts (e.g., *self-regulation* and *mastery*) and navigate *between* contexts to obtain resources.

Resilience theories are fundamentally *transactional* and *contextual*, and focus on a particular type of human development—adaptation in response to *significant adversity*. Resiliency is considered to involve environmentally-based *experiences* and a set of basic *adaptational processes*, including regulation of emotion and behavior, connections to others, and motivation for learning and engaging in the environment [2,30]. Thus, resiliency can be defined as a process involving *transaction* among an individual, that individual's life *experiences*, and current life *context* [31].

Resilience can be considered from an ecological perspective—as "successful development that exploits environmental contexts as they change over time" [32]. This points to the importance of social ecologies and the *opportunity structures* available and accessible to children, families, and communities, which provide *experiences* that support human development [33]. Principles reflecting an *ecological* and *process view* of resilience include a focus on context, the view that different starting points can lead to different but equally desirable ends due to different contextually relevant processes (the notion of equifinality), and a focus on processes rather than characteristics of the individual [32]. Attention is drawn to opportunity structures, facilitative contexts, and processes of navigation (i.e., movement toward resources that are available and accessible) and negotiation for resources.

*Acculturation theories and ethnographic approaches.* The key principles of these theories and approaches are that groups and individuals adapt to *sociocultural changes* and *new conditions in life* through transactional processes of *acculturation* and *assimilation*.

Acculturation can be seen as a transactional, dynamic process of adaptation to *new conditions* in life, in which the person, his/her group, and the larger culture are modified as a

result of contact [34]. Thus, *acculturation* shapes the meaning of experiences, and individuals in turn shape the cultures into which they move. *Assimilation* can also be viewed as a transactional process, as it refers to becoming a member of a community, with changes in the individual's reference groups and values due to in-the-moment transactional processes [34].

*Transactional Processes Relevant to Pediatric Rehabilitation*

Transactional processes were synthesized from pediatric rehabilitation models focusing on person-in-context. These practice-relevant models essentially apply tenets concerning *transaction*, *opportunities* and *experiences, pathways*, and *sensitive periods* to pediatric rehabilitation. The three identified types of processes are: (a) **facilitative processes** enhancing capacity in life contexts (a key focal area of pediatric rehabilitation), (b) **resiliency processes** enhancing adaptation in the context of adversity (relevant to clients' lives), and (c) **socialization processes** enhancing adaptation in the face of significant sociocultural transitions (relevant to disconnected interfaces between hospital, school, and pediatric and adult healthcare systems).

These processes were derived from a review of transactional pediatric rehabilitation models, collaborative practice models, and models that describe resiliency processes. These models are illustrative and do not constitute a comprehensive list. They view the client in transactional terms—as the focal change agent in life contexts and also as impacted by context and environment—and focus on capacity enhancement and other positive developmental benefits aligned with pediatric rehabilitation goals. The models are highly contextualized in their triggers, conditions, and outcomes of interest. Thus, they inform the *how*—the processes—of transaction in multiple contexts of children's lives.

*Transactional pediatric rehabilitation models.* These models consider person-to-context

and context-to-person processes underlying capacity development. The Developmental Health Model [35] focuses on the developmental benefits arising from qualities of environmental *settings* and associated *experiences*. It identifies capacity-relevant factors and processes, including opportunities for various types of growth-enhancing experiences, such as interaction with peers, choice, and personal growth [36]. It also considers the importance of *experiential processes* for the development of capacity, including the experience of choice.

The Developmental Trajectories Model [37] focuses on pathways to positive psychosocial outcomes and mental health for youth with disabilities. It proposes three separate types of processes (*relational*, *opportunity*, and *experiential*), arising from person–environment interaction, which lead to positive developmental outcomes over the life course. The Integrated Model of Social Environment and Social Context [10] combines sociological perspectives on *environments*, including Bronfenbrenner's socio-ecological levels (family, neighborhood, community, institutions), with psychological perspectives on *contexts*, which are defined as *experienced activity settings*, where people, places, activities, and objects come together in time. The model outlines two sets of *capacity-building processes*: (a) environment-to-person processes, including resources, supports, and opportunities for experiences, and (b) person-to-environment processes, including choice, collaboration, and active engagement.

*Collaborative practice models.* This grouping consists of models proposed to enhance children's participation in real-life contexts by involving clients and families in co-constructing intervention and applying change strategies to real-life settings. Examples include participation-based intervention models [23,24], coaching models [22,38], and relational models of client change [39]. These models are *capacity-facilitating* and *experiential* (i.e., enhanced capacity is

seen as due to changes in experiences); they adopt an ecological focus (i.e., attention and application to family and community settings); and they focus on collaborative *relational processes* (e.g., transactional processes of negotiation, co-ownership, and co-construction of plans) as an underlying mechanism of change. For example, coaching models are transactional, viewing the client in a strengths-based manner and as an active change agent.

*Models that describe resiliency processes.* Few pediatric rehabilitation models explicitly concern resiliency, but some incorporate elements of a resiliency perspective—most notably considering resilience (also called 'adaptation') as an outcome influenced by the complex interplay of multiple risk and protective factors in the person, interpersonal relationships, and broader environment [40]. For example, the Ecological Model of Adaptation for Adolescents with Spina Bifida [41,42] considers the numerous risk and protective factors affecting the functional independence of adolescents. In Shonkoff and Phillips' transactional-ecological model of early childhood development [43], development is shaped by the ongoing interplay among risk and resilience resources and processes, and *self-regulation* (a resiliency process) is considered to be a cornerstone of development. This model also stresses the uniqueness of children's developmental *pathways* or trajectories, which have continuities and discontinuities, as well as times of significant transition.

