Universidade de Aveiro
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OS EFEITOS DA MODELAGEM E DAS HISTÓRIAS SOCIAIS PARA MELHORAR AS COMPETÊNCIAS SOCIAIS DOS ESTUDANTES COM AUTISMO

THE EFFECTS OF AN EDUCATIONAL PROGRAM BASED ON MODELING AND SOCIAL STORIES TO IMPROVE THE SOCIAL SKILLS OF STUDENTS WITH AUTISM

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Tese apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Educação (Percurso Diversidade e Educação Especial), realizada sob a orientação científica da Doutora Anabela Maria Sousa Pereira, Professora associada com agregação do Departamento de Educação e Psicologia da Universidade de Aveiro, e da Doutora Paula Ângela Coelho Henriques dos Santos, professora associada do Departamento de Educação e Psicologia da Universidade de Aveiro.

Dedico este trabalho a todos os indivíduos com Distúrbio do Espectro do Autismo (ASD), aos professores que trabalham com eles, e aos investigadores no campo da Educação Especial.

I dedicate this work to all individuals with Autism Spectrum Disorder (ASD), the teachers who are working with them, and the researchers in the field of Special Education.

o júri

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palavras-chave

Estudantes com Perturbação do Espectro do Autismo; competências de comunicação social; modelagem; histórias sociais.

Resumo

As dificuldades de comunicação social são uma das questões mais comuns entre os indivíduos com Perturbação do Espectro do Autismo, afectando a sua vida social e académica, e isolando-os do seu ambiente. O presente estudo teve como objectivo examinar a eficácia de um programa educativo para melhorar as capacidades de comunicação social de uma amostra de seis estudantes com autismo de elevado funcionamento na Academia do Autismo da Jordânia. O programa consistiu em 12 sessões baseadas em múltiplas estratégias, incluindo histórias sociais, modelagem vídeo, e auto-modelagem vídeo visando várias competências de reciprocidade social. O método misto (quantitativo e qualitativo) foi utilizado para examinar o impacto do programa no grupo experimental. Os resultados do teste Mann-Whitney demonstraram que todos os participantes no grupo experimental conseguiram melhorias significativas no pós-teste do Perfil de Competências Sociais do Autismo em ambos os domínios da reciprocidade social, e competências de participação social sobre o grupo da lista de espera. Além disso, os dados das entrevistas de professores, analisados utilizando o software WebQDA, corroboraram os resultados sobre as melhorias significativas nas competências sociais após a intervenção do programa educativo. São referidas as implicações do estudo para a intervenção psicológica e educativa, bem como sugestões para investigação visando a promoção do desenvolvimento pessoal e social de indivíduos com Perturbação do Espectro do Autismo.

keywords Students with autism spectrum disorder; social communication skills; modeling; social stories.

Abstract

Social communication difficulties are one of the most common issues among individuals with autism spectrum disorder, affecting their social and academic life, and isolating them from their environment. The current study was aimed to examine the effectiveness of an educational program to improve the social communication skills of a sample of six high functioning students with autism at the Autism Academy of Jordan. The program consisted of 12 sessions based on multiple strategies including social stories, video modeling, and video self-modeling targeting several social reciprocity skills. The mixed method (quantitative and qualitative) was used to examine the impact of the program on the experimental group. The results of the Mann -Whitney test demonstrated that all participants in the experimental group achieved significant improvements on the post-test of the Autism Social Skills Profile (ASSP) in both domains of social reciprocity, and social participation skills over the monitoring group. Further, the data from teachers' interviews, analyzed using WebQDA software, corroborated the results about the significant improvements in social skills after the intervention of the educational program. The implications of the study for psychological and educational intervention are mentioned, as well as suggestions for research aimed at promoting the personal and social development of individuals with Autism Spectrum Disorder.

Index

List of Tables

List of Figures

Annexes Index

List of acronyms

ASD- Autism Spectrum Disorder.

HFASD- High Functioning Children with Autism.

LFA- Low-Functioning with Autism.

VM- Video Modeling.

AVM- Animated Video Modeling.

VSM- Video Self-Modeling.

SS- Social Stories.

VGI- Video-based Group Instruction.

ASSP- the Autism Social Skills Profile.

DSM- the Diagnostic and Statistical Manual of Mental Disorders.

(GARS-3)- the Gilliam Autism Rating Scale – 3rd. ed.

(WISC-III)- the Wechsler Intelligence Scale for Children 3rd. ed.

GDD- Global Developmental Delay.

(PPD- NOS)- pervasive development disorder -Not Otherwise Specified.

ToM- Theory of Mind.

ID- Intellectual Disabilities.

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by two main symptoms; persistent deficits in social communication and social interaction in multiple contexts, plus restricted and repetitive patterns of behaviors, interests, or activities (American Psychiatric Association, 2013a). People with ASD might also show language and cognitive impairment, which are not required for ASD diagnosis (American Psychiatric Association, 2013a). The present study focuses on high functioning children with Autism Spectrum Disorder (HFASD) who are diagnosed with ASD, but with normal language and cognitive abilities (Baron-Cohen et al., 2001). These children were estimated to be 10% of the ASD population, and they have special abilities in different areas, including art, music, mathematics, and memory skills (Bhat et al., 2014). However, individuals with HFASD have a deficit in social communication skills, and behavioral problems (Giambattista et al., 2019). Moreover, lack of social communication skills in ASD leads to the inability of having and maintaining a relationship (American Psychiatric Association, 2013a). Besides, they have a problem with developing friendships and playing skills (Ulke-kurkcuoglu, 2015). The purpose of the current study is to examine the impact of the proposed educational program, which was designed based on modeling and social stories combined, to increase the social communication skills of a sample of six students with HFASD.

Motivation

In Jordan, most children with ASD obtain their education in special education centers (Rayan & Ahmad, 2018), because parents have concerns regarding placing their children with ASD in the mainstream schools (Abu-Hamour & Muhaidat, 2014). These concerns could be seen as a result of the social communication difficulties of their children, which they believe have an important effect on their relationships with teachers and peers, and their learning process. Therefore, this prompted the researcher to develop an educational program to improve the social communication skills of children with ASD, and to encourage parents to place their children in an inclusive setting. The research suggests that the educational program achieves positive outcomes and allows these children to be educated in regular schools with their typically developed peers, which would positively impact their social and academic development.

Main dimensions of methodological design

The present study attempts to explore the impact of an educational program based on multiple strategies, including social stories, animated video modeling, and video self-modeling, to improve the social communication skills of students with HFASD, at the Autism Academy of Jordan. The mixed method (quantitative and qualitative) was used to achieve the purpose of the study, which was conducted through four phases:

First, reviewing the literature to identify the scientific studies that were published in the last ten years in the international journals, using digital format database research: Scopus, PubMed, and Eric journal. Also, designing the educational program sessions, preparing the study sample, tools, questionnaires, and developing ethical procedures.

Second, obtaining the approval of special school and parents of students with ASD, informing the teachers of the participants about the nature, purpose, and procedures of the study, evaluating students with HFASD social skills, using The Autism Social Skills Profile (ASSP) (Bellini, 2006), in which will be used as pre-test and post-test.

After that, implementing the educational program, which consists of 12 sessions, where the participants will be asked to watch animated videos, and play the role of the video; meanwhile, the participants will be recorded, and asked to watch their own videos and reproduce targeted behaviors (video self-modeling).

Finally, the participants will be evaluated by reapplying the Autism Social Skills Profile (ASSP) (post-test) (Bellini, 2006), to measure the educational program's effects on the student's social communication skills, and analyze the results of the quantitative method, using the SPSS software version 25th. Then, the qualitative method will be used by interviewing the teachers of the participants with HFASD, and analyzing teachers' responses using WebQDA software, to validate the study and confirm the results of the quantitative method.

Structure of the thesis

This thesis is organised in three chapters, besides the introduction, Annexes, and references parts. In this introductory part, the researcher presented an overview of the study problem, motivation, methodology, and research procedures.

In chapter 1, the theoretical framework of the study is explained, including two sections: i) the literature review, in which is presented the prevalence rate, characteristics, etiology, diagnosis of ASD. Also, the social skills components, social skills difficulties in ASD, the

social learning theory, and the theory of mind; ii) the previous studies are presented and discussed.

In chapter 2, the methodology of the study is explained, including the research objectives and questions, paradigm, nature, and research planning, elements of research and variables, participants and setting, study procedures and phases, research timeline.

In chapter 3, the results of the study are presented, including the results of the Mann-Whitney U test which was used to check the homogeneity of the study sample groups (the experimental and monitoring groups), and answering the research questions. In addition, study validity was checked, using the qualitative method where the data from teachers' Interviews were treated using WebQDA software to confirm and validate the results from the quantitative method. Also, the researcher discussed the results of the study and supported with previous findings.

In chapter 4, presents the conclusion, limitations of the study, and recommendations for future research were discussed.

In the references part, the researcher listed the references that were used in the thesis, including research papers, books, software, and electronic resources.

Finally, the Annex1. presents the educational program, including the target group, description, purpose, operant objectives of the program, teaching methods, and program sessions, where each session was designed using the animation maker program, each video was based on a social story, targeting one of the social communication skills. At the end, the remaining annexes will be presented.

Chapter 1- Theoretical framework

1.1 Literature review

Prevalence of ASD

The prevalence rate of individuals with ASD has increased rapidly in the last decades, and was estimated in the United States of America (USA) as 1 in 88 children (Center for Disease Control and Prevention, 2012). The increasing rate of ASD can be a result of social awareness or the development of assessment criteria (Crawford, 2016). In contrast, the prevalence rates of ASD in Jordan and other Arab countries are still ambiguous, because of the paucity of research in ASD prevalence and diagnosis difficulties that are associated with cultural and economic factors, and lack of expert psychiatrists (Taha & Hussein, 2014). However, the prevalence rate of ASD in Jordan was estimated at 12 out of 229 children with Global Developmental Delay (GDD), according to a clinical-based study at Jordan University Hospital (Masri et al., 2011).

Characteristics of ASD

Individuals with ASD at early years of age show a variety of clinical symptoms, including psychological issues such as anxiety, depression, eating problems, sleeping problems, which are more common in ASD than other developmental disabilities, and behavioral issues, e.g., hyperactivity. Besides, social communication difficulties and cognitive impairment are common characteristics in children with ASD (Bhat et al., 2014).

Lack of communication and social interaction skills was considered by the American Psychiatric Association (APA) as a fundamental issue characterizing persons with ASD (Ulke-kurkcuoglu, 2015). Therefore, people with ASD show difficulties in non-verbal communication skills, including lack of joint attention skills, initiating or maintain turn-taking, and difficulty in requesting skills. Besides, they have difficulties to respond or use gestures, lack of eye- contact, and difficulty in engaging vocally or visually with others during social interaction. Consequently, they show difficulties to have and maintain a relationship with others (Mundy & Crowson, 1997).

Additionally, individuals with ASD have a higher level of behavioral problems compared to other disabilities. For instance, they have a pattern of repetitive, stereotyped, and ritualistic behaviors, and resistance to change. Furthermore, children with ASD have a high level of aggressive behavior related to the severity of the disorder, cognitive ability, language difficulties, child’s age, parent’s high economic status, and low educational level. Moreover,

behavioral difficulties in ASD are associated with sleeping problems, hyperactivity, and attention difficulties (Hill et al., 2014). In addition to that, individuals with ASD show abnormal attachment to objects and self-injury behavior (Boyd et al., 2009). As a result, parents of children with ASD experience a high level of stress, depression, and mental issues (McStay et al., 2014).

Individuals with ASD can develop impairment in both receptive and expressive language. Therefore, they manifest delays in understanding or producing vocabulary, non-verbal language difficulties (e.g. using or understanding gestures), and understanding phrases difficulties (Ellis et al., 2010). Furthermore, children with ASD present verbal language disorder, e.g., meaningless repetition of another person's words (echolalia), speech disorders, and abnormal use patterns of rhythm and sound. However, children with HFASD develop normal language abilities, compared to those with Low Functioning with Autism (LFA) (Tager-flusberg & Caronna, 2007).

Most individuals with ASD show symptoms of sensory issues, which are manifested in DSM-V under behavioral problems, as one of the key features of individuals with ASD (American Psychiatric Association, 2013b). Thus, Individuals with ASD have an abnormal reaction to environmental stimuli including smell, visual, touch, and audio stimuli. For instance, they show over-responsive to insignificant sounds, odors, taste, and sights, rather than pay attention to more important things as their name's sound (Iarocci & Mcdonald, 2006). Likewise, parents of children with ASD reported that their children showed tactile, smell, taste, movement, visual, and auditory sensitivity on the Short Sensory Profile (SSP) instrument (Rogers et al., 2003). Tavassoli and others (2014) conducted a study to examine the sensory over-responsivity issue in (221) adults with ASD by using the Sensory Over-Responsivity scale (SP), and the results of the study demonstrated that adults with ASD scored a higher level on all domains of the SP scale including vision, hearing, touch, smell, taste, and proprioception, compared to the control group (Tavassoli et al., 2014).

Etiology of ASD

Several studies suggested that ASD is a genetic disorder. Yu and colleagues (2013) conducted a study in the USA to identify an inherited mutation in three families with ASD; the results showed significant evidence that some ASD cases were associated with inherited recessive mutations (Yu et al., 2013). Furthermore, some genetic studies reported that

multiple chromosomes (7q, 15q, and 16p) can be responsible for the causation of ASD and other developmental disabilities. Hence, they estimated that 30% to 40% of the ASD overall cases were associated with genetic factors (Landrigan, P., Lambertini, L., Birnbaum, 2012). As a result of using genome screening technologies to identify the genetic factors, the number of individuals who were identified with ASD significantly increased. Nevertheless, genetic screening contributed to reducing the level of parent's anxiety and guilt, and assist stakeholders to deliver early medical and psychological intervention (Reiff et al., 2017).

Since there's no strong evidence about specific genes that are responsible for ASD (Yang & Gill, 2007), environmental factors can potentially contribute to the causation of ASD. Kourtian and Abdelmeguid (2015) conducted an experimental study and reported that pregnant women with contagion were at high risk of having a child with ASD (Kourtian & Abdelmeguid, 2015). Also, maternal age, particularly those who exceeded 30 years of age, are at risk of having a child with ASD (Divan et al., 2015). Besides, some studies indicated strong evidence that some autistic behaviors are related to exposion to toxic chemicals during pregnancy, e.g., "organophosphate insecticide chlorpyrifos, phthalates, arsenic, manganese", which could damage the fetus's brain (Landrigan, Lambertini, & Birnbaum, 2012). In a more recent study, Raanan and colleagues (2018) indicated that air pollution and exposure of women to ON2 during pregnancy may increase the risk of having a child with ASD and pregnant-loss (Raanan et al., 2018).

Moreover, the use of medicine by pregnant women as a result of their health conditions, e.g., mental illness, epilepsy, diabetes, and asthma, was considered as a risk factor for having a child with ASD (Rivkees & Opipari, 2018). Similarly, using drugs, smoking, consuming alcohol, and exposure to radiation during pregnancy increase the risk of having deformed newborns and a child with ASD (Schofield, 2016).

Kumar (2016) indicated that 2600 pregnant women who have used paracetamol during pregnancy, their male children scored a high level of ASD, and both genders showed symptoms of hyperactivity and impulsive behaviors. However, the study did not report the number of paracetamol doses, and 36% of mothers in the study were a smoker or having health issues (Kumar P, 2016). Also, stress during pregnancy can contribute to low birth weight and increase the risk of having a child with ASD, as well as, Terbutaline treatment to stop preterm birth can be another risk factor for ASD (Powell, 2016).

Globally, the vaccines e.g., “mumps, and rubella vaccines” were thought to be associated with ASD, which prompted many countries to reduce vaccination. Consequently, the death rate and dangerous diseases were increased. Therefore, some studies examined the correlation between vaccines and the development of ASD, which showed that ASD is not associated with the vaccines, whereas, using "acetaminophen" during pregnancy could produce a toxin that affects immune function and the ability of the body to eliminate environmental toxins and increase the risk of ASD, ADHA, and asthma (Stephenson, 2018).

Fernandez and colleagues (2018) examined the parents’ beliefs about the causation of ASD. The results of the study showed that most mothers regardless of their ethics and language backgrounds thought that ASD is associated with genetic and environmental factors. However, some mothers considered that ASD is related to biomedical factors (Fernandez et al., 2018).

The theory of mind attempted to explain the causation of autism and assumed that social communication difficulties in ASD are correlated to the inability of people with ASD to think and comprehend other people's thoughts, intentions, and emotions, or predict and imagine others' behaviors. However, this notion was refuted, because high functioning individuals with ASD demonstrate high cognitive abilities but with social communication difficulties (Volkmar & Pauls, 2003). In contrast, executive dysfunction theory suggested that the repetitive, restricted behaviors and social interaction difficulties in ASD are associated with deficient executive dysfunction, which is responsible for working memory, planning, restraint, impulse control, and mental flexibility. Therefore, individuals with ASD manifest similar characteristics to people with prefrontal cortical dysfunction including repetitive behavior, inflexibility, and inability to respond properly. Consequently, this supports the proposition that individuals with ASD have deficits in at least two tasks of executive functions (Ozonoff et al., 1994).

One of the Psychological theories that sought to explain the causation of ASD was the “Refrigerator mother theory”. Leo Kanner (1943) was the first who used the term “infant autism” after examining (11) children who showed social interaction and communication difficulties, behavioral problems, and speech disorders. He assumed that symptoms of ASD are associated with parental absence and neglect (Kanner, 1943). Likewise, Bettelheim endorsed this idea and used the term “Refrigerator Mother” to describe unsympathetic mothers who failed to provide their toddlers at an early age with caring and attention that are

crucial for the development of a child's social and language skills. Therefore, parental absence and poor interaction with their child were believed to be a fundamental cause of autism (Bettelheim, 1967, p. 396). Consequently, parents were blamed for their child's disorder which led them to more social isolation. However, the lack of evidence to support this perception encouraged researchers to investigate the biological factors of ASD, instead of psychological factors (Ventola et al., 2017).

Despite the successful attempts of many studies to identify the factors that can be responsible for the development of ASD, there's still no strong evidence that a particular factor can explain the abnormal behaviors in ASD, the cause of ASD remaining unknown in many cases.

Assessment and diagnosis of ASD

The first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-I) classified children with ASD as "childhood schizophrenia". However, diagnosis criteria for persons with ASD were not particular in DSM-I (American Psychiatric Association, 1952). Similarly, in the second edition DSM-II, individuals with ASD continued to be called "childhood schizophrenic", and diagnosis criteria were not yet determined (American Psychiatric Association, 1968). In contrast, the DSM-III set six criteria for diagnosis of individuals with ASD, and those include: showing symptoms before 2.5 years of age, language deficiency, speech impairment, an odd pattern of behaviors, lack of communication, and symptoms of Schizophrenia as the absence of delusions (American Psychiatric Association, 1980). Although individuals with ASD for the first time had their diagnostic criteria in the 3rd edition of DSM, yet it was limited to one form of autism categorized as "infantile autism". In the (DSM-III revised edition), the diagnosis criteria of autism became clearer and more specific to identify the pattern of behaviors that persons with autism should display to be diagnosed with autism, and symptoms should be linked to the mental age of the child. Consequently, these differences contributed to a rapid increase in the rate of persons with autism (Factor et al., 1989).

The diagnosis criteria of ASD were changed in the DSM-IV, which is no longer limited to "infantile autism", therefore, five forms of ASD emerged from DSM-IV, comprised; Autistic disorder, Asperger syndrome, Rett's Disorder, childhood disintegrative disorder, or pervasive

development disorder -Not Otherwise Specified (PPD- NOS). The explanation of these categories according to DSM-IV (American Psychiatric Association, 1994) was as follows:

- Individuals with **Autistic disorder** must manifest at least six criteria including at least two items on the social interaction deficits, (e.g., eye contact, body language); and one on communication difficulties, (e.g., language delay, speech problem); and one on behavioral issues (e.g., restricted, stereotyped, and repetitive behaviors); and one on functional delays in areas of social interaction, language, communication, symbolic play. Finally, these symptoms should occur before three years of age, and must not be attributed to Rett's Disorder, or childhood disintegrative disorder.
- Individuals with **Asperger's Disorder** must demonstrate at least two signs of social interaction difficulties, e.g., body language, eye contact, and facial expression. Besides, at least one sign of stereotype and repetitive behaviors, e.g., hand flapping, rigid routine. Also, the disorder impacts their functional life, e.g., social and occupation. Finally, they must present normal cognitive and language abilities, which distinguished Asperger's Disorder from other forms of autism, and these signs not being correlated to the criteria of Schizophrenia or Pervasive Developmental Disorder (PDD).
- Individuals with **Childhood Disintegrative Disorder** demonstrate at least two signs of deficits in language, play, social skills, and motor skills. Besides, at least two signs of social, communication, and behavioral difficulties. Also, these symptoms should appear before ten years of age, and must not meet the criteria of Schizophrenia or Pervasive Developmental Disorder.
- Individuals with **Rett's Disorder** demonstrate, after five months of age, abnormalities in social interaction, receptive and expressive language, psychomotor skills, poor gait, and trunk movements, loss of hand functional movements, and slow head growth. However, these individuals should have a normal head and psychomotor development before the age of 5 months.
- **Pervasive Developmental Disorders-Not Otherwise Specified (PPD- NOS)** were used to define those who met some of the ASD criteria. For example, individuals with PPD-NOS may show severe symptoms in the social or communications aspect, but they might show slight or no signs on the behavior

aspect, and therefore, they do not fully meet the criteria to be diagnosed with autistic disorder.

The last version of DSM, the fifth edition (DSM-V), disclosed a new term of autism called "Autism Spectrum Disorder" (ASD). Moreover, all individuals who were diagnosed in the previous edition of the DSM (IV) with one of the autism forms, must fully meet the diagnosed criteria of ASD in the DSM-V. According to the DSM-V, individuals can be diagnosed with ASD, if they show two signs of social communication deficiency, including, lack of social and emotional reciprocity e.g., initiate and maintain the conversation, and non-verbal communication difficulties, e.g., eye contact and body language, and inability to build and maintain relationships e.g., lack of interest. Besides, they must show included: two signs of behavioral problems, rigid routine, stereotyped or repetitive behaviors, abnormal interests, hyper or hypo-reactivity speech, and sensory issues. Also, these signs should manifest at an early age, and influence individuals' functional life, e.g., vocational, and social. Furthermore, the ASD criteria should not be mislinked to intellectual disability or global developmental delay. Finally, the last version of DSM-V indicates three levels of severity for ASD, which are based on social communication and behavioral difficulties (American Psychiatric Association, 2013a).

