

Uncovering the theoretical underpinnings of an interprofessional preschool intervention program: Tumbling Together

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Découvrir les fondements théoriques du programme d'intervention interprofessionnelle préscolaire : Tumbling Together

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Key words: Early intervention; Evidence-based practice; Gymnastics; Interprofessional; Theoretical models.

Mots clés : gymnastique; interprofessionnel; intervention précoce; modèles théoriques; pratique fondée sur les données probantes.

Abstract

Background. Intervention programs are rarely tailored for children with self-regulation and communication challenges. Therefore, clinicians develop their own programs as is the case with the preschool program Tumbling Together. This program combines occupational therapy, speech-language therapy, and gymnastics. **Purpose.** The aim of this study was to take an in-depth look at the program to answer the following questions: (a) What are the fundamental concepts of the program? and (b) What is the underlying theoretical model that illustrates the relationships between concepts? **Method.** The qualitative research method of grounded theorizing using situational analysis was employed. **Findings.** Fourteen main concepts of the program were identified and informed the development of a theoretical model. **Implications.** A theoretical model incorporating Tumbling Together's concepts is a first step in evaluating its efficacy. Although the concepts involved are not novel, their unique combination forms a promising intervention approach for this population.

Abrégé

Description. Les programmes d'intervention sont rarement adaptés aux enfants ayant des problèmes d'autorégulation et de communication. Cependant, les cliniciens conçoivent leurs propres programmes, comme dans le cas du programme préscolaire Tumbling Together. Il s'agit d'un programme combiné d'ergothérapie, d'orthophonie et de gymnastique. **But.** Le but de cette étude était d'examiner le programme en profondeur afin de répondre aux questions suivantes : (1) Quels sont les concepts fondamentaux du programme? et (2) Quel est le modèle théorique sous-jacent qui illustre les relations entre les concepts? **Méthodologie.** La méthode de recherche qualitative qui consiste à élaborer une théorie fondée sur les données à partir d'une analyse situationnelle a été utilisée. **Résultats.** Les quatorze principaux concepts du programme ont été identifiés et ont permis d'orienter l'élaboration d'un modèle théorique. **Conséquences.** Le modèle théorique incorporant les concepts du programme Tumbling Together constitue la première étape de l'évaluation de son efficacité. Bien que les concepts en jeu ne soient pas nouveaux, leur combinaison unique constitue une méthode d'intervention prometteuse pour cette population.

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Children with communication needs (e.g., delays in receptive, expressive, or social pragmatics skills) may also have limitations related to self-regulation, such as difficulties controlling emotions and being alert and focused for learning (Eisenberg, Sadovsky, & Spinard, 2005; Pinborough-Zimmerman et al., 2007). The inability to engage in communication adversely affects the child's ability to engage in daily occupations and changes the manner in which services are provided. These children require simultaneous explicit teaching of both communication and self-regulation skills. Tailored intervention programs that comprise prerequisite, communication, and self-regulation skills are necessary because without them, these children may not receive appropriate intervention and may experience delays in services (Bricker, 2001; Hourcade, Pilotte, West, & Parette, 2004); Tumbling Together is a program that has evolved to embody this recommendation.

The dilemma with such programs in this age of evidence-based practice is that anecdotal evidence demonstrating their success is insufficient for proving their effectiveness. Although programs emerge from a range of clinical reasoning techniques and are informed by clinicians' formal training, programs often do not have defined theoretical concepts that can guide their formal evaluation. This study takes an in-depth look at Tumbling Together to gain a better understanding of its theoretical foundations as a first step toward proving its efficacy. This is an appropriate and necessary initial phase in testing a complex intervention (Craig et al., 2008), and having a defined theoretical perspective is important for the design and creation of hypotheses for future research (Creswell, 2013).

Tumbling Together

Tumbling Together was established in 2003 and was the brainchild of two clinicians (an occupational therapist and a speech-language pathologist). It uses recreational gymnastics as a therapeutic medium for the provision of play-based interprofessional rehabilitation. The program takes place in a gymnastics facility and comprises ten 45-min weekly sessions. It uses a small-group model for 3- to 5-year-olds based on play, movement, and social interaction to deliver occupational therapy and speech therapy. Its objectives include developing early group participation skills, providing sensorimotor experiences, working on language goals, and educating parents (Loiselle & Chamberlain, 2010). Children who participate in the program form a heterogeneous group, including children with an assortment of complex communication needs, developmental delays, physical challenges, and self-regulation challenges. They participate in activities such as circle times, gross motor circuits, and group activities in which appropriate language is integrated. Throughout the program, the Goal Attainment Scale (King, McDougall, Palisano, Gritzan, & Tucker, 2000) is used to carefully track progress in various areas (e.g., consistently attending to activities, initiating peer interactions). Parents

are consulted during a parent session at the beginning of the program, throughout the program, and at the end of the program, when they are asked to complete a written feedback form.