In addition to self-regulation [44], the literature identifies other resiliency processes, including *assimilative processes*, in which people intentionally change their behavior or the circumstances of a situation, and *accommodative processes*, which involve relinquishing something (such as a goal), leaving the situation (e.g., quitting a job), or seeking new contexts for the opportunities they are expected to provide [33,45,46].

## PART 2. A Framework of Transactional Processes and Adaptive Development

Building on the tenets and processes identified in Part 1, we developed a conceptual framework of transactional processes for pediatric rehabilitation. We first describe the framework and then apply its concepts and principles to a vignette about Ashley (see supplementary material) to illustrate how the framework can change focal points in intervention. We then consider the processes and pathways proposed in the framework and apply those to the same vignette.

### *Description of the Framework*

The framework focuses on person-context transactions during the life course, drawing attention to processes by which the sociocultural world provides *opportunities* and contexts for development [28,29] and the role of *experiences* in influencing the ways in which people modify existing contexts and select new contexts [4,10]. The constructs underlying the framework's principles (underlying assumptions) and propositions (basic assertions) are *the situated person*, *transactional change processes*, *transactional opportunities and experiences*, and *transactional outcomes* (Figure 2).

*Insert Figure 2 about here*

To emphasize the role of opportunities, which have utility for intervention, we separated out this construct (resulting in 5 main constructs in the framework in Figure 3). Moving from left to right in Figure 3, the key constructs are (A) opportunity structures, (B) the contextualized experiences of the situated person, (C) transactional processes, (D) cumulative and cascading experiences in multiple contexts, and (E) adaptive developmental outcomes (see Table 1 for definitions). Boxes A and D are linking constructs and are thus not bolded in the figure.

*Insert Figure 3 about here*

*Opportunity structures* refer to opportunities afforded in-context [47], including 'participatory contexts' and participatory properties of settings (e.g., availability, convenience, accessibility) [35,48]. We define *contexts* in terms of their subjective meaning [10]. Thus, context refers to the meaning of the activity setting for an individual—the *situated person*. *Experiences* arising from involvement and active engagement in situated contexts are considered to be central to change over the life span, reflecting a systems perspective and the idea of *emergence* [10,16]. *Transactional processes* involve capacity facilitation, resiliency, and socialization processes. *Cumulative and cascading experiences* in multiple contexts are assumed to lead to (a) *adaptive developmental outcomes*, including capacity development, adaptation, and socialization, as well as (b) changes in the nature of environments and contexts themselves (hence the arrow pointing back to the box titled 'environments and contexts').

*Application*. These key constructs change traditional views of Ashley (see supplementary material) as a person with a disability who is separate from her environment, to a more contemporary view of her as a young person situated within multiple contexts in her home, school, and community. These situated contexts can provide her with meaningful opportunities and experiences that affect her development, adaptation, and ability to take on new roles.

Ashley is a young person who is always situated in a context (**Principle 1: The Situated Person**), and her behavior and experience can be best understood in relation to her as a person-in-context. This encourages practitioners to think about Ashley's current experiences as a high school student, family member, friend, student council member, volunteer, and client of pediatric rehabilitation services. These roles transpire in different contexts that can influence

Ashley’s experiences and development, and, in turn, these contexts can be influenced by her. For example, Ashley’s experiences in at-home contexts can influence her development of independent living skills, and she can also influence her parents’ capacity to gradually give her more responsibility and begin the process of ‘letting go’ as she gets older.

Her development can be viewed in terms of transactional processes that are dynamic (ever-changing) in nature, and focused on person-in-context changes over her life course (**Principle 2: Transactional Change Processes**). Through experiences provided by opportunities in the sociocultural world, Ashley changes her behavior and sense of self, develops capacities for future life, and actively changes her world (**Principle 3: Transactional Opportunities and Experiences**). The outcomes of these transactional processes relate to her functioning-in-context, community participation, and selection of new opportunities and life niches. As she makes transitions to new contexts and experiences, such as university, she will engage in acculturation processes, as every new context has different sociocultural expectations and demands (**Principle 4: Transactional Outcomes**). With these principles in mind, practitioners in the children’s rehabilitation centre and at her school can support Ashley to develop capacities to meet her current and evolving future goals, and adjust to changes in her life (i.e., her changing life needs). Practitioners can work with her to identify relevant opportunities and experiences, guided by the desire to mobilize transactional processes that underlie change and adaptation across the life course.

*Framework Processes and Pathways*

The framework proposes three types of *transactional change processes*. Although these processes pertain to everyday life contexts, they deal with different phenomena of interest, as

shown in their different triggering mechanisms (Table 2). The processes can be considered as three *context-process-outcome (CPO) pathways* (Figure 4): a capacity facilitation pathway pertaining to capacity-relevant contexts, a resiliency pathway pertaining to adverse contextual events/experiences and how they play out over time in everyday activity settings, and a socialization pathway relevant to major sociocultural shifts in roles and environments.

*Insert Table 2 and Figure 4 about here*

These pathways describe the active-passive interplay that exists in transactions between person and context. They are interdependent in that they can be triggered simultaneously [49]. For example, an experience (or cumulative, recurring set of experiences) can simply be capacity-enhancing or—if adverse enough to trigger resiliency processes—can also involve fundamental changes to self-perceptions or identity, as well as advocacy leading to context, environment, or policy change. Furthermore, the experience could lead to changes in a person's role or reference group, implicating socialization processes.

