

## Multi-Approach Intervention in Enhancing Adaptive Behavior of ASD: A within-subject Experimental Design

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### Abstract

This paper evaluated the effectiveness of music, play and augmentative alternative communication (AAC) with a new found technique called "Ilin-Ilin" (creatively use of music, play and AAC along humor and fun), altogether called Multi-Approach Intervention to enhance adaptive skills in domains and subdomains of communication, daily living, socialization, motor and maladaptive behavior of children diagnosed with Autism Spectrum Disorder (ASD). The study was conducted for 24 h sessions, three to four times a week involving five children aged 2-5 years. From five, three participants satisfactorily met the inclusion criteria, whose results were reported in this study. Pre and post data of each participant were gathered through interview with the participant's mother and teacher using VABS-II. Paired t-test was used to examine whether there was a significant change in adaptive skills among the participants after the intervention. Result reveals that Multi-Intervention Approach has positive effects to the general adaptive behavior. The helpfulness of the interventions were found statistically evident in enhancing communication (receptive), socialization (interpersonal relationship, play and leisure time and coping skills), and motor skills (gross and fine) and in impeding maladaptive behavior particularly the internalizing subdomain but less influenced in the daily living skills of the participants (only in personal subdomain). To sum up, the intervention is found most effective in enhancing the socialization and motor skills including their subdomains.

**Keywords:** Autism; Adaptive behavior; Music; Play; Augmentative

### Introduction

Autism Spectrum Disorder (ASD) is a pervasive and life-long neurodevelopmental disorder characterized by functional impairment in areas of communication, socialization, and motor behavior. In addition to these core impairments, an individual diagnosed with ASD may have several comorbidities with differing manifestations according to the different genetic characteristics of the individual in his or her environment [1,2]. The National Autistic Society reported that at least 70% of individuals diagnosed with ASD may have one additional condition, 40% probability of having two or more additional conditions and an estimate of 30 to 60% of children diagnosed with ASD also suffer from intellectual disability [3].

The American Psychiatric Association [2] reported the prevalence of ASD rate closer to one percent of the populace. In the Philippines, an estimate of one in 100 or one million people have the condition nationwide with about 7,500 from Davao City [4]. However, less than five percent of these individuals have been given appropriate intervention [5]. It is assumed that the data could be much higher as there are a lot of areas in the Philippines that were not included in the survey [6]. Consequently, an inquiry about the reason of the increasing number whether it might be attributed to the factual increase of individuals diagnosed with ASD or if it merely reflects increased awareness about the disorder ignited an interest to investigate.

Still, the increasing diagnoses of individuals diagnosed with ASD impacts us all as it has become the most prevalent childhood affliction of our generation [7] that knows no border and does not discriminate based on nationality, ethnicity or social status [8].

Moreover, a large gap between intellectual and adaptive functional skills is often evident with this disorder, making it hard for individuals diagnosed with ASD to do planning, organizing and coping with changes, leading to negative effects in academic achievements even for those who are categorized as above average in intelligence. This leads to a lower quality of life due to the inability to meet everyday challenges [9].

The varied and unique symptoms of individuals diagnosed with ASD make it challenging to significant others to make their lives functional just as making assessment, treatment and desired outcomes difficult to attain [10,11]. These concerns led some families to seek external help in the form of therapy or special classes, leaving their children at home-based programs or ASD centers due to the feelings of inadequacy and frustrations in handling their children with ASD and regardless of financial constraints [12].

To provide care for individuals diagnosed with ASD, Kalyva [12] cited research proving effective approaches, including Applied Behavior Analysis (ABA), Picture Exchange Communication Systems (PECS), Teaching and Education of Autistic and Related Communication Handicapped Children (TEACHH), and Sensory Integration Therapy Floortime in order to address core deficits such as social communication and motor and behavioral commodities. Although some of these approaches were observed to have methodological limitations, they have been found to be scientifically acceptable and effective whenever properly implemented.

The consensus remains that there is still no single approach [12-14], or precise formula behind ASD [15]. Despite written evidence, there is no clear answer regarding the most effective therapy on ASD [8,12,15,16] that can effectively address all the characteristic behaviors or symptoms associated with ASD. This can be attributed to the

complex difficulties that majority of children diagnosed with ASD are experiencing. Thus, a single approach may address some of their needs but will not meet all their deficits [17]. According to the Australian Advisory Board on Autism Spectrum Disorder [18], the nature of ASD is no “one size fits all” approach intervention that is appropriate for the range of all the needs of individuals with ASD and it is therefore advised to combine the most effective treatment that is based on the unique need of individual with ASD to attain the desired outcome.

Considering the growing number of individuals diagnosed with ASD, Kopetz and Endowed [8] expressed that it is high time to act upon the issue both internationally and locally to enhance the lives and families of individuals affected by this devastating disorder. Similarly, Carandang [19] initiated a call to research and to design a more comprehensive approach in treatment and dealing with individuals diagnosed with ASD and emphasized the important role of non-medical professionals such as clinical psychologists to design a creative treatment that is culturally fit to help out in the journey of understanding, provide research-proven strategies, and give the necessary support and accommodation among individuals diagnosed with ASD.

As a practicing counselor, the researcher witnessed the remarkable restorative contribution of play to children experiencing emotional distress out of neglect from significant others, parental separation and trauma. Effectiveness of play and warm relationship were personally proven effective by the researcher during her unique encounter with children J, C, G, H, and B at an overseas international school. Having limited knowledge in dealing with their learning needs, the researcher re-experienced “the child within her” during special classes or during the children’s tantrums to fully understand and address their needs. The use of music was initially conceptualized by the notion that Filipinos like to sing and most if not all Filipino children had experienced being cuddled by their mother while the latter sings a lullaby. In addition, because participants belong to generation Z, the researcher thought of using gadgets, Youtube videos and online applications as means to introduce adaptive skills as these are much accessible in their environment.

This ignited the researcher’s interest to combine play [19], music [20] and augmentative and alternative communication [21] called-Multi- Approach Intervention based on previous research in order to enhance the adaptive skills of children diagnosed with ASD.

## Review of Related Literature

The following section presents the related readings, studies and relevant literature originating from the Philippines and abroad. Topics are subdivided into overview of autism and approaches to address adaptive behaviors such as music, play and augmentative alternative communication. Studies about most effective practices in dealing with ASD and its measures were also discussed.

**Overview of autism:** In her book, *The Autism Spectrum*, Wing [22] summarized the ASD diagnostic features according to the manifestation of difficulties into three-referring to it as a “triad of impairments”-namely, problems with social interaction and relationships; difficulties with language and communication; and, problems with the imagination that result in inflexibility in ways of thinking recognized during the early developmental period. All three are present to render the diagnosis of autism [1,2,23,24]. Recently, APA [2] merged social interaction and difficulties with language and communication as they are interrelated [1,3].

**Social communication and interaction:** The inability to use language to interact and learn from others is one of the hallmarks of ASD [25]. Children diagnosed with ASD may suffer from varied language problems and 40% of these children cannot speak [15]. Along with the impairments of communication and social interaction, manifested verbally or non-verbally or both, are speech repetition (echolalia), inability to identify and use personal pronouns, problems with speech volume or robot-like or monotonic voice, incapacity to tell stories, unusual eye contact, difficulty to learn and interpret nonverbal cues from others, failure to express feelings, and the absence of appreciation towards the need to interact with others [2].

These common difficulties experienced by individuals diagnosed with ASD make them self-absorbed; thus, most of them prefer to interact with objects [15]. The absence of understanding on how the relationship actually works makes it hard for them to connect, socialize, relate and be with others [26]. Temple Grandin, a very able woman diagnosed with ASD, shared that she continuously finds the way people relate to each other as a “complete mystery... It is as if there is some kind of secret code that people have and I cannot work it out” [3]. The stated difficulties also account for their problem of communication, interaction with peers, aggression, and depression.

**Motor behavior:** Individuals diagnosed with ASD manifest compulsive, restricted, repetitive, ritualistic, and odd patterns of behavior and interests called stereotypes in their use of objects, speech, or actions [2,25]. Motor stereotypes include hand flapping, twirling, rocking, and lining up toys [2] and maintaining odd body postures [1]. Other motor deficits including odd gait, clumsiness and other abnormal motor signs such as walking on tiptoes were also observed. In addition, individuals have distinctive responses to sensory stimuli due to their apparent hyper- or hypoactivity to sensory input. This sensitivity makes them fascinated with lights or spinning objects; they could also have extreme reaction to rituals involving taste, smell, texture, or appearance of food [2].

Wing [22] earlier attributed these stereotypes to the third area of the triad, “impairment of the imagination”. This area explains how difficult it is among individuals diagnosed with ASD to cope with anxiety caused by change. Thus, they need to have predictability resulting in their resistance to change and adherence to rigidity.

## The etiology and dynamics of ASD

Since ASD was labelled by Leo Kanner in 1943, there have been a wide range of theories attempting to explain its emergence and each paradigm was often known to have limitations and disagreement about the etiology of ASD.

The biological perspective linked abnormality of brain development to autism. Brain scanning technology probed and discovered the many differences of the ASD brain compared to a typical one. Biological theories proposed that individuals diagnosed with autism have lower number of Purkinje cells, reduced development in cerebellar tissue, lesser connections between white and grey matter, smaller amygdala and hippocampus, genetic conditions of chromosome 16 or a combination of several genes. At the same time, scientists affirmed that the nature of the abnormality has been difficult to describe and symptoms are complex that no single area of the brain can account for all of them [27].

To differ from the biological perspective, cognitive models were directed at deficits in cognitive processes, consequences, and symptoms. The central coherence theory of Frith [28] suggested that

the symptoms of autism are due to weak central coherence, summarized as the inability to generalize from specific details or inability to create wholeness. In the same perspective, Ozonoff, et al. [29] in their concept of executive function proposed that individuals diagnosed with ASD experienced difficulty in cognitive shifting resulting in impaired executive function such as reasoning and repetitive behavior. Similarly, Baron-Cohen [30] explains the deficits as lack of theory of the mind or the inability to interpret other's perspective primarily affected their social communication and interaction.

Originally, Kanner [31] stated that the 'autistic aloneness' he observed was the result of cold, unresponsive parenting a concept popularized by Bettelheim in his notion of 'refrigerator mother'. He theorised that the child diagnosed with ASD was assumed to be using a defense mechanism from poor maternal care. This was further supported by a theory of autistic identification by Tustin [32]. This interpretation spread confusion and anxiety in the past among parents of individuals diagnosed with ASD. Considering the unjust and unfounded belief about autism, the psychodynamic approach revised previous explanations in light of new evidence and innate powers of individuals for self-regulation. Object relations theory, for example, described pathological autism as caused by fixation or regression to the primary 'normal autistic stage' or an inability to attain a self-concept facilitating the autistic experience of a child as means on how they can be assisted. It is then conceived that only the initiated can understand but this can be brought to transformation using collaborative and effective techniques to teach children diagnosed with ASD to learn adaptive behaviors.

Although research provides strong reason for autism to be rooted in certain patterns of genetics, there is no definite answer to the question of what causes autism [15] and there is no single theory that can account for the varied symptoms of autism. It is assumed to be a lifetime neurobiological disorder with no known cure [12,13,33,34]. Regardless of researchers' attempts to seek its cure, searching treatment may be misguided due to its complexity. It is "not a sickness in any simple sense" [35]. Thus, a shift in the emphasis on how to intervene and compensate the deficits to help the child and his or her family has become of recent research and public interest.

### Music approach intervention

Social withdrawal and isolation are some basic characteristics of ASD together with lack of relations to peers, lack of eye contact, lack of physical response, exhibiting stereotypical occupation with objects, and maintenance of uniformity in the environment [1,2]. Individuals diagnosed with ASD physically reject or ignore other people especially in the first stage of relationship formation. The holistic approach of music therapy aims to promote balance between the child's social, emotional, physical and cognitive development [12] and has been effective supportive intervention since the time it was introduced in the United Kingdom in the 1950s and the 1960s by therapists such as Juliette Alvin, Paul Nordoff, and Clive Robbin in addressing concerns previously stated for individuals diagnosed with ASD.