Literature Review

Some important characteristics drawn from the program description are interprofessional collaboration, situational learning in a gymnastics facility, and use of a group model. A review of the literature by the first author looked at studies examining characteristics mentioned in the Tumbling Together program description for paediatric populations for a more complete definition.

The concept of interprofessional collaboration has been the subject of many studies. Interprofessional collaboration involves professionals from various disciplines, working together in an environment of trust and respect to address the complex needs of clients (D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005). Symon (2001) indicates that there have been increased collaborative efforts in designing interventions for children with special needs. Collaboration between professions is a recommended practice (Rapport, McWilliam, & Smith, 2004), and interprofessional teams have proven to be an effective approach for paediatric populations (Bell, Corfield, Davies, & Richardson, 2010; Golos, Sarid, Weill, & Weintraub, 2011).

Another recommended practice for paediatric rehabilitation is to ensure that interventions include situational learning that incorporates the concept of naturalness (Owens, 2010). Children must learn skills in an environment in which the skills are required, thus making their use natural. Play is natural for children and allows them to develop important skills (Burriss & Tsao, 2002; Kasari, Gulsrud, Freeman, Paparella, & Helleman, 2012). Use of groups in paediatric populations is also supported by literature. Groups provide opportunities for children to monitor their performance, learn from their peers, socialize with others, and increase their social participation and cooperation (Camden, Tétreault, & Swaine, 2012; Dunford, 2011; Quigg, 2003).

Research by Pennington and Thomson (2007) showed that qualitative methods are helpful in identifying key concepts of intervention programs and in studying implementation issues prior to evaluating their general effectiveness. To support an in-depth investigation into the theoretical model guiding the Tumbling Together approach, a transition from descriptive to analytical was required to identify all important concepts and their organization without being limited to the program description alone. Concepts are considered the building blocks of a theory and include central ideas and their characteristics (Strauss & Corbin, 1998). The aims of this study were therefore to take an in-depth look at the program to answer the following research questions: (a) What are the major concepts of the program? and (b) What is the underlying theoretical model that illustrates the relationships between concepts?

Method

Study Design

A qualitative design, grounded theorizing using situational analysis, was chosen as it is well suited for analyzing situations that have not yet been widely researched. Grounded theory involves creating theory from data that have been systematically collected and analyzed (Strauss & Corbin, 1998). Situational analysis considers both human and nonhuman factors while exploring the relationships between them to gain a better understanding of the social world (Clarke & Friese, 2007). The social world as considered in the context of this study involved the individuals implementing and participating in the Tumbling Together program.

Participants and Recruitment

Ethics approval was obtained by the Health Sciences and Science Research Ethics Board at the University of Ottawa. Participants were recruited by way of advertisement posters displayed in the office building of rehabilitation professionals and at the gymnastics club where the program takes place.

Four sampling methods were used in this study: convenience sampling, purposeful sampling, theoretical sampling, and theoretical interviews (see Morse, 2007). Archival historical materials, documents, and participants were selected in sampling as allowed by grounded theorizing using situational analysis. Convenience sampling consisted of using the program manual and transcription of the program DVD as these provided a good overview, helped establish the scope of the study, and were accessible to the authors. Purposeful sampling was used to recruit program participants to gather data exploring their perspectives as they related to the initial findings. Theoretical sampling involved anonymous parent feedback forms and Goal Attainment Scale forms that were provided to the first author to aid in theory development and supplementation. These forms were administered outside the context of this study; therefore, no exchange between researcher and participants was possible when compared to the traditional process of selecting additional participants to interview. However, the forms were selected to help supplement information about linkages between emerging concepts as they provided information from another perspective, thus contributing to theory development. Theoretical interviews included the recall of two participants to “expand on and verify the emerging theoretical model” (Morse, 2007, p. 235).

Five key informants with involvement in the Tumbling Together program were recruited: one occupational therapist, one speech-language pathologist, one gymnastics coach, and two university students in rehabilitation science programs. All participants were retained until the end of the study. The inclusion criteria for the participants were recent and direct involvement in the implementation of the program.

