

IMPROVING DAILY LIVING SKILLS IN CHILDREN WITH AUTISM SPECTRUM DISORDER THROUGH PICTURE EXCHANGE COMMUNICATION SYSTEM-INTEGRATED OCCUPATIONAL THERAPY

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Inspiring Change, Innovating Futures



ASD Definition

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition defined by persistent challenges in social interaction, communication, and the presence of repetitive behaviors or restricted interests (American Psychiatric Association, 2013).

Prevalance

ASD affects approximately 1 in 54 children in the United States, making it one of the most common developmental disorders (Christensen et al., 2019).



Core Features

Difficulty in understanding social cues, engaging in reciprocal social interactions, and developing age-appropriate communication skills (Ventola et al., 2007).

Quality of Life

Without appropriate support, individuals with ASD may struggle with everyday tasks, social integration, and achieving independence in adulthood (Reichow et al., 2008).

Lifelong Condition

ASD is a lifelong condition that requires ongoing support, intervention, and individualized treatment plans tailored to the specific needs of each person (Lord et al., 2020).

Variability in Symptoms

Some individuals may have significant intellectual disabilities, while others have normal or above-average intelligence but struggle with social communication and behavioral regulation (Lord et al., 2018)

KEY CHALLENGES FACED BY CHILDREN WITH ASD



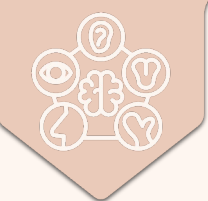
Social Interaction Deficits

Children with ASD often struggle with social-emotional reciprocity, unconventional social behaviors, and difficulties initiating or responding to social interactions (Watkins et al., 2017).



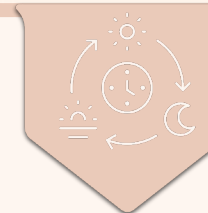
Communication Impairments

Challenges in verbal and nonverbal communication, including joint attention and symbolic play, which are crucial for language development (Trillingsgaard et al., 2005; Warreyn et al., 2005).



Sensory Processing Issues

Difficulty in processing and integrating sensory information, leading to behaviors that may cause social isolation and impact daily activities (Schaaf et al., 2014).



Impact on Daily Life

These challenges hinder the ability to perform Activities of Daily Living (ADLs) and participate in social contexts, impacting overall development and quality of life (Reichow et al., 2008).



Introduction

Picture Exchange Communication System (PECS)

PHASE I	How to communicate	Teaching on exchange pictures for preferred items- REINFORCER
PHASE II	Distance and persistence	Generalization across distance, communicative partners, variety of items and pictures.Expansion from Phase I
PHASE III	Discrimination	Preferred and non-preferred pictures
PHASE IV	Sentence structure	Request and complete sentenced
PHASE V	Responsive requesting	Answering questions
PHASE VI	Commenting	Response to the communicative partner about something interesting (event or occurrence)

(Bondy & Frost, 2002)





Impact on Daily Life

These challenges make it hard for children with ASD to do everyday tasks, be independent, and participate in social activities. Good communication is key for understanding social situations and forming relationships (Reichow et al., 2008; Dawson et al., 2010).



Intervention Needs

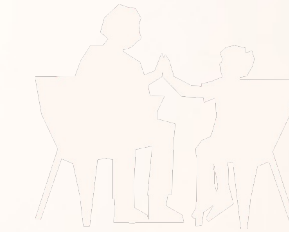
OT including sensory-based and sensory-motor approaches, aim to improve social communication and self-regulation, there is limited evidence supporting their effectiveness (Schaaf et al., 2014; Case-Smith et al., 2015).

PECS requires more rigorous research to validate its efficacy in OT settings, as current studies are limited in scope and methodological rigor (Preston & Carter, 2009)..

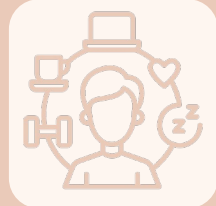




To determine the effects of the PECS program on daily living skills among children with ASD in intervention group and control group at baseline, week 4, week 8 and week 12,



Literature Review



Limitations in adaptive functioning (Tillmann et al., 2019)

Affects personal care, domestic skills, and community participation (Hus Bal et al., 2015)

Gross motor skills linked to social communication abilities (Bhat, 2022)

Reduced participation in community activities (Little et al., 2019)

Strong communication skills improve social interactions and independence (Park et al., 2012)

OT

Sensory Integration Therapy (Kashefimehr et al., 2018)

Animal-Assisted Interventions (Hill et al., 2019)