*Application.* With the guidance of practitioners, her parents, and school staff Ashley can develop her capacities for a summer job (**capacity facilitation pathway**). Together, they can identify opportunities in her current contexts, such as taking a co-op course in her next year of high school to promote job-related experiences; or volunteering this year at a summer camp at the children's rehabilitation centre, with the plan of applying for a camp counsellor position next summer. To facilitate capacity development towards her goal of attending university, practitioners can encourage Ashley and her parents to meet with school staff to choose high school courses that will give her the most relevant experiences and learning. Practitioners can also arrange for Ashley to meet with a 'graduate' of the children's rehabilitation centre who is

now attending university, thus providing her with mentorship. Ashley can be encouraged to seek experiences to develop future independent living skills, such as cleaning her own room, and managing her own clothing and laundry needs. These experiences can be planned to be cumulative, with increasing expectations as her capacity develops over time.

The **resiliency pathway** applies when Ashley faces adverse events or experiences in particular contexts. For example, when she experiences strong disappointment and self-doubt due to difficulties in her job as a summer camp counsellor, practitioners and parents can guide her to learn from these experiences and be better able to respond to future challenges in the employment context. Practitioners can also provide consultation and advocacy to employers, to adapt or modify tasks and other setting aspects to enable Ashley to be successful. They can support Ashley to let go of frustrating goals and seek new opportunities.

Attention to the **socialization pathway** can enable Ashley to transition to future adult social roles and environments. With planning and forethought, practitioners, school staff, and parents can support her (and those in her life) to adopt new roles and seek new opportunities that help her shift from being an adolescent who depends on her parents for physical and emotional support, to being a young adult who makes her own decisions, manages her own health care needs, and directs other people, such as attendants and roommates, to provide the supports necessary to live in residence.

In summary, practitioners will organize services to support Ashley to develop her capacities and learn how to adapt to times of adversity or transition. They might provide more services in her natural school setting, or meet regularly with Ashley and her parents to identify and enact the opportunities for contextualized experiences that she needs for capacity

development, adaptation, or adoption of new roles. Therapy services will be focused on Ashley's functioning in her current and future contexts; adapting to new settings and selecting new contexts that are expected to provide growth-enhancing and supportive opportunities; and experiencing new environments and opportunities that promote adaptive development over her life course—not just one particular stage in her life.

*Summary and Main Messages*

The framework reflects the transactional nature of adaptive development over the life course, and can assist in preparing young people with disabilities to adapt to their changing worlds—also acknowledging how they actively change their lives, settings, and society. What is unique is the focus on transactional change processes and the life journey, which need to be more at the forefront in pediatric rehabilitation. Pediatric rehabilitation has much to gain by embracing the notions of life course change and transaction, and considering the real-life settings of the client. Our framework serves to further the paradigm shift underway by emphasizing transactions in multiple real-world settings across the life course—thus broadening awareness and hopefully practice behavior. The framework indicates the importance of viewing the life context as the driver of service delivery—not what practitioners or others think should be provided. Many practitioners would describe their assessments of clients' life contexts as driving the services offered, but this may not always translate into a change in practice behavior with respect to the activity settings in which services are offered, nor to harnessing/mobilizing the transactional processes needed to facilitate change.

Thus, the framework provides a starting point for the development of new ways of thinking, new conversations, and new models of pediatric rehabilitation service delivery. It

changes the focus from 'body structures/functions' and 'person in activity' to 'person situated in changing and challenging life contexts'. Furthermore, it proposes a set of key transactional processes for all rehabilitation stakeholders to be cognizant of, and draws attention to what has typically been silent in our person- and intervention-focused models of intervention—the situated contexts in which all change efforts occur and adaptation unfolds.

The framework proposes transactional processes with utility for pediatric rehabilitation, and provides theoretical justification for looking at context-process-outcome linkages specifying paths to adaptive development. We view these processes from a constructivist perspective, and see them as unbounded, reflecting the complexities of life processes for all individuals and encompassing diverse ways of being in and navigating the world.

## PART 3: Implications of the Framework

### *Implications for Researchers*

Understanding and describing 'context' and investigating contextual intervention is an important future research direction. Indeed, this trend has already started. In addition, we need to understand the nature of specific contexts and the transactional processes they engender, not just consider 'environment' as an amorphous, undifferentiated concept essentially meaning 'everything outside the person'—in other words, as a separate entity often thought of in terms of ecological levels (e.g., family, organization, policy environment). There is also a need to go beyond the notion of 'transition' to embrace 'transaction'. Transitions are not important in and of themselves as events, but rather as times of need for accelerated transactional change and as 'windows of opportunity' (for good or ill). Research focusing on

context-process-outcome linkages will enhance understanding of the complex nature of adaptive developmental processes at play in pediatric rehabilitation.

The framework outlines a set of transactional change processes that require investigation—how are they best mobilized, how do they work in tandem? Pediatric rehabilitation intervention has primarily focused on facilitative processes implicated in capacity development (e.g., enhancing the child's skills). The framework suggests the benefit of greater focus on resiliency and socialization processes. The dearth of resiliency models in pediatric rehabilitation signals the need to attend to higher order conceptualizations of adaptation across the lifespan. Resiliency research is growing in other fields, and has potential to transform our understanding of the factors and processes that lead to wellness across the lifespan. As well, attention to acculturation and social assimilation (socialization processes) has potential to provide new understandings of how transition-related intervention may be best designed.

*Implications for Clients and Families, Practitioners, and Service Organizations*

First, this framework promotes a much more direct focus on client context and naturally occurring transactions in order to trigger experiential changes that cumulatively affect development. It encourages families (and practitioners) to prepare young people with disabilities to manage their own needs in inaccessible environments. Thus, clients, families, and practitioners should work collaboratively to support the creation of facilitative environments and opportunities for life experiences, as well as the development of resourceful individuals. This requires collaboration focusing on the existing and evolving contexts of client's lives.