All participants were women. The occupational therapist and speech-language pathologist each had 35 years of experience, were the co-creators of the program, and had been

involved in 50 Tumbling Together series. The gymnastics coach had 27 years experience and had been involved with 39 Tumbling Together series. The rehabilitation science students were in their final years of their programs. Having three professionals participate provided a good sampling of staff involved when compared to the total number of staff who have been involved with running the program since its inception. Participants were aware of research questions prior to interviews. The first author is related to one of the co-creators of the Tumbling Together program and was compelled to research it subsequent to witnessing anecdotal success stories. Bias was managed by having the third author review coding and question conclusions.

Data Collection and Analysis

The grounded theory approach used was consistent with the methodology described by Strauss and Corbin (1998). The iterative process of data collection and analysis was followed, and one complete cycle of levels of coding was accomplished.

Data were collected through document review of program materials, transcript analysis, and interviews. All interviews were semi-structured and flexible to ensure appropriate potential concepts could be explored as dictated by analysis of data. Interviews were held in a quiet room and were audio recorded. Interviews were on average 30 min. The first author (female graduate student) conducted all interviews and made field notes. Audio recordings of the interviews were transcribed prior to coding.

The coding paradigm described by Strauss and Corbin (1998) was used for data analysis. Data analysis involved three types of coding (open, axial, and selective) as well as memos, situational analysis, mini-frameworks, and theoretical model drafts. The resulting theoretical model was then validated during validation interviews with 2 participants. Figure 1 illustrates the cyclical process of data collection enabled by sampling methods and types of analysis used.

Memos were created and continued to be generated throughout the study to assist with theory development. Memos helped ensure the emerging theory had conceptual density and were divided into three types of notes: code notes, theoretical notes, and operational notes (Strauss & Corbin, 1998). Code notes yielded a total of 430 significant units of meaning and were classified under 51 codes during open coding.

Constant comparison between concepts and memos helped to ensure the analysis was valid. Axial coding defined codes and identified patterns. Codes were then organized into concepts according to their relationships. Selective coding, which integrated and refined concepts, was done in conjunction with situational maps—the first type of map involved in situational analysis as described by Clarke and Friese (2007) and allows for the inclusion of all major concepts instead of restricting it to a central concept. Table 1 outlines the contributory codes for each concept identified and their definitions. The 14 main concepts were divided into three categories to facilitate explanation. Concepts, related directly to the types of skills targeted

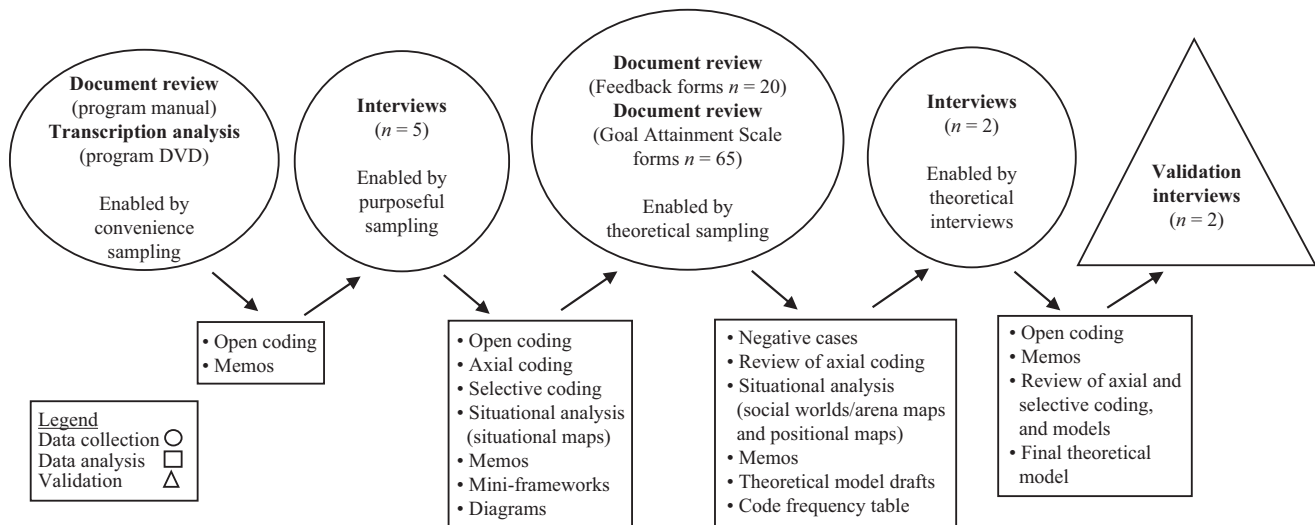


Figure 1. Visual representation of data collection and analysis methods.

in the program and their generalization, were grouped into one category. Concepts surrounding the circumstances of the setting of the program were grouped into a second category related to context. Finally, concepts used as intervention strategies were grouped into a third category. These categories should not be viewed as part of the theoretical underpinnings of the program as certain concepts fit into more than one category as described in the Findings section.