Social communication skills

Various definitions were given to social skills in the literature, but with common similarities among them (Merrell & Gimpel, 2014). Perner and colleagues (2012) defined social skills as a vast of observable behaviors that can be learned intentionally or unintentionally through numerous social contexts, e.g., social initiation and responding properly to others (Perner et al., 2012).

Similarly, Cook and colleagues (2008) indicated that social communication skills are reinforced learned behaviors that involve interaction between individuals which enable them to perform social tasks competently (Cook et al., 2008). Also, Hirsch, (2016) defined social skills as behaviors and abilities that are learned by individuals during their development to use them in their interpersonal communications (Hirsch, 2016). Social skills are indispensable, that individuals learn culturally, which facilitate their interaction and communication with each other through verbal or non-verbal language, e.g., body language, gestures (Little et al., 2017).

Social skills components

Researchers addressed social skills from different points of view according to their theoretical backgrounds. Various models were developed to investigate social skills as follows:

Wixted, Morrison, and Bellack (1988) distributed social skills into three main components:

- Expressive components: including speech content, language skills, type, speed, and level of sound; and non-verbal skills: physical movements, and eye contact, facial expressions.
- Receptive components: include attention, understanding verbal and non-verbal speech content, and awareness of cultural norms.
- Social Interactive balance includes response time, turn-taking, and social reinforcement (Wixted et al., 1988).

Argyle model: social skills were divided by Michael Argyle (1976) into two components: verbal and nonverbal communication, in which they cannot be separated because they are used in social interaction harmoniously. However, Argyle paid more attention and deep analysis to nonverbal cues, because they play a stronger role in social interaction than verbal cues (Argyle, 1969, p. 91):

- Nonverbal communication includes facial expression, body posture, hand movements, gaze, gestures, voice tune, head movements, and appearance. These cues can be used to support or replace the conversation and carry different meanings in different cultures. Besides, nonverbal cues provide us with the emotional and psychological status of people.
- Verbal communication includes spoken words, grammar, phrases, and sentences. Through verbal and nonverbal communication, individuals express their needs, interests, feelings, and beliefs (Argyle, 1969, p. 91–126, 1976, p. 57–73; Trower et al., 2014, p. 30–64).

Riggio model: Riggio (1986) suggested that social skills can be divided into two components, as follows:

- Non-verbal communication, including three dimensions: i) Emotional expressivity, which indicates the ability to express feelings, perceptions, and signals; ii) Emotional sensitivity, referring to the ability to perceive emotional cues and interpret emotions

rapidly and sufficiently; iii) Emotional control, which indicates the ability to control the expression of one's emotions to be appropriate with social situations.

- Verbal communication, including four dimensions: i) Social expressivity which indicates the ability to initiate and interact verbally with others in social conversations; ii) Social sensitivity, referring to the ability to comprehend verbal communication from others and learn appropriate social behavior to fit with the social contexts; iii) Social control, referring to the ability of the individual to speak confidently, take the lead during the social conversation, and adapt their behaviors to fit within the social context; iv) Social manipulation indicates to the ability to manipulate others or adjust the situation to benefit from social interaction (Riggio, 1986).

The importance of social skills

Social skills play a significant role in human's life for the following reasons:

- Allow individuals to build and manage their social relationships effectively and be acceptable within their societies.
- Assist individuals to develop problem-solving skills that are necessary to avoid or cope with conflicts effectively.
- Crucial for individuals' job success in the workplace.
- Enable individuals to increase their abilities to deal with illogical behavior from others and being able to establish and maintain a close relationship with those around them (Badiah, 2018).
- Prevent individuals from psychological issues, e.g., "loneliness", and promote their well-being (Riggio et al., 1993).
- Encourage individuals to build positive relationships that are required for social and academic success (DiSalvo & Oswald, 2002).

Overall, social communication skills involve the ability of individuals to exchange (sending and receiving) information, ideas, and emotions in social settings, which can be verbally by using spoken words or language, or non-verbally, that including eye contact, voice tone, body language, facial expressions, gestures, appearance, and body posture. Furthermore, both verbal and non-verbal communication should be always used synchronously and spontaneously to have effective and successful social interaction.

Autism Spectrum Disorder and social skills

Generally, individuals with social skills deficits are more likely to develop low self-esteem (Jerome et al., 2002), academic under-achievement (Elliott et al., 2001), adaptive behavior issues, and peer rejection (Coie et al., 1995). Particularly, individuals with ASD show difficulties in social communication, which is a key issue in ASD, and therefore, they are at risk of developing low educational and vocational performance. Besides, lack of social skills can create psychological issues such as anxiety, depression, language and speech problems, and behavioral issues such as violence, and social withdrawal (White et al., 2007). Moreover, individuals with ASD have difficulty to communicate with their peers, initiate and maintain the conversation, share others' interests, accept others' views, engage in a new environment, and therefore, fail to build a proper social relationship with counterparts (Bellini et al., 2007). Also, individuals with ASD demonstrate a lack of eye contact, poor joint attention, problem-solving difficulties, language and speech issues, difficulties understanding body language, and expressing sympathy; overall, these difficulties influence their social integration and academic achievement (Yeo & Teng, 2015).

Social learning theory

Modeling is an effective strategy based on social learning theory which stressed that observation is the main aspect of social learning (Cathy Huaqing Qi et al., 2017). Bandura (1977) suggested that individuals acquire behaviors by observing others rather than responding to a specific environmental incentive. Therefore, people repeat or avoid behaviors according to the positive or negative consequences of observing other's behaviors (Bandura, 1977, p. 2-4,6).

Bandura (1977) suggested that modeling requires four essential processes that are interconnected:

I. **Attention:** describes the first essential process in learning through observation, because if the learners did not pay attention to the model carefully while playing the target behaviors, learning will never occur or will be partial learning. Therefore, this process requires observers to involve their senses in observation.
II. **Retention:** presents the observers' ability to retain the stimuli that they have learned for adequate time to reproduce the response. This means that observers coded and sorted the behaviors of the model in their memory.

III. **Motor reproduction:** indicates the learner's physical abilities to reproduce the observed behaviors. In this process, if the learners retain the fundamental components of behavior, they will be capable to reproduce the behavior sufficiently.

IV. **Reinforcement/motivation:** provision of reinforcement is essential to acquire the skills and make learning occur. Besides, reinforcement not only encourages the learners to reproduce the behavior, but also prompts them to repeat the behavior accurately later (Bandura, 1977, p. 6–8).

In modeling, the child performs the target behavior after watching the performance of a model, who can be an adult or a peer. Modeling can be live, when a child watches directly the model and repeat the targeted behavior, or it can be video modeling, when a child watches a video and is requested to repeat the targeted behavior (Besler & Kurt, 2016).

Video modeling

Video modeling is a strategy that emerged from social learning theory, where the learners (observers) are asked to watch a video clip of a model while demonstrating the target behaviors to imitate and reproduce later (Bellini & Akullian, 2007; Besler & Kurt, 2016; Clinton, 2015).

Steinborn and Knapp (1982) were the first to use video modeling to teach a young girl with ASD, pedestrian skills. This study demonstrated that a behavioral training program and a classroom-based model were successful in teaching pedestrian skills for an individual with ASD (Steinborn & Knapp, 1982). Similarly, Haring and colleagues (1987) utilized video modeling to teach three adolescents with ASD, purchasing skills. The results of the study demonstrated that video modeling was effective in teaching individuals with ASD, purchasing skills, and enhancing their independence (Haring et al., 1987).

Video modeling was considered as an efficient technique to teach numerous skills for individuals with ASD for many reasons, including:

1) Encouraging the learners to focus on the targeted behavior, therefore, promotes individuals with ASD attention.
2) Assisting learners to retain the target behaviors in the memory as a result of video capability to be repeated, which provides the learners with the opportunity to

watch the content many times and preserve the events (Corbett & Abdullah, 2005).

3) Allowing the learners to practice and replicate the observational behaviors after watching the videoclips, and gives the learners adequate time to repeat the targeted behavior in a safe environment, without the need to interact face to face with others (Besler & Kurt, 2016).
4) Individuals with ASD are visual learners more than verbal learners (Ozdemir, 2010; Qi, Barton, Collier, & Lin, 2018), therefore, video modeling, by its nature, motivates them to learn through observation.

Video Self-modeling

Creer and Miklich (1970) were the first who used and developed video self-modeling to reduce undesirable behaviors of a young child with asthma (Creer & Miklich, 1970). Video Self -modeling is a teaching method based on recording a video of the individuals themselves while performing the target behavior to learn appropriate behaviors through observing themselves (Dowrick, 1999). The literature provides strong evidence about the promising outcomes of utilizing video self-modeling with individuals with ASD in prompting a variety of skills.

Theory of Mind

Theory of Mind (ToM) was first developed and used by Premack and Woodruff (1978), who suggested that ToM is the ability of individuals to recognize and predict others' beliefs and desires that are different from their own. ToM is essential for people's social interaction to understand, inspect, and arbitrate others' behaviors (Premack & Woodruff, 1978).

Wing and Gould (1979) found a strong correlation between cognitive abilities and social deficiency, where individuals with ASD who have lower cognitive abilities are more likely to be socially impaired (Wing & Gould, 1979). However, Baron-Cohen and colleagues (1985) investigated this hypothesis and found that 80% of individuals with ASD have social interaction deficits not as the result of mental retardation, because individuals with HFASD have a lack of social skills but with a high level of intelligence, whereas, most individuals with Down Syndrome have low-level of intelligence but most of them are not socially impaired. Therefore, they refer deficits in social skills in ASD to the failure of predicting and

understanding others' beliefs and ideas, and they tested this through utilizing an experimental method, where 80% of children with ASD failed in answering the belief question compared to counterparts of typically developed and Down Syndrome children (Baron-Cohen et al., 1985). Later, Baron-Cohen and colleagues (1989) conducted a pilot study to examine their proposition, and they found that all participants of the ASD group failed to answer the belief question and second-order justification question compared to Down Syndrome and typically developed individuals groups. Overall, Baron-Cohen and colleagues suggested that impairment in social interaction in ASD associated with the failure of developing "theory of mind", and consequently, individuals with ASD fail to recognize and predict others' beliefs (Baron-Cohen, 1989).

Social story

Social stories are a teaching strategy that emerged from the "theory of mind" to address the issues of individuals with ASD in understanding others' beliefs, behaviors, and intentions (Bawazir & Jones, 2017). Social stories were first developed and used with individuals with ASD by Carol Gray in 1994, who suggested using two to five sentences to describe the target skill or behavior, which must be according to a child's understanding (Sansosti et al., 2004). Social stories were defined as short written scripts that are designed to teach a child how to behave in social situations or events appropriately (Scattone et al., 2002). Several studies used social stories to teach social skills to children with ASD (Snell & Delano, 2006; Thiemann & Goldstein, 2001), behavior skills (Bondy & Frost, 1994), or to reduce behavior problems (Barry & Burlew, 2013).

1.2 Previous studies

Live and video modeling were utilized with individuals with ASD in several studies to teach and enhance their play skills (Dueñas et al., 2019; Kurnaz & Yanardag, 2018; Lee et al., 2017; Odluyurt, 2013; Ulke-kurkcuoglu, 2015) academic skills (Marcus & Wilder, 2009; Markey, Merion, & Lane, 2015; Schmidt & Bonds-raacke, 2013), writing skills (Harris et al., 2017), living skills (Bereznak et al., 2012; O'Handley & Allen, 2017), first- aid skills (Ergenekon, 2012) leisure skills (Spriggs et al., 2016), motor skills (Taheri-Torbati & Sotoodeh, 2019), or to reduce behavioral issues (Hillman, 2019). Besides, the social story was utilized with individuals with ASD to develop safety skills (Kurt & Kutlu, 2019), language skills (Favot et al., 2018), or to reduce the behavioral problems (Barry & Burlew, 2013; Beh-pajooh et al., 2011; Khantreejitranon, 2018). However, the researcher reviewed and analyzed the last ten years of published studies that utilized modeling and/or social stories in developing the social communication skills of individuals with ASD.

Ho and colleagues (2019) investigated the effectiveness of using video modeling with a sample of six young participants with ASD, to develop joint attention and social engagement. The results of the study showed that five out of six participants significantly improved in the initial sessions both targeted skills, and only one participant needed more than two sessions to meet the criteria of the targeted skills. Furthermore, three of the participants generalized the skills in different settings (Ho et al., 2019).

Grob and colleagues (2019) conducted a study to evaluate the impact of a training program based on modeling, verbal explanations, prompting, and role play, to teach social skills that are essential for work success to three college students with ASD, aged between 19 and 27 years old. The results of the study indicated that two participants demonstrated improvement in all targeted social skills, e.g., "responding to job tasks, requesting assistance, and apologizing", except one participant, who succeeded in one of four skills. Further, prompting was an effective strategy for social skills generalization to a workplace (Grob et al., 2019).

Amirrudin and colleagues (2019) conducted a study to examine the effect of social stories in improving the verbal communication skills of four children with ASD, aged between seven and nine years old. The results of the study demonstrated that the intervention based on social stories around moral values was effective in increasing verbal communication of the participants with ASD, and increased their perception about moral values toward animals and older people (Amirrudin et al., 2019).

Watkins and colleagues (2019) evaluated the effect of packaged intervention based on modeling, play, responding to questions, and instruction to enhance the social interaction of four participants with ASD, aged between four and six years old, attending an inclusive setting at a private school. The results of the study indicated that all participants demonstrated an increase in social interaction, and maintaining and generalizing the targeted skills (greetings, commenting, asking questions, sharing, helping) after 1.5 months of the intervention implementation (Watkins et al., 2019).

Daneshvar and colleagues (2019) compared the effect of two different intervention approaches: social stories and a photo activity with the provision of modeling, prompting, and chaining in developing two social skills components, applied to four children with ASD, aged 5 and 10 years old. The results of the study indicated that photo activity intervention was effective in teaching all the participants the social skills (greeting, commenting, social initiation, turn-taking, and sharing), but they did not demonstrate any improvement in social stories intervention. Furthermore, three out of four participants maintained the targeted skills with little generalization through photo activity intervention (Daneshvar et al., 2019).

Uzuegbunam and Wong (2018) conducted a pilot study to improve social greeting and eye contact skills in three young children with ASD. The study used MeBook to improve greeting skills, which contain two components: a social story, which is a story based on an animation video; and self-modeling, based on replacing cartoon characters with the face of the participants, and with the provision of reinforcement. The results of the study showed significant improvement in targeted skills and maintained the targeted behaviors after two days of the intervention completion (Uzuegbunam & Wong, 2018).

Stauch and colleagues (2018) conducted a study to explore the effectiveness of video-based group to teach social perception skills to three adolescents with ASD, and two with Intellectual Disabilities (ID). The study targeted three social skills components, including: “extending the conversation, joining a conversation, and responding to others”. The result of the study showed that four out of five participants increased their level of social perception skills and maintained the targeted skills after the intervention implementation (Stauch et al., 2018).

Thirumanickam and colleagues (2018) examined and compared the effect of video self-modeling (VSM) and video modeling (VM) to improve the conversational skills of four adults with ASD. The results of the study demonstrated that VSM was effective in

developing the conversation skills of all participants who showed high improvement, and VM was effective only with three participants who showed moderate to high improvement. Furthermore, two participants maintained the skills after two weeks of the intervention implementation, and only one participant generalized the skills to different settings (Thirumanickam et al., 2018).

Almutlaq and Martella (2018) investigated the impact of social stories delivered through iPad application on improving social skills: “smile, giving compliments, and responding you are welcome” for three elementary school children with ASD, aged between eight and ten years old. The results of the study indicated that all participants showed improvement in the targeted skills through the iPad application (The Kid in Story Application). Further, all participants generalized and maintained the skills after the intervention implementation (Almutlaq & Martella, 2018).

Kouo (2018) examined the effect of video modeling in developing greeting skills of five school children with ASD, attending inclusive elementary school. The results of the study showed that three out of five children demonstrated high improvement and maintained the targeted skills, while two of the participants showed moderate improvement. However, all the participants failed to generalize the acquired skills in different settings (Kouo, 2018).

Kellems and colleagues (2018) compared the difference between static pictures and video modeling in teaching everyday life skills and motor skills to three participants with ASD, aged 12 to 15 years old. The intervention included 21-sessions targeting daily skills (including brushing teeth, and washing mirror) and motor skills (including walking backward, cutting-banana, and jumping jack). The results of the study indicated that static pictures and video modeling were both effective in teaching the targeted skills for all participants (Kellems et al., 2018).

Radley and colleagues (2017) evaluated the impact of the Social Skills training program (The Superheroes social skills) in improving the social skills (including self-introducing skills, basic body language, and participating in the conversation) of two pre-school participants with ASD. The Superheroes' social skills intervention was based on animated videos with instruction, social stories, and self-monitoring cards. The results of the study demonstrated that both participants improved in the accuracy of the social skill and maintained it after one and a half months of the program implementation (Radley et al., 2017).

Rodríguez-Medina and colleagues (2016) conducted a pilot study to investigate the effectiveness of the peer-mediated intervention to improve initiation and responding skills of a high-functioning student with ASD, aged eight years old. The intervention included 14 sessions, using several strategies: direct instruction, modeling, and social reinforcement through his typically developed peers. The result of the study showed a significant improvement in social interaction skills after the intervention program, not only for the student with HFASD, but also was beneficial for his classmates (Rodríguez-Medina et al., 2016).

Acar and colleagues (2016) examined and compared the effects of two intervention approaches: social stories (SS) and (VM), which were developed and delivered by mothers to teach social skills that included "asking for permission, offering assistance, introducing himself, and saying his address" to three young children with ASD. The results of the study demonstrated that both interventions were effective in teaching social skills, and participants maintained and generalized the targeted skills after one to three months of the intervention implementation. However, VM intervention was more effective than SS for two participants; and SS intervention was more effective than VM with only one participant. Further, the mothers of participants showed high accuracy in developing and delivering both interventions (Acar et al., 2016).

So and colleagues (2016) utilized based on computer VM to teach gestures skills for 20 participants with ASD, aged between 6 and 12 years old. Twenty robot animation videos were designed to teach 20 common gestures in the Chinese community, e.g., hello, and goodbye. The results of the study showed that VM based on an animation robot was effective in teaching gesture skills to all the participants. Furthermore, they maintained and generalized the skills after two weeks of the intervention implementation (So et al., 2016).

Handley and colleagues (2015) investigated the effectiveness of using SS or VM and SS combined, to increase eye contact of a sample of six American adolescents with ASD. The results of the study showed that SS achieved moderate improvements in eye contact, but VM was more effective than SS in improving the targeted skill. However, the study indicated that using SS and VM combined resulted in a higher level of eye contact than VM or SS isolated. Furthermore, participants generalized and maintained eye contact with the use of VM solely, and VM and SS combined (Handley et al., 2015).

Malmberg and co-workers (2015) compared the impact of VM and SS in improving the social skills of four children with ASD, aged between five and nine years old. The results of the study showed that all participants learned the target skills through VM; meanwhile, they didn't achieve any gains through SS. In the second experiment of the study, SS were solely compared with SS packages with behavior procedures (verbal prompting and reinforcement) in improving the social skills (offering help, reciprocal commenting, empathy, and reciprocal questions) of two participants with ASD, aged four and ten years old. The results of the second part of the study showed that both participants learned the targeted social skills through behavioral procedures prompting, but they did not gain any improvements via SS solely (Malmberg et al., 2015).

Radley and colleagues (2015) conducted a study to examine the effects of the Superhero Social Skills program, based on VM and self-monitoring to improve the accuracy of using conversation, non-verbal, requesting, and responding skills for two young participants with ASD: one with Asperger's syndrome and the other with ID. The intervention program was delivered using animated videos with instruction, social stories, and self-monitoring cards. The results of the study demonstrated that both participants showed an increased level of the targeted skills and improvements of skills accuracy, and generalized the skills after the program implementation (Radley et al., 2015).

Özerk (2015) evaluated the effect of VM in improving the social communication skills of an 11-years old bilingual child with ASD. The intervention targeted "eye contact, turn-taking, participating in games actively, participation with friends, inviting others to play, using appropriate expressions with friends". The results of the study showed that the child demonstrated five out of six skills after VM intervention in the basketball game, and mastered all of the six skills in the chess game. Further, the child demonstrated the ability to generalize the skills in other games without video modeling, after a month of the intervention (Özerk, 2015).

Golzari and colleagues (2015) conducted a study to explore the impact of SS in improving the social skills (initiate the conversation, maintain the conversation, understand perspective-taking, and respond to others) of 30 participants with ASD; having; 15 participants in the intervention group, and 15 participants in the control group, aged 6 to 12 years old. The stories were read to the participants, followed by questions about each story. The results of the study showed that all the participants in the intervention group demonstrated significant

improvement in all targeted skills, except responding to others, compared to the control group (Golzari et al., 2015).

Plavnick and colleagues (2015) examined the impact of video-based group instruction (VGI) in developing the social skills of four adolescents with ASD and ID. The intervention targeted six social skills components, including "commenting, offering help, asking about information, requesting materials, showing items to others, and joining activity". The results of the study indicated that VGI was effective with three out of four participants who demonstrated high improvement in targeted social skills. Furthermore, three participants maintained and generalized the skills after two weeks, and only two maintained them after one month of the intervention completion (Plavnick et al., 2015).

Meister and colleagues (2015) examined the effects of using point-of-view VM to improve everyday life skills (e.g., washing hands) of eight school students with ASD, aged 7.5 to 13.5 years old. The results of the study showed that point-of-view VM was effective in improving the targeted skills of students with ASD (Meister et al., 2015).