The framework encourages stakeholders to go beyond *person* and *environment* as separate entities, toward the idea of the 'situated person' where people's real-life contexts are

focal or paramount, and not just 'taken into account' when intervention is provided. Thus, intervention is both figuratively and literally provided in the 'client world' rather than the 'pediatric rehabilitation world'. This is more than promoting a client-centred partnership by shifting the focus to a client's needs and preferences [50]—it is a shift to an ecological approach, to the situated person in their real-life contexts.

Second, the framework guides practitioners to be aware of transactional processes, as they help us understand what to *do* to support a young person to move over time towards outcomes of participation, engagement, and adaptation. "Knowing the mechanisms that lead to positive developmental benefits will indicate the types of opportunities, experiences, and services that will assist children and youth with disabilities in adapting to circumstances and meeting their goals in life" (p. 127) [51]. Each identified transactional process has implications for pediatric rehabilitation. A focus on facilitative processes can lead to an emphasis on 'mobilizing' client-based change rather than 'fixing'. A focus on resiliency processes can support client self-efficacy, self-determination, and autonomy in the context of interdependent relationships, rather than dependencies. A consideration of transactional socialization processes on a sociocultural level (e.g., the pediatric and adult healthcare worlds) may contribute to enhanced ability to enact new life roles at times of transition.

Third, there are important implications for practitioners, including new roles, mindsets, and conversations, and new ways of acting and intervening to facilitate transactional experiences fostering adaptive developmental pathways. Focusing on client context and adopting a transactional perspective is "like turning a pair of binoculars around and looking at the world differently" (p. 28) [33]—it is an inversion in thinking with the potential to be

transformative. Practitioners have a role to play in enhancing psychological well-being, including acceptance or understanding of impairment and recognition of capacity and potential—not simply a role in skill remediation. The roles of practitioners working with people with disabilities are different in this framework. Practitioners become part of the 'context' of the young person and family in a transactional and interdependent relationship. This requires practitioners to first and foremost think differently about the young person (what are their capacities for change?), to view the 'situation' of the person through a lens of opportunities and experiences, and to build capacities instead of focusing on deficits and problems to fix and improve.

The framework encourages 'new conversations': receptive and exploratory conversations to provide space for collaboration to occur around changing life situations and goals; consensus-oriented conversations to provide space for negotiation; and action-oriented conversations to support change in real-life contexts [52]. As much as clients and families must adapt to changes between systems of care, healthcare providers must also make adjustments (shift in focus and approaches) to address and adapt to the changing needs of children and families. This requires practitioners to act differently in providing services by taking a 'top down' approach to participation and life engagement, seeing them as starting points of services and as the immersive constructs by which capacity development, adaptation, and socialization occur. There is also a need to focus on the processes of change throughout a person's life course instead of just one point (or situation) in time. These changes will require building practitioners' competencies related to roles of change agents, advocates, collaborators, partners, negotiators, and coaches.

Working within this framework, practitioners would also strive to create context-based therapy opportunities. They would think about, and assess, opportunity structures, in-context experiences, and transactional context-process-outcome linkages. Assessing transactional possibilities is profoundly different from assessing the traditional physical, cognitive, and emotional functioning of the child. A transactional analysis aims to discover the conditions in which a change in any element of a problematic context has the opportunity to affect the child [8]—this is intervening in the *system*, based on a transactional analysis. An example is educating a parent about their child's disability, thus affecting their attributions and behavior, or reframing problems to highlight child strengths.

*Implications for Communities and Policy Makers*

The framework supports a fundamental shift in in how pediatric rehabilitation services are structured and accessed, including shifts instigated by consumer-led demand, changes in policy or funding, and organization-led changes in service mandate. The framework aligns with shifts toward funding models that provide the person with a disability (or their family) with the ability to manage disability funding and choose services based on their goals (e.g., as recently implemented by the Australian National Disability Insurance Scheme [53]). The model also aligns with shifts towards service provision in real-world contexts [23], such as providing exercise training in community gyms [54] and opportunities to take part in recreation/life skills programs in community venues, with support from service providers [55].

The framework raises questions about how to best shift services in response to anticipated changing contexts of individuals (e.g., change in schools) and how to facilitate networking between therapist and community organizations. New life situations often require

young people with disabilities to take on roles they may not be ready for, and that are different from their nondisabled peers. Support and energy are required to address these navigation issues. Since power differentials exist, and people with disabilities and their families can have difficulty acting as change agents in contexts and environments, practitioners can play a powerful advocacy role.

To enact the vision of the framework, practitioners must work with community partners and educators to ensure welcoming opportunities for meaningful experiences related to the engagement, participation, and adaptation of persons with disabilities. From a policy perspective, there are limited opportunities for community partners to engage in research and interact with youth and families, although youth and their families have advocated for processes and strategies that enable active communication with community partners to change practice and services [56]. Community partners should continue to work with practitioners to offer opportunities for skill development and experiential learning that encourage the participation and engagement of youth [55], such as the opportunity to develop, enhance, and practice life skills in real-life situations [57]. Policy makers also need to be part of the conversation and research process to inform systems change. In conclusion, the framework has implications for advocacy and the creation of positive participatory environments. Addressing adaptation across the life course requires community partnerships in which practitioners engage in active knowledge brokering roles to support social inclusion on a broad scale.

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Figure 1

*Deriving theoretical tenets and key transactional processes.*

Figure 2

*Principles and propositions of the framework of transactional processes and adaptive development for pediatric rehabilitation*.