Social worlds/arenas maps and positional maps as described by Clarke and Friese (2007) were created after document review and analysis of feedback forms and Goal Attainment Scale forms. These included social and organizational aspects and concepts viewed from differing perspectives.

Drafts of a theoretical model were created based on the above-mentioned concepts, memos, and maps. A table of code frequencies was made and questions were created to check the relative importance of concepts. An interview guide with questions stemming from these analyses was used for the final semi-structured interviews in the data collection phase.

Validation interviews were then conducted with each of the two therapists who co-created *Tumbling Together* at the end of the study to ensure the analysis concurred with the reality of the program. A printout of the final theoretical model draft was presented. No major inconsistencies were found. Two small graphic changes were made following these interviews, but both therapists agreed that the proposed theoretical model was a good representation of the program.

Findings

Figure 2 presents the theoretical model that was created to illustrate the theoretical underpinnings of the *Tumbling Together* program. The concepts listed horizontally across the top of the model apply to everything below (e.g., *community-based program* is the context for *interprofessional collaboration* and

individualization). The model was created based on relationships that emerged during coding, memos, mini-frameworks, and diagrams. As parts of the model emerged, they were tested against previously identified relationships and information from theoretical interviews. The mini-frameworks and diagrams were combined, tested, and validated to achieve the final product.

Concepts Related to Skills

Optimal state (being calm, alert, and focused). This concept highlights an important characteristic of the program as confirmed during theoretical interviews and is illustrated in the theoretical model as a main, all-encompassing characteristic. The cyclic process represented by a circular arrow from *optimal state* to *additional supports and strategies* highlights the need for supports and strategies to regain the optimal state if it is lost. This relationship emerged frequently in participant interviews. Furthermore, there is a circular arrow between *optimal state* and *integrated skill development*, as having an optimal state is a prerequisite for skill development and is part of the self-regulation skills being taught. Its importance is highlighted by Participant 3:

It's part of everything If you're not calm, alert, and focused, you can't participate, that's the bottom line How do you get yourself in that calm, alert zone and it's not just about being there. It's about attaining it, maintaining it, and probably in the end, the most functional skill of all, regaining it after you've been excited or upset.

Integrated skill development. The skills lie within the context of interprofessional collaboration because one of the reasons integrated skill development is possible is because many professions are involved. The skill areas targeted were self-regulation/sensory, motor, language and communication, school readiness, and socioemotional skills. Participant 1 listed integrated skill development as a strength of the program:

Table I
Axial and Selective Coding Concepts and the Contributing Codes From Data Analysis

Concept	Definition	Contributory code
Related to skills		
Optimal state (being calm, alert, and focused)	A state in which individuals are ready for learning because they have appropriate levels of arousal, attend to the task at hand, and achieve adequate self-regulation	Calm, alert, focus
Integrated skill development	Simultaneously targeting and developing functional skills from a variety of disciplines	Skill development, integrated skills, therapeutic/learning foci of activities, parental input, sensory motor/gross motor development, communication and language skills, self-regulation, co-regulation, socioemotional skills, confidence
Generalization	The ability to transfer skills to other contexts and settings	Generalization
Related to context		
Community-based program	A program that involves community partners, includes professional training informed by the community's needs, and improves community competency	Partnerships, professional training, increasing community capacity
Interprofessional collaboration	Professionals from various disciplines working together in an environment of trust and respect to address the complex needs of clients (D'Amour Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005)	Staff training, highly trained staff, interprofessional learning, student education, interprofessional teamwork, SLP role, OT role, coach role, mental health role, positive focus
Family-centred approach	An approach that engages the family as a member of the interprofessional team and includes family education, input, support, feedback, and advocacy.	Parent support, parent input, parent education, strategies for dealing with parental frustration, parent feedback, advocacy, motivation, parental outcomes
Related to intervention strategies		
Movement	Activities in which the body is physically active in order to change positions or locations	Movement
Situational learning	Learning that occurs in a natural context in which the learning can be directly applied	Learning in context, learning through experience, gains experienced by the child, measuring changes
Individualization	Tailoring aspects of a program to each individual, which includes components of both assessment and intervention	Therapist program, high adult-to-child ratio, expecting responses, parental input, individualized goals, assessing children
Peer interactions	Exchanges between peers in which they are engaged with each other	Peer interactions
Expert/novice pairing	A combination of children who have complementary strengths and weaknesses in various skills, which enable them to both teach others at times and learn from them at other times	Expert/novice pairing
Explicit teaching	Teaching that involves breaking down skills into smaller steps and providing specific instruction on how to accomplish each step to achieve the desired result; involves conscious learning guided by modeling, explanation, and practice	Explicit teaching
Scaffolding	Graduated assistance provided to novice learners to help them achieve higher levels of competence (Kaderavek, 2011)	Scaffolding
Additional supports and strategies	All additional supports and strategies that facilitate the development of integrated skills and the ability to achieve an optimal state, such as use of a structured natural environment, routines, sensory processing strategies, and visuals	Supportive environments, non-human factors, routine