The effectiveness of music therapy was first proven by Wimpory and Chadwich [36] to evaluate the effect of musical interaction therapy (MIT) for children diagnosed with ASD. Using a case study method, Wimpory together with the mother conducted two 20-minute sessions of MIT at home throughout the intervention phase. Sessions involved repetitive yet varied runs of mother-child games of swinging, patting, tickling, blowing, stroking, vocalizing, action-rhymes, and singing. An

improvement on the child's use of social acknowledgment, eye contact, and initiations of interactive involvement was observed during the initial therapy session. Further, creative child contributions to interaction (including teasing) and symbolic play emerged later as predicted. After two years, these positive changes were sustained and confirmed as manifested by the child's enhanced social interaction. Two decades since the first MIT intervention, Thompson, et al. [37] reveal the same conclusion that supports the contribution of music therapy to social engagement in children with severe ASD.

In the Philippines, effectiveness of music was proven to address crying tantrums, lessens hyperactivity, and serves as an avenue to connect and enter the inner world of the client that makes therapeutic relationship accepting, safe and effective [38]. This was further confirmed by Marin [20] claiming that music is a therapeutic tool in making one of her participants initiate interaction. Marin's findings included the assumptions that music encourages the child's verbalization, increased eye contact, and expression of feelings. Further, music was observed to modify repetitive behavior that could be associated with the change and variation of improvised music used by Marin. Lastly, Marin indicated that it was surprising to note how music draws out the inner "musical person" among the participants diagnosed with ASD.

Apart from the enhancement of social interactions, music therapy confirms effectiveness in dealing with non-verbal and verbal communication skills of children diagnosed with ASD. Music is a universal language that provides bridges of communication between children diagnosed with ASD and the environment in a non-threatening context. It facilitates interpersonal relations, self-expression and communication [12]. Kalyva further stated that as there are some children diagnosed with ASD who sing but do not talk, music therapists can work language systematically through verbal activities that have music style. The speech of children diagnosed with ASD can be supported through songs with simple words, repeated phrases or even repeated syllabi with no meaning. This claim was supported by Srinivasan and Bhat [25], affirming the links between music and language and justifies the use of music therapy to enhance communication skills.

Apart from the said role of music therapy, the studies of Kostka (1993), Thaut (1984) and Toigo (1992), all cited in Kalyva [12] revealed a significant contribution of music to decreasing stereotypic and unwanted behavior. Srinivasan and Bhat [25] also claim that music-based contexts have been used with success to reduce challenging behaviors such as self-injurious, aggressive and stereotypical behaviors of children diagnosed with ASD drawn from 10 studies conducted from year 1991-2009. Likewise, Pelayo and Sanchez [39] conducted a multiple case study concerning music therapy among eight adolescents diagnosed with ASD. Results revealed significant changes in participant's ability to control tantrums, enhanced social interaction, and tolerance to employ changes such as shifting from one musical instrument to another. These results may be linked to the attraction of sounds to children diagnosed with ASD [12,14] or due to the pressure involved in the activities that eventually corrected irregular brain wave patterns [39].

One of the most popular approaches to MIT is improvisation music. This approach allows the child diagnosed with ASD to take over and create his/her own music language. The therapist uses percussion and stringed instrument or his or her voice to respond creatively to the noise that the child is making, encouraging the child to construct his or her own music language. The instrument and the kind of music

chosen must be simple and can cause a pleasant reaction in the child, so that the therapist can use them flexibly and adjust them to the child's clinical and developmental needs at any given time. The therapist can respond to the child's voice, screams, and movements, which have rhythm and volume and can be, organized musically [12,25,40].

Thus, considering these suggestions, this study made use of music to initiate interaction, facilitate learning, and means to build a warm relationship with research participants as well as to identify skillful inclinations that may fall within the intervention parameters using tools they are already attached to.

### Play intervention approach

Lack of creative imagination among children diagnosed with ASD results in the absence of or reduced social interest. Hence, social skills set the greatest challenges to educate children diagnosed with ASD as these require them to participate and collaborate with others. These difficulties clearly influence them as they experience rejection from others. They may act passively or respond to the environment with aggressive or disruptive behavior due to inability of others to understand them [2,12,24].

Regardless of their exhibited impairment in reciprocal interaction, children diagnosed with ASD nevertheless demonstrate many play behaviors [41]. Considering that play is a phenomenon that naturally occurs for most children [5], this study attempted to use play as a therapeutic medium to help children diagnosed with ASD with their impairments in communication and socialization and rigid behaviors. This notion was further supported by Banerjee and Ray [42] in their view that symbolic pretend play can address some core challenges of ASD for play permits a variety of innovative medium to communicate and establish relationship and at the same time provides children diagnosed with ASD an avenue to learn socio-emotional skills as their natural way of self-expression [43].

Effectiveness of play to enhanced verbal expression was concluded in the study of Lu, et al. [44] among 24 children ages 7-12 years old using creative and symbolic play technique. The same conclusion was reported by Stagnitti, et al. [45] in their study self-initiated play and play skills to 10 pupils ages 5-6 for 6 months.

The utilization of play as technique of intervention commenced in the writings of Rousseau in the 1700s and late in the 1800s when it was introduced by Anna Freud and Melanie Klein in therapeutic settings as an analytic technique allowing children to express themselves as an alternative for verbalized free association. In contrast to the psychoanalytic methods, Virginia Axline [46] used play as nondirective therapy in her work with children, with no attempt to direct the act of children; this marked the most significant development in the field of play therapy. Axline viewed play as a psychotherapeutic treatment that offers natural form of expression and trust towards the capacity of children to resolve their own problems through their play.

In the Philippines, Carandang [43] conducted a study aiming to make out the dynamics of play as a transformational tool to facilitate the distressed child's reformation back to normal functioning using play. In group therapy of eight children, Carandang concluded that through play "the child acts out his/her deepest reality...during this arbitrary scheduled play therapy hour, the child can become most real, therefore, most deeply empowered. Herein lies the magic and power of "play" [43].

In this study, play was not used as a simple reward after the child has worked on various activities or an excuse to take a break while preparing materials for the next task. Rather, this served as an activity designed to enhance socio-emotional deficits by providing an environment where children diagnosed with ASD could express themselves naturally through play using toys.

### Approaches for developing augmentative and alternative communication

For most people, communication involves spoken language. However, for some, the ability to hear speech or to speak is compromised. Communication is one of the major difficulties among individuals diagnosed with ASD. This comprises their inability to express, share or respond to messages in social context. Children diagnosed with ASD often disregard communication and discount the joy derived from conversation. They struggle to develop normal, fulfilling and appropriate connections and relations to others. These struggles were defined by Temple Grandin [47], one of the most successful individuals diagnosed with ASD in her statement:

I Think in Pictures. Words are like a second language to me. I translate both spoken and written words into full-color movies, complete with sound, which run like a VCR tape in my head. When somebody speaks to me, his words are instantly translated into pictures.

This clearly shows that children diagnosed with ASD see things through images making words seem strange to them. Considering this characteristic, the use of non-speech communication strategies, called augmentative and alternative communication (AAC) systems have been proven to be beneficial [21].

Augmentative and alternative communication (AAC) refers to methods of communicating that do not involve direct speech from an individual. These methods include gestures, facial expressions, writing, sign language, Morse code, communication aids (charts, informational bracelets, language boards), and electronic devices to clarify and expand speech abilities, as means to request items and manner to respond to questions [48].

In this regard, Heller [21] categorized AAC systems in several ways: no technology, low technology, and high technology. In no technology, the system involves only the individual's body. A simpler system may involve gestures unique to a particular child that the caregiver understands (for example, when a child touches her cheek to ask for a hug). Second, the low technology system is non-electronic but involves materials outside the child's body. Examples are photographs, drawings, and/or words that are kept in a notebook or photo album, fastened to any other lightweight material that is easily cleaned. A low-tech system may also involve a collection of objects (such as a spoon to represent the desire to eat) kept in a box or fastened. Lastly, high technology systems include the use of electronic communication boards and/or computerized speech synthesizers. Electronic communication boards have a display of communicative messages using photographs, line drawings, phrases, words, or letters. The message is activated by touch or laser beam to produce a printout or synthesized/digitized speech [49].

Recent studies show the effectiveness of AAC as shown by the improvement of the quantity and quality of children's verbal communication [50,51], receptive language abilities [52], and ability to form speech sounds [53,54]. One of the essentials of AAC is its



extended applicability at home and school environments with minimal skill requirements [55-57].

### **Optimal effectiveness in dealing with ASD as basis for inclusion criteria**

Over the years, a number of studies and reviews were conducted to design the best intervention for individuals diagnosed with ASD. Those studies indicated that early intervention gives better prognosis for children diagnosed with ASD. One of the earliest reviews of early behavioral intervention for autism was conducted by Green [58] based on the studies of Birnbrauer and Leach [59], Lovaas [60], McEachin, et al. [61] and Perry, et al. [62] about early intervention, may it be home-based, school or center-based, revealing that the best outcomes were evident for those children who started treatment at age two or three and pointing out that the most favorable age to begin intensive behavioral intervention is before the age of five or preschool years [63]. Green [58] added that as long as it is verified that the child diagnosed with ASD has sufficient motor skills to do simple actions, there is no compelling reason to delay intervention.

Researchers supposed that this period is the optimal period in which the young developing brain is very modifiable [61-64] attributed it to evidence of success from early intervention [65,66] and the possible effect of brain plasticity that significantly occurs in preschool years [67].

The previous assertions were supported by one of the prominent personalities diagnosed with ASD, Grandin [68]. She shared her wonderful effective early intervention at the age of two and half. She claims in her statement that "it will take less practice to change an inappropriate behavior at age two to three than it will to change the same behavior at age seven to eight. By then, the child has had many years of doing this way, and change comes about more slowly."

The intensive review conducted by Green [58] and Grandin's [68] personal claims were further supported by Schreibman [69] affirming that children diagnosed with ASD who attended early intervention programs improved better in many developmental areas and their level of functioning. Kalyva [12] drew a concluding statement from the series of book reviews in her book, *Autism: Educational and Therapeutic Approaches*, stating that it is equally reasonable to assume that a child who starts any therapy before the age of two has a better prognosis than a child who starts the same therapy at the age of seven.

Although girls as a group often manifest severe cognitive problems, boys are diagnosed three to four times higher than girls [67]. It is further assumed that girls have stronger play and communication skills and are prone to less attention problems than boys. Considering these differences, some researchers excluded girls from participation in research studies [67].

Another factor to consider in attaining a desirable outcome is the child-therapist ratio. Studies of Lovaas and Smith [70] and Kalyva [12] claim that the most effective child-therapist ratio is one-to-one. They further agree that individual teaching at the initial stage is essential as children manifest better response in this approach. The therapy should be done by professionals. However, it may be extended to family members provided they receive appropriate training to properly facilitate the needs of individuals diagnosed with ASD. Research studies affirm the importance of parent-child relationship in the whole process of intervention [71-74].

This was affirmed by Ivar Lovaas [75] in his study, 'The UCLA Young Autism Project,' claiming that children who returned to their families improved better especially if the parents are interested to implement the program at home. This was further supported by Temple Grandin who attributed her success in coping with ASD with having a supportive environment and encouraging parents [15]. Despite the involvement of family members, having a ratio of one is to one in therapy centers is difficult to maintain especially in inclusive classes when one teacher is assigned to teach many children with diverse needs.

We also have to look at the issue of how much time is needed in order to gain maximum possible benefits. Lovaas [60] reached a conclusion of 40 hours per week as essential for the success of ASD intervention. In many studies the hours for therapy vary from 15-40 or more hours per week. Some children cannot sustain such long period of time and it is still a question if it is realistic and acceptable for young children to stay indoor for that long when they are supposed to be outside. Another issue to consider is the act of spending too long with the therapist that may hinder the child from learning how it is to be with other individuals such as other members of the family [12,67]. Apart from the issues speculated, the said 15-40 hours recommended time cannot always be attainable considering financial sustainability especially for those families that pay at their own expense [12].

In the United States, for example, they even know how much money is spent annually on autism services. Autism services cost US citizens \$236-262 billion annually based on the study of Buescher, et al. [76]. In the Philippines and in Davao City, health and special education may cost a fortune for the average family. Behavioral intervention therapies range from Php 450 to 1,000 per hour, much higher than the minimum wage earned by a regular breadwinner. The scarcity of public and private special education (SPED) centers and hospitals with staff trained to handle individuals diagnosed with autism pose another significant problem [77].