Parent-Mediated Interventions (Park et al., 2020)

Naturalistic Developmental Behavioral Interventions (Swain et al., 2020)

ABA

Focus on enhancing communication and social skills (Smith & Iadarola, 2015)

Cognitive-Behavioral Training (CBT) (Wood et al., 2014)

Systematic reinforcement of communication skills

Special Education Needs

Early Achievements for Education Settings (EA-ES) (Engelstad et al., 2020)

TEACCH approach (Hendricks, 2010; Mavropoulou et al., 2011)

LEAP model (Vismara & Rogers, 2010)

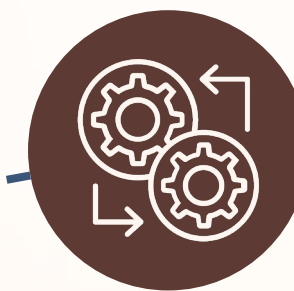
Social stories and video modeling (Stathopoulou et al., 2020; Alkinj et al., 2017)



Literature Review

PECS

- Effective in enhancing communication skills (Bondy & Frost, 2002)
- Facilitates effective communication of needs in social settings (Alli et al., 2015)
- Improves speech, language, and social communication (Barker et al., n.d.)
- Widely used in special education settings (Flippin et al., 2010; Ganz et al., 2012)



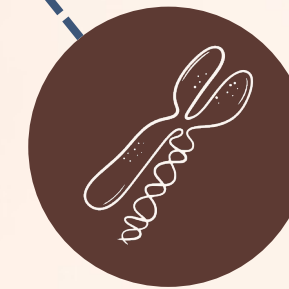
PECS and OT

- Limited research on OT interventions specifically targeting social communication in ASD
 - Lack of studies combining OT approaches with PECS
- Gap in understanding how PECS can be integrated into comprehensive OT interventions



PECS and ASD

- Effective in enhancing communication skills (Cannella-Malone et al., 2010)
- Facilitates effective communication of needs in social settings (Alli et al., 2015)



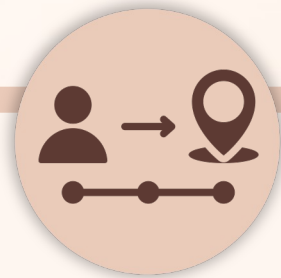
PECS and Other Disabilities

- Effective for developmental disabilities (Ganz & Simpson, 2004)
- Useful for Rett Syndrome and severe developmental disabilities (Stasolla et al., 2014)
- Beneficial for adults with intellectual impairments (Ziomek et al., 2008)



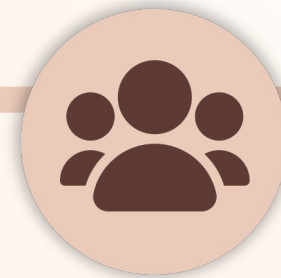
Study Design

- Randomized control trial
- Pre-test and post-test evaluations
- Follow-up assessments at 4th, 8th, and 12th weeks



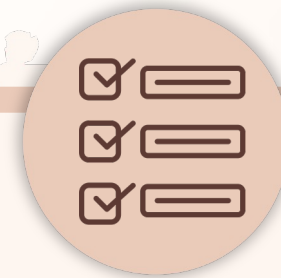
Study Location

- Tadika Cemerlang Cendana
- Daughters and Sons Kota Damansara
- Daughters and Sons Kuala Lumpur
- Bridges EIP



Study Population

- Preschool children aged 4 to 6 years
- Diagnosed with ASD Level 1 or Level 2
- Mastery of PECS Phase I and II
- No concurrent speech-language therapy



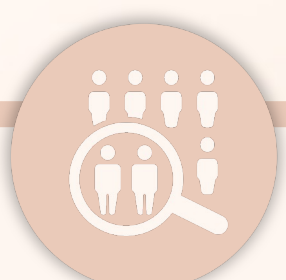
Inclusion Criteria

- Referred to OT service
- Diagnosed with ASD Level 1 or 2
- Demonstrated mastery of PECS Phase I and II
- Social communication difficulties as per checklist



Exclusion Criteria

- Referred to OT service
- Diagnosed with ASD Level 1 or 2
- Demonstrated mastery of PECS Phase I and II
- Social communication difficulties as per checklist



Sample Size

- 30 participants to account for 20% dropout rate
- 15 participants in control group
- 15 participants in intervention group
- 1:1 ratio allocation