I think the biggest thing is the fact that we're working on integrated skills In the past . . . I might be doing speech and the physio is doing physio, but I think it helps the kids to generalize better if we are working on them in an integrated way . . . developing them all at the same time.

Generalization. This represents, in the words of the participants, the “ultimate goal” of the program and is represented by an arrow pointing away from the theoretical model to illustrate the application of skills to other occupational settings. Participant 1 noted that “generalization is absolutely key. If we

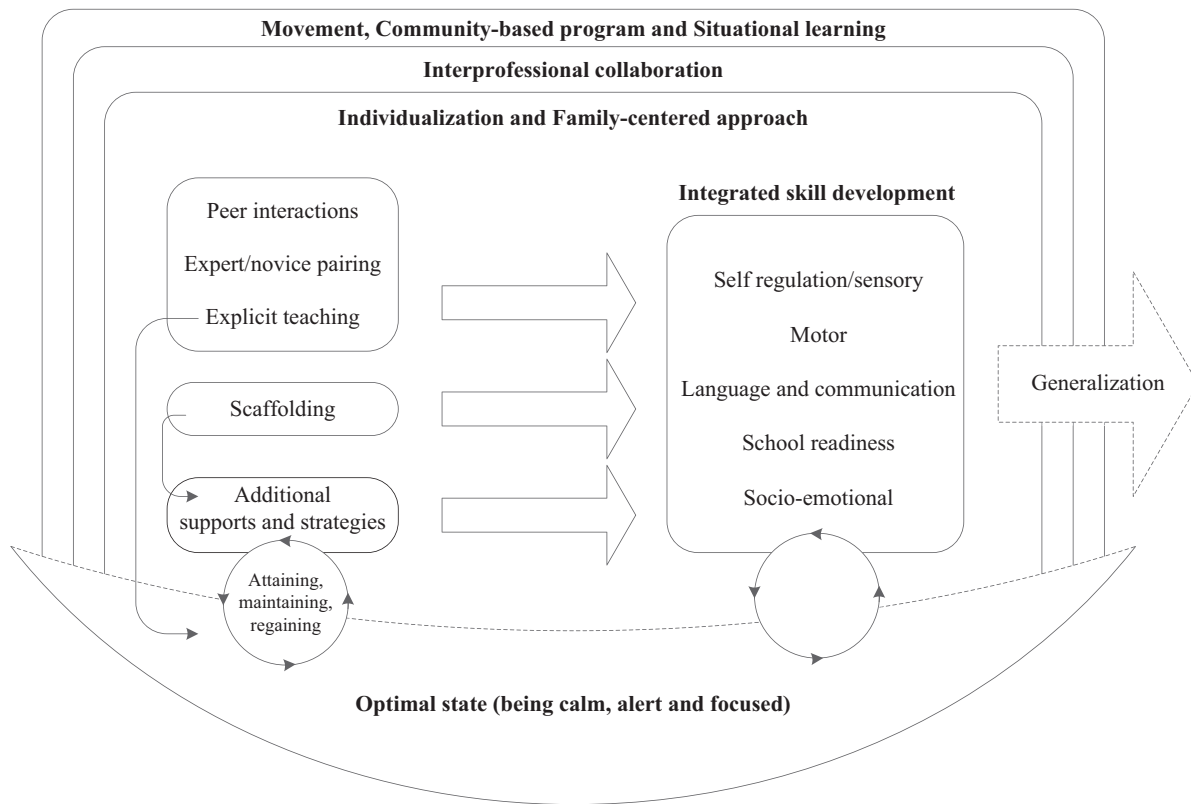


Figure 2. Tumbling Together theoretical model.

don't have that, we don't have a program that's giving us the results."