Karayazi and colleagues (2014) conducted a single case study to evaluate the effect of SS in improving the social behaviors of a 22-years old woman with ASD. The intervention was delivered at the university clinic; two written stories were delivered during five sessions, targeting two social skills behaviors (nose-wiping, and greeting others). The results of the study demonstrated that the participant with ASD showed improvement in both targeted behaviors after the SS intervention implementation (Karayazi et al., 2014).

Amin and Oweini (2013) conducted a case study to evaluate the effect of SS and peer-mediated intervention in developing the social skills of a child with ASD, aged seven years old. The intervention targeted: "asking questions, sharing objectives, greeting, introducing himself, participating in activities, conversation, and asking for assistance". The participant was gathered by the facilitator with three of his typically developed peers, to work on a task that required all group members to communicate and collaborate after reading a SS. The results of the study indicated that the SS and peer-mediated intervention combined, were effective in increasing the targeted skills of the participant, and that he maintained the skills after a week of the intervention implementation (Amin & Oweini, 2013).

Cardon (2013) conducted a study to evaluate the effect of VM in developing ten gestures skills of three preschool participants with ASD. The results of the study showed that VM was effective in teaching the gestures skills for two out of three participants, who maintained and

generalized the targeted skills after a month and two weeks of the intervention completion (Cardon, 2013).

Kagohara (2013) examined the impact of SS and VM in teaching social greeting skills to two young participants with HFASD. The results of the study indicated that the SS was effective in teaching simple social greetings, and VM was effective in teaching advanced greeting skills. Also, both participants maintained the gains after two weeks of the intervention implementation (Kagohara et al., 2013).

Wilson (2013) evaluated the impact of video and live modeling in developing social communication skills of four preschool participants with ASD. The intervention targeted social behaviors, e.g, "sharing an interest with others, and requesting". The results of the study showed that all participants gained the targeted skills by one or both intervention methods and maintained the acquired skills after two weeks of the intervention (Wilson, 2013).

Mason and colleagues (2012) examined the impact of VM in promoting social communication skills for two college students with ASD. The intervention targeted three social skills components; "eye contact, facial expression, and turn-taking". The results of the study demonstrated that VM was effective, with both participants achieving a moderate to high improvement on targeted skills, and maintaining eye contact and facial expression after a week of the intervention implementation (Mason et al., 2012).

Samuels and Stansfield (2012) evaluated the impact of SS in developing social communication skills of four participants with ASD, aged between 17 and 32 years old. The eight SS were designed by using sentences and pictures. The stories were read to the participants, followed by questions to increase social interaction. They included "greeting or reducing inappropriate social behavior, e.g., putting the hands in underwear, breaking the conversation, and bossy talk". The results of the study showed that all the participants achieved an improvement during the intervention phase, but they didn't maintain the gains after a month and half of the intervention (Samuels & Stansfield, 2012).

Axe and Evans (2012) evaluated the effect of VM in developing a facial expression of three children with ASD, aged 5-6 months old. The results of the study demonstrated that two of the participants learned to distinguish between the eight facial expressions successfully. Furthermore, both participants were able to maintain and generalize the facial expressions to

different environments, with different people, after four and six months of the intervention. However, only one participant needed more training sessions (Axe & Evans, 2012).

Boudreau and Harvey (2012) examined the impact of video self-modeling (VSM) in teaching social initiations to three young participants with ASD. The results of the study indicated that VSM was effective in teaching all participants social initiations. They achieved a fast improvement, although only two participants maintained the skills after two weeks of the intervention completion (Boudreau & Harvey, 2012).

Buggey and colleagues (2011) conducted a study to evaluate the impact of VSM in teaching social initiations skills to four preschool participants with ASD. The results of the study indicated that two out of the four participants demonstrated improvements in targeted skills and maintained them after four weeks of the intervention completion. However, one participant gained slight improvement and the fourth didn't gain any change (Buggey et al., 2011).

Keen and colleagues (2007) evaluated the impact of animated VM to teach toileting skills to five preschool children with ASD, aged 4.5 to 6.9 years old. The study lasted 171 days, using animated video for using the toilet. The results of the study demonstrated that animated VM was effective in teaching toileting skills for all participants; however, only three of them continued in the study and maintained the skills; and only two participants generalized the targeted skills (Keen et al., 2007).

Table 1. Shows the prior studies' aims, samples, procedures, instruments, and results.

Study	Aim	Sample	Procedures	Instruments	Findings
(Amirrudin et al., 2019), Malaysia.	To examine the effect of social stories in improving verbal communication skills.	4 children with ASD, aged between 7 and 9 years. (2 with HFASD and 2 with LFASD).	Two stories about moral values with animals and older people, each social story followed with 4 questions.	Interview questions, and Tarone's Communicative Strategies (CS).	The intervention was effective in increasing the verbal communication of the participants with ASD and increased their perception of moral values toward animals and older people.
(Daneshvar et al., 2019), the USA.	To evaluate and compare the effect of social stories and a photo activity schedule in developing social skills.	4 children with ASD, aged 5 to 10 years.	Photoactivity included a group of photos that describe the task for the child through steps with the provision of modeling, prompting, and chaining. In the social stories intervention, the stories were read to participants followed by three questions about each story.	Observation and Interobserver agreement (IOA). , the Peabody Picture Vocabulary Test-Revised Edition, and the Vineland Adaptive Behavior Scale.	Photo activity intervention was effective in teaching all the participants the targeted skills (greeting, commenting, social initiation, turn-taking, and sharing), but they did not demonstrate any improvement in social stories intervention.

(Grob et al., 2019), the USA.	To evaluate the impact of a training program based on teaching social skills that are essential for workplace success.	3 adults with ASD, aged between 19 and 27.	The package program consisted of a series of sessions based on modeling, verbal explanations, role play, and promoting. Targeting e.g., "responding to job tasks, requesting assistance, and apologizing".	Observation.	Two participants demonstrated improvement in all targeted social skills except for one participant who succeeded in one of four skills.
(Watkins et al., 2019), the USA.	To evaluate the effect of packaged intervention based on modeling, play, responding to questions, and instruction to enhance social interaction.	4 participants with ASD, aged between 4 and 6 years	Instructions and modeling were utilized to explain to the participants the play activities, then the instructor directed the participants to play with their peers without providing any assistance. Targeting (greetings, commenting, asking questions, sharing, helping)	Observation and Interobserver agreement (IOA), Social Validity Questionnaire.	All participants demonstrated an increase in social interaction and maintained and generalized the targeted skills after 1.5 months of the intervention implementation.
(Ho et al., 2019), the USA.	To investigate the effectiveness of using video modeling in developing joint attention and social engagement.	6 participants with ASD ages 7-11 years.	15 intervention sessions were delivered through three videos that were developed based on animation to target joint attention and social engagement, then the participants were asked to play the role after watching the videos.	Observation and Interobserver agreement (IOA), the (Vineland – II), the (MIS), The Treatment Acceptability Rating Form – Revised (TARF-R).	5 out of 6 participants significantly improved in the initial sessions both joint attention and social engagement skills and only one participant needed more than two sessions to meet the mastery level.
(Almutlaq & Martella, 2018), the USA.	To examine the impact of social stories delivered through iPad application on improving social skills "smile, giving compliments, and responding you are welcome"	3 children with ASD, aged 8 and 10 years.	Typically developed peer pictures were taken and edited by using "The Kid in Story Application" on the iPad to place them on the story as models. The story was delivered 5 steps through pictures and a few sentences to describe the behavior.	Interviews, the (ASSP-2), Observation checklist, and Inter-observer Agreement (IOA).	All participants showed improvement in the targeted skills, and generalized and maintained the skills after the intervention implementation
(Uzuegbunam & Wong, 2018), the USA.	To improve social greeting skills for included (hand waving, saying hi or bye, eye contact).	3 participants, aged between 7-11 years old.	MeBook was utilized based on a social story and animated video to improve greeting skills and self-modeling based on replacing the main character face with the image of the learner animating his body and voice, then the positive reinforcement.	Observation.	The participants showed significant improvement in greeting skills and maintained the targeted behaviors after 2 days of the intervention completion.
(Stauch et al., 2018), the USA.	To explore the effectiveness of video-based group to teach social perception skills.	3 adolescents with ASD and 2 with ID, aged between 15-17 years.	13 videos of two models targeted extending the conversation, joining a conversation, and responding to the effective behavior of others.	Observation, Interobserver agreement (IOA), the ADOS-2^{ND,} the Wechsler Abbreviated Scale of Intelligence 2nd ed.	4 out of 5 participants increased their level of social perception skills and maintained the targeted skills after the intervention completion.
(Kouo, 2018b), the USA.	To evaluate the effect of video modeling in developing greeting skills.	5 nursery school children with ASD, aged between 5 and 6 years.	22s point of view video that was played by a peer with the provision of verbal prompting and reinforcement.	Observation and Social Validity Questionnaire.	Three children demonstrated high improvement and maintain the targeted skills, and 2 of the participants showed moderate improvement.
(Thirumanickam et al., 2018), Australia.	To examine and compare the effect of video self-modeling and video modeling to improve conversational skills.	4 adults with ASD, aged between 11 to 18 years.	Videos were designed according to models of their typically developed peers (video modeling) and video self-modeling was performed by the participants with ASD, targeting conversation skills with the use of "the least to most prompting system".	The Peabody Picture Vocabulary Test-4 (PPVT- 4), observation, and Inter-observer reliability (IOR), survey Questions.	All participants showed high improvement in VSM and VM was effective only with three participants who showed moderate to high improvement.
(Kellems et al., 2018), the USA.	To teach everyday life skills and motor skills.	3 participants with ASD, aged 12 to 15 yrs.	Compare the difference between static pictures and video modeling (video prompting) in teaching daily skills brushing teeth washing mirror and motor skills including walking backward, cutting banana, and jumping jack. (21 sessions).	Observation and interobserver agreement.	Static pictures and video modeling were both effective in teaching the targeted skills for all participants.
(Radley et al., 2017), the USA.	To evaluate the impact of (The Superheroes social skills) in	N= 2 Preschool children, aged	The Superheroes' social skills intervention is based on animation videos with	Observation and Interobserver agreement (IOA), the DSM-1V, the	Both participants achieved an increase in the accuracy of the social skill and

	improving the social skill (self introducing skills, basic Body language, and participating in the conversation).	4.5 years and 4.3 years.	instruction, social stories, and Self-monitoring cards.	DSM-V, the (ASSP), the (WISC-III), the Vineland Adaptive Behavior Scale.	maintained the accuracy after one and a half months of the intervention completion.
(So et al., 2016), China.	To evaluate based computer video modeling in teaching the gestures skills.	20 participants with ASD, aged between 6 and 12 years.	The participants were asked to perform the gestures after watching the clips, then the examiner recorded the participants' responses.	The Beery Visual-Motor Integration (VMI) test and the Beery Visual Perceptual (VP) subtest.	All the participants learned gesture skills. and maintained and generalized the targeted skills.
(Rodríguez-Medina et al., 2016), Spain.	To investigate the effectiveness of peer-mediated intervention in improving social interaction skills.	A student with HFASD, aged 8 years 3 months, and 16 of his developed peers	The peer-mediated program included 14 sessions, using several strategies: direct instruction, modeling, and social reinforcement.	Observation, peer rating, Social Interaction Skills Questionnaire, and Non-parametric Wilcoxon matched pairs test.	The intervention was effective in improving social interaction skills for the participant with HFASD and his developed peers.
(Acar et al., 2016), Turkey.	To examine and compare the effects of two intervention approaches; social stories (SS) and Video modeling (VM) in teaching social skills.	3 Participants with ASD, aged 6 and 10 years.	Each intervention approach VM and SS targeted two social skills included asking for permission, offering assistance, introducing himself, and saying his address.	Observation and Interobserver agreement (IOA), interviews with mothers for social validity.	All participants learned, maintained, and generalized the targeted skills after one to three months of intervention. However, VM was more effective for two participants and SS was more effective with only one participant.
(Özerk, 2015), Norway.	To evaluate the effect of video modeling in improving social communication skills.	An 11-years bilingual child with ASD.	Using VM targeting; "eye contact, turn-taking, participating in games actively, inviting others to play, using appropriate expressions". After the child watches the two designed videos, he was asked to join his peers in his favorite games; basketball and chess.	Observation	The child demonstrated five out of six skills after video intervention in the basketball game and mastered all of the six skills in the chess game. He generalized the skills after a month of the intervention.
(Golzari et al., 2015), Iran.	To assess the impact of social stories on improving social skills.	30 participants with ASD, aged 6 to 12 years. intervention group=15, control group=15.	The social stories were designed to improve the children's ability to initiate the conversation, maintain the conversation, understand perspective-taking, and respond to others. The stories were read to the participants, followed by questions about each story.	The social skills questionnaire.	All participants in the intervention group demonstrated significant improvement in all targeted skills except responding to others compared to the control group.
(Plavnick et al., 2015), the USA.	To examine the impact of video-based group instruction (VGI) in developing social skills.	4 participants with ASD and ID, aged between 14 and 17 years.	18 video clips targeting six social skills including "commenting, offering help, asking about information, requesting materials, showing items to others, and joining activity". All participants were asked to play the role after watching the videos with the provision of corrective feedback.	The Autism Social Skills Profile (ASSP) and interviews, The observation and interobserver agreement (IOA).	Three participants demonstrated high improvement in targeted skills and maintained and generalized the skills after two weeks. Only two maintained them after one month of the intervention completion.
(Handley et al., 2015), the USA.	To examine the effectiveness of using social stories or video modeling and social stories combined to increase eye.	6 participants with ASD, aged between 16 and 19 years.	Using social stories isolated from video modeling, then used them combined.	Observation and Interobser agreement (IOA), the (ASRS), and the (CARS-2).	VM was more effective than SS in improving eye contact However, using SS and VM combined resulted in a higher level of eye contact.
(Malmberg et al., 2015), the USA.	To examine and the impact of VM and SS in improving the social skills "greetings, sharing, social commenting, and turn-taking".	4 participants, aged between 5 and 9 years.	(1st experiment) used VM in comparison to SS by watching 30 seconds video and listened to a short story about the target behaviors. (In 2nd experiment) SS was used solely and compared with social stories packages with behavior procedures (verbal prompting and reinforcement).	The DSM-V, the Peabody Picture Vocabulary Test- III (PPVT-4), and the Vineland Adaptive Behavior Scale, observation, and checklist.	All participants learned the target skills through VM and SS with behavioral procedures "prompting and reinforcement", meanwhile, SS was not effective solely.
(Radley et al., 2015), the USA.	To examine the effects of superhero social skills program based on video modeling and self-monitoring to improve the accuracy of using conversation, non-verbal, requesting, and responding skills.	N= 2 HFASD and ASD with intellectual disability.	10 intervention 1.5 hours sessions for 5 weeks, using animation videos with instruction, social stories, and Self-monitoring cards.	The observation and interobserver agreement (IOA). the Autism Social Skills Profile (ASSP).	Both participants showed an increased level of the learned skills and improvement of skills accuracy and generalized the skills after the intervention implementation.

(Meister et al., 2015), the USA.	To Improve everyday life skills e.g. washing hands.	8 school children ages 7.5 to 13.5 yrs.	49 sessions lasted for 6 weeks each session was between 10 to 25 minutes using point-of-view video modeling of developed peers who were recorded using the iPad.	The Child Occupational Self-Assessment (COSA) Version 2.1.	Point-of-view video modeling was effective in improving the targeted skills of students with ASD.
(Karayazi et al., 2014), the USA.	To evaluate the effect of social stories in improving social behaviors.	22-year female adults with ASD.	Using two written stories, targeting two social skills behaviors; nose-wiping, and greeting people.	Observation.	The participant with ASD showed improvement in both targeted behaviors after the social stories intervention implementation.
(Amin & Oweini, 2013), the USA.	To evaluate the effect of social stories and peer-mediated intervention in developing social skills	One participant, aged 7 years.	The intervention was based on five pages of social story and peer play, targeting "asking a question, sharing objectives, greeting, introducing self, participating in activities, conversation, and asking for assistance".	The Social Behavior Assessment Inventory (SBAI) rating scale, the Conditional Probability Record (CPR), observation, and interviews.	The intervention was effective in increasing the targeted skills of the participant and he maintained the skills after a week of the intervention implementation.
(Cardon, 2013), the USA.	To evaluate the effect of video modeling in developing gestures skills.	3 participants with ASD, aged 3 and 4.6 years.	The videos were designed to target ten gestures. The participants were asked to watch each video clip and perform the targeted skills with the provision of prompting and reinforcement of the accurate responses.	The (CARS), the (ADOS), Vineland scales of adaptive behavior 2nd.ed, the (MIS), the MacArthur-Bates CDI Words and Gestures assessment, and developmental play assessment instrument.	Two participants learned, maintained, and generalized the targeted skills after two weeks and a month of the intervention completion.
(Wilson, 2013), the USA.	To evaluate the impact of video and live modeling in developing social communication skills.	4 participants with ASD, aged between 3.9 years and 5.4 years.	One targeted social behavior was chosen for each participant e.g., sharing an interest with others, and requesting. All participants were asked to watch individually a video model once and a live model once, afterward, they were encouraged to present the behavior after each mothed.	The (ADOS), Vineland scales of adaptive behavior 2nd .ed, the (MSEL), the (PLS-4), the observation, and interobserver agreement (IOA).	All participants gained the targeted skills by one or both intervention methods and maintained the acquired skills after two weeks of the intervention implementation.
(Kagohara et al., 2013), the USA.	To examine the impact of social stories and video modeling in teaching social greeting skills.	2 participants with HFASD, aged ten years.	A social story about people greeting each other was presented through PowerPoint, followed by two questions. Afterward, the participants were asked to watch a video that was designed using animated characters and a story dialogue, followed by a question.	The observation and interobserver agreement (IOA).	The social story was effective in teaching simple social greetings and video modeling was effective in teaching full greetings and both participants maintained the gains after two weeks.
(Mason et al., 2012), the USA.	To examine the impact of video modeling in promoting social communication skills.	2 college students with ASD, aged 19 and 26 years.	The designed video clips were played by two college student models, targeting "eye contact, facial expression, and turn-taking".	The Observation.	Both participants achieved a moderate to high improvement on targeted skills and maintained eye contact and facial expression after a week of the intervention implementation.
(Samuels & Stansfield, 2012), the UK.	To evaluate the impact of social stories in developing social communication skills.	4 participants with ASD, ages between 17 and 32 years.	The eight social stories were designed by using sentences and pictures. The stories were read to the participants, followed by questions to increase social interaction e.g., greeting or reducing inappropriate social behavior.	The Pragmatics Profile of Everyday Communication Skills in Adults and the Test for Reception of Grammar (TROG2), and the observation.	All the participants achieved an improvement during the intervention phase but they didn't maintain the gains after a month and 1.5 months of the intervention.
(Axe & Evans, 2012), the USA.	To evaluate the effect of video modeling in developing a facial expression.	3 children with ASD, aged 5.6 months.	The participants were asked to watch eight videos of a model who presented eight facial expressions included; "pain, disapproval, approval, pleased, calming, bored, disgusted, and impatient", afterward, the participants were encouraged to present these expressions.	The Observation and Interobserver agreement (IOA).	Two of the participants learned to distinguish between the eight facial expressions and they maintained and generalized the facial expressions to different environments and people after four and six months of the intervention.
(Boudreau & Harvey, 2012), the USA.	To evaluate the impact of video self-modeling in teaching social initiations.	3 participants with ASD, aged between 4 and 7 years.	Using video self-modeling with prompting to teach social initiations. The participants were asked to	The observation, interobserver agreement (IOA), and social validity survey.	The results of the study indicated that video self-modeling was effective in teaching all participants

			watch edited videos and play with their peers.		social initiations and only two maintained the skills after two weeks of the intervention completion.
(Buggey et al., 2011), the USA.	To evaluate the impact of video self-modeling in teaching social initiations skills.	4 participants with ASD, aged between 3.10 years and 4.2 months	Using video self-modeling with prompting to show the physical and verbal initiations e.g., " to share objects, throw the ball and, laugh". The participants were asked to watch the edited videos and play the targeted behaviors.	The observation and interobserver agreement (IOA).	video self-modeling was effective with two participants who maintained the skills after a month. However, one participant gained slight improvement and the fourth didn't gain any changes.
(Keen et al., 2007), Australia.	To teach children with ASD toileting.	5 participants aged 4.5 to 6.9 yrs.	Using animated video modeling. The study lasted 171 days- Every day.	The Scales of Independent Behavior (SIB-R).	Animated video modeling was effective in teaching toileting skills for all participants. Only three maintained the skills, two generalized, and two were withdrawn or quitted.

Comments on the previous studies

By reviewing the previous studies, which addressed the issues of social communication skills of people with ASD, it is clear that the current study may have agreed with the previous studies in some points and distinguished from them in other points.

The current research agrees with the previous studies in its aim, which is to develop an educational program to improve social communication skills. However, these studies were limited to one or six of social skills targeting: greeting skills (Amin & Oweini, 2013; Daneshvar et al., 2019; Kagohara et al., 2013; Karayazi et al., 2014; Kouo, 2018; Malmberg et al., 2015; Samuels & Stansfield, 2012; Uzuegbunam & Wong, 2018; Watkins et al., 2019), social initiations (Boudreau & Harvey, 2012; Buggey, 2012; Buggey et al., 2011), sharing objectives or interest (Amin & Oweini, 2013; Daneshvar et al., 2019; Malmberg et al., 2015; Watkins et al., 2019; Wilson, 2013), asking and offering assistance (Acar et al., 2016; Malmberg et al., 2015; Plavnick et al., 2015), asking questions and/or responding skills (Amin & Oweini, 2013; Golzari et al., 2015; Grob et al., 2019; Malmberg et al., 2015; Radley et al., 2015; Thirumanickam et al., 2018; Watkins et al., 2019), turn-taking (Daneshvar et al., 2019; Malmberg et al., 2015; Mason et al., 2012; Özerk, 2015), facial expression (Axe & Evans, 2012; Mason et al., 2012), gesture skills (Cardon, 2013; So et al., 2016), eye contact (Handley et al., 2015; Mason et al., 2012; Özerk, 2015), nose-wiping (Karayazi et al., 2014), social commenting (Daneshvar et al., 2019; Malmberg et al., 2015; Plavnick et al., 2015; Watkins et al., 2019), conversation skills (Amin & Oweini, 2013; Golzari et al., 2015; Mason et al., 2012; Radley et al., 2015, 2017; Samuels & Stansfield, 2012; Thirumanickam et al., 2018), requesting skills (Grob et al., 2019; Plavnick et al., 2015; Radley et al., 2015; Wilson, 2013), self-introducing (Acar et al., 2016; Amin & Oweini, 2013; Radley et al., 2017), body

language (Radley et al., 2017), social engagement and joint attention (Ho et al., 2019), social values (Amirrudin et al., 2019), smile, giving compliments, and responding with "you are welcome" (Almutlaq & Martella, 2018), social perception skills (Stauch et al., 2018), social-job related skills (Grob et al., 2019; Rosen et al., 2017), and everyday life skills (personal hygiene) (Keen et al., 2007; Kellems et al., 2018; Meister et al., 2015). These skills haven't been studied altogether, therefore, the present study attempts to address most of them, including greetings and introducing self, maintain personal distance, listening skills, eye-contact, facial expression, asking and responding to questions, expresses sympathy, asking for assistance, helping others, personal hygiene, and expressing feelings.