Furthermore, having considered the variation of the level of functioning of ASD, intervention programs of these individuals should be adapted based on a clear understanding of each child's strength and weaknesses, emotional [15], receptive and expressive language, diverse educational, financial and social context and to other areas of functioning to give the necessary and appropriate support to individuals diagnosed with ASD so they can actively and successfully participate in the social context in which they belong [12]. Mesibov and Shea [78] as well as Mundy and Mastergeorge [63] emphasized the importance of incorporating factors such as age, intelligence, language skills, social skills and interest, rigidity, organizational skills and special interests into individualized interventions.

Thus, the key to successful treatment lies in devising a plan that takes into account not only the strengths and weaknesses of the affected person, but also the severity and the subtype of the disorder, the age of the individual, the presence of associated medical and psychiatric conditions, the needs of the family, and the availability of resources in the community [79].

### **The measurement of adaptive behavior**

Adaptive behavior is defined as the ability to use necessary skills to accomplish self-efficiency and social competence to meet individual's role in everyday life. It is also the ability to meet everyday challenges. The social deficits are presumed to be the reason why individuals diagnosed with ASD experience obstacles to develop and apply the

skills necessary to meet the typical demands of daily living [80]. Studies have disclosed that the overall level of functioning of both children and adults diagnosed with ASD are relatively marked with impairments in adaptive skills compared to other key areas such as communication [81-83]. It is then observed that children diagnosed with ASD likely need precise instruction to develop age-appropriate daily life skills such as bathing, grooming, dressing and taking care of one's health [63].

Failure to acquire adaptive behaviors may result in maladaptive behaviors such as insistence on sameness as manifested by their consistent preference in clothing, food, toys and activities or routines [10]. Other maladaptive behaviors include violence, hostility, anger, and self-injury [84]. These challenges make it difficult for children diagnosed with ASD to exercise control over their lives. This makes completing tasks and practicing self-care difficult to do.

To know and address the adaptive needs of children diagnosed with ASD, this study used adaptive functioning assessment to measure a child's typical patterns of functioning and the child's basic capacities in areas of communication, socialization and daily living skills as basis for program goals, techniques and intervention.

The Vineland Adaptive Behavior Scales (VABS) is a comprehensive, reliable, and valid instrument that evaluates communication, daily living skills, socialization, gross and fine motor control skills and maladaptive behaviors [85]. This test is designed to measure adaptive behavior of individuals from birth to age 90 with subtests that measure strengths and weaknesses. The scales are measured so carefully and thoughtfully constructed to be valid from the first months of life through adulthood, as broad in scope as to be sufficient to contrast with cognitive measures across disabilities, and so flexible it can be used throughout the world. The Vineland has served the field of autism studies well as defined by Paul, et al. [86]. From the reviews conducted by the researcher, this study prefers the use of Vineland Adaptive Behavior Scales-Second Edition (Vineland-II) in the belief that this would be a reliable measure in understanding the child's unique needs and in identifying deficiencies to be enhanced during the therapy session. The data gathered upon entry could be used as basis of a possible improvement of functioning after the intervention program.

### Theoretical framework

This study was anchored on Margaret Mahler's 1968 as cited in Corey [87] object-relations theory. This theory identifies the importance of understanding the formation and preservation of "self-structure" as well as the fundamental need to form relationship with others (object).

Object-relations theory stressed that the concept of the "self" is unfolded and subsist within a context and environment and in relation to others. Fact is, humans pass through different psychological stages of development as partner from whom they anticipate a high degree of emotional relationship. In progression, the child will experience separation from the significant others although still turns to them to find sense of affirmation and comfort. As they relate to others as separate from themselves, the child finally attains the final stage called separation-individuation process or a point of selfhood (Figure 1).

The stage of normal infantile autism presumes that the infant responds to physiological symptoms more than to psychological processes. In this stage the infant state has undifferentiated sense of whole self and no concept of wholeness. After this stage is the phase called symbiosis. At this stage the infant becomes dependent on

mother or primary caregiver considering them as partner from whom they anticipate a high degree of emotional relationship. In progression, the child will experience separation from the significant others although still turns to them to find sense of affirmation and comfort. As they relate to others as separate from themselves, the child finally attains the final stage called separation-individuation process or point of selfhood.

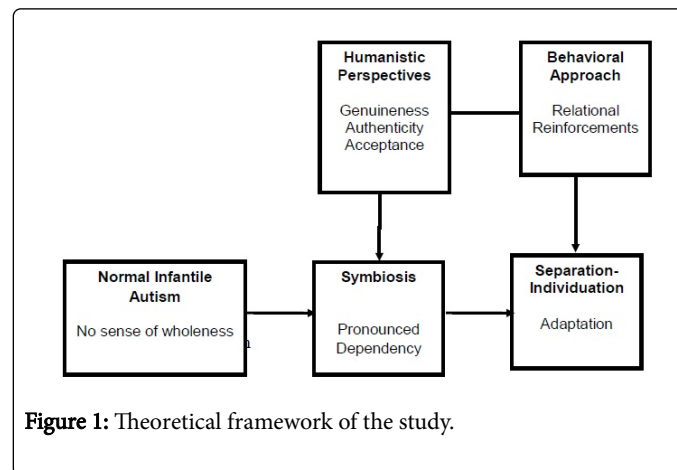


Figure 1: Theoretical framework of the study.

To attain the different stages, this study further utilized Marin's improvisational creative therapy technique to explore the effectivity of music therapy for Filipino autistic children. Marin's approach collectively used creative music therapy of Paul Nordoff and Clive Robbins, non-directive play approach of Axline and Carandang's humanistic perspective. Marin further described her improvisational creative therapy technique as non-directed following Axline's Principle of Play Therapy suggesting the nature of the play to initiate from the acceptance of the child exactly the way he or she is and allowing the child to lead are two significant entities in the therapy. In addition, the therapist's responses are encouraged to be grounded on a continuous observation of the client's responses and the practitioners' ability improvise spontaneous responses to the observed behavior will make the approach creative.

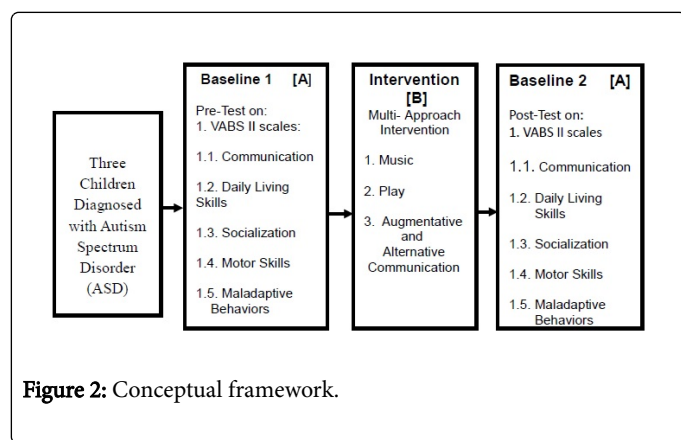
In her clinical framework, Marin does not prescribe a definite structure and standardized approach or formula as to how the therapist will musically interact with the client. With this approach, the therapist is allowed to be creative, spontaneous and flexible to make the therapeutic process flow in the most natural way through the use of music. This concept was drawn from the humanistic perspective of Carandang [38] as she explained that it is more important for an autistic child to connect through his/her own activity or avenue rather than to stop the activity and stop the connection.

Creating connections to things, humans and events is one of the observable cognitive deficiencies of autism. Research on the theory of the mind demonstrated that children in this spectrum have problems in understanding knowledge, empathy, deception, humor and language [41]. This concludes the researcher to adapt social constructivist theory to support the use of Augmentative Alternative Communication. Social constructivist focuses on the belief that the construction of knowledge is a shared experience and that the learner constructs knowledge from the situation. To this, aided and unaided AAC were used as tools and visual symbols to allow the ASD individuals to communicate their needs and to create meaningful relationships.

Considering the pervasive nature of ASD and the assumption that a single approach will only address some, but not all symptoms of ASD, the researcher combines three proven effective techniques to intensify and to dispersedly address the varied symptoms of autism.

### Conceptual framework

Considering Mahler's psychological stages of development, the current study's multi-approach intervention program is premise on the concept that participants perceive themselves and the researcher as separate individuals. To facilitate relationship or period of symbiosis, the researcher made herself as a model of behavior using relational-connectedness approach to facilitate connection [38] with different strategies such as music, play and augmentative alternative communication (Figure 2).



Taking account such uniqueness, the researcher embraced the importance of optimism and untiring sense of hope to recognize the development as a process. For this reason, the researcher journeyed with the participants to the attainment of separation-individuation or adaptation. To attain such, the researcher employed behavioral approach such as repetition, modelling and other creative techniques using relational reinforcement to continuously enhance engagement [38]. Thus, adaptation (the final phase of the intervention) will only be attained through a combination of internal (participants' inner world) and external relationship or available support.

Three children diagnosed with autism spectrum disorder (ASD) were chosen as research participants. Adaptive behaviors in areas of communication, daily living skills, socialization, motor skills and maladaptive behaviors were measured and identified using VABS-II that served as the baseline 1 data. These children were exposed to the Multi-Approach Intervention using different techniques such as music, play and augmentative alternative communication for 24 sessions at a minimum of three to four times a week. Further, the effectiveness of the therapy was measured using the baseline data against post-intervention data (baseline 2).

### Statement of the problem

This study attempted to explore and validate the effectiveness of a combined intervention on adaptive behaviors of children with autism spectrum disorder (ASD). Moreover, it sought to answers to the following questions:

What is the pre-test and post-test adaptive skills level of children with Autism Spectrum Disorder in terms of:

- Communication skills
- Daily living skills
- Socialization skills
- Motor skills
- Maladaptive behaviors
- Adaptive behaviors

Is there a significant difference between the pre-test and post-test adaptive skills level of children with Autism Spectrum Disorder?

What do pre-test and post-test differences imply for the practice of clinical psychology in intervention for children diagnosed with autism spectrum disorder?

### Hypothesis

It was hypothesized that there is no significant difference between the pre-test and post-test adaptive skills levels of children diagnosed with autism spectrum disorder.

### Significance of the study

The findings of the study should be beneficial to children especially with Autism Spectrum Disorder (ASD) because the program designed for the purpose was deemed adequate and effective.

Secondly, this study should ignite interest to educational clinics and institutions handling ASD children in searching effective intervention and may reveal the need for institutional evaluation of facilities, clinics, and schools, with emphasis on their current programs to properly accommodate the distinctive needs of children diagnosed with ASD. This may directly lead to modifying existing programs if necessary.

The study is expected to provide information for Non-government organizations and Mental Health Advocates to disseminate awareness about the need for early intervention program to address adaptive behavior of children with ASD, not only to families but to other organizations as well to offer a more friendly and accepting environment for children with ASD.

This study may encourage local government units and national agencies to create and organize programs for parents, teachers and other related professionals. Activities may include education and trainings or seminars to equip these significant individuals the basic knowledge and skills in handling children with ASD.

In addition, this study provides awareness for families on the importance of early detection, intervention and a better understanding with regards to the importance of their decisive roles toward the progress of any program provided to their children.

This study may also provide classroom teachers, SPED teachers and practitioners basic approaches in handling children with ASD to encourage them to adhere to special accommodations and appreciate the need to provide adaptive behavior skills to children with ASD in order to attain independence and to achieve their highest potentials. Practitioners are also important contributors to this effort.

Finally, this study is expected to contribute to knowledge on neurodevelopmental disorders-characteristics, behaviors, assessment and treatment-and therefore, directly benefits the discipline of clinical psychology.

## Definition of terms

The following operationally defined terms were used to help facilitate the reader's understanding of this study.

**Adaptive behavior** refers to the research participant's ability in areas of communication, daily living skills, socialization, and motor skills as measured by VABS-II.

**Genuine and authentic self** are the researcher's characteristic show of emotions during the sessions. The researcher was expected to handle the children with utmost care and warmth, truthfulness and consistency of elicited behaviors to build rapport and develop extra connection to the research participants.

**Multi-approach intervention** is a combination of techniques such as music, play, augmentative and alternative communication, humanistic characteristic of the practitioner and relational-reinforcement to attain a target behavior.

**Object-relations stages of development** stands for three stages of Multi-Approach Intervention, such as normal infantile autism, symbiosis and separation individuation.

**Relational reinforcement** is the use of hug, polite facial expressions, tapping of shoulders as encouragers of behavior or reward.

**Separation-individuation** refers to the last phase of the Multi-Approach Intervention called adaptation. At this period, the child manifests independence and ability to initiate activities with less assistance from the researcher/teacher.