Figure 3

*A framework of transactional processes and adaptive development for pediatric rehabilitation.*

Figure 4

*Context-process pathways to adaptive development.*

Table 1

*Definitions of Terms*

| Term | Definition |
|---|---|
| Accommodative processes | Accommodative processes involve changing goals, personal preferences, and/or self-definitions to fit situational constraints or possibilities that lie ahead [45,49]. |
| Acculturation | A bidirectional, dynamic process of adaptation to new conditions of life, including change on the individual level and change in the culture of a society as a result of the contact [34]. |
| Adaptation | Adaptation refers to changes that take place in individuals or groups in response to environmental demands [58]. These adaptations can occur immediately, or they can be extended over the longer term. Adaptations typically refer to the sociocultural level—to something larger than a specific situation (e.g., to a change in life). |
| Adaptive development | Adaptive development [27] broadly refers to 'learning' (i.e., changes in skill, function, and/or behavior; acquisition of strategies to adapt/function; new ways of seeing oneself or one's situation; new expectations about the future) [59]. In the context of our model, adaptive development specifically refers to capacity development, adaptation, and socialization to new roles and life transitions. |
| Assimilation | The process of becoming a member of a community, in which there are changes in values, reference group, internal changes, and out-group acceptance due to transaction [34]. |
| Assimilative processes | Processes in which people intentionally change their circumstances, situations, or settings [49]. |
| Capacity | The ability or power to do, experience, or understand something. |
| Capacity-building | Strengthening the skills, competencies, and abilities of people and communities. |
| Cascading processes | A chain of events where opportunity and child behavior/experience amplify one another; also referred to as downstream processes (effects forward in time) due to an act affecting a system. An event or experience can have minimal impact at one point in time, but amplified effects due to how it alters the individual and their future interactions, relationships, and choices. |
| Change | To become altered or different. |
| Collaboration | Active engagement and partnership between stakeholders around a topic of inquiry. Collaboration refers to how individuals form relationships/partnerships/alliances and act together to influence the issues that affect them [60]. Collaboration is considered to be an integrative mechanism for self-organizing change, as well as a |

| | |
|---|---|
| | fundamental mechanism by which individuals change their environments [60]. |
| Context | Experienced and situated activity settings comprised of five key elements: people, place, activity, objects, and time [10]. Context is where the effects of transaction can be seen [5] and differs from environment (see definition of environment below). |
| Development | A process of adaptive change involving person-in-context, where there is change over time towards positive developmental outcomes. |
| Developmental contextualism | An approach that considers the influence of contextual factors on development [26]. |
| Developmental systems perspective | A perspective that draws attention to the processes by which the social-cultural world provides opportunities, contexts, and settings for development [28,29]. |
| Environment | Physical, socio-cultural, institutional, or political factors affecting the individual; often considered as a container for action or set of forces that enable or constrain participation [9]. |
| Individualization | Fitting the intervention or the therapy process to the person. |
| Life course development theories | Theories that view development as both a capacity and an adaptive, life-long process involving complex interactions between individual and context. |
| Mechanism | In line with realist principles, mechanisms or processes are hidden yet real, sensitive to variations in context, and generate or influence outcomes [61]. |
| Navigation | How individuals negotiate their way in various aspects of their life. |
| Negotiation | Negotiation has been defined as a discussion aimed at reaching an agreement—as the process of talking with another person to settle a matter. People negotiate for resources, information, cooperation, and support [62]. |
| Opportunities | A set of circumstances that makes it possible to do something. |
| Opportunity structures | Environments and experiences that allow individuals to realize their potential [47], encompassing participatory environments, optimal participatory contexts, and environmental dimensions. |
| Process | See Mechanism |
| Resiliency | A process involving transaction among an individual, that individual's life experiences, and current life context [31]. |
| Resources | Materials such as funding, services, and people [10]. |
| Self-regulation | Ways in which individuals monitor and control aspects of their thoughts, feelings, and behavior [6]. |
| Situated life context | See Context |
| Situated person | Person in context (real-life). |
| Supports | Social, emotional, and practical assistance of other people or the physical place (e.g., physical design and accessibility) [10]. |

| Tenet | A fundamental principle or belief. |
|---|---|
| Trajectory | A path over the life course [4], which can fluctuate due to different influences at different points in time [25]. |
| Transaction | The exchange or interaction between two or more parties or things that reciprocally affect or influence one other. |
| Transactional approach | An approach that draws attention to the ways in which individuals' experiences modify their selection of contexts and the ways in which they actively change contexts [4]. |
| Transactional change processes | Dynamic processes by which individuals and contexts reciprocally affect one another. |
| Triggering mechanism | An event or experience that precipitates other events or sets a process in motion. |

Table 2

*Nature of Transactional Processes in the Framework**

| Types of Processes | Nature |
|---|---|
| **Facilitative Processes**<br>Resources<br>Supports<br>0pportunities for choice, active engagement, and collaboration (i.e., negotiation, co-ownership, co-construction) | Contexts of interest: capacity-relevant everyday activity settings<br>Triggering mechanism: none specifically; varied and ubiquitous<br>Description: these processes deal with how contexts support and afford particular capacity-enhancing transactions and experiences, with these having the potential to change interpersonal transactions and the selection of contexts and niches<br>Context-Process-Outcome (CPO) pathway: capacity-relevant contexts—facilitative processes—capacity development (**capacity facilitation pathway**) |
| **Resiliency Processes**<br>Assimilative (e.g., self-regulatory, mastery, and negotiation processes)<br>Accommodative (e.g., compensatory and protective opportunities, navigation processes) | Contexts of interest: everyday activity settings<br>Triggering mechanism: adverse contextual events/experiences (assumed for these processes to operate)<br>Description: these processes deal with subsequent person-in-context changes (i.e., assimilation), as well as the selection of new contexts that are expected to provide new opportunities or supports (e.g., navigation)<br>Context-Process-Outcome (CPO) pathway: adverse contextual experiences—resiliency processes—positive adaptation (**resiliency pathway**) |
| **Socialization Processes**<br>Social Assimilation (e.g., changing values and reference groups)<br>Acculturation | Contexts of interest: everyday activity settings (typical life contexts)<br>Triggering mechanism: sociocultural changes in roles and locations of everyday activities in a person/group's life (country, home, school, health care system)<br>Description: these processes deal with how individuals and groups adapt to and also change their host contexts<br>Context-Process-Outcome (CPO) pathway: role/culture shift—socialization processes—positive acculturation outcomes (**acculturation pathway**) |

* All are person-in-context over time but differ in the nature of the relevant contexts: typically encountered contexts (everyday activity settings relevant to capacity), ‘adverse context/experience’, and ‘role shift or culture shift’.