The previous studies were conducted by utilizing video modeling solely (Axe & Evans, 2012; Cardon, 2013; Ho et al., 2019; Mason et al., 2012; Özerk, 2015; Plavnick et al., 2015; So et al., 2016; Stauch et al., 2018; Keen et al., 2007), or video self-modeling (Boudreau & Harvey, 2012; Buggey et al., 2011), or compared the effect of both approaches VM and VSM (Thirumanickam et al., 2018). The point of view VM was utilized by two studies (Kouo, 2018a; Meister et al., 2015), and the SS was used in six studies (Almutlaq & Martella, 2018; Amin & Oweini, 2013; Amirrudin et al., 2019; Golzari et al., 2015; Karayazi et al., 2014; Samuels & Stansfield, 2012). In contrast, some studies utilized VM and SS combined (Handley et al., 2015; Kagohara et al., 2013; Radley et al., 2015, 2017; Uzuegbunam & Wong, 2018), or compared between SS and photoactivity (Daneshvar et al., 2019), or VM (Acar et al., 2016; Malmberg et al., 2015), or compared static pictures and VM (Kellems et al., 2018). There was only one study that utilized live modeling through typically developed peers with instruction and social reinforcement (Rodríguez-Medina et al., 2016), and two studies used live modeling with verbal instruction, role play, and prompting (Grob et al., 2019; Watkins et al., 2019). One study utilized video modeling and live modeling combined (Wilson, 2013). Overall, the effect of animated VM, SS, and VSM combined, haven't been studied. Therefore, the present study will be conducted by using these strategies combined to examine their impact on social communication skills.

The previous studies targeted individuals with ASD; however, only two studies targeted children with HFASD (Kagohara et al., 2013; Rodríguez-Medina et al., 2016), and two studies targeted children with HFASD and LFASD (Radley et al., 2015; Amirrudin et al., 2019). Most of the studies targeted ASD in general. Additionally, five studies were conducted with adults with ASD (Grob et al., 2019; Handley et al., 2015; Karayazi et al., 2014; Mason

et al., 2012; Rosen et al., 2017; Samuels & Stansfield, 2012), three studies with adolescents (Plavnick et al., 2015; Stauch et al., 2018; Thirumanickam et al., 2018), eight studies with preschool children (Axe & Evans, 2012; Boudreau & Harvey, 2012; Buggey et al., 2011; Cardon, 2013; Kouo, 2018; Radley et al., 2017; Watkins et al., 2019; Wilson, 2013; Keen et al., 2007), and the rest targeted young school children. In contrast, the present study targeted only school children with HFASD, aged between 7 and 12 years old.

Three studies used a single case study (Amin & Oweini, 2013; Özerk, 2015; Rodríguez-Medina et al., 2016), and only one study (aimed to improve conversation skills for school children with ASD) utilized a control group (Golzari et al., 2015). The rest of the previous studies were conducted on a small sample size without using a control group. In contrast, the present study follows mixed methods: a quasi-experimental method based on a pre-test and post-test design for both groups (experimental group and monitoring group) to examine the effectiveness of the educational program, and a qualitative method to confirm and support the quantitative data.

Some of these studies have a lack of follow-up data (Kellems et al., 2018; Meister et al., 2015; Golzari et al., 2015; Ho et al., 2019), or long term follow-up data (Mason et al., 2012; So et al., 2016; Thirumanickam et al., 2018; Wilson, 2013). Besides, some studies have a lack of generalization data (Buggey et al., 2011; Daneshvar et al., 2019; Golzari et al., 2015; Kagohara et al., 2013; Mason et al., 2012; Radley et al., 2017; Uzuegbunam & Wong, 2018; Wilson, 2013), or generalization was limited to a particular setting or activity with certain people (Handley et al., 2015; Kouo, 2018; Plavnick et al., 2015; Radley et al., 2015; Stauch et al., 2018; Watkins et al., 2019). In some studies, maintenance was limited to communicative peer (Kouo, 2018); or no maintenance test for one of the targeted skills (Mason et al., 2012), or maintenance was during the intervention implementation (Handley et al., 2015). In contrast, the present study will be conducted using a follow-up test after 1.5 months of the intervention implementation, to investigate if the participants maintain and generalize the targeted skills to different settings with different people.

Most of these studies utilized observation and interobserver agreement to evaluate the effects of the intervention approaches. However, some studies used official assessment tools to evaluate the effect of the intervention, such as the Motor Imitation Scale (MIS), the MacArthur-Bates (CDI) Words and Gestures Assessment, and the Developmental Play Assessment Instrument (Cardon, 2013), the Social Behavior Assessment Inventory (SBAI)

rating scale, the Conditional Probability Record (CPR) (Amin & Oweini, 2013), the Autism Social Skills Profile (ASSP) (Plavnick et al., 2015; Radley et al., 2015), the social skills questionnaire (Golzari et al., 2015), observation, peer rating, Social Interaction Skills Questionnaire (Rodríguez-Medina et al., 2016), the Beery Visual-Motor Integration (VMI) test and the Beery Visual Perceptual (VP) subtest (So et al., 2016), the Peabody Picture Vocabulary Test-4 (PPVT- 4) (Thirumanickam et al., 2018), the Scales of Independent Behavior (SIB-R) (Keen et al., 2007), the Child Occupational Self-Assessment (COSA-2) (Meister et al., 2015), interview questions, and Tarone's Communicative Strategies (CS) (Amirrudin et al., 2019). Furthermore, questionnaires or interviews were utilized with parents or teachers, or both, to check social validity in most of these studies. The present study will be conducted by using the Autism Social Skills Profile (ASSP) (Bellini & Hopf, 2007), and interviews with the teachers of the participants.

Finally, most of these studies that utilized VM, or VSM, or SS, or combined SS with video or live modeling, yielded significant outcomes in improving the social communication skills of individuals with ASD. However, there was only one study showing that SS did not yield any changes in the participants, in comparison to the photo activity strategy (Daneshvar et al., 2019). This was because the researcher used the SS without the provision of additional strategies. Meanwhile, prompting, chaining, and modeling strategies were utilized in photoactivity. The promising outcomes of these studies prompted the researcher to conduct the present study using animated video modeling, social stories, and video self-modeling combined to improve the social communication skills of children with HFASD.

Chapter 2 – Methodology

2.1 Method

The present study is aimed to explore the effectiveness of an educational program (see Annex 1) in improving the social communication skills of a sample of six high functioning students with Autism Spectrum Disorder (HFASD), at the Autism Academy of Jordan, in Amman. The program consisted of 12 sessions based on multiple strategies including social stories, video modeling, and video self-modeling, targeting a variety of social communication skills. The researcher utilized mixed method -quantitative and qualitative-, based on dominant, sequential design. The results of both groups were analyzed recurring to SPSS software version 25th, and teachers' interviews were analyzed using the WebQDA software, in order to examine the impact of the educational program.

2.2 Purpose, Questions, and/or Objectives

The purpose of the present study is to evaluate the impact of an educational program based on modeling and social stories, in improving the social communication skills of a sample of children with HFASD.

Research Question: What are the impact of modeling and social stories intervention on the social communication skills of children with HFDAS?

The research question was divided into four sub-questions, according to the Autism Social Skills Profile test dimensions as following:

- **Q1:** Are there statistically significant differences between both groups at the level of significance ($\alpha \leq 0.05$) in social communication skills after the application of the educational program?
- **Q2:** Are there statistically significant differences between both groups at the level of significance ($\alpha \leq 0.05$) in the social reciprocity dimension after the application of the educational program?
- **Q3:** Are there statistically significant differences between both groups at the level of significance ($\alpha \leq 0.05$) in the social participation dimension after the application of the educational program?
- **Q4:** Are there statistically significant differences between both groups at the level of significance ($\alpha \leq 0.05$) in the detrimental social behaviors dimension after the application of the educational program?

Objectives:

- Reviewing the scientific literature to design and implement the educational program.

- Evaluate and validate the educational program.
- Identify changes in the social communication skills of students with HFASD who will attend the educational program.

2.3 Paradigm, Nature, and Research planning

Among the most common difficulties among students with ASD, are the social communication skills difficulties. They have a lack of eye contact, abnormal facial expression, inability to initiate or maintain a conversation, lack of interest, and one-sided discussion (Thomeer et al., 2017). As a result, the lack of social communication skills can impact these students' academic and social development, and isolate them from their environments (Yeo & Teng, 2015). Therefore, these indicators prompted the researcher to develop an educational program based on modeling and social stories to promote social communication skills for a sample of students with HFASD.

The current research fits with the post-positivist paradigm, which aims to "predict results, test a theory, or find the strength of relationships between variables or a cause and effect relationship" (Wagner et al., 2012, p. 7). Research variables in quantitative studies should be operationally defined by researchers to be measurable by using "observations, tests, or questionnaires" (Wagner et al., 2012, p. 9). This study attempts to find the cause-and-effect relationship between variables: the independent variable- the program; and the dependent variable- social communication skills. In order to answer the research question, overcome the weakness of using a single method, and increase the validity of the study (Jason & Glenwick, 2016, p. 236), the researcher utilized mixed method quantitative and qualitative based on the dominant, sequential design (Jason & Glenwick, 2016, p. 235), where the researcher used a quasi-experimental method in the first phase, according to the following design of the study: pre-test and post-test design for both groups; the experimental group and the monitoring group to study the impacts of an educational program on the experimental group (Campbell & Stanley, 1963, p. 55); then, qualitative method to support and confirm the obtained results from the quantitative method, by interviewing the teachers of the participants.

2.4 Elements of Research and variables

- **Independent variable**: **Educational program**

Educational program: is a group of activities based on modeling and social stories to improve social communication skills among a sample of students with HFASD. The educational program consists of 12 sessions, the duration of each session 1.50 minutes. These

sessions were designed according to multiple strategies, included social stories, animated video modeling, and video self-modeling, which were delivered by the researcher and special education teacher. The program aims to develop social communication skills through the implementation of training sessions with the experimental group. In order to assist individuals with ASD to develop their communication and social interaction skills; Supporting individuals to achieve social and psychological adaptation; Developing the skills of dealing with others and identifying the ways of excellence and success; Promoting an individual's abilities in social, emotional, and psychological aspects and Developing an individual's sense of social participation.

This program consists of a wide and varied range of teaching methods, including: roleplay; video modeling; social stories; video self-modeling; games and some interactive discussion.

- **Dependent variable: Social communication skills**

  Social communication skills: defined as reinforced learned behaviors that involve interaction between individuals, which enable them to perform social tasks competently (Cook et al., 2008), cultural behaviors and abilities learned by individuals to communicate with each other (Hirsch, 2016, Little, Swangler, & Akin-little, 2017). The educational program targeted the following social communication skills: greeting and introducing self, keeping personal distance, listening skills, maintaining eye contact, comprehending facial expressions, asking and responding to questions, expressing sympathy, asking for assistance and helping others, doing personal hygiene, and expressing feelings.

2.5 Participants and setting

The study consisted of 12 participants who were diagnosed with HFASD by using the Gilliam Autism Rating Scale - Third Edition (GARS-3) (Gilliam, 2014), attending the Autism Academy of Jordan in Amman, aged 7-12 years old. The participants were divided in two groups; an experimental group, which consisted of six male students, and a monitoring group, which consisted of six male students. The researcher set the following criteria for the participants to control the external factors that could affect the study outcomes (Shadish et al., 2002, p. 56): i) had been diagnosed with HFASD; ii) have a level of intelligence above 85; iii) have a normal level of language abilities; iv) have the ability to imitate. The researcher assessed their social communication skills by using the Autism Social Skills Profile (ASSP) (Bellini, 2006), before and after the implementation of the program; and used the Mann-

Whitney test to examine the impact of the educational program on the students' with HFASD social communication skills.

The scores of participants are described in Table 2 for the experimental group, and Table 3 for the monitoring group.

Table 2. The experimental group age, WISC-III, and GARS-3 scores

Name	Age (years)	WISC-III	GARS-3
Saud	12	95	86
Bader	10	97	75
Yusef	10	90	92
Uday	10	95	77
Abbas	7	86	92
Ahmad M	9	85	95

Table 3. The monitoring group age, WISC-III, and GARS-3 scores

Name	Age (years)	WISC-III	GARS-3
Ayham	8	90	82
Abdullah	12	85	77
Yazan R	9	93	86
Sama	10	98	78
Ahmad T	8	86	93
Mansour	7	85	89

2.6 Study Procedures

The study was conducted through four phases, explained as follows:

First phase

- 1st of September to 31st of December 2019.

The researcher started reviewing the literature, to identify the scientific studies that were published between 2009 and 2019 in international journals. In order to conduct the review, the researcher used digital format database research: Scopus, PubMed, and Eric journal, using the search terms "students autism spectrum disorders", AND "social skills", OR "communication skills", AND "modeling", AND "social stories". The results demonstrated 33 publications, which targeted the social communication skills of individuals with ASD, using video modeling, or/and video self-modeling, or/and social stories, or/and live modeling.

The obtained information was classified and analyzed according to the authors, year of publication, country, study aim, sample, methodology, and findings.

Later, the educational program sessions were designed by using the animation maker program (www.animaker.com), which is a 2D video program, each video was based on a social story with a duration of 30 and 50 seconds. Also, the researcher prepared the study sample, tools, questionnaires, and developed ethical procedures.

Second Phase

- 12th to 22nd of January 2020.

The study was conducted at Autism Academy of Jordan, which is a special school for individuals with ASD, located in Amman, the capital city of Jordan. The parental approval was obtained by the supervisor of the special education center; the study setting was prepared to conduct the study, and the teachers of the participants were rigorously informed about the nature, purpose, and procedures of the study.

The participants with HFASD were evaluated by Gallium Autism Rating Scale GARS-3 (Gilliam, 2014), and The Wechsler Intelligence Scale for Children 3rd (WISC-III) (Wooger, 1991). The Autism Social Skills Profile (ASSP) (Bellini, 2006) was utilized as a pre-test and post-test to evaluate the effects of the educational program, and the sample was selected from those who have a low level of social communication skills. The ASSP scale was validated by professors Dr. Marlene da Rocha Migueis and Dr. Anabela Pereira, from the University of Aveiro, Portugal.

- **The Autism Social Skills Profile (ASSP)** is a scale that was developed by Scott Bellini to assess the social skills deficits and measure the intervention progress of individuals with ASD with an age range of 6 to 17 years old. The ASSP includes 49 items divided into three domains: Social Reciprocity (23 items), Social Participation (12 items), and Detrimental Social Behaviors (10 items). The ASSP scale had high reliability, and Cronbach's alpha value was ($\alpha = .940$). The scale's items are rated according to a 4-point Likert scale where the examiner's response was registered by circling or placing the letter to specify how often the examinee demonstrates each behavior. The ASSP can be conducted by parents, teachers, professionals, or other familiar adults in an individual's life. The ASSP has a brief

description section where the examiner can provide further comments about the child's behaviors (Bellini & Hopf, 2007).

- **Gilliam Autism Rating Scale -3rd ed. (GARS-3)** is an assessment instrument to identify and diagnose individuals with ASD, aged between 3 and 22 years old, and measures the severity of ASD. The GARS-3 measures observed behaviors in three areas, including communication stereotype behaviors and social interaction; each area has 14 items. The examiner should estimate each item according to the frequency of observed behaviors. The GARS-3 can be implemented by a well-trained person who is familiar with the examinee, e.g., parents or, educators. Also, the GARS-3 has two sections of an interview with someone familiar with the examinee. In the first section of the interview, the respondent is required to answer yes or no questions, which are related to the child's growth in the first three years. The following section of the interview is a set of open-ended questions about the child's behaviors, signs of ASD, concerns of parents, and medical history (Gilliam, 2014).
- **The Wechsler Intelligence Scale for Children 3rd (WISC-III)** is a scale with high reliability (0.89), developed by Wechsler in 1991 to assess the cognitive abilities of children aged 6 to 16 years old. The WISC-III contains two main scales: the verbal scale, including six subscales; and the performance scale, including seven subscales. The WISC-III can be only implemented by a well-trained professional who is not familiar with the examinee. The scale utilizes the Deviation IQ (mean=100, and standard deviation=15). A score of 100 on verbal, or performance, or a total of both, was considered as average performance (Wooger, 1991).

Table 4. Shows the ASSP scores of the experimental group

Name	ASSP (pre-test)	ASSP (post-test)
Saud	113	160
Bader	116	159
Yusef	120	166
Uday	117	157
Abbas	111	148
Ahmad M	110	149

Table 5. Shows the ASSP scores of the monitoring group

Name	ASSP (pre-test)	ASSP (post-test)
Ayham	105	107
Abdullah	101	104
Yazan R	108	113
Sama	109	112
Ahmad T	103	108
Mansour	102	105

Third phase

- 23rd of January to 1st of March 2020.

The educational program consisted of 12 sessions, lasted for eight weeks, two sessions a week, and the duration of each session was 1.50 minutes. The implementation of the program was conducted at a 4x6 meters classroom, that includes two tables and four chairs, with the assistance of a special education teacher. Each participant was asked to sit on a chair and watch the animated video about the targeted skill on the laptop type HP. When they accepted, the instructor provided social reinforcement by saying "that's great!" "amazing!". The videos were displayed twice and paused every time the participants lose their attention. Afterward, the participants were asked questions about each video, and then each participant was directed to play the role of the video with the trainer and was recorded by using FUJIFILM digital camera (26X super-wide). Then, the participants were asked to watch their videos and reproduce targeted behaviors (video self-modeling).

Fourth phase

- 7th of March to 7th of April 2020.

The participants with HFASD were revaluated by reapplying the Autism Social Skills Profile (ASSP) (post-test) (Bellini, 2006), to measure the educational program effects on the student's social communication skills, and analyze the results using the SPSS software version 25th, including the mean rank, sum of ranks, and Mann-Whitney U value. Then, the qualitative method was utilized by interviewing the teachers of the students with HFASD, and the interviews were analyzed by using the WebQDA software (Costa et al., 2019), to validate the study and confirm the results of the quantitative method.

Final phase

- 8th of April to 1st of July 2021

The researcher collected the data, discussed the results, and wrote the thesis.

Figure 1. Research Timeline

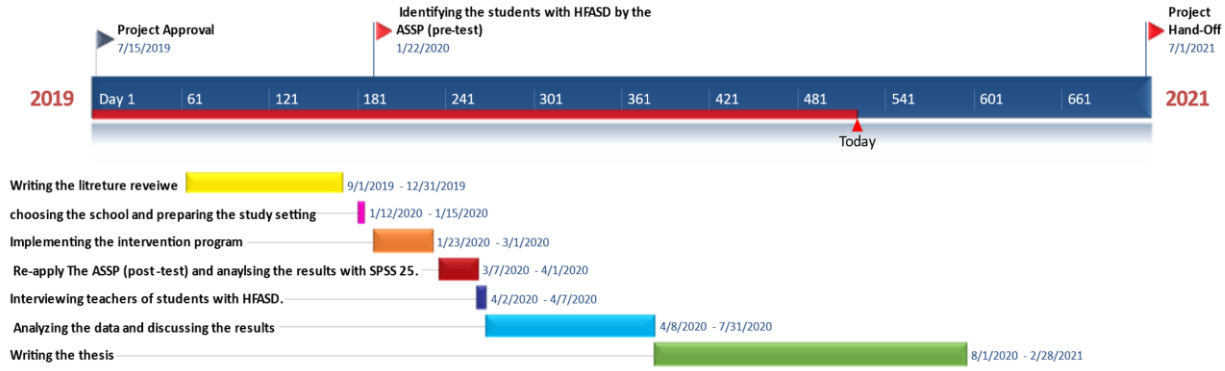


Table 6. Research Table

Phases	Expected duration	Questions/ Objectives	Tasks	Techniques collection and analysis
First phase	1st of September- 31st of December 2019.	Reviewing the literature to design the educational program.	Reviewing the literature and designing the educational program sessions.	Using articles, books, thesis, studies, Internet.
Second phase	12th– 22nd of January 2020.	Implementation of the educational program.	Identifying the schools, parental approval, and identifying the students with HFASD (pre-test).	Evaluate the participants by The Autism Social Skills Profile Rating Scale (ASSP).
Third phase	23h of January –1st of March 2020.	Implementation of the intervention program.	Implementation of the intervention program.	Multi-strategies: social stories, video modeling, and self-modeling.

Fourth phase	7th of March – 1st of April 2020.	Evaluate and validate the educational program.	Re-apply The Autism Social Skills Profile Rating Scale (ASSP) (post-test) to measure the impacts of the educational program.	Analyzing the obtained results with SPSS software.
	2nd – 7th of April 2020.		Interviewing teachers of students with HFASD.	Interviews+ analyzing data with WebQDA software.
Final phase	8th of April 2020 – 1st of July 2021**.**	Analyze the effects of the educational program.	Collecting the data, discuss the results, and write the thesis.	Discussing the study results.