## Methods

### Research design

This study utilized quantitative and purposive, within subject small N experimental design to determine the effectiveness of Multi-Approach Intervention towards the enhancement of adaptive behavior skills of selected children diagnosed with Autism Spectrum Disorder (ASD). The baseline 1 data was measured using Vineland Adaptive Behaviors Scale II - Expanded Interview, through interview of the subject's mother and teacher. After baseline 1 data was gathered, 24-h sessions were conducted three to four times a week. After such duration, adaptive behavior was measured again in the same manner. Effectiveness of the program was measured through comparison of baseline 1 and baseline 2 data. In some experimental book this procedure is known as single case experimental design and designated as A=Baseline, B=Intervention, A=Baseline or ABA design [88].

### Research locale

The study was conducted at a behavioral intervention center in Davao City. The center was founded in 2014 under the headship of a licensed psychologist and currently serving 35 children diagnosed by a developmental pediatrician as children with ASD and Global Developmental Delay. The center envisioned to establish a reliable site for teaching, psychological testing and evaluation through scientific assessment. Being one of the new centers dealing with ASD, the center opens opportunity for research to seek effective ways to cater and help individuals diagnosed with ASD.

## Participants

In view of studies and reviews conducted to design the best intervention for ASD [12,58,63,67] this study came up with an inclusion criteria to delimit confounding variables in the study. This includes preference to male gender ages 2 -5 years old with no other medical condition such as seizures, hearing and motor coordination problem. Children who are clinically diagnosed with ASD and attending more than one therapy aside from this study were excluded in the study.

Considering the criteria above, among the 35 children diagnosed with ASD by a developmental pediatrician, three children satisfactory met the inclusion criteria and were included in the study. Although all the five research participants successfully completed the 24 sessions, one of them was later found out of having Global Developmental Delay (GDD) and the other had gathered the highest number of late attendance and complicated schedules during the conduct of the study leading to the exclusion from the study. Among the three identified research participants, one of them had twice a week occupational therapy sessions and others were having Multi-Approach Intervention program, respectively. Parents and teachers were interviewed for the purpose of gathering relevant data and as measures of reliability. In effect, during the first and last week of the sessions, attending teachers of the research participants were present to facilitate proper activity transition. Aside from the researcher, during group play sessions, the research participants were introduced to other children, interns and teachers at the center.

## Instrument

**Vineland Adaptive Behavior Scales-Expanded Interview:** This study used the Vineland Adaptive Behavior Scales - Expanded Interview Form of Sparrow, et al. [85]. This measure is one of the most popular tools to assess adaptive behaviors that offers a more comprehensive assessment that provide a systematic basis for preparing individual educational, rehabilitative and treatment programs [89].

The VABS has a total of 383 items divided into five main domains each with two to three subdomains including communication (receptive, expressive, and written); daily living skills (personal, domestic, community); socialization (interpersonal relationship, play and leisure time-coping skills), motor skills (gross, fine) and maladaptive behavior (optional) which elicits both internalizing and externalizing and other behavioral problems that may interfere with the individuals' development of adaptive behavior. It requires an approximate of 20 to 60 minutes administration and 15 to 30 minutes scoring duration. Scoring starts with assigning scores from 4 to 1 with 4 as "almost always"; "3" which means "often"; "2" means "sometimes"; "1" stands for "rarely" and "0" for "never performs independently".

Thereafter, the rater's personal perspective of the research participants' behavior in raw scores was converted into v-scale score, domain standard score then to percentile rank and stanine score. Verbal description was assigned to each subdomain and domain v-scale and standard scores respectively, with 13, 14 to 65 interval difference from each level. The questions were clearly read separately to mothers and teachers to address consistency and to avoid researcher's bias in scoring. Further, the same questionnaire and manner was used to gather baseline 2 data after the intervention. Consequently, pre-test and post-test data was compared as basis of the effectiveness of the program designed for the study.



### Multi-approach intervention program

Consolidated from various review of related literature, it is important to note that this study considered Mahler's psychological stages of development as the program's stages of relationship and not as explanation of autism. This premise on the concept that participants perceive themselves and the researcher as separate individuals is called

normal infantile autism. To address the contained self and to mediate the separateness of the researcher and the participants, approaches such as music, play and augmentative alternative communication were used to facilitate relationship called the stage of symbiosis and adaptation stage through relational-connectedness approach (Table 1).

Domains and Subdomains of Adaptive Skills	Target Behavior	Intervention Approach
<b>Communication</b>		
Receptive Domain (As expected for ages 2-4)	The Multi-Approach aims to enhance the following behavior:	
	1. Responding behavior- this includes:	1.Non-directed play
	a. Ability to direct attention once called.	
	b. Understanding of "Yes" or "No" concept.	
	2. Following simple instructions- ability to follow simple instructions that (a). Required one action.	2.AAC
(b). Required one action and one object.		
Expressive	The Multi-Approach aims to enhance the following behavior:	
	1. Affective expressions such as :	1.Non-directed play
	a. Vocalizing pleasure ( laughs, gurgles, etc).	
	b. Smiling when spoken to or cuddled.	
	2. Pre-speech sounds such as	2. High Technology AAC
	a. Vocalizing to get attention.	
	b. Vocalizing to indicate desire to stop or continue the activity.	
	c. Responding to others in an interval of at least 3 seconds.	
	3. Pre-speech nonverbal expressions such as	3. No Technology Augmentative Alternative Communication and Improvised Music
	a. Pointing at object to indicate preference of choice or wants.	
	b. Grabbing hands to get attention.	
	c. Waving good-bye in response to the doing such or through instruction.	
	c. Shaking head to indicate desire to stop or continue an activity.	
	4. Ability to talk such as:	4. Use of Low Technology AAC using the pictures of participants parents, siblings, and significant others
	a. Consistent attempt to say at least 2 names of significant others.	Naming of 10 basic objects addressed through play ( see Appendix G-K )
	b. Name at least 10 objects.	
	c. Make simple request such as "go, come, open".	
5. Ability to talk in sentence such as	5. Play	
a. Using phrases with a noun and a verb.		
b. Saying first and last name when asked.		
c. Representing age through the use of his fingers.		
Written	The Multi-Approach aims to enhance the following behavior:	

	1. Understanding of letters and words as manifested by:	1. High technology Augmentative Alternative Communication
	a. Distinguishing letters from numbers.	Play
	b. Recognizing the writing and reading pattern such as left to right or top to bottom.	( see Appendix G-K)
	c. Identifying at least 10 letters of the alphabet.	
	d. Identifying upper and lower case.	
Daily Living Skills	The Multi-Approach aims to enhance the following behavior:	
	1. Understanding the use and function of basic utensils such as fork, spoon, glass, straw and plate.	Creative Play
	2. Performing basic routines such as removing shoes and packing of toys before leaving the therapy room.	No Technology Augmentative Alternative Communication
Community	3. Understanding the function of the telephone.	Creative Play
<b>Socialization</b>		
Interpersonal Relationship	The Multi-Approach aims to enhance the following behavior:	
	1. (Ability to look/Looking) at the eyes of the researcher for 5 seconds.	Play and Music
	2. (Ability to initiate/Initiating) social contact.	
	3. (Ability to show/Showing) interest in person than in object.	
Play and Leisure	The Multi-Approach aims to enhance the following behavior:	
	1. (Ability to respond/Responding) to researcher's playful non-verbal facial expressions.	Play and Music
	2. Interest in the environment.	
	3. (Ability to play/Playing) simple interaction games with others.	
Coping Skills	The Multi-Approach aims to enhance the following behavior:	
	1. Ability to adapt changes in routines, toys and activities.	Play and Music
Gross	The Multi- Approach aims to enhance the following behavior:	
	1. Throws ball in specific direction following a simple instruction.	Small /Big group play
Fine	The Multi- Approach aims to enhance the following behavior:	
	1. Transfer object from one hand to another.	Play and Music
	2. Pick up toys in not more than 2 inches dimension using thumb or fingers.	
	3. Demonstrate ability to hand toys to other person when asked.	

**Table 1:** Multi-Approach Intervention Initial Target Behavior and Plan of Intervention.

**Physical atmosphere:** Although ASD is linked with biological and neurological factors, still the environmental conditions promote enhancement for the level of functioning of children diagnosed with ASD. In this regard, the researcher adapted the concept of structured environment. The study's physical atmosphere offers sense of safety that includes but is not limited to, safeguarding children from access to electrical sockets, safe or rubberized floor, removing obstacles that might distract attention, and taking away breakable things that may harm them. Organized and accessible environment (accessibility to toilets and comfortable working space) were also provided on the belief

that safe physical structure could establish trusting, calmative and reassuring environment that encouraged active participation.

**Social atmosphere:** Considering children diagnosed with ASD, there was an assumed difficulty in understanding emotional cues, the researcher provided a nurturing and demonstrative environment which was manifested but not limited to offering of an authentic relationship of acceptance, attention, appreciation, affirmation and affection, called the 5 A's [5]. Reinforcement was given in the form of hug, cuddle, tapping and smile.

**Approaches:** In this study, music, play and augmentative alternative communication were primarily used to establish connection and medium to address therapy goals (see Appendix G1-4). There was no definite sequence on the application of the approaches as it is highly dependent to the child's behavior during the therapy session. However, the researcher was guided with suggestions and guidelines on the use of the following:

**Music:** Furthermore, the researcher applied some concepts from improvisation music and modified music by Carandang [38] and Kalyva [12]. Considering the individuality of the participants, music was also accustomed to the child's developmental level and auditory capacities and their appropriate motor and sensory reaction. Music served as "mediator" to facilitate social interaction. The tone and movement associated with the sounds and texture of the musical instrument whenever used aimed to provide a stimulating activity leading to a pleasant, supportive, trusting and creative relationship between the therapist and the child. Activities associated with music involved movement such as hand shaking and clapping, listening, responding, turn-taking and joint activity to foster relationship between client and therapist in the belief that this can be generalized outside the therapy session. In view thereof, the researcher composed special songs while making use of the songs that already existed and involved repetitive words or expressions from primary school books and were presented slowly and clearly to capture the child's attention [12].

**Play:** This study did not limit the use of toys and varied games for building rapport that quickly stimulate children rather, this also served as an opportunity for learning and socialization. The researcher acted as a playmate who initially created opportunities for the participants to play and have fun. Further, this study applied non-directive play therapy of Virginia Axline (1947) as cited in Homeyer & Morrison [90] jointly with Kalyva's [12], Carandang [91] and Carandang's [92] where suggestions obtained from reviews regarding the different approaches of play were applied to ASD. It was suggested that play of children diagnosed with ASD should not be limited to addressing repetitive behavior but should also have educational role. The therapist is suggested to have one set of targets for a child to master at a time; child's interest was accounted and used as basis for the development of imagination, imitative behaviors and social play. Gradually, the child is introduced to a bigger group preferably the less threatening such as the child's shadow teacher, assistant teacher, siblings or parents for an opportunity for learning and socialization to generalize his or her play experiences to other objects, people and to the environment.

Aside from these suggestions, the researcher was advised to uphold Axline's eight principles of play therapy including to develop acceptance, warmth and friendly relationship with the child and the researcher's attentiveness to child's feelings and to reflect these feelings back to the child to gain understanding of his or her behavior and freedom to express feelings completely during the sessions. Allowing these will encourage the participants to lead the therapy session, giving them the freedom to make choices and institute change. It was then the task of the researcher to follow the lead to draw the present inappropriate behavior to the adaptive one or make use of it as teaching opportunity to introduce new behavior or skills.

**Augmentative and Alternative Communication (AAC):** To further enhance the expression of basic needs and encourage participation and reciprocal communication, Augmentative and Alternative Communication worked better in tandem with play and music. When AAC was utilized to introduce a concept as a technique, it

subsequently edified and elicited more leads and responses from the participants. The researcher applied Heller's [21] AAC system concept of no-technology, low-technology and high-technology perceptions. As a concept, the 'No technology AAC systems' included but were not limited to actions such as putting right fist on top of left fist as clue to start working on a task and putting right pointer finger on the chin as prompt to talk and thumbs up to indicate ending of a certain task. In addition, low technology involved the use of pictures to separately introduce to participants the necessary simple activities in order to attain the target behavior. The realistic images of the actual settings of participants' home and personal belongings were highly encouraged. In the high technology concept, AAC systems in this study involved the use of downloaded or recorded activities presented using television or laptop. However, the use of relational reinforcement was also used to ensure participants' spontaneous engagement in everyday activities and communication.