Figure 1

*Deriving theoretical tenets and key transactional processes.*

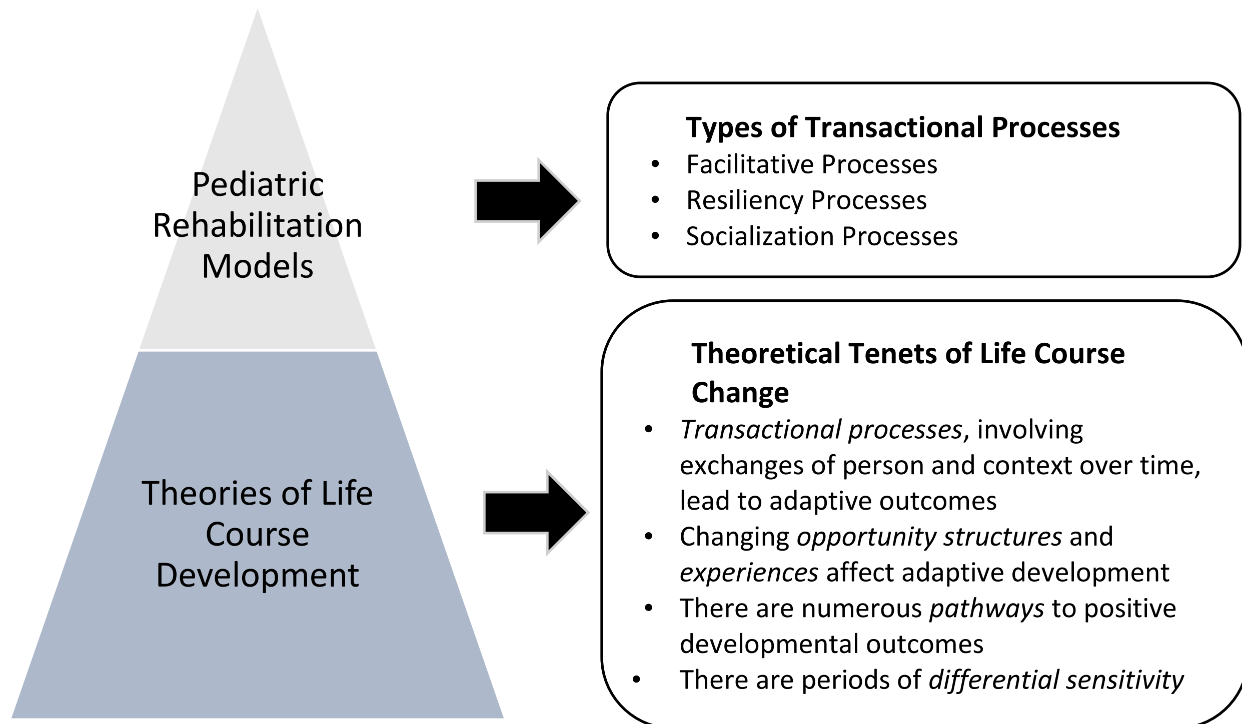


Figure 2

*Principles and propositions of the framework of transactional processes and adaptive development for pediatric rehabilitation*.