Chapter 3 – Results and discussion

3.1 Results of the study

Homogeneity of the study sample

The homogeneity of both groups (the experimental and monitoring groups) was tested on the pre-test of the ASSP by utilizing the Mann-Whitney test. The results of both groups were analyzed by SPSS software version 25th to find the mean rank, sum of ranks, and Mann-Whitney U value on the pre-test of the ASSP as shown in Table 7.

Table 7. Results of the Mann-Whitney test on the pre-test of the ASSP

ASSP total	Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig.	Exact Sig.
	Experimental group	6	7.33	44.00	13.000	34.000	-.803-	.422	.485b
	Monitoring group- pretest	6	5.67	34.00					
	Total	12	-	-					

a. Grouping Variable: group

b. Not corrected for ties.

Table 7. shows that there are no statistically significant differences at the level of significance (α≥0.05**),** between the experimental group and the monitoring group, on the pre-test of the Autism Social Skills Profile (ASSP). The value of the mean rank on the ASSP of the experimental group reached 7.33, and the mean rank on the ASSP of the monitoring group reached 5.67. The Mann-Whitney U test for small samples was utilized to compare the means of both groups to evaluate the homogeneity of the groups and the results showed that the value of the Mann-Whitney U was 13.000, which is greater than the level of significance (α≥0.05**)** which means both groups are equivalent.

Q1: Are there statistically significant differences at the level of significance (α≤ 0.05) in social communication skills after the application of the educational program?

The Mann-Whitney was utilized for both groups (the experimental and monitoring group) on the post-test (ASSP) to evaluate the effects of educational programs based on modeling and social stories on the social communication skills as shown in Table 8.

Table 8. Results of the Mann-Whitney test on the post-test of the ASSP

ASSP total	Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig.	Exact Sig.
	Experimental group	6	9.50	57.00	.000	21.000	-2.887-	.004	.002[b]
	Monitoring group- pretest	6	3.50	21.00					

Total	12	-	-	

a. Grouping Variable: group
b. Not corrected for ties.

Table 8. shows that there are statistically significant differences at the level of significance (α≥0.05**),** between the experimental group and the monitoring group, on the post-test of the ASSP in favor of the experimental group. The value of the mean rank on the ASSP of the experimental group reached 9.50, and the mean rank on the ASSP of the monitoring group reached 3.50. The Mann-Whitney U test for small samples was utilized to compare the means of both groups on the social skills variable and the results showed that the value of the Mann-Whitney U was 0.000, which is less than the level of significance (α≥0.05**),** and therefore, there is an effect of the educational program on the post-test of the social skills in favor of the experimental group.

Q2: Are there statistically significant differences at the level of significance (α≤ 0.05) in the Social Reciprocity dimension after the application of the educational program?

Table 9. Results of the Mann-Whitney test on the social reciprocity dimension

Social Reciprocity	Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig.	Exact Sig.
	Experimental group	6	9.50	57.00	.000	21.000	-2.887-	.004	.002b
	Monitoring group- pretest	6	3.50	21.00					
	Total	12	-	-					

a. Grouping Variable: group
b. Not corrected for ties.

Table 9. shows that there are statistically significant differences at the level of significance (α≥0.05**),** between the experimental group and monitoring group, on the post-test of the Social Reciprocity dimension, in favor of the experimental group. The value of the mean rank on the ASSP of the experimental group reached 9.50, and the mean rank on the ASSP of the monitoring group reached 3.50. The Mann-Whitney U test for small samples was utilized to compare the means of both groups on the Social Reciprocity dimension and the results showed that the value of the Mann-Whitney U was 0.000, which is less than the level of significance (α≥0.05**),** and therefore, there is an effect of the educational program on the post-test of the Social Reciprocity dimension in favor of the experimental group.

Q3: Are there statistically significant differences at the level of significance (α≤ 0.05) in the Social participation dimension after the application of the educational program?

Table 10. Results of the Mann-Whitney test on the social participation dimension

Social participation	Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig.	Exact Sig.
	Experimental group	6	9.50	57.00	.000	21.000	-2.918-	.004	.002b
	Monitoring group- pretest	6	3.50	21.00					
	Total	12	-	-					

a. Grouping Variable: group
b. Not corrected for ties.

Table 10. shows that there are statistically significant differences at the level of significance (α≥0.05**),** between the experimental group and monitoring group, on the post-test of the Social participation dimension, in favor of the experimental group. The value of the mean rank on the ASSP of the experimental group reached 9.50, and the mean rank on the ASSP of the monitoring group reached 3.50. The Mann-Whitney U test for small samples was utilized to compare the means of both groups on the social participation dimension and the results showed that the value of the Mann-Whitney U was 0.000, which is less than the level of significance (α≥0.05**),** and therefore, there is an effect of the educational program on the post-test of the Social participation dimension in favor of the experimental group.

Q4: Are there statistically significant differences at the level of significance (α≤ 0.05) in the Detrimental Social Behaviors dimension after the application of the educational program?

Table 11. Results of the Mann-Whitney test on the detrimental social behaviors dimension

Detrimental Social Behaviors	Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig.	Exact Sig.
	Experimental group	6	7.58	45.50	11.500	32.500	-1.052-	.293	.310b
	Monitoring group- pretest	6	5.42	32.50					
	Total	12	-	-					

a. Grouping Variable: group
b. Not corrected for ties.

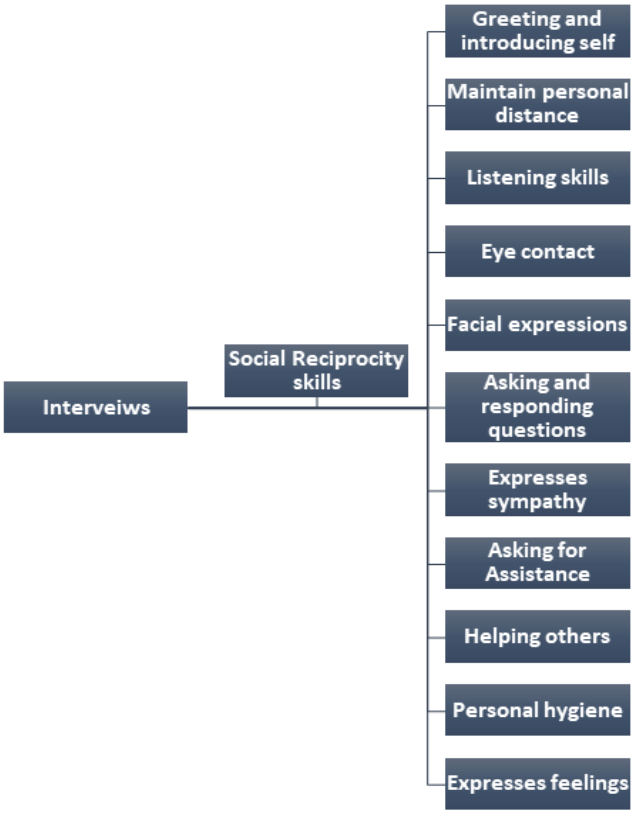
Table 11. shows that there are no statistically significant differences at the level of significance (α≥0.05**),** between the experimental group and monitoring group, on the post-

test of the Detrimental Social Behaviors dimension. The value of the mean rank on the ASSP of the experimental group reached 7.58, and the mean rank on the ASSP of the monitoring group reached 5.42. The Mann-Whitney U test for small samples was utilized to compare the means of both groups on the Detrimental Social Behaviors dimension, and the results showed that the value of the Mann-Whitney U was 11.500, which is greater than the level of significance ($\alpha \geq 0.05$**),** and therefore, there is no effect of the educational program on the post-test of the Detrimental Social Behaviors dimension.

3.2 Study validity

The qualitative method was conducted by Interviewing four of the participants' teachers to validate the study and confirm the data of the quantitative method. The data of the interviews were treated using WebQDA software (www.webqda.com) (Costa et al., 2019) to support the analysis of qualitative data in a collaborative and distributed environment developed by researchers at the University of Aveiro. The 12 interview questions were related to the social reciprocity skills of students with ASD and divided into 11 categories to answer the research question. The main category and sub-category of the data analysis are presented in Figure 2.

Figure 2. **Categories and subcategories for content analysis**



The results of WebQDA software analysis (Costa et al., 2019), including related sources, dimensions, categories, and the number of references are shown in Table 12, where teachers' interviews were analyzed and divided into 11 subcategories presenting social reciprocity skills of students with ASD.

Table 12. Related sources, dimensions, categories, and the number of references

Social Reciprocity skills of students with ASD											
Sources	Greeting and introducing	Maintain distance	Listening skills	Eye contact	Facial expressions	Ask/ respond to Ques.	Expresses sympathy	Asking for Assistance	Helping others	Personal hygiene	Expresses feelings
Interview 1	7	2	2	3	3	3	2	3	3	2	3
Interview 2	4	1	1	2	3	2	1	2	2	2	2
Interview 3	4	2	2	2	2	4	2	3	3	2	2
Interview 4	5	2	4	2	3	4	2	2	2	2	4
Total references	20	7	9	9	11	13	7	10	10	8	11

1.2. Social Reciprocity skills

1.2.1 Greeting and self-introducing

In all the interviews, teachers stated that all participants increased their level of greeting and self-introducing skills. The participants greet their teachers, peers, and school staff by saying "salaam" or "Marhaba", which means "hello" in English. However, the initiating greeting was performed only with familiar people; but unfamiliar people should initiate the greeting to have a response. Additionally, the participants introduce themselves to others by mentioning their name, age, school, and grade, as teachers certified in the interviews in the following examples:

> *"when he enters the classroom, he says "Marhaba" Hello" or "Salam", however, with unfamiliar people, he needs verbal prompting or they should initiate the greeting."*
>
> *"The student introduces himself when someone asks him. For example, he says "I am Abbas", "Studying at Oxford School", and he mentions his age."*
>
> *"The student introduces himself by mentions his name, grade, age, and school"*
>
> *"when he enters the classroom, he knocks on the door and says salaam and he does the same with other schools' staff"*

"He says "how are you, my teacher?"

1.2.2 Maintaining a personal distance.

All the participants with ASD showed the ability to maintain personal distance during the interaction with their teachers and peers, inside and outside of the classroom. Teachers provided evidence about participants maintaining a personal distance, for example:

> *"The student maintains an appropriate distance when he speaks with me or his peers, when I ask him to come to the whiteboard to solve a question, he maintains an appropriate distance".*
>
> *"He maintains appropriate personal distance when he speaks to me or other teachers".*
>
> *"The student maintains an appropriate distance when he speaks to me or peers when he asks me to correct his answer, he leaves a suitable distance".*
>
> *"The student maintains appropriate distance when he asks the teacher to go to use the toilet and with his peer when I ask him to work in a pair to talk about his weekend before the students".*

1.2.3 Listening skills

In all the interviews, teachers provided several examples of the students' listening skills, either with teachers or their peers. For example, teachers pointed out that the participants show listening skills during the explanation of lessons or the conversation, by moving the face toward the speaker, maintaining eye contact, and asking questions related to the topic:

> *"The student listens to the teacher when we have a conversation and during the lesson explanation, when I talk to him about the homework, he listens carefully with attention and maintaining eye contact".*
>
> *"He listens to the teacher and he does that by making eye contact and asks questions related to the conversation".*
>
> *"The student listens to when I or his colleagues when we talk to him when I ask him about something or explain the lesson he sets and looks straight to me and listens to what I am saying".*
>
> *"The student listens when you ask him a direct question when I explain the lesson to him, He moves his face toward the speaker, makes eye contact with him/her, and responds to the topic".*

1.2.4 Eye contact

In all the interviews, participants with ASD show evidence about making eye contact with the speakers, teachers, and peers during the conversation, when teachers called them, during the lesson explanation, or in classroom activities. For example:

> *"The student makes eye contact when the teacher calls him, during the lesson while the teacher explains the topic when someone speaks with him directly".*
>
> *"He makes eye contact when I ask him a question during the lesson, Also, during classroom activities with his peers".*
>
> *"The student makes eye contact when I ask him for assistance or when he asks for drinking water, Also when I directly have a conversation with him".*
>
> *"The student makes eye contact when the teacher asks him a question about the lesson, when I ask them to do an activity with his peers he makes eye contact e.g., discussing with his peers to answer the lesson's questions".*

1.2.5. Facial expressions

The teachers indicated in all the interviews, that participants with ASD show the ability to recognize facial expressions during games, or classroom activities. The examples that the teachers gave included recognition of happiness, sadness, or anger, as following:

> *"The student recognizes the people if they are sad, or happy, or angry. He feels happy when his peers playing and laughing. He recognizes that his peer is angry when he takes one of his tools".*
>
> *"He recognized facial expression, he can tell if someone sad, or happy, or angry. if his peer crying, he asks him why are you sad? Also, he says I am happy when he got a high mark".*
>
> *"He recognizes the facial expression he smiles if someone smiles. if one of his colleagues appears to be angry, he asks why you are angry?"*
>
> *"The student recognizes facial expressions e.g., during classroom activities, he recognized that I am angry when he conducts an undesirable behavior and he shows happiness when his peers are happy during game activities".*

1.2.6 Asking and responding to questions.

In all the interviews, the teachers pointed out that all participants with ASD show the ability to ask and respond to questions. Where they ask questions about several things by using "Can I?", "Do you?", "What?", or "How?"; furthermore, they respond to the questions that are asked by others, as their teachers, and peers. For example:

> *"The student asks and responds to questions that are asked by the teachers or peers. For example, he asks his peer, "do you have a pen?"; "can I go to the toilet?". As*

well as he responds to the question posed by others e.g., what are you doing? "I am painting", "I am playing".

"The student asks and responds to question for example he asks what's your name? how old are you?. Also, responding to questions by answering others about his name, age, name of the school, and grade".

"The students respond and answer the questions. if I ask him how old are you? or which school are you studying? He mentions his age and school or what is your favorite color?. He asks questions as well e.g., can I go to the toilet?. are we going to play football today?"

"The student responds to the questions asked by others about his name, age, city, grade, school. As well as he asks others questions about different things e.g., when are we going to have the launch?. what is your name?, how I can answer this?".

1.2.7 Expresses sympathy

In all interviews, the teachers of participants with ASD indicated that all participants express sympathy with their peers when they are upset or sad, by going to them and try to comfort them. For example:

"He goes to his peer if he is sad and asks him why you are sad. Sometimes, he shares his objectives with him".

"When he sees his peer, he talks to him and asks him why you are upset? and tell me about him".

"When one of his colleagues starts crying, he goes to him and asks him to calm down. He says why are you crying?".

"He shows empathy to others e.g., when one of his peers is upset, he gets close to him to know why and tries to comfort him by saying "it is ok".

1.2.8 Asking for Assistance.

In all the interviews, teachers provided evidence about the willingness of participants with ASD to ask for assistance, when the situation requires it, as solving a question that they do not understand or finding their stuff. For example:

"When the student struggle in something he looks at me and says, "help me", he asks for help to solve lesson question when he doesn't understand. He asks for help when he does not find his teeth brush".

"he asks for help when he needs it, for example, he asks for help when he doesn't understand something in the lesson by pointing to the difficult phrase or question, askes verbally "how we solve this?"

"The student asks for help when it's needed. He looks to the teacher and verbally asks for painting colors. He pointed and says verbally I need the notebook from the shelf".

"He asks the teacher to help him to tie his shoes. He asks me to help him to handle his bag from the classroom shelf".

1.2.9 Helping others.

In all the interviews, teachers pointed out that all participants have the willingness to offer help to others, as helping their peers to clean or collecting the study tools. Also, they help teachers when they ask them, by cleaning the whiteboard or bring something that teachers ask for. For example:

"The student is willing to offer help when someone asks for it. He closes the door of the classroom when I ask him. He brings the ball for his peer when he asks him".

"If I ask him to help me in collecting the trash from the floor and throw it in the pin he listens and helps. He helps me when I ask him to carry the notebooks from the classroom to another".

"The student offers assistance when I or other teachers asked him to do. when ask him to bring me a paper from the drawer. when I ask him to return the chair to its place he does".

"The students offer help when I ask him e.g., he helps in cleaning the whiteboard, collecting the teaching tools that we used in the lesson and put them in the drawer".

1.2.10 Personal hygiene

In all the interviews, teachers stated that all the participants with ASD show the ability to maintain their hygiene, by washing their hands before and after the meals, and brushing their teeth when they finish their lunch. For example:

"The student maintains good personal hygiene e.g., he washes his hands before going to the cafeteria to have lunch. brush his teeth after he finishes eating".

"He always brushes his teeth after having lunch at the cafeteria. Also, he wishes his hand after and before the meal".

1.2.11 Expresses feelings

All participants with ASD show evidence of expressing their feelings towards people or situations. Teachers in all the interviews provided examples about this skill, where the participants with ASD express their sadness, anger, or love, as follows:

"The students express if he is angry or sad. he says I do not like to set far away from the window. I am sad because we did not go to the playground".

"He expresses his feelings, for example, I like Saud who is one of his peers. Also, if someone took one of his pens or other things, he says I do not like this, return it, and he reports it to me".

"He expresses about his feelings e.g., he says I love you, my teacher. Also, if someone annoys him, he says I do not like this and complain to me".

"He always expresses his feelings about things and people. I do not like to sit here because this guy is annoying. I love Amal's teacher because she helps me a lot".

3.3 Discussion

The results of the current study demonstrated that the educational program based on social stories, animated video modeling, and video self-modeling combined was effective in improving the targeted social communication skills for all the participants with HFASD in the experimental group, over the monitoring group.

The researcher attributes the improvement in social communication skills of the participants with HFASD to the video modeling and social story combined, which was an effective technique to teach the targeted skills, because it encouraged the learners to focus on the targeted behavior, and therefore, it promoted their attention, assisted learners to retain the targeted behaviors in memory, as a result of the possibility given by video to be repeated; this provided the learners with the opportunity to watch the content many times, preserving the events, permitting the learners to practice, and replicate the observed behaviors after watching the video clips. This situation gives the learners adequate time to repeat the targeted behavior in a safe environment, without the need to interact face to face with others. Also, children with ASD are visual learners more than verbal learners (Ozdemir, 2010; Cathy H Qi et al., 2018), therefore, video modeling, by its nature, motivates them to learn through observation. Besides, the social story can improve the individuals' with ASD ability to understand, inspect, and arbitrate others' behaviors, beliefs, and intentions, in the social situation, which provides them with the ability to plan and organize their behaviors to meet the needs of others, and therefore, decrease the level of anxiety.

Although the educational program targeted the skills on the social reciprocity dimension, there were similar results on the Mann-Whitney test on the social participation dimension. The similarity in the results can be related to the small sample size. The study was conducted on a sample of 12 participants with HFASD, (the experimental group= 6 participants and the monitoring group=6 participants); thus, the study would require a larger sample size to show

the differences between the two dimensions. However, the Mann-Whitney test is designed to treat data within studies with small and moderate sample sizes; therefore, it was the appropriate test to utilize with this kind of study. Moreover, the Mann-Whitney test works with ranks, rather than data values, which can be the main reason for the similarity of the results on both dimensions. Consequently, the qualitative method was utilized to overcome the weakness of using a single method by conducting interviews with the teachers of the participants, and the data of the interviews were analyzed using WebQDA software (Costa et al., 2019).

The educational program based on Social Stories (SS), Video Modeling (VM), and Video Self-Modeling (VSM) was effective in improving greeting and self-introducing for all participants with HFASD in the experimental group. This group demonstrated statistically significant differences in the post-test of the ASSP, when compared to the monitoring group, who did not show any improvements. Furthermore, the teachers' interviews provided examples of how the participants with HFASD greet or introduce themselves, saying "Hi = Marhaba, Salam", and introducing themselves by mentioning their "names, age, grade, and school". Several studies were conducted to improve the greeting skills of individuals with ASD, by utilizing social stories and video modeling combined (Kagohara et al., 2013; Uzuegbunam & Wong, 2018), Point of view video modeling (Kouo, 2018), or social stories solely (Amin & Oweini, 2013; Karayazi et al., 2014; Samuels & Stansfield, 2012). Radley and colleagues (2017) utilized animated videos, social stories, and self-monitoring cards to improve self-introducing skills, basic body language, and participating in the conversation (Radley et al., 2017). Acar & colleagues (2016) compared the effects of two intervention approaches: SS and VM to teach self-introducing (Acar et al., 2016). All these studies showed that VM or/and SS were effective in improving the greeting and self-introducing skills of individuals with ASD.

Daneshvar and colleagues (2019) compared SS and a photo activity with the provision of modeling, prompting, and chaining to teach four social skills components, including greeting, commenting, social initiation, turn-taking, and sharing. The results of the study showed that a photo activity with the provision of modeling, prompting, and chaining, was effective in teaching the targeted skills, but SS solely wasn't effective (Daneshvar et al., 2019).

So and colleagues (2016), and Cardon (2013) utilized VM in teaching the gestures skills (including hello and goodbye); the results of both studies showed that VM was effective in

teaching all the participants' gesture skills (Cardon, 2013; So et al., 2016). Boudreau and Harvey (2012), and Buggey and colleagues (2011), utilized VSM in teaching social initiations for young participants with ASD; both studies showed that VSM was effective in teaching the targeted skills (Boudreau & Harvey, 2012; Buggey et al., 2011). The results of the current study are consistent with previous studies in improving greeting and self-introducing skills for all participants with HFASD.

The educational program based on SS, AVM, and VSM was effective in teaching the participants of the experimental group to maintain a personal distance with others, where the participants of the experimental group scored higher than the monitoring group on the post-test of the ASSP. Moreover, the examples that were provided by the teachers' interviews confirmed the results of the Mann-Whitney test.

Ho and colleagues (2019) utilized VM with six young participants with ASD, to develop joint attention and social engagement. The results of the study showed that five out of six participants significantly improved (Ho et al., 2019). The results of this study are consistent with the results of the current study, where all participants showed a high improvement in listening skills.

Handley and colleagues (2015) utilized VM, and SS combined to improve the eye contact of individuals with ASD. The results of the study showed a high improvement in the eye-contact of participants with ASD (Handley et al., 2015). Furthermore, Mason and colleagues (2012), and Özerk (2015) utilized VM solely to improve eye contact; the results showed improvement in the eye contact of participants with ASD (Mason et al., 2012; Özerk, 2015). The results of both studies are consistent with the results of the current study, where all participants with HFASD demonstrated a high improvement in eye contact.