Ethical Considerations

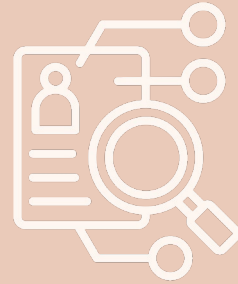
- Approved by Research Ethics Committee at UiTM
- Reference: REC/09/2021(MR/812)
- Informed consent obtained from parents/caregivers



Data Analysis

- SPSS version 28
- Descriptive statistics
- Normality test: Shapiro-Wilk
- One-way repeated measures ANOVA
- Significance level: $p < 0.05$

01



Screening

Social Communication Skills
Difficulties Checklist
[Adapted from Plymouth City
Council (2015)]

Reinforcers Assessment Form
(Frost & Bondy, 2002)

Paediatric Occupational Therapy
Initial Screening Form

02



Main

Vineland Adaptive Behavior Scale
-3rd Edition (VABS III) (Sparrow
et al., 2016)

- Assesses daily living skills,
- 30-40 minutes to complete
- Standardized on 3,975 participants (2014-2015)
- Excellent reliability (Cronbach's alpha: .80-.92)

03



PECS Monitoring Progress Sheets

Essential for documenting
participant progression through
PECS phases

- Provides measurable indication of progress
- Allows for customized modifications to individual programs
- Enables in-depth evaluation of proficiency
- Guides transition between phases





Screening Setup

Therapeutic settings with various objects
Qualified OT and special education teacher
Researcher with PECS Level 1 & 2 training

1



Phase I: Physical Exchange

Dual-trainer method
Picture exchange for desired item
Mastery: 3+ items, 2+ environments

2



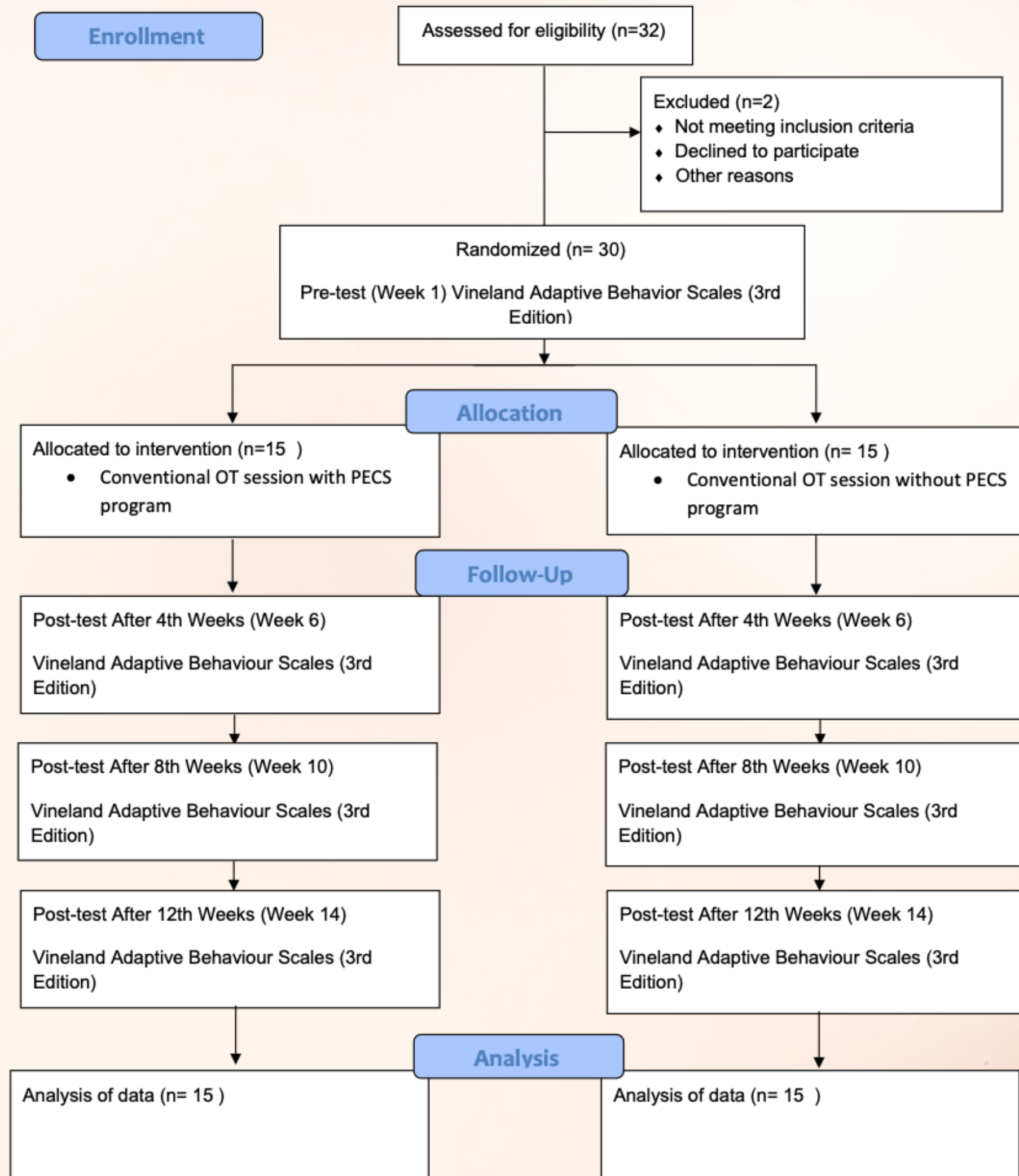
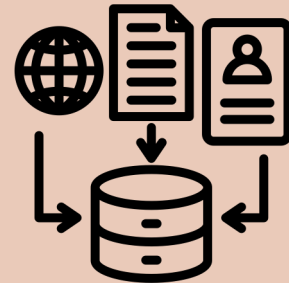
Phase II: Distance & Persistence