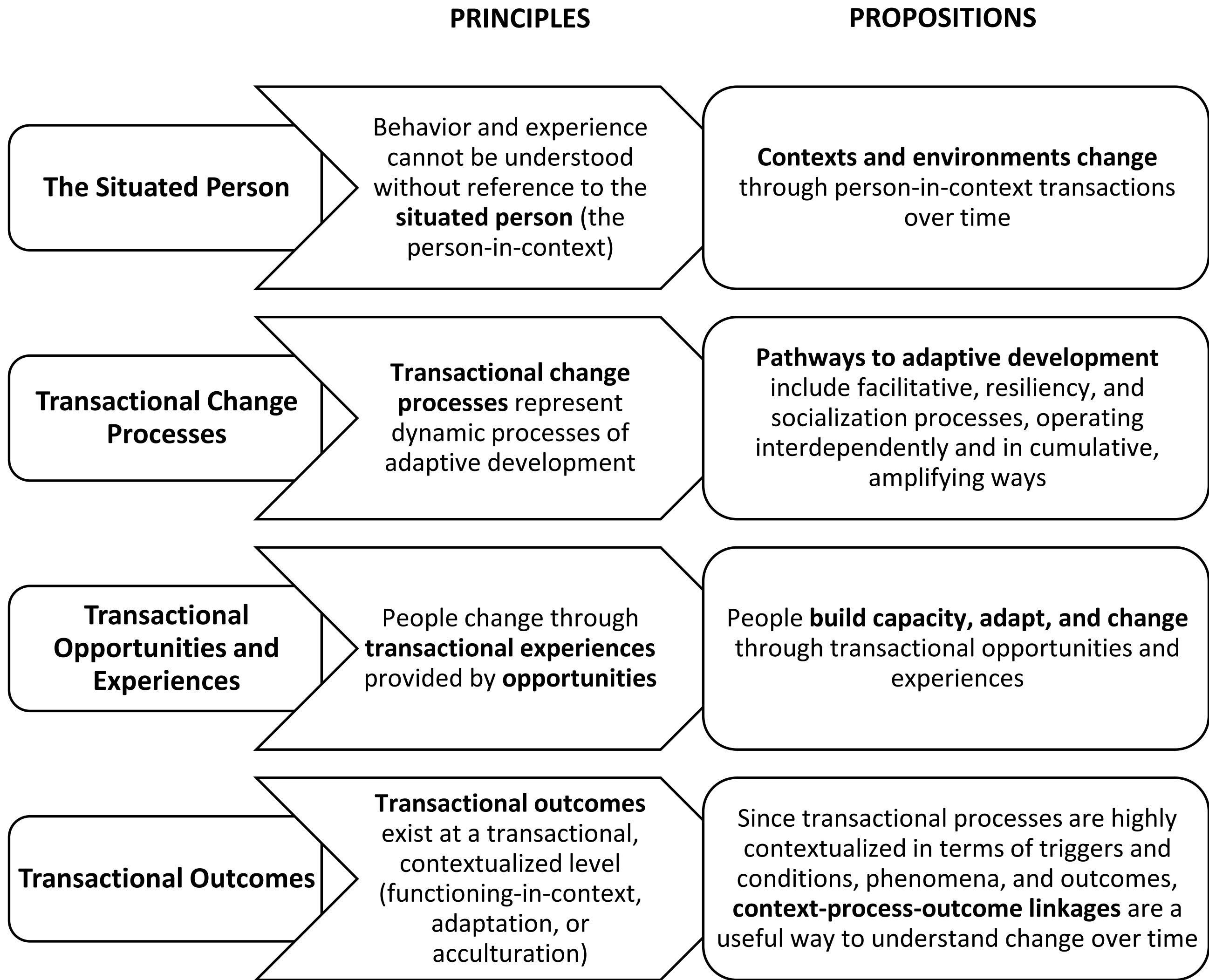
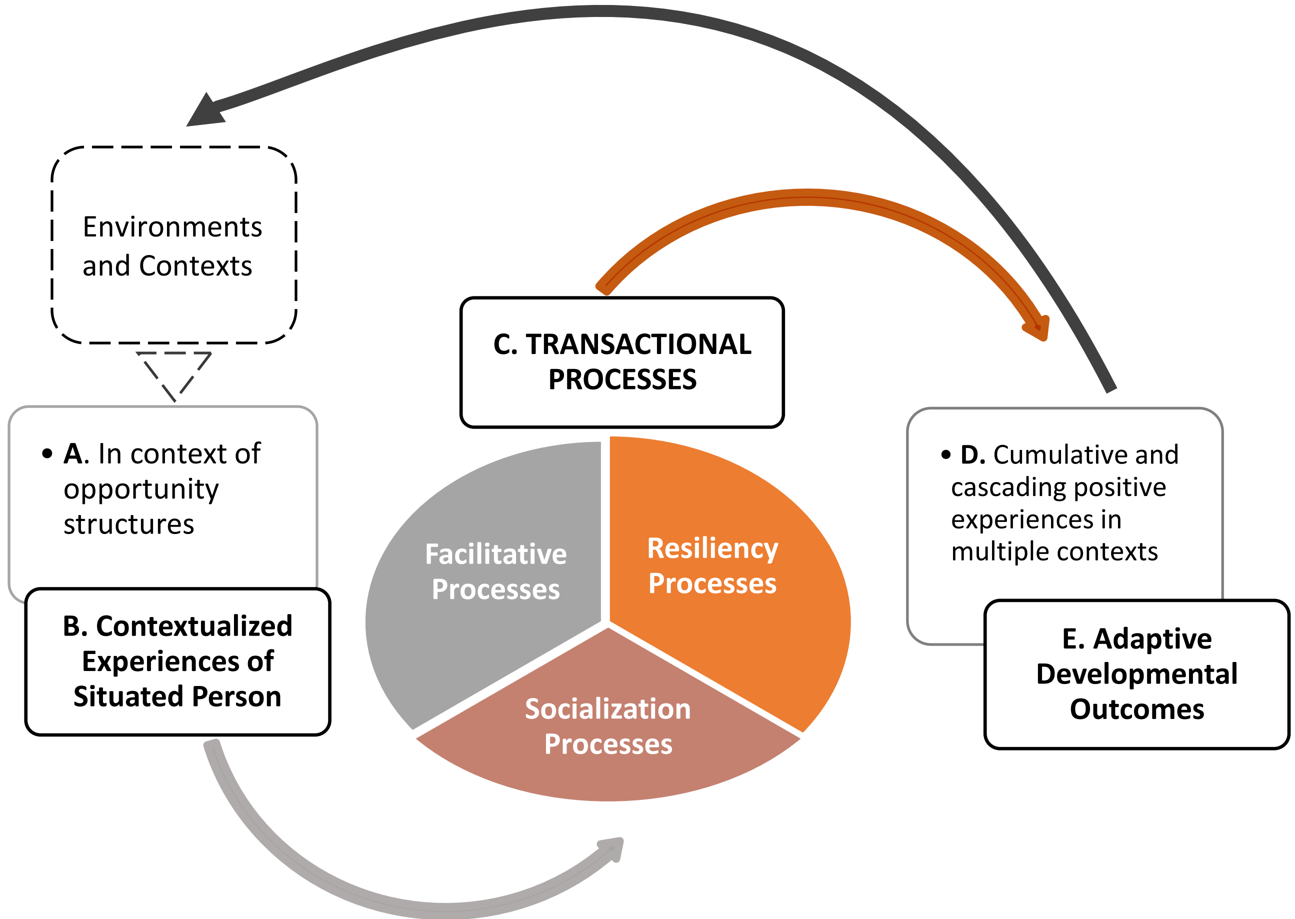