Concepts Related to Context

Community-based program, interprofessional collaboration, and family-centered approach. All participants spoke of teamwork as a strength of the program: "Tumbling is probably where you're going to see the best teamwork and the best interdisciplinary team" (Participant 4). The team includes community members, rehabilitation professionals, and family members. Family members are involved in a variety of ways right from the beginning during goal setting: "If they have specific goals then obviously we'll incorporate them . . . We always talk about the goals and then at the end we give parents a report" (Participant 3). The placement of these concepts within the spheres of the model stems from having the professionals operate within a community-based program and then consult with families to ensure appropriate intervention strategies and goals are targeted based on participants' strengths and needs. The community's involvement had positive effects as reflected by Participant 3:

Because it's in the community, it actually looks like a recreational program and this is a big deal because parents feel very hopeful that their children will be able to participate in all kinds of things once they've seen them there. And because of the way it's set up, we can invite early childhood educators,

day care staff, teachers, grandparents, whoever the parents want can come and see them . . . It also shows everyone else that you don't need to be afraid of children who have special needs.

Concepts Related to Intervention Strategies

Movement. This concept is in the outer layer of the theoretical model because it is not only an intervention strategy but also one of the building blocks of the program. It is also unconventionally used as part of the context for the program as revealed by data analysis. It is an essential part of the program for learning. Participant 1 points out its necessity: "Movement needs to be a part of it. I think that's really important . . . The gym has an inherent value to us, but it doesn't have to be in the gym."

Situational learning. Considered both part of the context of the program and an intervention strategy, learning takes place in a gymnastics facility during highly motivating activities. It is listed in the outer sphere of the model since it is a foundation for many of the other concepts. Situational learning as an intervention strategy is mentioned by Participant 1: "We know situational learning is the best way for children to learn and that they'll generalize that information the best and the quickest." Participant 2 gives an example of how the natural setting provides a good context for skill development:

It's more in context so the kids are learning from each other and there's a purpose to it It's not just so isolated and just working on such decontextualized language They're having to call their friends for their turn because it's their friend's turn It makes sense to do that.

Individualization. This concept was identified by participants as a strength of the program as there is a high adult-to-child ratio and a lot of time and energy is spent tailoring the program to each child. This concept is listed below interprofessional collaboration as the professionals ensure the program, skills targeted, type of teaching, and supports are individualized. Participant 5 mentioned the adaptability of the program: "You can easily change it up to, to meet each child's needs."

Peer interaction. This is used as a modality by which the children learn targeted skills. Its importance was confirmed during theoretical interviews: "Peer interactions are one of the most important aspects of this group Kids learn best from each other" (Participant 1).

Expert-to-novice pairing. This pairing is often used with typically developing peers as the experts and children with disabilities as the novices. The Tumbling Together program uses a different approach and ensures that the children involved have strengths in different areas to enable many children to act as experts. Participant 3 stated, "It's a combination of children. They're not all the same and so they may be expert in one area and novice in another."

Explicit teaching. This concept was identified as a significant intervention strategy not only for skill development but also for teaching prerequisite self-regulation skills (e.g., "Silly, Settle Down" game, teaching hand squeezing to assist with waiting). It is for that reason an arrow was drawn from *explicit teaching* to *optimal state* in the model. Explicit teaching is grouped with the previous two concepts, peer interaction and expert-to-novice pairing, as they lead to the development of integrated skill development. Explicit teaching was identified as being important in the Tumbling Together 2010 manual:

We often fail, however, at teaching them the mechanics of how to do such things as sitting still, paying attention, taking turns, etc. It has been proposed that young children learn best through being explicitly taught strategies to accomplish this. (Loiselle & Chamberlain, 2010, p. 1)

Participant 3 also indicated that "we do a lot of explicit teaching."

Scaffolding. Scaffolding is used in conjunction with other intervention strategies to lead to integrated skill development. It has clear links to additional supports and strategies as represented by an arrow in the theoretical model. Some examples of scaffolding in the program are social routines, adult repetition, and varied expectations depending on participants' skill levels. Professionals from various disciplines coached each other on

how best to provide assistance to children to facilitate learning skills. Participant 4 said, "The gym coach was also very good at showing us the safe techniques, so making sure that they're jumping and landing on two feet, that they're not falling to the ground, and ways that you can assist them jumping." Participant 3 mentioned that "the language therapist has to guide me I may get stuck because it may not be natural for me to know how to simplify or how to scaffold the next thing."

Additional supports and strategies. This concept is important for moving toward integrated skill development and for achieving an optimal state, as Participant 3 illustrates:

We use . . . organizational supports: So the gym is set up, it's very structured, it's very obvious where the equipment is, what's next. We use picture symbols like Boardmaker symbols for directions We use strategies that a lot of occupational therapists use who work with sensory processing—for example, joint compressions.

Negative Case

One comment questioned the generalization of skills with this program. This participant had not yet seen the program to completion. Participants who had seen the full program commented that the skills transfer to other contexts and provided specific examples. Studying whether generalization always occurs and how soon it occurs during the program would require further investigation.