Axe and Evans (2012), and Mason and colleagues (2012), evaluated the effects of VM in developing facial expressions for individuals with ASD (Axe & Evans, 2012; Mason et al., 2012). The results of both studies are consistent with the results of the current study, where VM was effective in improving the facial expressions of the participants with ASD. However, the current study utilized VM with SS and VSM.

Thirumanickam and colleagues (2018) compared the effects of VSM and VM in improving the asking question and other conversation skills. The study demonstrated that both strategies were effective, but VSM was more effective in improving the targeted skills (Thirumanickam et al., 2018). Also, Radley and colleagues 2015 utilized VM with self-monitoring to improve

requesting and responding skills with two individuals with HFASD; the results of the study showed that both participants achieved a high improvement in targeted skills (Radley et al., 2015). Also, Wilson (2013) utilized video and live modeling to develop requesting skills, and the results of the study showed that both intervention approaches were effective in developing the targeted skills for all participants with ASD (Wilson, 2013). Stauch and colleagues (2018) utilized video modeling (video-based group) to teach three social skills components, including extending the conversation, joining a conversation, and responding to others. The results of the study showed that VM was effective in teaching the targeted skills to four out of five participants with ASD (Stauch et al., 2018).

Furthermore, Rodríguez-Medina and colleagues (2016) utilized live modeling, direct instruction, and social reinforcement to improve initiating and responding to social interaction with a student with HFASD, through his typically developed peer. The results of the study showed that live modeling, direct instruction, and social reinforcement were effective in improving the targeted skills, not only for the participant, but also for his classmates (Rodríguez-Medina et al., 2016). Golzari and colleagues (2015) utilized SS to improve conversation skills as maintaining the conversation and responding to others (Golzari et al., 2015), and Almutlaq and Martella (2018) utilized SS through iPad application to improve "smile, giving compliments, and responding you are welcome" (Almutlaq & Martella, 2018). The results of both studies showed that all participants demonstrated significant improvement in the targeted skills. The results of the current study are consistent with previous studies, as all participants demonstrated a high improvement in asking and responding skills.

Malmberg and colleagues (2015) examined the impacts of VM in teaching empathy and other social skills, in comparison to social stories, for individuals with ASD. The results of the study showed that VM was effective in teaching the targeted skills, but SS solely was not effective (Malmberg et al., 2015). Besides, Amirrudin and colleagues (2019) utilized SS to improve moral values, including empathy to animals and older people; the results of the study showed that SS was effective in increasing verbal communication of the participants with ASD, and increased their perception about moral values toward animals and older people (Amirrudin et al., 2019). The results of both studies are consistent with the present study, in what refers to improving empathy with others.

Amin and Oweini (2013) evaluated the effects of SS and peer-mediated intervention to develop asking for assistance and other social skills. The results of the study showed that SS and peer-mediated combined were effective in developing targeted skills (Amin & Oweini, 2013). Grob and colleagues (2019) conducted a study to evaluate the impact of a training program (based on modeling, verbal explanations, role play, and promoting), to teach asking for assistance, and responding to job tasks in the workplace; the results showed that two out of three participants demonstrated improvement in all targeted skills (Grob et al., 2019). The results of both studies are consistent with the current study, in what refers to asking for assistance; however, the current study utilized VM and VSM to avoid the difficulties of finding an appropriate model for the participants.

Watkins and colleagues (2019) evaluated the effects of packaged intervention (based on modeling, play, responding to questions, and instruction) to improve helping others and other social skills. The results of the study indicated that all participants with ASD demonstrated an increased level of targeted skills (Watkins et al., 2019). Also, Plavnick, Kaid, and MacFarland (2015) examined the impact of video-based group instruction in developing helping others; the results of the study showed that video-based group instruction was effective with three out of four participants (Plavnick et al., 2015). Acar, Tekin-iftar, and Yikmis (2016) compared the effects of two intervention approaches SS and VM, to teach offering assistance; the results demonstrated that both interventions were effective in teaching the targeted skills (Acar et al., 2016). The results of the current study are consistent with these studies, in improving offering assistance to others.

Meister and colleagues (2015) utilized point-of-view video modeling to improve everyday life skills, e.g., handwashing, for eight students with ASD; the results of the study showed that point-of-view video modeling was effective in teaching all the participants the targeted skills (Meister et al., 2015). Furthermore, Kellems and colleagues (2018) compared the effects of VM and static pictures in teaching living life skills and motor skills, e.g., brushing teeth and jumping jack; the results of the study demonstrated that video modeling and static pictures were effective in teaching all of three participants the targeted skills (Kellems et al., 2018). Moreover, Keen and colleagues (2007) evaluated the effects of animated video modeling in teaching toileting skills, and the results showed that all participants with ASD learned the targeted skills through animated video modeling (Keen et al., 2007). Also, Karayazi and colleagues (2014) indicated that SS was effective in improving social behaviors

(nose-wiping) for an individual with ASD (Karayazi et al., 2014). The results of these studies are consistent with the current study in improving personal hygiene.

Chapter 4 – Conclusion

Conclusion

This research aimed to explore the impact of social stories, animated video modeling, and video self-modeling combined, to improve the social communication skills of six students with HFASD. The mixed-method (quantitative and qualitative) was conducted, based on dominant, sequential design to examine the effectiveness of the educational program. The results of both groups were analyzed using SPSS software version 25th to find the mean rank, sum of ranks, and Mann-Whitney U value. Besides, teachers' interviews were analyzed using the WebQDA software, in order to validate the study. The results of the study indicate that the educational program based on SS, AVM, and VSM combined was effective in improving the targeted social communication skills for all the participants with HFASD in the experimental group, over the monitoring group. Also, the participants in the experimental group show improvement in both the social reciprocity and social participation dimensions, but no improvement was observed on the detrimental social behaviors dimension.

The improvement in social communication skills of the participants, in the experimental group, is attributed to the nature of video modeling, which gives the learners adequate time to repeat the targeted behavior in a safe environment, promotes their attention, encourages them to focus on the targeted behaviors, assists them to retain the targeted behaviors, permits the learners to practice and replicate the observed behaviors, and provides the opportunity to watch the content many times. Hence, these advantages make video modeling an effective technique to teach the targeted behaviors for individuals with ASD. In the current research, SS, AVM, and VSM were used combined, where each animated video was designed according to a social story. Later, VSM was used, where the participants were recorded and asked to play the role of their own video.

Limitations

The results of the study can be discussed in the light of some limitations. First, it was impossible to obtain the maintenance data (follow-up), because of the pandemic Covid-19, where all the schools and special education centers shut down, and Jordan imposed a curfew until the end of the school year. Second, the study was conducted on a small sample size because of difficulties to obtain the approval of the program implementation and the bureaucracy of special education centers in Jordan, where is a lack of encouragement to conduct this kind of program. Finally, lack of parental participation in the study, because of the busy schedule or cultural reasons. Additionally, the researcher delivered the information

through the supervisor of the center, as he should do; therefore, the communication with them was not effective.

Recommendation

The results of the study showed that using animated video modeling with social stories and video self-modeling combined yielded promising outcomes in improving the social communication skills of individuals with ASD. However, there is a need to extend these studies to developing countries, where is a lack of research in the area of social communication skills in ASD. Also, there is a need to develop official assessment tools to evaluate the effects of intervention programs with the use of a larger sample size and a control group. Therefore, this can be possible if we train many teachers and each one is responsible for the implementation of the program with his/her students; consequently, the results would be more satisfactory. Moreover, conducting a long-term follow-up test to investigate if the participants maintain and generalize the targeted skills. Finally, encouraging parents to participate in the intervention program to assist their children and support the maintenance and generalization of their acquired skills.

Many implications can be identified from the results of the current research, including the improvement in social skills of individuals with ASD, in the experimental group, which was associated with the use of SS, AVM, and VSM combined, which indicate to promising outcomes of using these techniques. In the developing countries, particularly Jordan, there is a lack of studies targeting the social communication skills of individuals with ASD; therefore, there is a need to conduct this kind of research in order to increase the odds of individuals with ASD to obtain the necessary skills that facilitate their participation in the inclusive settings. Also, examining the impact of these programs by using a large sample size and a control group; and this can be possible by conducting this study in different schools and providing teachers with training to be prepared for implementing this kind of programs in their classrooms; and therefore, the results would be more satisfactory. Besides, developing official assessment tools that can be accessible and suitable to be used to evaluate the impact of intervention programs.

Furthermore, the participation of parents in the intervention program would enhance the maintenance and generalization of targeted skills for their children with ASD. The researcher

suggests benefiting from the advanced technology by using 3D video programs to make the videos more realistic and enjoyable for the learners. Finally, conducting a follow-up test, which would provide valuable data about the maintenance and generalization of the targeted skills after the program completion.

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Annexes

Annex 1. The educational program

Introduction

This program is an educational program suggested by the researcher to develop social communication skills for a sample of high functional students with Autism (HFASD). This program was developed according to principles and theoretical foundations, by introducing experimental studies that are related to the development of communication and social interaction skills.

Target Group

The program targets high-functioning individuals with ASD.

Brief description of the educational program

This program is an educational program based on modeling and social stories to develop social communication skills for a sample of high functioning students with ASD. The program consists of (12) training sessions, the duration of each session was (1.50) minutes, two sessions a week. The sessions of the program are based on Social Learning Theory, developed by Ebert Pandora (Bandura, 1977), and the Theory of Mind, developed by Simon Baron-Cohen and Uta Frith (Baron-Cohen et al., 1985), where the child learns by simulating and imitating animated videos based on a social story; after that, the participants are recorded and play the role of their own videos (video self - modeling).

The purpose of the program

The program aims to develop social communication skills through the implementation of (12) training sessions with the experimental group.

Operant objectives of the program

1. Assisting individuals to develop communication and social interaction skills.
2. Supporting individuals to achieve social and psychological adaptation.
3. Developing the skills of dealing with others and identify the ways of excellence and success.
4. Promoting an individual's abilities in social, emotional, and psychological aspects.
5. Developing an individual’s sense of social participation.

Program teaching methods

This program consists of a wide and varied range of teaching methods, including:

1. Roleplay.
2. Video modeling.
3. Social stories.
4. Video self-modeling.
5. Games.
6. Discussion.

The educational program sessions

<u>Session Nº.1: Greeting and introducing self.</u>

Date of the session: Thursday_23rd of January 2020.

Session objectives:

1) Teaching the participants 'greeting skills'.
2) Teaching the participants 'introducing themselves skills'.

Session time: 1h50 min.

Session procedures:

Meeting the participants of the experimental group, ask them to set on a chair and prepare them for the session. Afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "two people introducing themselves and greeting each other"; when they accept, the instructor will provide verbal reinforcement by saying "that's great!"; "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Sami always greets and introduces himself to others. Sami: Hello, good morning. Ahmad: Good morning: Sami: I am Sami, studying in second grade, and you? Ahmad: I am Ahmad, studying in third grade. Sami: How old are you? Ahmad: I am 8 years old, and you? Sami: I am 9 years old. Ahmad: Nice to meet you. Sami: Nice to meet you too.

Each time the participant loses attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 13. Question about greeting and introducing-self story

Questions	Answers
How did Sami greet Ahamed when they meet?	"Hello, Good morning".
How did Sami and Ahmad introduce themselves?	By saying the name, grade, and age.
How did Sami and Ahmad finish the conversation?	"Nice to meet you", and "Goodbye, or "see you later".

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be paired again and asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

<u>Session Nº. 2: Maintaining personal distance</u>

Date of the session: Sunday_26th of January 2020.

Session objectives:

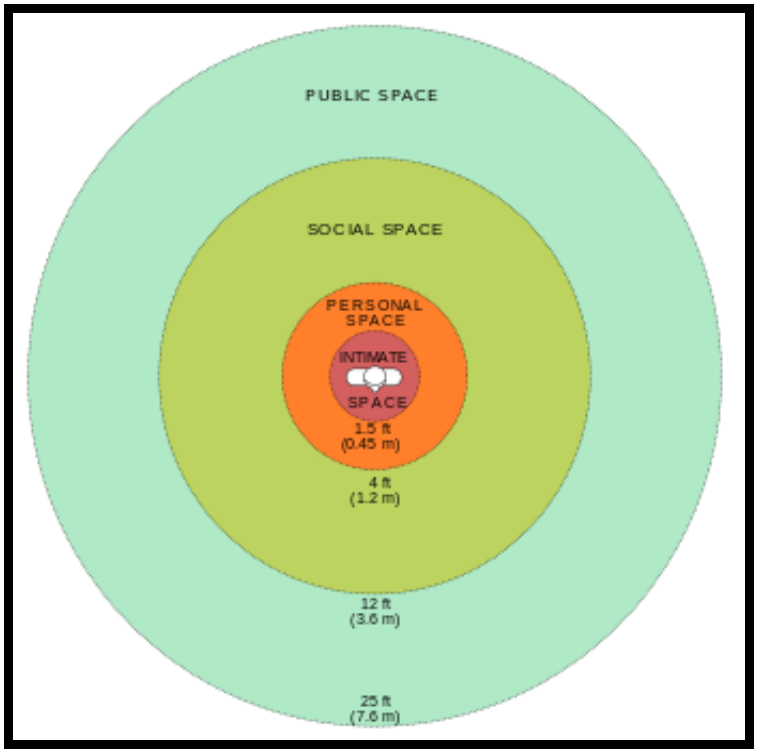
1) Explaining to the group members the meaning of "personal distance" (distance between people).
2) Teaching the participants to maintain an appropriate personal distance.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.
Clarifying the purpose of this session, which is to learn to "maintain an appropriate personal distance", and why it is important in the process of communication and social interaction.

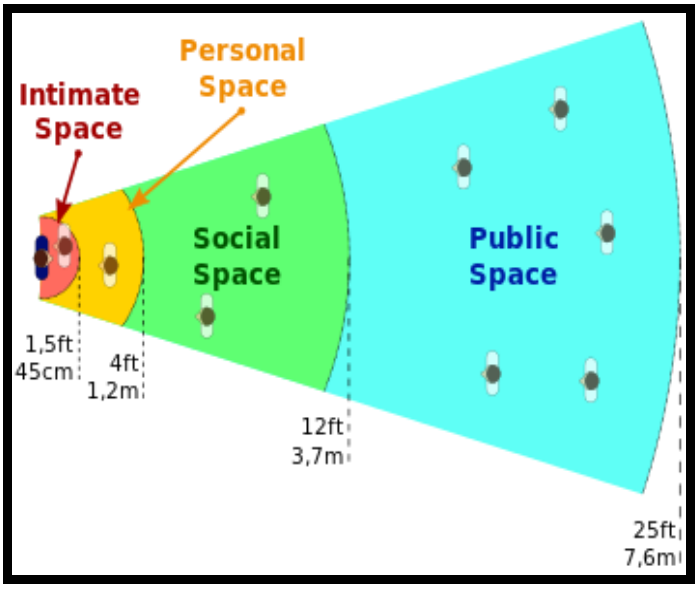
Figure 3. A chart describing interpersonal distances of man, showing radius in feet and meters



(Web Hamster, 2009)

Note. By WebHamster. (2009). Diagram representation of personal space limits, according to Edward T. Hall's interpersonal distances of man, showing radius in feet and meters. Wikipedia. https://en.wikipedia.org/wiki/File:Personal_Space.svg

Figure 4. Shows the different spaces used in proxemics



(Jean-Louis Grall, 2011)

Note. By Jean-Louis Grall (2011). The different spaces used in proxemics. Wikipedia. https://commons.wikimedia.org/wiki/File:Personal_Spaces_in_Proxemics.svg

Before the participants watch the video, the instructor will ask them to give examples about the closest people in their lives.
The participants will be asked to sit on a chair and will be prepared for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "maintaining a personal distance"; when they accept, the instructor will provide verbal reinforcement by saying "that's great!"; "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always maintains an appropriate personal distance between him and others when he talks to them according to their kinship level. Ahmad leaves a close distance when he speaks to his mother, father, and siblings. Ahmad leaves more distance when he speaks with his friends and relatives than with family. Ahmad leaves more distance when he speaks to teachers and colleagues at school. When Ahmad talks to strangers, he leaves more distance, compared to family, friends, relatives, colleagues, and teachers.

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 14. Questions about maintaining personal distance story

Questions	Answers
Who are the closest people to you?	Mom, dad, brothers, and sisters.
Who are the less close people to you?	Strangers.
Who is closer to you, teachers, or parents?	Parents.
Does Ahmad leave the same distance with his colleagues and strangers?	No, because colleagues are closer to Ahmad.

Then, the instructor will draw a circle on the floor consisting of several rings, and draw an X in the middle of the circle, to mark the status of the participants compared to others; then, he/she asks the participates to play the role of dad, mom, friend, brother, teacher, and stranger; then, each participant will move in the circle according to the closest person in their lives. In this stage, the participant will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº.3: Listening skills

Date of the session: Thursday_ 30th of January 2020.

Session objectives:

1) Developing the listening skills of the experimental group.
2) Recognizing the importance of listening skills in social interaction.
3) Training the group in turn-taking skills during the conversation.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing listening skills and realizing the importance of listening skills in social communication".

The participants will be asked to sit on a chair and be prepared for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "listening skills"; when they accept, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always listens to their teacher while explaining the lessons that is why Ahmad answers teacher questions. Teacher: Ahmad, can you answer 4×4=? Ahmad: it is 16. Teacher: excellent, Ahmad. In contrast, Ali was playing during the lesson, when the teacher asked him: 4×6=? Ali felt nervous and gave the wrong answer. Teacher: asked him to keep his attention on the lesson. Ali: sorry, I will pay attention next time. Teacher: ok, I will explain it again. Ali: thanks!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 15. Questions about listening skills story

Questions	Answers
Did Ahmad answer the teacher's question correctly?	"Yes".
Why did Ahmad answer the question?	"Because he was listening to the teacher during the Math's lesson".
Did Ali answer the teacher's question in the beginning? Why?	"No, because he was playing during the lesson"

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

<u>Session Nº. 4: Eye contact</u>

Date of the session: Sunday_ 2nd of February 2020.

Session objectives:

1) Developing eye contact skills of the experimental group.
2) Recognizing the importance of eye contact in social interaction.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing eye contact skill and its importance in social interaction ".

The participants will be asked to sit on a chair and be prepared for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "eye- contact"; when they accept, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always makes eye contact when others speak to him. Teacher: Hello Ahmad, good morning?

Ahmad: Hello teacher, I am fine, and you?
Teacher: I am fine, thanks, did you do your homework?
Ahmad: Yes, I finished it.
Teacher: Well-done Ahmad!
When Ahmad went back home, he speaks to his mother while making eye contact.
Mother: Good evening Ahmad, how was your day at school?
Ahmad: It was good, and my teacher corrected my homework and gave me a good mark.
Mother: That is great! Congratulations Ahmad!
Ahmad: Thanks, mom.

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 16. Questions about eye contact story

Questions	Answers
When someone talks to us, where should we turn our eyes?	"Toward his/her face".
If we look away from the face of the speaker, can we understand what he/she is saying?	"No, because we will miss a lot of information".
Does Ahmed make eye contact when he talks to his teacher or mother?	"Yes".
What was Ahmed looking at when he responded to his mother and teacher?	"He was looking at their faces".

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker. Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 5: Facial expression

Date of the session: Thursday_6th of February 2020.

Session objectives:

1) Developing facial expression recognition skills.
2) Recognizing the importance of facial expressions in social interaction.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing facial expression recognition skill and its importance in social interaction ".

The participants will be asked to sit on a chair and be prepared for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "facial expression"; when they accept, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad was sitting at the school playground and feels bored; therefore, he asked his colleagues to join them in the game.
However, his colleagues refused to let Ahmad join the game and he felt sad.
Sami saw his friend Ahmad at school, and he looks "sad".
Sami asked Ahmad: Hi Ahmad, why do you look sad?
Ahmad: Hi Sami! Because my colleagues refused to let me join them in the game!
Sami felt angry and says: What do you think if you'd join me and we play together?
Ahmad looks very happy and says: Yes, I would like to join you. Thanks, Sami!
Sami: You are welcome!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 17. Questions about facial expression story

Questions	Answers
How did Ahmad feel when his classmates refused to join him in the game?	"Sad".
How did Sami feel when he heard Ahmad's story?	"Angry".
How did Ahmad feel when Sami invited him to	"Happy".

play?	
How did Ahmad feel when he was sitting alone at the school playground?	"Bored"

The participants will be asked to play the role of what they have watched, by recognizing the emotional state (sad, happy, angry, upset, shamed, fear, etc.). In this stage, the participant will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be paired again and asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 6: Asking and responding to questions

Date of the session: Sunday_ 9th of February 2020.

Session objectives:

1) Improving 'asking and responding questions skills'.
2) Identifying different types of questions, and when, how, and where we use them.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing asking and responding questions skills, and its implementation in social interaction ".

Types of questions:

- Open question: a question that does not specify a pattern of response, but opens the way for discussion and allows for much longer responses.
- Closed question: a specific question that requires a 'yes' or 'no' answer.
- Follow-up question: a question to be followed by a question or other questions, for more information.
- Feedback question: aims to provide information about the quality of performance.

Examples

- How old are you?
- What is your father's name?
- What are your favorite things?
- Where do you live?
- What is your ambition?
- Do you like sports?

Meeting the participants of the experimental group, ask them to sit on a chair and be prepared for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "asking and responding questions"; when they accepted, the instructor will provide verbal reinforcement, by saying "that's great! "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always asks and responds to others' questions.
Father sitting in the living room, reading a book.
Ahmad: Hello, dad, what are you reading?
Father: I am reading an interesting story; would you like to go out to play today?
Ahmad: Sure, dad, but where are we going?
Father: We are going to the park.
Ahmad: That is great, when are we going there?
Father: At 5 PM.
Ahmad: How are we going to go there?
Father: Walking, because the park is nearby.
Ahmad: Thanks, dad!
Father: You are welcome.

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 18. Questions about asking and responding to questions story.