**Preliminaries:** From the evaluation of children's behavior, the researcher identified target behaviors in domains and subdomains of adaptive skills as expected in their age using the Vineland Adaptive Scale-Second Edition (Appendix E). The identified target behaviors served as the goal of the therapy in the session. Before the onset of a session, the researcher prepared one target behavior for each subdomain such as receptive, expressive, and written for communication; personal, domestic and community for daily living skills; interpersonal relationship, play and leisure and time-coping skills for socialization; and gross and fine for motor skills including the approaches such as music, play or augmentative alternative communication as means to address the adaptive behavior.

The session started with a welcome song, followed by an introduction of lessons in communication (receptive, expressive and written); daily living skills (personal, domestic and community); interpersonal relationship (play, leisure and coping skills) and motor (gross and fine).

A non-directive therapy environment permits the child to lead and explore the session. The researcher's task was to observe the behavior, action and situation to take or make an opportunity to introduce learning. Thus, creativity and knowledge on the varied goals of the therapy were encouraged considering the continuous and unpredictable behavior of the child in every session. Therefore, there was no absolute sequence on how the lessons were presented as long it addressed at least one subdomain of each adaptive domains.

To maintain a therapeutic relationship, the researcher valued moments more than the objective goals of the therapy sessions and made it certain that participants had a fun and fulfilling experience during the session. Each session ended by fixing the room while singing a goodbye song.

### Summary of the sessions

The 24 sessions with children diagnosed with ASD was a journey of knowing, accepting, learning and re-learning that comprise the change happened among children who undergone this study. Theoretically, this study is described of having three different stages of relationship: stages of normal infantile autism, symbiosis and separation-individuation (Table 2).

**Sessions 1-8 (Stage of Normal Infantile Autism):** The stage of normal infantile autism is also called as the transition period of both the researcher and the participants. Apprehension was one of the main emotional dilemma the researcher felt, thinking how the client will

accept her, what she will do to deal with tantrums, what approaches to use to get the participants' attention and the parents' reaction to the new intervention given to their children. As beginner in the field, this stage also included the feeling of incompetence to a point of questioning about personal skills, knowledge on theories to revisit to fill in the feeling of hesitation and gaining confidence in dealing with ASD children.

On the other hand, participants in this stage were surprised with the new environment and set up. They were overwhelmed with the accessibility of toys in the therapy room. However, they feel uneasy due to the presence of the researcher. This made them cling to their assigned teacher. Although they picked up toys of their interest, they played only about 5 -10 inches or even closer to their assigned teacher. Further, it was observed that even when they were relatively sitting or in a place closer to their teacher, the participants' attention was focused on their toys and both the researcher and their teacher became stranger to them. At this stage, the participants exhibited tantrums once distracted from their chosen activity. Moreover, it was witnessed that all the participants were irritated of the sounds from the keyboard during the first three weeks of the session.

This period also denotes the period of no or poor eye contact. Using play, the researcher directed the opening of a tunnel (toy) in front of a child upon calling his name while the assigned teacher performed animated actions to get the child's attention to encourage eye contact.

In an approximate of 20 attempts in an hour of session, the children responded only in an average of 5 gazes. Moreover, children in this stage showed distinctively repetitive interest. They were observed enjoying and feeling satisfied doing the same thing in an hour (observed during transition period) and resolved to tantrums once stopped.

In this stage, the researcher chose not to stop participants' behavior unless it was self-destructing. This is to encourage the participants to be themselves. Allowing them to express and explore provide the researcher substantial data about the participants. Thus, all weaknesses observed and even those that were not reported during the data gathering were added to the prepared objectives or target behaviors of the succeeding sessions. On the hand, the identified strengths were used as tools to address the deficits. For example, Participant 3 was observed having obsessions with letters and attracted to color green but identified of having relative weakness in fine motor. With this background, the researcher prepared 2 inches green paperboard with printed letters scattered on the floor. His interest in letters encouraged him to pick up the boards as we sang the alphabet song. To make it more interesting, the researcher vocalized the initial sounds of his picked letter before it was dropped in the box. This sample activity used music, play and augmentative alternative communication addressing fine motor, eye coordination and communication target behaviors.

	Description	Acceptance Stage	Description
<b>Low</b>	Participants in this stage need 90% prompt from the researcher to perform the task and manifest 90% of repetitive behaviour with 10-29% eye contact.	Point of resistance	In this stage, the participants were given 10 to 30 minutes to enjoy their interest. They resisted activities by crying or resolved in aggressive behavior such as throwing of toys and banging of head on the wall. To take them out for this point of resistance, the researcher offered varied choices of toys and interest to distract their need of sameness. This also included the application of the creative approach called Ilin-Ilin together with the music, play and augmentative alternative communication.
<b>Moderate</b>	Participants in this stage needed 60-89% prompt from the researcher to perform the task and manifest 60-89% of repetitive behaviour with 30-59% eye contact.	Guided Participation	In this stage, the participants' resistance such as crying for 3-5 minutes has less manifestations of aggressive behaviour once taken from their chosen activity. The researcher in this stage either carried the participant or kept the toys of his interest. The researcher dealt the participants' frustration through music, play or funny gestures to make them laugh. Another target behaviour was introduced in this stage.
<b>Adequate</b>	Participants in this stage needed 30-59% prompt from the researcher to perform the task and manifest 30-59% of repetitive behaviour with 60-89% eye contact.	Adequate Participation	Participants in this stage were able to follow simple verbal instructions. Active participation was shown by the participants in this stage.

**Table 2:** The participants' feelings of coping and acceptance passed through different stages.

**Sessions 7-24 (Stage of Symbiosis):** Appreciating and allowing the participants to enjoy their interest make way to the next level, the level of acceptance or period of symbiosis. After a minimum of 3-6 sessions, the stage of symbiosis gradually developed towards the succeeding sessions (7-24). Participants in this stage were challenged to deal with the researcher as a person and the task as part of their relationship. Guided with the participants' background from the previous stage, the researcher was set to introduce change to the children. Their weaknesses or target behaviors along with techniques to address it were prepared. Emotionally, the researcher was expected to be patient, warm, open-minded, spirited, physically humorous and creative. These were essential to make change less threatening to children diagnosed with ASD. The participants' feelings of coping and acceptance passed through different stages as summarized.

**Sessions 10-24 (Stage of Separation-individuation Stage):** To strengthen the target behavior, all steps were repeated until the children were able to imitate and follow the pattern of actions to the extent that the research participants did it with minimal help from the researcher until adaptation stage was attained or even towards joining "in" into the activities outside of which they were not of interest at the start of the session.

Participants in this stage needed 10-29% prompt from the researcher to perform the task and manifest 10-29% percent of repetitive behavior with 90% eye contact. The children were able to perform some target behaviors 70% on their own and started to familiarize new tasks or attained the period of adaptation.

Dependent on the level of severity, it was observed that some target behaviors were strengthened within three to six consecutive sessions.



This permitted the researcher to introduce another target behavior in addition to the acquired behaviors. The same presentation- acquiring process was continuous and repeatedly done until the desired adaptive behavior was attained.

This is the period of behavioral change where the participants independently learned to perform tasks upon realizing one's potential encouraged by the acceptance of the researcher. The change attained in this period is a product of symbiotic effort and relationship by not just the researcher herself, but with the remarkable responses of every child who participated in the study.

## Research procedures

A letter for request of permission was personally given by the researcher to the administrator of LEAF (Appendix A), a behavioral intervention clinic in Davao City. The letter was used to identify possible participants in the study. The letter contained a background of the researcher's study, objectives, procedures and agreements, stipulating the terms for clinical compliance.

After the agreement and approval of the study, the researcher handed the invitation letter to the parents (Appendix B) asking them to participate in the study. Explanation about the nature of the study, together with the frequency and duration was also provided. The written consent (Appendix C) and assent (Appendix D) were then obtained from parents after their thorough understanding and commitment. In a manner, the ethical considerations were explained including confidentiality issues especially on the use of recordings during the session. Their right to withdraw from the study was highlighted to emphasize freedom and voluntary participation in the study. Upon the agreement, interview with parents was conducted using VABS-II. To verify and validate assessment given by the parents, teachers were interviewed for objective scoring. Similar procedure was also used to gather baseline 2 data.

Based on the gathered data from parents and teachers, the researcher designed an intervention program for the participants guided with the tasks enumerated in VABS-II (Appendix E), aiming to address the participants' adaptive skills deficiency using the Multi-Approach Intervention. The program was conducted for 24 sessions at one hour per session three to four times a week. Out of the 24 sessions, the researcher randomly selected 10 videos for process observation to confirm what was actually happening during the therapy sessions and to make certain on how humanistic approach was applied in the study. Moreover, paired t-test was used to answer the inquiry on the effectiveness of the intervention after the 24 sessions.

## Data analysis

The comparison of the baseline-intervention-baseline data was conducted for each participant. Paired t-test is a method utilized in comparing the difference of two measurements taken from the same participants or one measurement taken from a matched pair of participants. In this study, this was used to compare the pre-test score and post-test score of the participants in areas of communication, daily living skills, socialization, motor skills, maladaptive behaviors, and adaptive behavior composite.

## Ethical considerations

**Informed Consent and Informed Assent:** The researcher provided the parents an informed consent that included a detailed explanation

about the objectives and significance of the study and the study's duration. A contract to voluntarily participate or withdraw from the study was also provided. Considering that participants are minors, informed assent was taken upon the permission and approval of the parents in place of the consent of children with ASD.

**Beneficence:** The researcher upheld the principle of beneficence that aimed to provide maximum possible benefits and do no harm to the research participants. In this regard, risks and benefits were discussed during the research debriefing.

**Confidentiality:** The researcher at all times conformed to the ethical value of confidentiality. Thus, this study has maintained anonymity and confidentiality to protect the personal information of the participants in the program. Video coverage/CCTV footage was only considered part of the 'process observed' by selected practitioners in the field.

**Role of the Researcher:** The researcher was responsible in carrying the integrity, sensitivity, and commitment to moral issues and actions throughout the study as mandated in the Psychological Association of the Philippines Code of Ethics and Magna Carta for Children with Special Needs. She was cautious in dealing with any concerns and addressed uncertainties and difficulties to her mentor.

## Results

Adaptive behavior refers to an individual's typical performance of the day-to-day activities. These scales measure what a person actually does, rather than what he is able to do. In this study, adaptive behavior was measured using Vineland Adaptive Behavior Scales - Expanded Interview Form (VABS-II) using 90 percent confidence interval on the principle that all assessment are imprecise to some degree and the need to consider the error is deemed necessary. This encourages a less rigid interpretation of the actual scores and helps prevent misinterpretation and test abuse specifically in measures of adaptive behavior using a rating scale with no right or wrong answer. With these, the author recommended the 90% confidence level as being suitable for most application' hence used in this study which justifies the used of significant at the 10% alpha level. Furthermore, Vineland Adaptive Behavior Scales - Expanded Interview Form (VABS-II) consist of five main domains each with two to three subdomains including communication (receptive, expressive, and written); daily living skills (personal, domestic, community); socialization (interpersonal relationship, play and leisure time-coping skills), motor skills (gross, fine) and maladaptive behavior (internalizing and externalizing and other behavioral problems).

## Baseline 1 profile of the participants

**Participant 1:** A 3.7 year old boy diagnosed with autism spectrum disorder. His neurodevelopmental evaluation result was conducted on November 13, 2015 (1 month and 21 days before the study) denoted the following developmental level: receptive language (9 months), expressive language (11 months), cognitive skills (1 years and 6 months), personal-social skills (1 year and 3 months), gross motor (2 years and 2 months), fine motor skills (2 years and 5 months), and his total adaptive skills of 1 year and 9 months.

His mother and his attending teacher were interviewed using Vineland-II Expanded Interview Form. Both Participant 1's significant others identified his inappropriate giggling and laughing, need to be toilet trained and need to acquire communication skills as areas for

improvement. With the 90 percent confidence interval, Participant 1's VABS-II Adaptive Composite score of 64 was categorized as mild deficit. This could mean that Participant 1's adaptive functioning is higher than 1% of similarly aged children in the norm sample. The same conclusion was revealed in areas of communication specifically in expressive domain.

This denotes the child's needs for substantial support and experience in order to meet age-related expectations of day-to-day activities. His communication denotes the child's inability to find words to be able to make sentences necessary in expressing oneself. His inability to listen, stay focused and interpret and understand verbal communication were identified unsatisfactory as to children of his age.