Discussion

The study's goal was to identify Tumbling Together's fundamental concepts and to create a theoretical model to illustrate existing relationships. Tumbling Together is an intervention program with multiple concepts involving complex relationships. The program is dynamic and evolving as clinicians are constantly making changes to improve the approach, but the theoretical underpinnings remain constant. The fundamental concepts underlying the program are consistent with research in the areas of early childhood interventions. There are no novel concepts in the Tumbling Together program, but their unique combination forms a promising intervention approach for children with communication and self-regulation challenges.

Interprofessional collaboration and situational learning are concepts related to characteristics identified in Tumbling Together's program description. Interprofessional collaboration is currently thought to be essential to optimize care in health-related fields and is developing into an expectation for service delivery (Bajnok, Puddester, Macdonald, Archibald, & Kuhl, 2012). The natural gymnastics environment promotes situational learning as the participants must use the skills they are learning to succeed in the program. Additionally, one of the occupations of preschool children is to engage in gross motor play with other children (Bricker, 2001). Reviews of literature

on interventions for children with disabilities demonstrate that play-related activities and modeling of specific social skills are correlated with positive outcomes, and play can be used to support goals in many domains (Case-Smith, 2013; Lifter, Foster-Sanda, Arzamarski, Briesch, & McClure, 2011; Vaughn et al., 2003).

Although *Tumbling Together* is a group intervention, the group setting itself was not identified as a fundamental concept; however, two other concepts emerged that are closely related: peer interactions and expert-to-novice pairing. Peer interaction is an intervention strategy that occurs in group settings (Quigg, 2003), and the same applies to expert-to-novice pairing as described by Quill (2000). This latter concept has been effectively applied in special education (see Law, Garrett, & Nye, 2003; Quill, 2000; Wolfberg & Schuler, 1993), and the way it is adapted to the *Tumbling Together* program seems to yield results in all skills. In addition, the *Tumbling Together* team members not only individualize participant goals as recommended when working collaboratively with children and their families (Brewer, Pollock, & Wright, 2014; Odom & Wolery, 2003) but also use individualization as an intervention strategy.

The following concepts identified in the study are related to skills. Optimal state (being calm, alert, and focused) is a concept that emerged as predominant from the data. Achieving this state requires self-regulation skills. These are important prerequisite skills for learning (Blair, 2002; Kawai, Oxford, & Iran-Nejad, 2000; Neuenschwander, Röthlisberger, Cimeli, & Roebbers, 2012). *Tumbling Together* is unique in the way it highlights the importance of these skills not only to children but also to the adults involved. Thus, the program introduces notions of co-regulation as advocated by Greenspan and Shanker (2004). Occupational therapy traditionally plays a major role in helping children achieve self-regulation; however, even participants from other professions have recognized its importance. Elements of sensory processing approaches, such as joint compressions, jumping, and balance beams, are integrated into the program, but they are only one component of a comprehensive intervention as suggested by research due to the equivocal nature of evidence in this area (Case-Smith & Arbesman, 2008). Integrated skill development is another key concept of the *Tumbling Together* program. Every profession involved contributes specialized knowledge to target multiple skills simultaneously. The integration of gross motor skills with other skills and the application of interprofessional treatments have emerged as valuable approaches when working with young children (Hechler et al., 2014; Howell, Wittman, & Bundy, 2012).

Generalization is viewed as a critical aspect of early intervention, and natural environments promote generalization of skills (Corsello, 2005; Fava et al., 2011). It is integrated in clinician training, and strategies to facilitate generalization are integrated from the beginning of all well-structured intervention programs as per professional guidelines (see Association of Canadian Occupational Therapy Regulatory Organizations, 2011; Canadian Association of Speech-Language Pathologists and Audiologists, 2004). The generalization observed in the

Tumbling Together program is promising and supports the rationale for future study. Generalization of skills taught in the program could help improve the lives of participants by increasing their ability to function and communicate in various contexts.

The following concepts identified from the study are related to context. Community-based programs have several advantages, especially when working with children who require adapted programs. They help build partnerships between community staff and rehabilitation professionals to extend therapeutic services. Community capacity is increased by the training of recreational professionals by rehabilitation professionals and vice versa (Rimmer, 1999). Community-based programs are described by Rimmer (1999) as a way to help children overcome barriers to participation in other recreational community-based programs and increase overall quality of life. It is not surprising that *Tumbling Together* uses a family-centred approach as it is encouraged in the fields of the program co-creators and is considered best practice when working with children in natural environments (Woods, Wilcox, Friedman, & Murch, 2011).