Questions	Answers
What was the father reading?	He was reading an interesting story.
Where are the father and son going?	They are going to the park.
What time are they going there?	At 5 PM.
How are they going there?	Walking on foot.

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

<u>Session Nº.7: Expressing sympathy</u>

Date of the session: Thursday_13th of February 2020.

Session objectives:

1) Developing 'expressing sympathy to others' skills.
2) Distinguishing between different emotional situations and realizing their importance in social interaction.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing empathy with others skill and realizing its importance in social interaction ".

Meeting the participants of the experimental group, asking them to sit on a chair, and preparing them for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "empathy"; when they accepted, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!"

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad's friends always express sympathy to others. When the teacher asked the students to draw a painting about a place that they have visited, Ahmad and his classmates started drawing. While Ahmad was drawing, he spilled the colors on his painting. Ahmad started crying and felt upset. All his classmates saw this and come to Ahmad to support him. Ali: Are you ok, Ahmad? Ahmad: No, I spilled the colors on my painting. Ali: Do not worry, Ahmad, we will bring you a new painting and we will share the colors with you. Ahmad: Stopped crying and said "thanks, guys, for your support". Ali and his classmates: You are welcome!

When Ahmad finished his painting, all his classmates applauded him. Ahmad felt happy because of his classmates' support, and thanked them again.

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 19. Questions about expressing sympathy story.

Questions	Answers
Why did Ahmad cry?	Because he spilled the colors on his painting.
What did Ali and his classmates do for Ahmad?	They came to him and gave him a new painting and share the colors with him.
What did Ahmad feel after his classmates' support?	He felt happy.
What did Ahmad's classmates do after he finished drawing?	They clapped for him.

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be paired again and asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 8: Asking for assistance

Date of the session: Sunday_16th of February 2020.

Session objectives:

1) Developing asking for assistance skills.
2) Recognizing the importance of asking for assistance, and when it can be requested.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.
Clarifying the purpose of this session, which is "Developing the skill of asking for assistance from others and when it can be requested".

Meeting the participants of the experimental group, asking them to sit on a chair, and preparing them for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "asking for assistance"; when they accepted, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!"

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Fatima always asks for help when she needs it. Fatima: Good afternoon mom, can you help me in dressing my hair? Mother: Good afternoon. Sure! It is my pleasure. Fatima: Thanks, mom. Mother: You are welcome! Fatima also asks her teachers or colleagues, when she needs assistance. Fatima: Good morning, teacher! I need your help to explain this question, please! teacher: Good morning, Fatima, sure! I can do that. Fatima: Thanks a lot! teacher: You are welcome!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 20. Questions about asking for assistance story

Questions	Answers
What did Fatima ask her mother?	To help her dress her hair.
What did Fatima ask her teacher?	To assist her to understand the question.
Did the teacher and mother help Fatima?	"Yes".

When do we ask for assistance?	When we need it.

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 9: Helping others

Date of the session: Thursday_20th of February 2020.

Session objectives:

1) Developing the skill of helping others.
2) Recognizing the importance of helping others and when we can provide it.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.
Clarifying the purpose of this session, which is "Developing the skill of helping others", the instructor links between helping others and the skill in the previous session, which was "asking for assistance".

Meeting the participants of the experimental group, asking them to sit on a chair, and preparing them for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "helping others"; when they accepted, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always helps others when they need it. Ali and Ahmad are brothers. Ali: Good evening, Ahmad, can you help me doing my homework? Ahmad: Good evening, Ali, Sure! I will help you. Ali: Thanks. Ahmad: You are welcome! Ahmad helps his mother too, when she asked him for help.

Mother: Ahmad, can you take the garbage out, please? Ahmad: Yes mom, I can. Mother: Thanks, Ahmad. Ahmad: You are welcome!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 21. Questions about helping others story.

Questions	Answers
What did Ali ask Ahmad?	To help him doing his homework.
What did Ahmad's mother ask Ahmad to do?	To take the garbage out.
Did Ahmad help his brother and mother?	"Yes".
Is Ahmad a helpful person?	"Yes".

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 10: Personal hygiene

Date of the session: Sunday_ 23rd of February 2020.

Session objectives:

1) Developing the skill of maintaining personal hygiene.
2) Recognizing the right healthy habits.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing and maintaining personal hygiene skill and recognizing the right healthy habits".

The importance of personal hygiene:

- Maintain health and prevent disease.
- The individual feels more comfortable and more dynamic and productive (Sharma, 2018).
- Promote the success of the individual in social interaction and making social relationships (Speltini & Passini, 2014).

Healthy habits to maintain personal hygiene:

- Taking a shower every day for all ages at least three times a week. The bath must be fast within 5 minutes to save water and time.
- Brushing the teeth three times a day, after each meal, to maintain a good smell of the mouth.
- Clipping the nails every two weeks and clean them carefully.
- Using deodorants.
- Pay attention to sports, reduce weight, and eating healthy food.
- Wearing clean clothes and rid of dirty clothes because may cause serious skin disorders.
- Washing your hands after using the bathroom, before eating, after dealing with some pets, or touching the garbage, or after coughing or sneezing, all prevent us from bacteria, viruses, and helps get rid of germs.
- Cleaning accommodation periodically as roofs and floors, sterilizing the tools we use in daily lives; washing towels, dishes, and others (Kumar et al., 2020).

Meeting the participants of the experimental group, asking them to sit on a chair, and preparing them for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "personal hygiene"; when they accepted, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Ahmad always maintains his personal hygiene. Ahmad washes his hands before and after eating. Ahmad brushes his teeth before going to bed. In the morning, when he wakes up, he washes his face, dresses clean clothes, brushes his hair, and says to his mother: goodbye!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 22. Questions about personal hygiene story

Questions	Answers
What does Ahmad do before and after eating?	He washes his hands.
What does Ahmad do before going to bed?	He brushes his teeth.
What does Ahmad do before he goes to school?	He washes his face, dresses clean clothes, and brushes his hair.
What does Ahmad do when his nails are long?	He clips his nails.

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 11: Expressing feelings

Date of the session: Thursday_27th of February 2020.

Session objectives:

1) Developing the skills of expressing feelings.
2) Recognizing the importance of expressing feelings toward different social situations.

Session time: 1h50 min.

Session procedures:

Greeting the participants and emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Clarifying the purpose of this session, which is "Developing the skills of expressing feelings and recognizing its importance in different social situations".

It's when the individuals reveal their feelings toward social situations or people, whether positive or negative feelings (Waterloo et al., 2018).

The importance of expressing feelings:

- Offers relief to psychological pressures, develops an individual's self-acceptance, and increases social interaction (Kennedy-Moore & Watson, 2001).
- It is important in building positive and clear social relations (Daou et al., 2016).
- Enhances physical health, and the immunity system (Greenberg et al., 1996).

Meeting the participants of the experimental group, asking them to sit on a chair, and preparing them for the session; afterwards, the instructor will ask each participant if he/she would like to watch an animated video about "expressing feelings"; when they accepted, the instructor will provide verbal reinforcement by saying "that's great!", "amazing!".

After the participants accept watching the video, the instructor plays the animated video that was designed according to the following story:

Fatima always expresses her feelings toward different social situations.
When Fatima was sitting next to Ali in the classroom, Ali started writing in her notebook without asking her.
Fatima: Ali, stop! I do not like anyone to write in my notebook!
Ali: Sorry Fatima! I needed a paper, but I should have asked you.

Fatima: It is ok Ali, I liked that you apologized! And I will give you a paper. Ali: Thanks, Fatima. It is so kind of you! Fatima: You are welcome, Ali!

Each time the participant loses his attention, the instructor pauses the video and asks him/her to attend the video. The instructor will play the video twice to assure that each participant watches the whole video with attention.

The participants will be asked to answer the following questions about the video:

Table 23. Questions about expressing feelings story

Questions	Answers
What did Ali do while he was sitting next to Fatima?	He wrote in Fatima's notebook.
What did Fatima do when she saw what Ali did?	She asked him to stop, because she did not like his behavior.
How did Ali react when Fatima asked him to stop?	He apologized and told her that he needed a paper.
What did Fatima do when Ali apologized?	She liked that he apologized and gave him a paper.

The participants will be asked to play the role of what they have watched. Then, they will be recorded, and the video will be edited using Windows' Moviemaker.

Afterwards, each participant will be asked to watch the video of him/herself while playing the targeted behavior.

Finally, the participants will be asked to play the role of their own video.

Ending session:

Close the session by thanking the group members for attending and participating, and reminding them about the date for the next session.

Session Nº. 12: What did you benefit from the program?

Date of the session: Sunday_1st of March 2020.

Session objectives:

1) Preparing the group members to finish the program.
2) Discussing the previous sessions.
3) Listening to the comments of participants in the program, and their perceptions about the most important skills they consider they have benefited from the program.

Session time: 1h50 min.

Session procedures:

Meeting the participants (experimental group), greeting, and thanking them for their good commitment and attendance throughout the sessions of the program, wishing that they benefit from the program in their lives.
Emphasizing the skills developed in the previous session, by asking them and listening to their comments.

Preparing the members to finish the program.

The instructor discusses with the members what happened in the previous sessions.

Writing notes about the program and discussing it.

Reviewing examples of skills that have been trained during the program.

Ending session:

Close the session by thanking the group members for attending and participating in the program, and ask them to practice what they have learned in their lives.

Annex 2. The results of WebQDA software analysis.

Social communication skills of students with Autism

Issued by dr.zreqat28

greeting and introducing self

Abbas _Interview Questions_31.3.2020.rev_PS	7 References	3.31%

Reference 1 0.48%

the student greets familiar and unfamiliar people

Reference 2 0.53%

when he enters the classroom, he says “Marhaba” Hello

Reference 3 0.10%

or “Salam”

Reference 4 0.86%

the students introduce himself when someone asks him. For example, he says “ I am Abbas”

Reference 5 0.27%

“Studying at Oxford School”

Reference 6 0.20%

he mentions his age.

Reference 7 0.87%

With unfamiliar people he needs verbal prompting or they should initiate the greeting.

Odi _Interview Questions_31.3.2020.rev_PS	4 References	2.71%

Reference 1 0.91%

the student greets other familiar and unfamiliar people at school by saying hello “Marhaba”

Reference 2 0.10%

or “Salam”

Reference 3 0.95%

he initiates greets with familiar people but unfamiliar they should initiate the greeting first.

Reference 4 0.74%

the student introduces himself by mentions his name, grade, age, and school

Suad Interview Questions_31.3.2020.rev_PS 4 References 3.22%

Reference 1 0.58%

the student greets familiar people by saying Hello or salaam

Reference 2 1.09%

when he enters the classroom, he knocks the door and says salaam and he does the same with other schools' staff

Reference 3 0.62%

The unfamiliar people should initiate him to return the greeting

Reference 4 0.93%

the student introduces himself if someone asked him by saying his name, school, grade, and age.

Yussaf_Interview Questions_31.3.2020.rev_PS 5 References 3.10%

Reference 1 1.41%

the student greets familiar and unfamiliar people but he initiates the greeting with only the familiar people as his peers or teachers or cleaners

Reference 2 0.51%

when he enters the classroom he says hello "Marhaba"

Reference 3 0.08%

"Salam"

Reference 4 0.33%

he says "how are you, my teacher?"

Reference 5 0.77%

when other people ask him, he always mentions his name, grade, school, and age.

Maintains appropriate distance

Abbas _Interview Questions_31.3.2020.rev_PS 2 References 1.77%

Reference 1 0.79%

the student maintains an appropriate distance when he speaks with me or his peers

Reference 2 0.98%

when I ask him to come to the white board to solve a question, he maintains an appropriate distance.

Odi _Interview Questions_31.3.2020.rev_PS 1 References 0.80%

Reference 1 0.80%

he maintains appropriate personal distance when he speaks to me or other teachers

Suad Interview Questions_31.3.2020.rev_PS 2 References 1.40%

Reference 1 0.73%

the student maintains an appropriate distance when he speaks to me or peers

Reference 2 0.67%

When he asks me to correct his answer, he leaves a suitable distance.

Yussaf_Interview Questions_31.3.2020.rev_PS 2 References 1.80%

Reference 1 0.89%

the student maintains appropriate distance when he asks the teacher to go to use the toilet

Reference 2 0.92%

with his peer when I ask him to work in a pair to talk about his weekend before the students.

Listening skills

Abbas _Interview Questions_31.3.2020.rev_PS	2 References	1.96%

Reference 1 0.94%

the student listens to the teacher when we have a conversation and during the lesson explanation

Reference 2 1.02%

when I talk to him about the homework, he listen carefully with attention and maintaining an eye contact

Odi _Interview Questions_31.3.2020.rev_PS	1 References	1.12%

Reference 1 1.12%

he listens to the teacher and he does that by making eye contact and asks questions related to the conversation.

Suad Interview Questions_31.3.2020.rev_PS	2 References	1.81%

Reference 1 0.65%

the student listens to when I or his colleagues when we talk to him

Reference 2 1.16%

when I ask him about something or explain the lesson he sets and looks straight to me and listens to what I am saying.

Yussaf_Interview Questions_31.3.2020.rev_PS	4 References	1.76%

Reference 1 0.53%

the student listens when you ask him a direct question

Reference 2 0.31%

when I explain the lesson to him

Reference 3 0.35%

He moves his face toward the speaker

Reference 4 0.57%

makes eye contact with him/her and responds to the topic.

Eye contact

Abbas _Interview Questions_31.3.2020.rev_PS — 3 References — 1.45%

Reference 1 0.58%

the student makes an eye contact when the teacher calls him

Reference 2 0.52%

during the lesson while the teacher explain the topic

Reference 3 0.35%

when someone speak with him directly

Odi _Interview Questions_31.3.2020.rev_PS — 2 References — 1.78%

Reference 1 1.08%

he makes eye contact with the teacher. E.g., he makes eye contact when I ask him a question during the lesson

Reference 2 0.70%

Also, he makes eye contact during classroom activities with his peers.

Suad Interview Questions_31.3.2020.rev_PS — 2 References — 1.67%

Reference 1 0.94%

the student makes an eye-contact when I ask him for assistance or when he asks for drinking water

Reference 2 0.73%

he maintains the eye- contact when I directly have a conversation with him.

Yussaf_Interview Questions_31.3.2020.rev_PS — 2 References — 2.11%

Reference 1 0.80%

the student makes eye contact when the teacher asks him a question about the lesson

Reference 2 1.31%

when I ask them to do an activity with his peers he makes eye contact e.g., discussing with his peers to answer the lesson's questions.

Facial expressions

Abbas _Interview Questions_31.3.2020.rev_PS — 3 References — 1.84%

Reference 1 0.68%

the student recognizes the people if they are sad, or happy, or angry

Reference 2 0.49%

he feels happy when his peers playing and laughing

Reference 3 0.68%

he recognizes that his peer is angry when he takes one of his tools.

Odi _Interview Questions_31.3.2020.rev_PS — 3 References — 1.78%

Reference 1 0.79%

he recognized facial expression, he can tell if someone sad, or happy, or angry

Reference 2 0.49%

if his peer crying, he asks him why are you sad?

Reference 3 0.50%

Also, he says I am happy when he got a high mark.

Suad Interview Questions_31.3.2020.rev_PS — 2 References — 1.31%

Reference 1 0.62%

he recognizes the facial expression he smiles if someone smiles

Reference 2 0.69%

if one of his colleagues appears to be angry he asks why are you angry?

Yussaf_Interview Questions_31.3.2020.rev_PS — 3 References — 2.06%

Reference 1 0.73%

the student recognizes facial expressions e.g., during classroom activities,

Reference 2 0.68%

he recognized that I am angry when he conducts an undesirable behavior

Yussaf_Interview Questions_31.3.2020.rev_PS 3 References 2.06%

Reference 3 0.66%

he shows happiness when his peers are happy during game activities.

Social communication skills of students with Autism

Issued by dr.zreqat28

Asking and responding questions

Abbas _Interview Questions_31.3.2020.rev_PS 3 References 2.50%

Reference 1 1.34%

the student asks and responds to questions that are asked by the teachers or peers. For example, he asks “do you have a pen?” to his peer

Reference 2 0.21%

“can I go to toilet?”

Reference 3 0.95%

he responds to question posed by others e.g., what are you doing? “I am painting”, “I am playing”

Odi _Interview Questions_31.3.2020.rev_PS 2 References 1.89%

Reference 1 0.95%

the student asks and responds to question for example he asks what’s your name? how old are you?

Reference 2 0.93%

responds to questions by answering others about his name, age, name of the school, and grade.

Suad Interview Questions_31.3.2020.rev_PS 4 References 2.54%

Reference 1 0.44%

the students respond and answer the questions

Reference 2 1.22%

if I ask him how old are you? or which school are you studying? He mentions his age and school or what is your favorite color?

Reference 3 0.53%

He asks questions as well e.g., can I go to the toilet?

Reference 4 0.35%

are we going to play football today?

Yussaf_Interview Questions_31.3.2020.rev_PS 4 References 2.29%

Reference 1 0.96%

the student responds to the questions that asked by others about his name, age, city, grade, school

Reference 2 0.93%

well as he asks other question about different thing e.g., when are we going to have the launch?

Reference 3 0.18%

what is your name?

Reference 4 0.21%

how I can answer this?

Expresses sympathy

Abbas _Interview Questions_31.3.2020.rev_PS	2 References	1.09%

Reference 1 0.65%

yes, he goes to his peer if he is sad and asks him why you are sad

Reference 2 0.44%

sometimes, he share his objectives with him.

Odi _Interview Questions_31.3.2020.rev_PS	1 References	0.91%

Reference 1 0.91%

when he sees his peer, he talks to him he asks him why you are upset? and tell me about him.

Suad Interview Questions_31.3.2020.rev_PS	2 References	1.06%

Reference 1 0.80%

when one of his colleagues starts crying, he goes to him and asks him to calm down

Reference 2 0.26%

he says why are you crying?

Yussaf_Interview Questions_31.3.2020.rev_PS	2 References	1.33%

Reference 1 0.94%

he shows empathy to others e.g., when one of his peers is upset he gets close to him to know why

Reference 2 0.40%

tries to comfort him by saying “it is ok”

Asking for Assistance

Abbas _Interview Questions_31.3.2020.rev_PS — 3 References — 1.92%

Reference 1 0.72%

when the student struggle in something he looks at me and says, “help me”

Reference 2 0.68%

he asks for help to solves lesson question when he doesn’t understand

Reference 3 0.53%

he asks for help when he dose not find his teeth brush

Odi _Interview Questions_31.3.2020.rev_PS — 2 References — 2.01%

Reference 1 1.65%

he askes for help when he needs it, for example, he askes for help when he doesn’t understand something in the lesson by pointing to the difficult phrase or question

Reference 2 0.36%

askes verbally “how we solve this?”

Suad Interview Questions_31.3.2020.rev_PS — 3 References — 1.68%

Reference 1 0.41%

The student asks for help when it's needed

Reference 2 0.60%

he looks to the teacher and verbally asks for painting colors

Reference 3 0.67%

bring he pointed and says verbally I need the notebook from the shelf

Yussaf_Interview Questions_31.3.2020.rev_PS — 2 References — 1.12%

Reference 1 0.47%

he asks the teacher to help him to tie his shoes

Reference 2 0.65%

ask me to help him to handle him his bag from the classroom shelf.

Helping others

Abbas _Interview Questions_31.3.2020.rev_PS	3 References	1.54%

Reference 1 0.59%

the student is welling to offer help when someone ask for it

Reference 2 0.50%

he closes the door of the classroom when I ask him

Reference 3 0.45%

he bring the ball for his peer when he ask him

Odi _Interview Questions_31.3.2020.rev_PS	2 References	1.82%

Reference 1 1.07%

if I ask him to help me in collecting the trash from the floor and throw it in the pin he listens and helps

Reference 2 0.74%

he helps me when I ask him to carry the notebooks from classroom to another

Suad Interview Questions_31.3.2020.rev_PS	3 References	1.68%

Reference 1 0.68%

the student offers assistance when I or other teachers asked him to do

Reference 2 0.47%

when ask him to bring me a paper from the drawer

Reference 3 0.53%

when I ask him to return the chair to its place he does

Yussaf_Interview Questions_31.3.2020.rev_PS	2 References	1.57%

Reference 1 0.77%

the students offer help when I ask him e.g., he helps in cleaning the whiteboard

Reference 2 0.80%

collecting the teaching tools that we used in the lesson and put them in the drawer

Personal hygiene

Abbas _Interview Questions_31.3.2020.rev_PS	2 References	0.64%

Reference 1 0.19%

he wishes his hands

Reference 2 0.45%

brushes his teeth after he finishes his launch

Odi _Interview Questions_31.3.2020.rev_PS	2 References	1.28%

Reference 1 0.66%

he maintains his personal hygiene for example, he washes his hands

Reference 2 0.63%

brushes his teeth before and after the meal with good accuracy.

Suad Interview Questions_31.3.2020.rev_PS	2 References	1.48%

Reference 1 1.10%

The student maintains good personal hygiene e.g., he washes his hands before going to the cafeteria to have lunch

Reference 2 0.39%

brush his teeth after he finishes eating

Yussaf_Interview Questions_31.3.2020.rev_PS	2 References	1.02%

Reference 1 0.61%

he always brushes his teeth after having lunch at the cafeteria

Reference 2 0.41%

wishes his hand after and before the meal.

Expresses feelings

Abbas _Interview Questions_31.3.2020.rev_PS	3 References	1.42%

Reference 1 0.42%

the students express if he is angry or sad.

Reference 2 0.52%

he says I do not like to set far away from the window

Reference 3 0.48%

I am sad because we did not go to the playground

Odi _Interview Questions_31.3.2020.rev_PS	2 References	1.93%

Reference 1 0.73%

he expresses his feelings for example, I like Saud who is one of his peers

Reference 2 1.19%

Also, if someone took one of his pens or other things he says I don't like this return it back, and he reports it to me.

Suad Interview Questions_31.3.2020.rev_PS	2 References	1.34%

Reference 1 0.65%

he expresses about his feelings e.g., he says I love you my teacher

Reference 2 0.69%

if someone annoys him, he says I do not like this and complain to me.