Figure 3

*A framework of transactional processes and adaptive development for pediatric rehabilitation.*




**TRANSACTIONAL PROCESSES**
Relational and experiential; Interdependent in nature

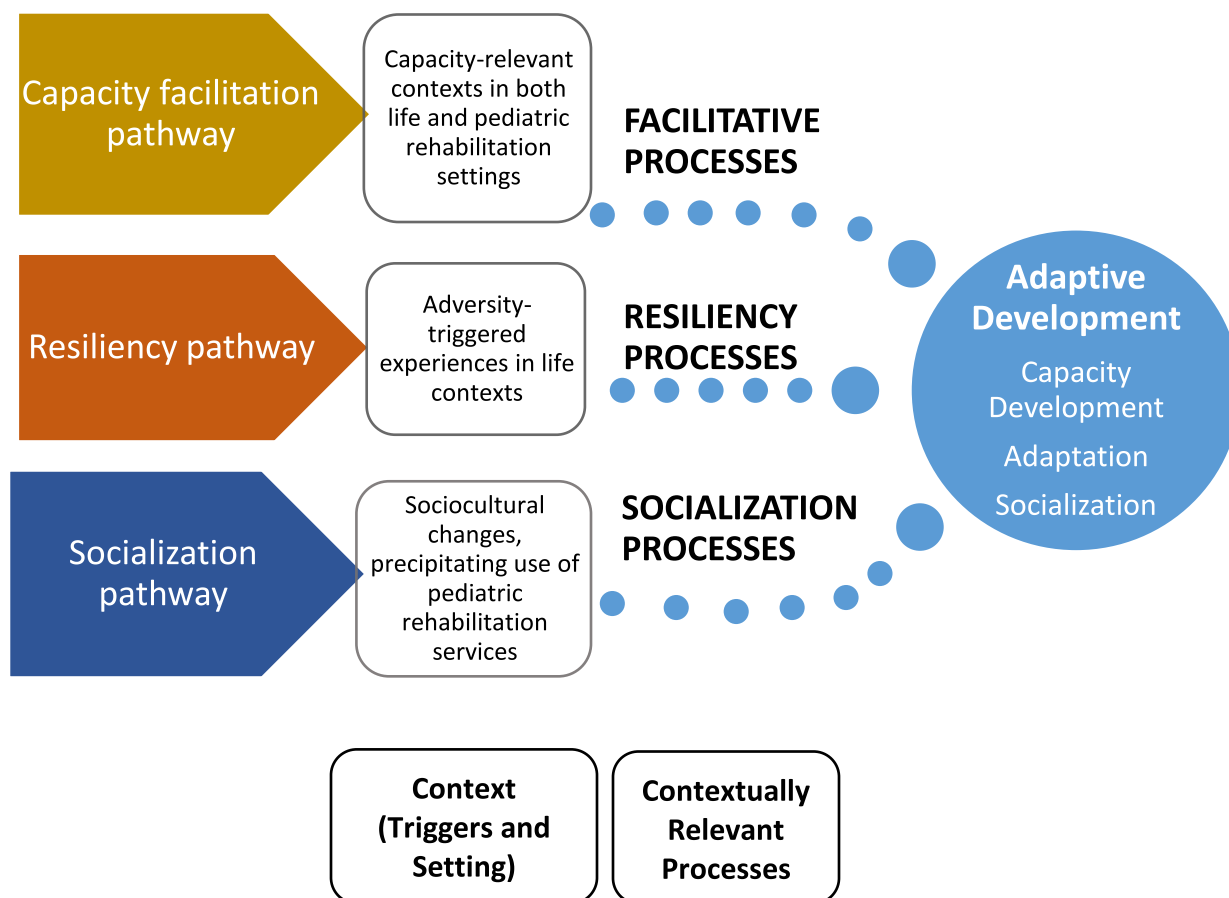
Facilitative Processes→ Resources; Supports; Opportunities for choice, active engagement, and collaboration (i.e., negotiation, co-ownership, co-construction)

Resiliency Processes→ Assimilative (e.g., self-regulatory, mastery, and negotiation processes); Accommodative (e.g., compensatory and protective opportunities, navigation processes)

Socialization Processes→ Social Assimilation; Acculturation

Figure 4

*Context-process pathways to adaptive development.*



**Supplementary Material: Vignette Illustrating Framework Elements**

Ashley is a sixteen-year-old living with a physical disability. She lives with her mother, father, and younger sister in an urban environment in Canada. Ashley has just completed her second year of high school and plans to go to university to study psychology.

Ashley uses power mobility outdoors and a walker indoors most of the time, but makes choices based on her level of endurance and schedule for the day. Throughout childhood Ashley received occupational and physical therapy at a local children's rehabilitation centre and at school. Although she does not interact with therapists on a regular basis, they have provided services when needed by her and her family, and have offered voices of guidance throughout her life.

Ashley is actively involved in her school and with her friends. She is a member of the student council and a volunteer at the children's treatment centre, where she acts as a mentor to other young people with physical disabilities. She has not yet had a paid job. On weekends and after school, Ashley prefers to spend time with her friends and do volunteer work, leaving little time for homework. Amanda, one of Ashley's best friends, does not have a disability but now has a driver's license and actively assists Ashley getting in and out of her car. Ashley's other friend, Sarah, also has a physical disability, and her parents drive them both to social events. One of Ashley's goals is to attend university and be roommates with her childhood friend Amanda. She would also like to get a summer job so she can earn some money.