The following identified concepts are related to intervention strategies. Movement was viewed not only as an intervention strategy for learning skills but also as an essential building block and context for the program. Without movement, the program would not be considered *Tumbling Together*. The concept that movement is necessary for learning is supported in both quantitative and qualitative research (see Hills, King, & Armstrong, 2007; Lloyd, 2012; Ramah, 2014).

Explicit teaching is often discussed as a critical and essential intervention strategy in education research for positive outcomes (Kroesbergen & Van Luit, 2003; Vaughn, Gersten, & Chard, 2000). Explicit teaching is of use to all students but is especially important for children with disabilities (Kroesbergen & Van Luit, 2003). This type of teaching should not be overlooked when considering preliminary, prerequisite skills. Explicit teaching within the context of *Tumbling Together* is used specifically to help teach prerequisite skills, such as self-regulation strategies and group readiness skills. These skills help participants be prepared to learn other skills (e.g., language, motor) and then generalize the skills to everyday occupations.

The two final major concepts identified as part of *Tumbling Together*'s intervention strategies stem from the field of psychology and the work started by Lev Vygotsky: scaffolding and additional supports and strategies. Scaffolding assists children in learning various skills, including social engagement and movement patterns (Horn & Kang, 2012; Wimpory, Hobson, & Nash, 2007). Additional supports, such as visuals, gestures, and adult repetitions, are gradually removed to encourage participants to perform independently.

The current combination of components in the *Tumbling Together* program has emerged as the result of years of program modifications and refinements by its co-creators. The program's fundamental concepts are common in rehabilitation science programs. It is their unique combination and

interactions that make Tumbling Together a distinctive intervention program.

Limitations

Due to time constraints, participants were selected for purposeful sampling prior to initial analysis. Thoughtful consideration was given to recruitment strategies and appropriate numbers of participants to maintain as much rigour as possible. However, this process deviates from requirements of grounded theory methodology. Grounded theory calls for continuation until a point of saturation has been reached. Saturation is defined as the point where new information no longer contributes to theory development (Strauss & Corbin, 1998). The process used appeared to facilitate saturation of main concepts within the sample of participants as no new information for theory development emerged in the later interviews as evidenced through coding. Although more in-depth analysis of secondary concepts may have been possible by interviewing parents of participants as a source of triangulation, the use of historical written parent feedback forms allowed for an examination of the thoughts of a greater number of parents. Twenty written parent feedback forms were available for analysis, which surpassed the limited number of parents involved in the program at the time of the study. While only one researcher coded the data, a second researcher challenged the data, reviewed coding, and suggested changes as appropriate to improve reliability.

Study Implications and Future Research

This study highlights important theoretical concepts of an intervention program that has had anecdotal success. Other program developers may be inspired to follow this model without necessarily reduplicating the Tumbling Together components exactly to build other intervention programs for preschoolers. Tumbling Together's co-creators state they believe it is not the exact execution of the program that makes it successful but the combination of its concepts.

The theoretical model is also the first step toward meeting the criteria for evidence-based practice. It facilitates future testing of the program's efficacy and generalizability. One or multiple concepts of the program could be studied at a time. Long-term effects and changes to participant diagnoses could also be studied. The theoretical model might also be used to explain the program more thoroughly to stakeholders to obtain grants that would ensure the continuation of the program and expand the program to other sites. Continuation and expansion would benefit a population in need.

As the methods used in this study were able to successfully address the research questions, they can provide a framework for studying other programs that combine various concepts. Grounded theory using situational analysis can be considered valuable in rehabilitation science program evaluations. A combination of qualitative and quantitative methods could be considered for future research (e.g., Glogowska, Campbell, Peters, Roulstone, & Enderby, 2002).

Conclusion

The 14 fundamental concepts of the Tumbling Together program were identified: optimal state (being calm, alert, and focused), integrated skill development, generalization, community-based program, interprofessional collaboration, family-centred approach, movement, situational learning, individualization, peer interactions, expert-to-novice pairing, explicit teaching, scaffolding, and additional supports and strategies. Although these concepts are not novel, their unique combination makes the program noteworthy. A theoretical model with these concepts and the relationships among them was created subsequent to document and interview analyses. The theoretical model acts as the first step toward validating the program. Eventual efficacy studies may help ensure the continuation of the program and ultimately contribute to helping a population in need.

Key Messages

- The fundamental concepts of the Tumbling Together program are consistent with research recommendations in the areas of early childhood interventions.
- Although the concepts involved in the Tumbling Together program are not novel, their unique combination forms a promising intervention approach for children with self-regulation and communication challenges.
- Program developers may be inspired to follow the model in building intervention programs for preschoolers as this program has had anecdotal success.

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