Yussaf_Interview Questions_31.3.2020.rev_PS	4 References	1.67%

Reference 1 0.55%

he always expresses his feelings about things and people

Reference 2 0.14%

I like drawing

Reference 3 0.52%

I do not like to sit here because this guy is annoying

Reference 4 0.46%

I love Amal's teacher because she helps me a lot

Annex 3. Declaration letter for implementing the educational program

Declaration letter

To whom it may concern

Mr. Issa Jamil Qasim Alkinj is a doctorate student at the Department of Education and Psychology of the University of Aveiro, Portugal, and is working under the scientific supervision of Professor Dr. Anabela Pereira and Professor Dr. Paula Santos on the project "The effects of an educational program based on modeling and social stories in improving social skills for students with Autism".

The project will be conducted using mixed research methods quantitative and qualitative, based on dominant- sequential design, where the researcher will use a quasi-experimental method in the first phase, according to the following design of the study: pre-test/ post-test design for both groups; an experimental group and a control group to study the impacts of an educational program on the experimental group; then, qualitative method to support and confirm the obtained results from the quantitative method, by interviewing the mothers or the teachers of the participants. In order to achieve the purpose of the study, the candidate needs a sample of 14 children with ASD (experimental group=7 and waitlist group=7), aged between 7 and 12 years old. The educational program contains 14 sessions with duration of two hours a session, three sessions a week.

The confidentiality and anonymity of everyone involved - children, professionals, families and the center - will be guaranteed.

Therefore, we humbly ask you to give the candidate the opportunity to implement this program at your center, facilitate his work and provide him with support that is needed to implement the program.

In advance, acknowledging and thanking for your collaboration.

Respectfully,

The University of Aveiro, the 15th. January, 2020.

Professor Dr. Anabela Pereira

Professor Dr. Paula Santos

Annex 4. Validation of the Autism Social Skills Profile

universidade de aveiro dep
departamento de educação e psicologia

DECLARATION

I declare that the Program Autism Social Skills Profile (Scott Bellini) is appropriate to the objectives proposed in the research work of Issa Jamil Alkinj.

DEP. 2019-12-26

Marlene da Rocha Miguéis (PhD)

Annex 5. Autism Social Skills Profile (ASSP)- English version

Autism Social Skills Profile

Scott Bellini

Child's Name:_____
FIRST MIDDLE LAST

Birthdate: _____ Age: ____ Sex: GFemale GMale Today's Date: _____
MO. DAY YEAR MO. DAY YEAR

School:_____Grade: _____

Your Name: _____
FIRST MIDDLE LAST

Relationship to Child: GMother GFather GGuardian GOther _____

Street Address: _____

City:_____State:_____Zip: _____

Phone: (_____) _____

The following phrases describe skills or behaviors that your child might exhibit during social interactions or in social situations. Please rate **HOW OFTEN** your child exhibits each skill or behavior independently, **without assistance from others** (i.e., without reminders, cueing and/or prompting). You should base your judgment on your child's behavior over the last **3 months**.

Please use the following guidelines to rate your child's behavior:

Circle **N** if your child **never** or **almost never** exhibits the skill or behavior.

Circle **S** if your child **sometimes** or **occasionally** exhibits the skill or behavior.

Circle **O** if your child **often** or **typically** exhibits the skill or behavior.

Circle **V** if your child **very often** or **always** exhibits the skill or behavior.

Please do not skip any items. If you are unsure of an item, please provide your best estimate. You may use the "Brief Description" section to provide additional information on the particular skill or behavior. For instance, if your child will exhibit a particular skill or behavior more frequently when cueing or prompting is provided, or when interacting with adults rather than peers, please make note of this in the "Brief Description" section.

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Invites Peers to Join Him/Her in Activities	N 1 S 2 O 3 V 4	
Joins in Activities With Peers	N 1 S 2 O 3 V 4	
Takes Turns During Games and Activities	N 1 S 2 O 3 V 4	
Maintains Personal Hygiene	N 1 S 2 O 3 V 4	
Interacts With Peers During Unstructured Activities	N 1 S 2 O 3 V 4	
Interacts With Peers During Structured Activities	N 1 S 2 O 3 V 4	
Asks Questions to Request Information About a Person	N 1 S 2 O 3 V 4	
Asks Questions to Request Information About a Topic	N 1 S 2 O 3 V 4	
Engages in One-On-One Social Interactions With Peers	N 1 S 2 O 3 V 4	
Interacts With Groups of Peers	N 1 S 2 O 3 V 4	
Maintains the "Give-and-Take" of Conversations	N 1 S 2 O 3 V 4	
Expresses Sympathy for Others	N 1 S 2 O 3 V 4	
Talks About or Acknowledges the Interests of Others	N 1 S 2 O 3 V 4	

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Recognizes the Facial Expressions of Others	N 1 S 2 O 3 V 4	
Recognizes the Nonverbal Cues, or "Body Language" of Others	N 1 S 2 O 3 V 4	
Requests Assistance From Others	N 1 S 2 O 3 V 4	
Understands the Jokes or Humor of Others	N 1 S 2 O 3 V 4	
Maintains Eye Contact During Conversations	N 1 S 2 O 3 V 4	
Maintains an Appropriate Distance When Interacting With Peers	N 1 S 2 O 3 V 4	
Speaks With an Appropriate Volume in Conversations	N 1 S 2 O 3 V 4	
Considers Multiple Viewpoints	N 1 S 2 O 3 V 4	
Offers Assistance to Others	N 1 S 2 O 3 V 4	
Verbally Expresses How He/She Is Feeling	N 1 S 2 O 3 V 4	
Responds to the Greetings of Others	N 1 S 2 O 3 V 4	
Joins a Conversation With Two or More People Without Interrupting	N 1 S 2 O 3 V 4	
Initiates Greetings With Others	N 1 S 2 O 3 V 4	

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Provides Compliments to Others	N S O V 1 2 3 4	
Introduces Self to Others	N S O V 1 2 3 4	
Politely Asks Others to Move out of His/Her Way	N S O V 1 2 3 4	
Acknowledges the Compliments Directed at Him/Her by Others	N S O V 1 2 3 4	
Allows Peers to Join Him/Her in Activities	N S O V 1 2 3 4	
Responds to the Invitations of Peers to Join Them in Activities	N S O V 1 2 3 4	
Allows Others to Assist Him/Her With Tasks	N S O V 1 2 3 4	
Responds to Questions Directed at Him/Her by Others	N S O V 1 2 3 4	
Experiences Positive Peer Interactions	N S O V 1 2 3 4	
Compromises During Disagreements With Others	N S O V 1 2 3 4	
Responds Slowly in Conversations	N S O V 1 2 3 4	
Changes the Topic of Conversation to Fit Self-Interests	N S O V 1 2 3 4	
Misinterprets the Intentions of Others	N S O V 1 2 3 4	

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Makes Inappropriate Comments	N S O V 1 2 3 4	
Engages in Solitary Interests and Hobbies	N S O V 1 2 3 4	
Ends Conversations Abruptly	N S O V 1 2 3 4	
Fails to Read Cues to Terminate Conversations	N S O V 1 2 3 4	
Exhibits Fear or Anxiety Regarding Social Interactions	N S O V 1 2 3 4	
Experiences Negative Peer Interactions	N S O V 1 2 3 4	
Engages in Socially Inappropriate Behaviors	N S O V 1 2 3 4	
Exhibits Poor Timing With His/Her Social Initiations	N S O V 1 2 3 4	
Is Manipulated by Peers	N S O V 1 2 3 4	
Engages in Solitary Activities in the Presence of Peers	N S O V 1 2 3 4	

For more information on how to use this assessment tool in the context of teaching social skills, see S. Bellini, *Building Social Relationships: A Systematic Approach to Teaching Social Interactin Skills to Children and Adolescents with Autism Spectrum DIsorders and Other Social Difficulties* ©2006; AAPC Publishing; www.asperger.net

Annex 6. Autism Social Skills Profile (ASSP)- Arabic version

إستمارة المهارات الاجتماعية للطفل التوحدي .

ترجمة بتصرف لخبير التربية الخاصة / بلال عودة .

إسم الطفل :_____.

تاريخ الميلاد: _____ الجنس ----------.

تاريخ التقييم : ---------- .

إسم المركز/ المدرسة _____/ الفصل أو مستوى الطالب :----------

إسم المقيم ---------- .

علاقة ولي امر الطفل به : أب___ أم ____جد ____غير ذلك حدد___.

عنوان سكنه _____.

رقم الهاتف _____.

***تمهيد وتعريف بالقائمة وتفسير درجاتها (شرح خبير التربية الخاصة بلال عودة):

هذه القائمة هي عبارة عن مجموعة من السلوكات الاجتماعية واللإجتماعية وتقسم لقسمين وهما :

1- السلوكات الاجتماعية وفقراتها من الفقرة رقم (1) إلى الفقرة رقم (37) وهنا تفسر الدرجة تقديرا فكلما إرتفعت الدرجة على الفقرة الواحدة لتصل للدرجة(4) دل ذلك على إيجابية السلوك الاجتماعي .

2- السلوكات اللإجتماعية وفقراتها من الفقرة رقم (38) إلى الفقرة رقم (49) والمضللة بالاصفر وهنا تفسر الدرجة تقديرا فكلما إرتفعت الدرجة على الفقرة الواحدة لتصل للدرجة(4) دل ذلك على سلبية السلوك الاجتماعي وعدم ملائمته .

***إستخدام هذه القائمة :

***تستخدم هذه القائمة لعدة استخدامات نذكر منها على سبيل المثال :

***عمل الخطط الفردية متضمنتا نقاط الضعف في نتائج هذه القائمة لمعالجتها ونقاط القوة لتنميتها وتعزيزها .

***عمل خطط تعديل السلوك للسلوكات اللاجتماعية وتعديلها .

***تصميم برامج ارشادية للاسر والعاملين للطفل للتغلب على السلوكات الغير مقبولة .

****ملاحظة لمطبق هذه الاستمارة (يشترط معرفته بالطفل) :

العبارات التالية تصف المهارات أو السلوكيات التي قد تظهر عند طفلك أثناء التفاعلات الاجتماعية أو في المواقف الاجتماعية. يرجى تقييم السلوك الذي يقوم به طفلك في كل مهارة أو سلوك بشكل مستقل(دون مساعدة من الآخرين أو أي نوع من التحفيز او الدعم) ويجب أن تبني حكمك على سلوك طفلك من خلال ملاحظاتك من ثلاثة أشهر ماضي .

*****إرشادات لتطبيق تقييم سلوك طفلك في الاستمارة :

- ضع دائرة N(Never) إذا كان طفلك أبدا أو أبدا تقريبا يقوم بالمهارة أو السلوك.
- ضع دائرة S (Sometimes) إذا كان طفلك في بعض الأحيان يقوم بالمهارة أو السلوك.
- ضع دائرةO (Often) إذا كان طفلك غالبا يقوم بالمهارة أو السلوك.
- ضع دائرةV (Very often) إذا كان طفلك دائما يقوم بالمهارة أو السلوك.

******من فضلك لا تترك أي فقرة بدون وضع التقدير الخاص بها وإن أردت وضع أي ملاحظات يمكنك ذلك من خلال الكتابة في خانة الملاحظات المقابل لكل فقرة .

م	الفقرات	تقدير حدوث للسلوك				ملاحظات
		أبدا (1)	بعض الاحيان (2)	غالبا (3)	دائما (4)	
.1	يدعوا أصدقاءه للمشاركة في مناسباته الخاصة					
.2	يستمتع بمناسباته الخاصة مع مشاركة أصدقاءه					
.3	يحترم الدور (الانتظار في الصف) عند المشاركة بالالعاب ويلتزم به.					
.4	يحافظ على نظافته الشخصية					
.5	يتفاعل بإيجابية مع أصدقاءة بالانشطة الغير محددة التعليمات والقوانين (الحره)					
.6	يتفاعل بإيجابية مع أصدقاءة بالانشطة محددة التعليمات والقوانين (المنظمة)					
.7	يسأل أسئلة لطلب معلومات عن شخص ما					
.8	يسأل أسئلة لطلب معلومات عن موضوع ما					

.9	يشارك في المسابقات والانشطة التي تطلب واحدا مقابل واحد .					
.10	يتفاعل مع مجموعة الأقران					
.11	يحترم أدب المحاثة من حيث وقت الإصغاء والتكلم.					
.12	يعبر عن تعاطفه مع الآخرين					
.13	يشارك الاخرين في مجال إهتمامهم الشخصي					
.14	يدرك ويفهم تعبيرات الوجه من الاخرين					
.15	يدرك ويفهم الإشارات الجسدية (لغة الجسد) من الاخرين					
.16	يطلب المساعدة من الاخرين					
.17	يفهم النكت أو الدعابة من الاخرين					
.18	يحافظ على التواصل البصري اثناء الحديث مع الاخرين					
.19	يحافظ على المسافة المناسبة عند التعامل مع الاخرين.					
.20	يراعي نبرة الصوت وشدته في محاثاته مع الاخرين					
.21	يراعي ويحترم تعدد الآراء					
.22	يقدم المساعدة للاخرين					
.23	يعبر لفظيا كيف يشعر (هو) أو (هي) من الاصدقاء					
.24	يرد التحية والسلام على الاخرين					
.25	يبادر الاخرين التحية					
.26	ينظم للمحادثات الثنائية او الجماعية					
.27	يقدم الاطراء (المدح) للاخرين					
.28	يعرف الاخرين ببعضهم بلقائهم الأول معا					
.29	يسأل بأدب الاخرين لفسح الطريق له					
30	يقدر مدح الاخرين له					
31	يسمح للاخرين بمشاركته لانشطته					
32	يستجيب لدعوة أقرنائه لمشاركته ألعابهم					
33	يسمح للاخرين لمساعدته بالقيام ببعض المهام					
34	يستجيب للاسئلة الموجه له من الاخرين					
35	لديه خبرات إيجابية مع التفاعل مع الاخرين					
36	يقدم تنازلات عند الخلاف مع الاخرين					
37	يتفاعل بهدوء عند المناقشات مع الاخرين					
38	يغير المحادثة لكي تلائم إهتماماته الشخصية					

	فقط					
39	يسيئ فهم نوايا الاخرين					
40	يعطي تعليقات غير لائقة					
41	ينجذب ويشارك في اللعب الانفرادي والهوايات الخاصة به فقط					
42	ينهي المحادثة فجأه					
43	يفشل في قراءة الإشارات لإنهاء المحادثة					
44	يقلق من التفاعل الاجتماعي					
45	لديه خبرات غير إيجابية مع التفاعل مع الاخرين					
46	يشارك في سلوكيات غير مناسبة اجتماعيا					
47	ضعف فهم التوقعات الايمائية في المناسبات الاجتماعية					
48	من السهولة التأثير به من قبل الاخرين (ضعيف الشخصية)					
49	يميل للعب الانفرادي على الرغم من وجدو الاصدقاء					

لمزيد من المعلومات على العنوان التالي :

For more information on how to use this assessment tool in the context of teaching social skills, see Bellini,Building Social Relationships: A Systematic Approach to Teaching Social Interactin Skills to Children and Adolescents with Autism Spectrum DIsorders and Other Social Difficulties ©2006; AAPC Publishing; www.asperger.net.

المقاييس التي ترجمها(خبير التربية الخاصة / بلال عودة) ونشرها في الانترنت :

-1	المقياس الهندي للتوحد - Indian Scale for Assessment of Autism
-2	قائمة تقدير السلوك لـ (سون و جريسون) لمتلازمة أسبرجر وذوي الأداء العالي من فئة الاضطرابات النمائية الشائعة. Sohn Grayson Rating Scale for Asperger's Syndrome and High-Functioning Pervasive Developmental Disorder.
3	اختبار متلازمة أسبرجر الطفولي (The Childhood Asperger Syndrome Test-
4	Autism Spectrum Quotient (AQ) استمارة الاسئلة الكشفية لطيف التوحد
5	قائمة التوحد للأطفال دون السنتين CHAT (Checklist for Autism in Toddlers)**Autism screening at 18–24 months of age**
6	إختبار طيف التوحد (كاست) The Childhood Autism Spectrum Test (CAST)

Annex 7. Teachers interview form- English version

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Interview Questions

Teacher Name: _____.

Student Name: _____.

I am Issa Alkinj a second-year Ph.D. student at the University of Aveiro/ department of education and psychology. I am conducting this interview to evaluate the effects of an educational program based on modeling and social stories to improve the social communication skills of children with Autism. The following interview questions aim to discover the perspectives of the teachers about the effectiveness of the educational program. Each answer requires the teacher to provide an example. The researcher guarantees that the obtained data of the interview is confidential and will be used only for scientific research.

1) Do the pupils make eye contact with the teachers and students during the classroom activities?

_____
_____
_____
_____ .

2) Do the students maintain personal hygiene (such as washing hands or brushing teeth)?

_____
_____
_____
_____
_____ .

3) Do the students seek help from their peers, teachers, or school staff? How do they do that, exactly – verbally, gestures?

_____
_____
_____
_____
_____ .

4) Do the students request or offer assistance e.g., clean the whiteboard or in doing lessons exercises? Give an example?

_____
_____
_____
_____ .

5) Do the students evidence they are listening to the teacher or peers during the conversations? How do they act?

_____
_____
_____
_____ .

6) Do the students greet the familiar and unfamiliar people? How do they do that, exactly / specifically?

_____
_____
_____
_____ .

7) Do the students introduce themselves to others? How do they do that?

_____
_____
_____
_____ .

8) Do the students ask or respond to the questions posed by you, the peers, other adults in the school…? How do they do that?

_____
_____
_____
_____ .

9) Do the students maintain an appropriate personal distance when interacting with others? Can you give an example (either of an appropriate distance or inappropriate)?

_____
_____
_____
_____ .

10) Can the students recognize facial expressions from others? How do they show that?
_____
_____
_____
_____ .

11) Do the students express sympathy for others? If so, can you give examples?
_____
_____
_____
_____ .

12) Do the students verbally express how they feel about a situation or person? If so, can you give examples?
_____
_____
_____
_____ .

13) Do the students cooperate with the teacher or peers in some classroom activities? Can you give some examples, please?
_____
_____
_____
_____ .

14) Do the students interact with other students? In which circumstances: When / how / with certain peers (and not other) / for how long / within certain activities and interests?
_____
_____
_____
_____ .

15) Do you think the educational program was useful? And what do you recommend to improve the program?
_____
_____
_____
_____ .

Annex 8. Teachers interview form- Arabic version

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departamento de educação e psicologia

أسئلة مقابلة

اسم المعلم: _____

أسم الطالب: _____

أنا عيسى الكنج طالب دكتوراة في جامعة أفيرو قسم التنوع والتربية الخاصة أعمل على أطروحة لتقييم أثر البرنامج التعليمي المستند على النمذجة والقصص الأجتماعة لتنمية المهارات الأجتماعية لطلاب التوحد ذوي الأداء الوظيفي المرتفع لدى الأكاديمية الأردنية للتوحد. أجب عن الاسئلة الآتية بناءاً على وجهة نظرك في مدى تحسن مستوى الطالب بعد تطبيق البرنامج التعليمي المعتمد على النمذجة والقصة الأجتماعية مع أعطاء الأمثلة.

ملاحظة: يؤكد الباحث أن البيانات التي حصل عليها من المقابلة سرية ولن تستخدم إلا في أغراض البحث العلمي.

1) **هل يقوم الطالب بالتواصل البصري مع المعلم والطلاب أثناء الحصة الدراسية؟ أعط أمثلة على ذلك؟**

_____
_____
_____
_____ .

2) **هل يحافظ الطالب على نظافتة الشخصية (مثل غسل اليدين أو تنظيف الأسنان ؟ أعط أمثلة على ذلك ؟**

_____
_____
_____
_____ .

3) **هل يطلب الطالب المساعدة من الاخرين من زملائه أو معلميه في المدرسة أو العاملين فيها؟ أعط أمثلة كيف يقوم الطالب بذلك بالضبط بطريقة لفظية أو أيمائية؟**

_____
_____
_____
_____ .

4) هل يقدم الطالب المساعدة عندما يطلب المعلم منه ذلك أو من زملائه؟ أعط أمثلة على ذلك ؟

_____
_____
_____
_____ .

5) هل يصغي الطالب الى المعلم أثناء شرح الدرس أو لزملائه أثناء الحديث معهم؟ كيف يقوم بذلك؟

_____
_____
_____
_____ .

6) هل يبادر الطالب في ألقاء التحية الأشخاص المألوفين وغير المؤلفين بالنسبة اليه؟ كيف يقوم الطالب بذلك بالضبط؟

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7) هل يعرف عن نفسة أذا التقى بالاخرين ؟ كيف يقوم الطالب بذلك ؟

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8) هل يطرح أو يستجيب الطالب للأسئلة التي تطرح من قبلك أو من الطلاب أو من البالغين في المدرسة؟ كيف يقوم بذلك؟

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9) هل يحافظ الطالب على مسافة مناسبة عند تفاعلة مع الاخرين؟ هل تستطيع أن تعطي أمثلة سواء يحافظ فيها على الطالب على مسافة مناسبة أو لا؟

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10) هل يستطيع الطالب فهم وأدراك تعبيرات الوجة من الاخرين؟ أعط أمثلة كيف يظهر الطالب ذلك؟

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11) هل يعبر الطالب عن تعاطفة مع الاخرين ؟ أعط أمثلة على ذلك؟

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12) هل يعبر الطالب لفظياً كيف يشعر تجاه موقف أو شخص معين؟ أعط أمثلة على ذلك؟

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13) هل يتعاون الطالب مع معلمية أو زملائه في القيام ببعض المهام في المدرسه أو خارجها؟ أعط أمثلة على ذلك؟

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14) هل يتفاعل الطالب مع الطلاب الجدد ويقوم بتكوين صداقات معهم؟ في أي مواقف؟ ومتى؟ وكيف؟ مع زملائة أو أخرين؟ ما هي مدة التفاعل؟ ما هي الأنشطة ومجالات الاهتمام التي يتفاعل فيها؟

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15) ما هي وجهة نظرك بشكل عام عن البرنامج التعليمي؟ وما هي التوصيات التي تنصح فيها لتحسين البرنامج؟

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