In addition, moderately low socialization and motor skill were revealed through the child's VABS-II v-scale. These may suggest relative weakness in interpersonal relationship, play and use of leisure time and coping skills so with the areas of gross and fine motor. He further demonstrated apparent need to learn skill in domain of daily living although he was described of being cooperative in doing household and personal tasks such as brushing teeth, taking bath, eating and fixing his toys.

Using VABS-II Expanded Form at 90 confidence, Participant 1's baseline 1 adaptive composite on the following domains were: communication (receptive language: 11 months); (expressive language: 9 months); daily living skills (personal: 2 years old; Domestic: 2 years and 4 months; community: 1 year and 6 months), socialization skills (interpersonal relationships: 10 months); (play and leisure: 1 year and 2 months); coping skills (1 year and 3 months), gross motor (3.3 years and 2 months), fine motor skills (2 years and 6 months) with mild deficit adaptive behavior composite.

In summary, when compared to all domains of his adaptive behavior, the domain of communication was of his utmost weakness (-21 from the median score of his adaptive composite domains) specifically in receptive skills (-6 from the median score of his communication subdomain). In most times, the child manifested unacceptable behavior as expected of his age. Although his motor skills revealed as area of strength, the need to enhance fine motor skills was exhibited and less developed when compared to his ability to perform gross motor tasks. To conclude, VABS-II data of Participant 1 revealed a significant lag in his total adaptive behavior composite.

**Participant 2:** Behaviorally observed as active, has poor eye contact, quiet, irritated with noise and fascination with color blue and circular object were noted by the researcher during the interview with his mother and teacher. His mother expressed concern regarding the child's preference to be alone and his unruly behavior towards his older and younger sisters. His inability to talk and display emotions so with his poor eye contact were recognized as areas that need immediate intervention by his significant others.

Aside from the center's program, the child is also attending twice a week occupational therapy program. His neurodevelopmental profile reported on September 25, 2015 (3 months and 10 days before the conduct of the study) classified his skills to the following developmental level: gross motor (2 years), fine motor (1 month), language skills (9 months), and personal/social/adaptive (12 months) and summarized the child's developmental profile performance as of 12 months old.

Ratings from Participant 2's mother and teacher on his adaptive behavior composite and socialization skills fell much lower (mild

deficit) than what is expected at his age compared to VABS-II standard norm using 90 percent confidence interval. These suggest the child's limitations to effectively attain personal independence in doing day-to-day tasks. This further denotes fair need for support for a child to meet age-related expectations.

A reasonable weakness in the child's daily living and motor skills were revealed. He's reportedly incapable of eating alone and self-grooming however, manifests obedience when asked to perform such. Granting his observable restlessness, his motor skills were identified to be his area of strength when compared to the other domains of his adaptive behavior. However, a weakness in fine motor skills was observed when compared to his gross motor ability.

Further, a significant need for enhancement was revealed in the child's domain of communication. His rating in this skill fell in extremely low (profound deficit) category (-42 from the median score among his adaptive domains). This pertains to the child's very limited understanding of verbal and non-verbal expressions as manifested by his inability to point objects of desire and resolved to tantrums when not understood.

Using VABS-II Expanded Form of 90 confidence interval, Participant 2's baseline 1 adaptive composite on the following domains were: communication (receptive language: 1 month); (expressive language: 7 months); daily living skills (personal: 1.5 years old; Domestic: 11 months; community: 1.5 months), socialization skills (interpersonal relationships: 2 months); (play and leisure: 5 months); coping skills (1.2 months), gross motor (2.4 months), fine motor skills (8 months) with mild deficit adaptive behavior composite.

To conclude, the ratings of the child's mother and teacher signified that Participant 2 displayed developed gross motor skills though displayed elevated maladaptive behavior, profound deficit in communication, mild deficit in general adaptive behavior and weakness in fine motor skills domain.

**Participant 3:** He is the youngest among the three participants of the study. He was observed of having repetitive hand flapping, no verbal communication and preoccupations with letters. His notable speech concern elicited the need for neurodevelopmental assessment last October 28, 2015 (2 months and 6 days before the study), which concluded Autism Spectrum Disorder clinical impression. His skills to the following developmental level: gross motor (2 years), fine motor (1 year and 8 month), receptive and expressive (1.7 months), cognitive skills (1 year and 6 months), personal-social skills (11 months) with a general adaptive skills as of 1 year and 6 months.

Drawn from the collective rating of Participant 3's mother and teacher, his adaptive behavior composite fell into mild deficit level. This rating ranked him into the 0.3% lowest among the standardize VABS-II norm sample. However, a reasonable deficit in domains of daily living skills and motor skills were revealed in his data. Although he was reported to be too dependent in aspect of living skills specially in eating, he showed submission to his caregiver during taking a bath and putting on clothes and shoes. His motor skills were tolerably low but an apparent deficit in subdomain in fine motor was identified as manifested by his incapacity to clap hands, inability to eat finger food, and difficulty in grasping objects smaller than 2 inches.

Ratings of Participant 3's mother and teacher revealed the child's need of support in the area of socialization. Moreover, it is revealed that the child has limited ability to understand words and express oneself both in verbal and non-verbal means. This signifies further, a

need for extended assistance before the child can learn to understand words to be able to form, use and express it as means of communication.

Using VABS-II Expanded Form using 90 confidence, Participant 3's adaptive composite on the following domains were: communication (receptive language: 5 month); (expressive language: 5 months); daily living skills (personal: 1.2 years old; Domestic: 11 months; community: 1.3 months), socialization skills (interpersonal relationships: 3 months); (play and leisure: 4 months); coping skills(1.2 months), gross motor (1.11 months), fine motor skills (4 months) with mild deficit adaptive behavior composite.

This concludes the Participant's weakness in areas of communication when compared to his ratings on domain of daily living skills, socialization and motor behavior. Despite these challenges, Participant 3 manifested reasonable maladaptive behavior as expected for his age group.

### Pre-test and post-test standard scores on adaptive behavior of children with ASD

After the 24 sessions, baseline 2 data was gathered through interview using VABS-II of the participants' mothers and teachers. Through the presented verbal description (Table 3), a notable difference was found in the general adaptive behavior of children diagnosed with ASD. In this data set, behaviors improved from mild deficit pre-test scores to adequate, moderately average and moderately low for participants 1, 2 and 3, respectively.

**Participant 1:** Mother and teacher's rating indicated a standard score of 86 which pulled him from the 1 percentile rank to 18% ranked (+2 standard deviation) of the norming sample. This means that he had shown ability to cope up with day-to-day activities when initiated with less support from significant others after the intervention. Evident learned skills in areas of daily living skills, motor skills and communication as reflected in his post-test standard score increase of +1 standard deviation. The intervention further helped the child's fine motor skills deficits as presented by increased fine motor skills post-test score. Although communication skills still remain as utmost weakness when compared to all domains of his adaptive behavior, there is a decrease of mean difference. The median score was down to -12 from -21 in the pre-test data. This concludes the usefulness of the intervention in learning gestures and verbal expressions that are necessary in expressing oneself.

Using VABS-II Expanded Form of 90 confidence interval, Participant 1's adaptive composite after the intervention improved to the following: communication (receptive language: 2.11 months); (expressive language: 1.5 months); daily living skills (personal :2.10 months; Domestic: 3 months; community: 2.9 months), socialization skills (interpersonal relationships: 2.3 months); (play and leisure: 3.2 months); coping skills ( 2.4 months), gross motor (4 years), fine motor skills (3.5 months) with adequate adaptive behavior composite.

The above changes ranked him to 5 percentile in communication (pre-test=<.01), 19 percentile in daily living skills (pre-test=3), 23

percentile in socialization (pre-test=3), 50 percentile in motor (pre-test=13). To conclude, there were apparent change in the Participant's communication, daily living skills, socialization and motor skills, and lessened Participant 1's maladaptive behavior. Moreover, his motor skills remained the domain of strength and communication as area for enhancement.

**Participant 2:** Post data rating of Participant 2 revealed an increased post-test standard score in domains of communication from profound deficit to moderate deficit. This could mean that the intervention had facilitated on the development of the child's verbal and non-verbal skills as it changed from profound deficit to moderate deficit. This further denotes that from his very limited ability in understanding verbal and non-verbal communications, the intervention had proven his capacity to learn with extended assistance, repetition and consistency.

In contrast, there was no enough evidence of change in areas of Participant 2's daily living skills as reflected with similar adaptive level of moderately low before and after the intervention. An evident change in socialization domain was observed as manifested by the standard score of 58 to 82 or moderately low (+2 SD) after the intervention. Although he still has limited initiation in social interaction, the increase could mean that the intervention has helped the child to appreciate the need to associate with others. An indication on the effectiveness of the intervention was also observed helpful in minimizing maladaptive behavior and refining fine motor skills as revealed by increased post-test standard score.

The above changes ranked him to 8 percentile in daily living skills (pre-test 4), 12 percentile in socialization (pre-test=0.3), 27 percentile in motor (pre-test 5) and apparently lessen Participant 2's maladaptive behavior. His motor skills remained the domain of strength and communication as area for enhancement although a decrease from -42 to -38 difference of his weakness point was revealed.

To conclude, Using VABS-II Expanded Form of 90 confidence interval, Participant 2's adaptive composite after the intervention improved to the following: communication (receptive language: 1.3 months); (expressive language: 1 year); daily living skills (personal : 1.11 months; Domestic: 2.2 months; community:1.8 months), socialization skills (interpersonal relationships: 10 months); (play and leisure: 1.11 months); coping skills (1.11 months), gross motor (3.5 months.), fine motor skills (1.9 months) with moderately low adaptive behavior composite.

**Participant 3:** Post data rating of Participant 3's mother and teacher revealed an enhanced adaptive behavior composite as manifested by an elevated score of the child's post-test standard score compared to the pre-test data. From the group of children in the lowest 0.3% of the standard norm, Participant 3 moved to the lowest 14 % group of the sample population. This impressive progress maybe attributed to the enhanced percentile rank of Participant 3 in other domains and subdomains of adaptive composite. This includes communication 8 percentile (pre-test=<.01), 8 percentile in daily living skills (pre-test=4), 21 percentile in socialization (pre-test=0.4), 50 percentile in motor (pre-test=5).

Participant	Subdomain	Pre-test Score	Standard	Adaptive Description	Level	Verbal	Post-test Score	Standard	Adaptive Description	Level	Verbal
1	Communication	50		Moderate Deficit			76		Moderately Low		
	Daily Living	71		Adequate			87		Adequate		

	Socialization	72	Moderately Low	89	Adequate
	Motor	83	Moderately Low	100	Adequate
	Maladaptive Behavior Index	19	Elevated	15	Adequate
	Adaptive Behavior Composite	66	Mild Deficit	86	Adequate
2	Communication	23	Profound Deficit	42	Moderate Deficit
	Daily Living	73	Moderately Low	79	Moderately Low
	Socialization	58	Mild Deficit	82	Moderately Low
	Motor	76	Moderately Low	91	Adequate
	Maladaptive Behavior Index	18	Elevated	7	Average
	Adaptive Behavior Composite	55	Mild Deficit	71	Moderately Average
3	Communication	35	Severe Deficit	79	Moderately Low
	Daily Living	74	Moderately Low	79	Moderately Low
	Socialization	60	Mild Deficit	88	Adequate
	Motor Skills	76	Moderately Low	100	Adequate
	Maladaptive Behavior Index	10	Average	6	Average
	Adaptive Behavior Composite	58	Mild Deficit	84	Moderately Low

Adequate: reasonable limitations;  
 Moderate deficit: an perform but needs extended period of time;  
 Profound deficit: dependent on others/ very limited;  
 Average: no more maladaptive behaviors.

**Table 3:** Level of pre-test and post-test standard score of adaptive behavior of children diagnosed with ASD, n=3.

Further, the reported hand flapping was minimally observed after the intervention. His areas of weaknesses before the intervention were enhanced as manifested by the increased standard scores in areas of communication, supported with a decreased subdomain mean difference of -3 from -32 points of pre-test data. He further showed interest in picking up small object, transferring toys from one container to the other, eating biscuit properly on his own and producing sounds when clapping. All these explained the increased motor skills of Participant 3.

To conclude, Using VABS-II Expanded Form of 90 confidence interval, Participant 3's adaptive composite after the intervention improved to the following: communication (receptive language: 1.7 months; expressive language: 1.7 months); daily living skills (personal : 1.6 months; Domestic: 1.5 months; community: 1.9 months), socialization skills (interpersonal relationships: 1.4 months; play and leisure: 1.10 months; coping skills: 1.11 months), gross motor (2.8 months; fine motor skills :2.8 months) with moderately low adaptive behavior composite.

It was further noted that two participants did not display changes in daily living skills. It denotes similar verbal description before and after the intervention. In addition, participants seemingly benefited from the intervention in area of maladaptive behavior composite drawn from the high pre-test score to average post-test score. This means that the maladaptive behavior decreased as they continuously participated

in the intervention. Consequently, it was perceived that Multi-Approach Intervention program has positively influenced the behaviors of the participants in areas of communication, socialization and motor skills as supported by increased scores of these domains after the intervention.

Adaptive Behavior	Mean Score		Gain Score	t-Ratio	p-Value
Domains	Pre-test	Post-test			
<b>Communication</b>					
Receptive	5.33	12	6.67	20.00*	0
Expressive	1	6.33	5.33	2.87	0.1
Written	3.33	4.67	1.33	1	0.42
Composite score standard	37	65	28	3.21*	0.09
<b>Daily Living Skills</b>					
Personal	8.33	10.33	2	3.46*	0.07
Domestic	9.67	13	3.33	1.64	0.24



<b>Community</b>	11	12.33	1.33	1.51	0.27
<b>Composite standard score</b>	70.67	81.67	11	1.1	0.18
<b>Socialization</b>					
<b>Interpersonal Relationship</b>	6.67	11.33	4.67	14.00*	0.00
<b>Play and Leisure time</b>	6.67	13	6.33	7.18*	0.02
<b>Coping Skills</b>	11.33	13	1.67	5.00*	0.04
<b>Composite standard score</b>	63.33	85.67	22.33	8.19*	0.02
<b>Motor Skills</b>					
<b>Gross</b>	14	15.67	1.67	5.00*	0.04
<b>Fine</b>	8.67	13.33	4.67	3.21*	0.09
<b>Composite standard score</b>	78.33	97	18.67	6.84*	0.02
<b>Maladaptive Behavior Index</b>					
<b>Internalizing</b>	18.5	15	-3.5	7.00*	0.09
<b>Externalizing</b>	15.5	15	-0.5	1	0.42
<b>Others</b>	-	-	-	-	-
<b>Composite standard score</b>	15.67	12.33	-3.33	5.00*	0.04
<b>Adaptive Composite Score</b>	59	80.33	21.33	7.341*	0.02
*Significant at 10% alpha					

**Table 4:** Test for significant difference between the pre-test and post-test score among adaptive behaviors.

#### Test for significant difference between the pre-test and post-test score among adaptive behaviors

Under the domain of communication (Table 4), the difference between the pre-test and post-test mean scores in the receptive subdomain came out to be statistically significant at 5% alpha level (p-value is lesser than 0.05). The receptive subdomain had the highest score among the subdomains of communication and this further reinforces the evidence of significant difference. This means that there is no reason to doubt that the receptiveness of the participants demonstrated significant progress after the interventions were given to them.

Similar results were also observed when communication was analyzed using a composite or aggregated value. The difference in standard score of communication between pre-test and post-test was likewise statistically significant at 10% alpha level. Applied interventions had positive effects on the overall communication of the participants. The other subdomains, expressive and written, revealed non-significant difference between the pre-test and post-test mean score. In terms of daily living skills, non-significant difference was found between the pre-test and post-test in the composite value and among the subdomains except for the personal sub-domain where the

difference in the v-score is significant at the 10% alpha level. The same table reveals that the interventions given to the subjects worked successfully in the domain of socialization and motor skills of the participants. These findings are indicated in the significant difference between the pre-test and post-test scores of socialization and motor skills of the participants as well as the corresponding subdomains.

Positive result is also found in the maladaptive behavior index. The result suggests that the interventions are also effective in regulating maladaptive behavior of the participants. The pre-test score was significantly reduced in the post-test (that is why the gain score is negative) in the composite score for maladaptive behavior as well as in the internalizing subdomain.

Based on the results, the helpfulness of the interventions were found statistically evident in enhancing communication (receptive), socialization (all subdomains), motor skills (all subdomains) and impeding maladaptive behavior particularly the internalizing subdomain. These results helped to explain why the interventions came out to be statistically influencing the overall adaptive behavior of the participants. These findings are supported by the significant difference in the composite adaptive score between the pre-test and the post-test.

Based on the analyses, the intervention is most effective in enhancing the socialization and motor skills including its subdomains since effectiveness of the intervention is consistent in these domains and within its corresponding subdomains.

#### Implication of pre-test and post-test differences for the practice of clinical psychology in intervention for children diagnosed with autism spectrum disorder

Efforts towards searching intervention for ASDs have been encouraging to promote functional independence and improving quality of life among individuals with ASD. Generally, therapies for ASD focused on improving the core deficits in social communication and interaction, and motor behavior. Efforts have been made to search effectiveness of single or combination of therapies to address treatment goal, however, there is no specific answer as to the best therapy for this disorder.

This study employed music as proven effective to address communication [12,25,93], socialization [12,25,36,37,39], motor both in gross and fine [25,58], and maladaptive behavior [20,25,38,39]. Further, play confirmed to be effective in areas of communication which includes verbal expression and language [19,42,44,45], socio-emotional [19,41,42] and socialization [42,44,45]. The use of augmentative alternative communication was proven effective in domain of communication [50-54].

In summary, music therapy, play therapy and augmentative alternative communication were proven approaches to address the domains of communication, socialization, motor skills and maladaptive behavior. Even though music, play and augmentative have been used with success on those identified domains, there are still limited reviews on the approaches' efficacy in domains of daily living skills and adaptive behavior for ASD specifically to children ages 4 below.

This present study substantiates the effectiveness of music, play and augmentative alternative communication, altogether called Multi-Approach Intervention to enhance the total composite of adaptive behavior of ASD children specifically in domain of socialization. This

result also clarified the role of a psychologist in addressing the core deficits of children with ASD.

Change can be extremely stressful for children with ASD [12]. Considering this characteristic of ASD's, the researcher's task was to introduce change in a subtle or indirect way, enough for ASD children to endure. To attain such, a technique called Ilin-ilin was applied.

From videos and CCTV footage, the process observer noted that the researcher applied common behaviors to all participants of the study whose approach was not yet identified. The technique observed was closely related to "rapport-building" yet it requires longer period than the common "rapport-building" technique. The technique was not limited only to the use of rapport but also used to look for "perfect-timing" to get the attention of the children with ASD. This unidentified technique was used by the researcher to balance situation and opportunities in order to catch the attention of the child. The technique was performed with creative gestures made it appealing to the children, making it a new parameter of getting trust. The said unidentified technique was observed to be the most enjoyable interaction between the children and the therapist that subsequently led to a more enjoyable play. This concludes to be the foreground of play called "Ilin-ilin".

"Ilin-ilin" is a creative behavioral gesture form of getting a proper timing (ranging from 10-30 minutes), a period of observation to find out the specific stimulation that would elicit a response from the participants. It includes offering choices of activities to help the researcher gradually introduce new learning and to get them out of their customary practices and replace them with acceptable ways and behaviors. The technique also involves creative behavioral gesture to catch the attention, trust and participation of the child such as researcher's ability to adjust tone of voice in softhearted and calm manner shifting it skillfully to a varied rhythm with dazzling humor. This concludes the persevering, pleasing and creative use of conventional play, music and augmentative as entity of Multi-Approach Intervention.

"Ilin-ilin" as approach, seemingly offered pleasant, enjoyable, and engaging activities with the feeling of acceptance and belongingness. This also meant that participants in the study were given complete freedom to participate and to totally accept who they really are. These therapy conditions enhanced children's participation because even though they became nonsensical, their choices were accepted for they were the priority and the ones who lead the process.

Research on the theory of the mind demonstrated that children in this spectrum have problems in understanding knowledge, empathy, deception, humor and language [41]. Nonetheless, this study proves that despite ASD's cognitive difficulty in creating connections to things, humans and events, they enjoyed being appreciated, surprised with humor and fun.

## Discussion

### Significant difference between the pre-test and post-test score among adaptive behaviors

Music, play and augmentative alternative communication are proven single approaches in dealing children with ASD. In single and separate studies of these approaches, music, play and AAC were recognized to be effective on area of communication [12,41,50]. Both play and music reviewed similarly addressed communication and

socialization [25,39]. In recent studies, music has gained recognition to address motor skills which was not revealed in previous studies. Given this background, this study aimed to investigate the effectiveness of the combination of these separate and single approaches to address adaptive behavior comprised the specific details in each domains of communication (receptive, expressive, and written); daily living skills (personal, domestic, community); socialization (interpersonal relationship, play and leisure time-coping skills), motor skills (gross, fine) and maladaptive behavior (internalizing and externalizing and other behavioral problems) among children ages 2-4 years old.

Limitations in adaptive functioning are evident in individuals with ASD as manifested by their difficulty to do planning, organizing and coping with changes [9] making it challenging to their significant others to make their lives functional just as making treatment and desired outcomes of behaviors difficult to attain [10,11]. However, this study revealed that the use of music, play, AAC, altogether called Multi-Approach Intervention, was found to statistically improve the overall adaptive behavior composite of the children who participated in this study. This study verifies Kalyva's [12] notion that ASD is not a generative disorder regardless of its various co-existing problems and varied functional impairment. This implies that, with the help of intervention, the likelihood of development, adaptation and participation of individuals with ASD in their environment is attainable.

The significant result in the total adaptive behavior composite of the participants were attributed to the improved gained scores after the intervention in subdomains of receptive (communication), personal (daily living), interpersonal, play and leisure time, coping skills (socialization), gross and fine subdomain (motor), and the decreasing manifestations of maladaptive behavior in index of internalizing, externalizing and other behavioral problems.

**Communication:** In this study, the areas of communication such as receptive, expressive and written sub-domains were measured and found statistically significant in the sub-domain of receptive communication but seemingly not significant in expressive and written sub-domain. The limitations of the study to address the expressive language may be associated to the severity of communication deficits before the intervention. Baseline 1 data reveals that among all the domains of pre-test adaptive behavior composite, communication, specifically in expressive sub-domains, was the common weakness and laid the highest lag of development among the participants. Nevertheless, all participants from this study were reported to have learned pre-speech behaviors as manifested by their ability in cooing, gurgling chuckling, laughing and smiling when cuddled after the intervention. An enhanced ability to express desire through pointing or grabbing significant others towards the object of interest and averts face to indicate agreement or disagreement when offered something were demonstrated. Even though participants were able to begin uttering three ("mama", "papa", and "ate") to 10 words from zero baseline 1 data, this was not enough to statistically prove the effectiveness of Multi-Approach Intervention program. In addition, an apparent improvement in pre-speech nonverbal expression was observed after the therapy.

Challenges in areas of language and communication were one of the many challenges of ASD. This limits them to interact and learn from others [25]. Embracing similar idea of Brooks and Goldstein [15] stating that "children diagnosed with ASD may suffer from varied language problems and 40% of these children cannot speak". In effect, children with ASD are incapable of telling stories and expressing

feelings which proves the limitations of the intervention to this domain.

In similar result, the Multi-Approach Intervention approach was found to be not significant in the sub-domain of written communication. It is important to note that written skills under communication sub-domain is not expected to be performed among children below 3 years old using VABS-II, thus, only Participant 1's data was measured and used for statistical treatment. This may imply that the data treated in the study failed to measure the effectiveness of the intervention, which could likely explain the inadequacy of the intervention to address communication domain.

However, receptiveness of the children demonstrated significant progress after the intervention. Improved listening skills was generally observed by parents and attending teachers. This also includes the ability to perform request or follow simple instructions such as "Give the ball to teacher J" or other instructions such as packing away of toys and waiting for one's turn during waiting time activity. Further, an enhanced eye contact, ability to name common objects and skills in pointing body parts when asked were demonstrated.

**Daily living skills:** Several daily living skills are difficult for ASD children to accomplish even to those above average intelligence [9,94] which substantiates the presumed ineffectiveness of intervention to daily living skills of the participants. Although children with ASD were observed of having a need for precise instructions to develop age-appropriate daily life skills such as bathing, grooming, dressing and taking care of one's health [63], the researcher believes that the study's limitation to address this domain possibly associated to the result of no significance. This was concluded provided the evidence that some daily living activities practiced during the therapy were observed being learned and performed by the participants at home such as cleaning up work areas and removing shoes before entering their homes. These mentioned activities were consistently executed before they entered the therapy room and packing away of toys after every session which contributed to the effectiveness of the intervention in the sub-domain of personal skills.

Moreover, the expected tasks of VABS-II such as involvement in housecleaning, preparing food, household safety, understanding concept of time, date and numbers to call in an emergency were found to be challenging for them. Most of these tasks can be better addressed at home to which the therapy was not designed. This limitation pronounced the need of family involvement to extend or complement the goals beyond the sessions [79].

In addition, although the goals of therapy aims to develop skills in eating, dressing, drinking and toilet training as expected in their age, all these needs minimally arose during the one hour therapy sessions. It is important to note that the study was set in a non-directive and unstructured environment, thus, behavior could only be modified once manifested. This further means that the creative play approach used to teach eating, dressing and drinking skills was seemingly ineffective for children ages 2.7 – 3.9 years old. This suggests the limited creative imagination among children with ASD [2,12] that results in the absence or reduced social interest.

**Socialization skills domain:** Difficulties in understanding the essentials of relating to others encompassed socialization problem. This makes it hard for individuals with ASD to connect, socialize, relate and be with others [26]. Although all the three participants showed mild deficits in areas of socialization from the onset of intervention, all demonstrated an enhanced ability to socialize with others. Parents

reported their children of being affectionate, improved imitation skills that makes them teachable and able to respond to positive statements "such as good/great job" and know how to react once applauded. A remarkable shift of interest from toys to playmates was observed, as manifested by an act of pulling teachers or therapy mates to join their play. It was further observed, that children under Multi-Approach Intervention program showed engagement with their siblings, other significant others at home, neighbors and children they just meet in playrooms.

An evident manifestation of being self-absorbed and preference to play with object [15] were observed during the beginning of the therapy session. One of the participants have an extreme interest with letters and color blue, another is attracted to blue and blocks with letter O, while the other is fanatic with cars rolled over the edges of tables and walls. However, towards the end of the study, the children were observed playing different toys and engaging themselves in different activities such as watching augmentative videos, stopping to play with toys then returned to augmentative and later glided on the improvised slide made of table. All of these thrills were done with fun and giggles. This was attained through the use of humor, play, music and "Ilin-ilin".

**Motor skills domain:** In addition, an evident outcome of Multi-Approach Intervention program in subdomain of gross and fine motor development was observed among the participants. This means that participants, after the intervention, became more physically engaged compared to before the session. Physical activities were enhanced using trampoline, improvised slide out of table, and dancing. Tasks such as catching balls and hopping and skipping for gross motor was introduced during play. An interest in completing puzzles, one of the fine motor tasks, was observed similarly among the three participants. Play was the primary tool used to address this domain together with "Ilin-ilin" as linked to the participants' motor skills improvement.

**Maladaptive behavior:** Due to their inability to express themselves, individuals with ASD often manifest maladaptive behaviors [10] and aggression [3]. Although participants initially had high manifested maladaptive behaviors, such were drawn to average after the intervention. This further means that withdrawal from people, poor eye contact, unsociable behavior, temper tantrums, or being over-sensitive to noise, physical aggressiveness and poor concentration were enforced using Multi-Approach Intervention program. This can be best explained through the fun experience which is even extended when they get out from the playroom.

The result confirms Carandang's theory (1992), the studies of Kostka (1993), Thaut (1984) and Toigo (1992), all cited in Kalyva [12] and Pelayo and Sanchez [39] on the effectiveness of music to address crying tantrums, lessen hyperactivity and unwanted behavior, reduced challenging behaviors such as self-injurious, aggressive and stereotypical behaviors of children with ASD. These results may be linked to the attraction of sounds to children with ASD [12] or due to the pressure involved in the activities that eventually corrected the irregular brain wave patterns [39].

### Implications for the practice of psychology in dealing with children diagnosed with ASD

Music therapy and play therapy had proven their effectiveness in dealing with autism. However, presence of these therapies was not enough to handle the increasing numbers of children with ASD. Due to increasing diagnosis, there is a heightened need to develop intervention strategies to address the difficulties associated with the



disorder. This concludes the researcher's interest to investigate the use of basic music, play and AAC, altogether called Multi-Approach Intervention to enhance adaptive behavior composite of children diagnosed with ASD, later found to be effective.

The effectiveness of the intervention was made possible through the active participation of the participants throughout the 24 sessions. This concludes the notion that cooperation and acceptance from the part of the participants are essential for the therapy to move forward. Their anxiety with change, unconcerned with social interaction, interest in sameness, and their inability to share attention are the common behaviors that impede development as they block the children with ASDs to acquire skills from the environment. Considering these characteristics, the researcher was challenged to look for ways to be visible and be accepted by the participants.

To attain such, the practitioner is encouraged to show real acceptance and to appreciate the value of freedom to enjoy despite the children's tendencies to be nonsensical. Their choices should not be rejected rather treated as priority. Further, it is encouraged to accept the children with no sense of defeat from their diagnosis. In this study, the children were accepted as who they are neither more nor less than a person with or without symptoms of autism. This includes acceptance of atypical interests, ways of doing things and tantrums as part of their being and not as symptoms of autism. This was taken of importance as it is viewed as a significant aspect in building relationship. Further, the researcher of this study was directed to understand the subjective world of the participants and encouraged to be with the children's feelings. Unlike other therapist, psychology as a field go beyond teaching the children for it focuses more on the emotional aspects. This study agrees to believe that emphatic understanding encouraged the children to process their own feelings and experience so they would know that they are not alone in their symptoms. This was manifested when the researcher joined and allowed the participants to enjoy their chosen specific and repetitive interest. Doing such leads to facilitate understanding of the children's subjective world. The moment the researcher revisited her "child within" enabled and made the experience pleasurable that led to the opening of the children's self to the therapist as their companion and playmate.

The observed selective preference of participants to stimulus around them affirms APA [2] notion on the apparent distinctive sensory responses among children with ASD emphasizing ASD children's difficulty in paying attention to relevant cues or focus on what is irrelevant information in the environment. Example, Participant 3 was interested in touching the floor mat instead of the puzzle on top of it. On the other hand, Participant 2 is looked at the knot of the trampoline instead of the researcher jumping on it. When uninterrupted, the child will be preoccupied on it disregarding other details of the environment including the presence of the researcher. This characteristic needs to be addressed as it blocks ASD individuals to appreciate diversity which leads to their preference of "aloneness". Hence, the task of the researcher was to take them out from that preoccupied moment using creativity and warmth to make disruption unnoticed as they often resolve to tantrums when interrupted.

For example, in one of her group sessions, Participant 1 was introduced to a bigger group. That group involved three intern students aside from the researcher and the child. During that session, the child was tasked to throw a ball to any of the intern students guided by the researcher. However, he only threw it once and went to the toy shelves where the cars were placed. The researcher asked the interns to

continue with the activity and she intentionally threw the ball near the child's toys of preference to destruct and get his attention. When he joined, he was applauded but was not refrained to go back to the activity he liked. The act previously done by the researcher and the interns was done repeatedly until the child voluntarily joined the activity and gradually forgot what he was previously preoccupied of. To get them out from their preferred activities and interest, the same way as repetitive behaviors, the researcher's tasks was to destruct or offer them something much interesting than what they were having. Although the need to enhance behavior is deemed necessary, it was observed that change may not be attained when imposed. Thus, it is encouraged that changes or modifications should be introduced as if to them it appears naturally through warmth, humor and fun.

To conclude, a practitioner should be in harmony with himself/herself when using this approach. He/she should be aware of and capable of acceptance and control of his/her own feelings during the therapy. This is to offer a model behavior that a child may learn in the sessions through expression of genuine relationship displayed through words, gestures and non-verbal expressions.

This may conclude the effectivity of the intervention given the proof of this study's statistical result. In support, Limbadan [95] believes that a therapy session is not effective if the therapist is "unfit to carry out helping relationships". This further concludes Kalyva's [12] notion that change and behavior improvement will happen if the environment will change and adjust to the specific needs of individuals diagnosed with ASD and to be an effective therapist, is to "accept them as they are and find a way to evolve together to find joint ways of communication, expression, affection, respect, freedom and development" [96-100].

### Future research direction

It is most recommended that the domain of daily living skills be included as a separate home program considering that most of these daily tasks are basically done at home. It is further suggested that parents may be involved and could probably be partners to practitioners so that both parents/significant others will adhere to similar goals or target behaviors. "Ilin-ilin", together with humor and fun, are suggested to be explored to evaluate its effectiveness in handling children with ASD and to ascertain the most appropriate term for this approach.

### Scope and limitations

It should be noted that this study focused only on three children diagnosed with ASD which limits the generalization of this study's intervention results, findings and recommendation. Furthermore, the program duration cannot cover enough adaptation skills which comprised five different domains as indicated in VABS-II. However, the research instrument used to measure pre and post data employed rating scale that is subject to social desirability and interpersonal variable has affected the reliability of the data. To address such, inter-rater measure is a need in order to measure and address the baseline 2 data.

## Summary and Conclusions

### Summary

This study attempted to find culturally fitted intervention to Filipino children diagnosed with ASD. ASD is assumed to be of no "one size fits



all approach” thus, the researcher combined three proven effective techniques to intensify and be more able to dispersedly address the varied symptoms of autism. Among the 35 clients in the center, 5 were selected to undergo 24 sessions using play, music and augmentative alternative communication, altogether called Multi Approach Intervention program. Subsequently, two of the 5 participants were excluded and three were identified as legitimately included in the study. The comparison of the baseline-intervention-baseline data was conducted out from the data gathered from parents and teachers in structured interview technique using VABS-II. The effectiveness of the program on domains of adaptive behavior such as communication, daily living, socialization, and motor, after the intervention was implemented was explored using paired t-test.

## Conclusion

Grounded from the result of this study, conclusions were highlighted as evaluation to the multi-approach intervention program of children with Autism Spectrum Disorder using Vineland Adaptive Behavior Scale (VABS II).

Receptiveness of the children demonstrated significant progress after the intervention program was given as manifested by the child’s ability to listen and attend to simple instructions. However, the multi-approach intervention was seemingly ineffective to address the daily living skills domain considering the limitations in the study’s duration and facilities. Further, the proposed intervention was found effective in unlearning maladaptive behaviors. This could be associated with the fun that the children experienced in an accepting and non-threatening environment through the warm therapeutic ambiance presented using the program. This may reflect a calmative way leading to unlearning, learning and relearning of more acceptable behaviors.

In addition, the program was found effective towards the enhancement of the children’s adaptive behaviors. This could mean that the participants of this study were able to develop skills to help them cope with their day-to-day activities that are necessary for them to get along with others and to take care of themselves independently. This could be attributed to the carefree condition that the Multi Approach Intervention program has offered. It is important to note that change caused anxiety to individuals diagnosed with ASD. By allowing them, the participants were able to acquire confidence and autonomy to initiate and perform activities of their interest. Doing such, leads to empowering them to continuously explore without fear of being restricted. Creatively using play, music and AAC called multi approach intervention therapy introduced change to participants subtly, making anxiety brought by change non-threatening, enough and tolerable which makes them easy to be initiated to learn.

Considering the multi-intervention approach is most effective in areas of motor and socialization behavior, it gives a specific placement to psychology profession as lamplight to address motor and socialization skills, known areas of deficit among individuals with Autism Spectrum Disorder. It is time that the psychology profession can confidently collaborate with other helping professionals such as occupational therapists to address motor deficits, speech therapists for language deficits, and finally, psychology experts for socialization, completing the professional team to address the core impairments of Autism Spectrum Disorder.

Although this study showed positive result, nonetheless, this study was conducted to limited participants in quasi –experimental study with no control group, thus, it is suggested that this study may be

replicated with enhanced methodology and still conduct the similar multi-approach on play, music and augmentative communication must be more valued in as much as newly discovered technique of this study called “ilin-ilin” the use of humor and fun may be part of the highlights in the next ASD scientific inquiry.

It is further suggested to include parents/ caregivers as intervention partners to attain the different goals of the therapy especially on domain of daily living skills considering that most of these daily tasks are basically done at home. Acknowledging the challenging and unique needs of children with ASD, the goals of intervention should be adjusted depending upon the kind of individual needs and the use of culturally tailored assessment tool is encouraged.

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