Introduce communication book
Increase physical distance
Mastery: 5+ reinforcers across room

3

Methodology

**DATA COLLECTION PROCEDURES
(December 2021 - May 2022)**



C

CONTROL GROUP (N=15)

Conventional OT sessions
12 sessions, 45-60 minutes each
Sensory-motor activities (30 sec - 5 min each)
Play activities (functional, symbolic, social)



INTERVENTION GROUP (N=15)

Conventional OT sessions + PECS program
12 sessions, 45-60 minutes each
Sensory-motor activities
Play activities
PECS Phases III-VI integrated



Activities

Trampoline jumping

Climbing

Gymball exercises

Tunnel crawling

Scooter board

Balance beam walking

Pretend play

Turn-taking games





Phase IIIA & IIIB: Picture Discrimination

Differentiate between preferred and non-preferred items/activities

Icons: Trampoline, tunnel, ladder, gymball, balls, balance beam, scooter boards, blocks, Legos, etc.

3



Phase IV: Sentence Structure

Introduce 'I want...' phrase for explicit requests

Icons: All from Phase III + marbles, beans, nuts, buttons, verbs, colors, numbers, etc.

4



Phase V: Responsive Requesting

Answer 'What do you want?' with time delay and prompts

Icons: All from Phase IV + drink, eat

5



Phase VI: Commenting

Use 'I want...', 'I have...', 'I see...' for broader communication

Icons: All from Phase V + new phrases for expressing ownership and perception

6

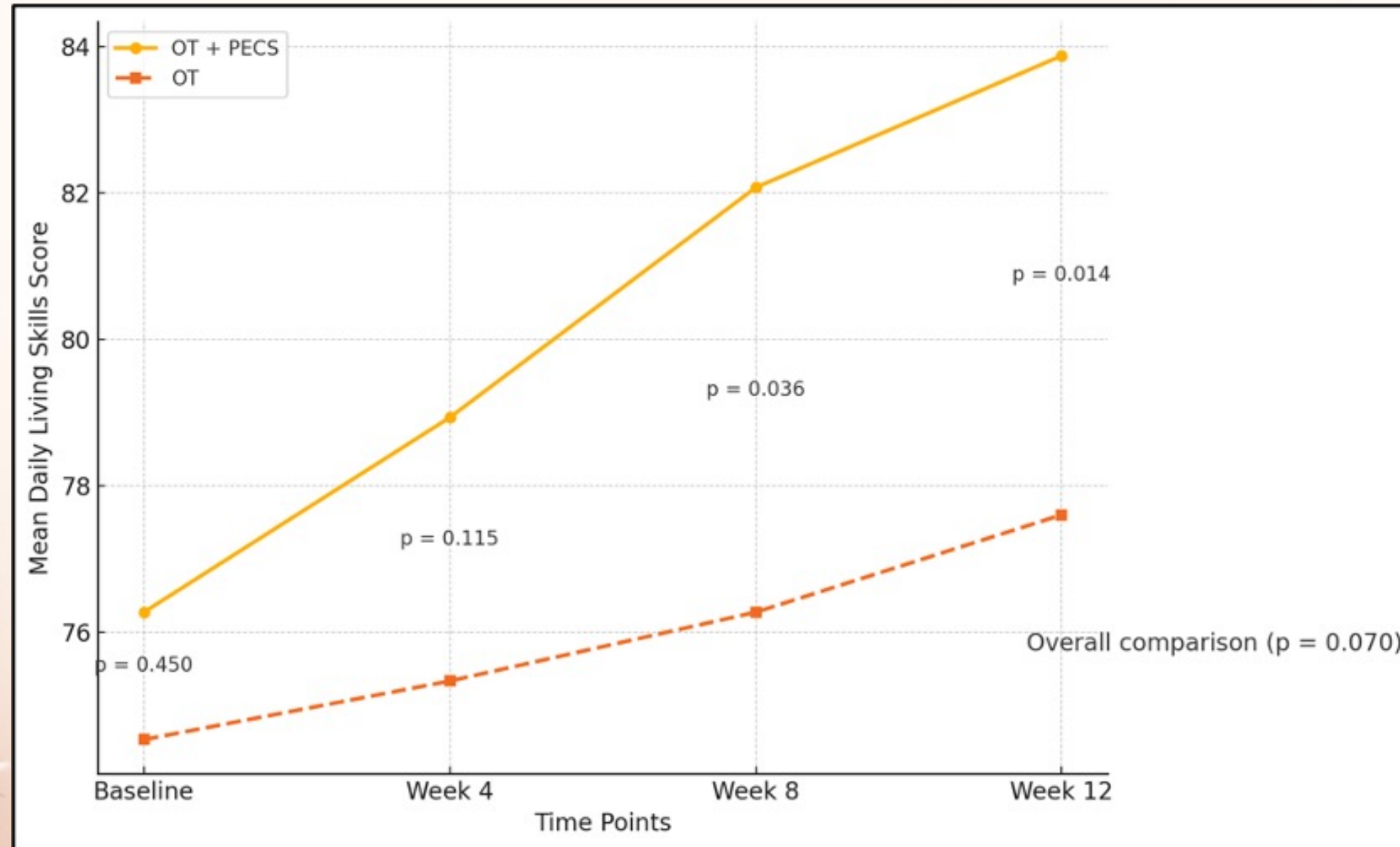
Demographics Data

Variables	Mean (SD)	Total n (%)
Age	5.08(0.64)	
Gender Girl Boy		8(26.7) 22(73.3)
Location Cemerlang Cendana Daughters & Sons (KD) Bridges EIP Daughters & Sons (KL)		5(50.0) 10(33.3) 1(3.3) 4(13.3)
Ethnicity Malay Chinese Indian Others		20(66.7) 6(20.0) 3(10.0) 1(3.3)
Group OT with PECS OT		15(50.0) 15(50.)



Effects on Daily Living Skills

Result



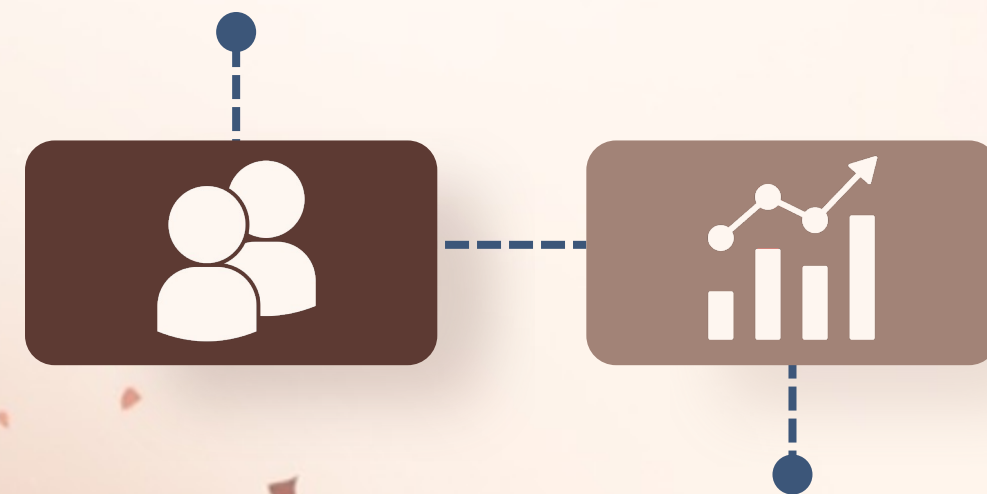
Daily living skills showed marked improvement in the OT + PECS group compared to OT only, although gains plateaued by week 12.

Means Response for Each Time Interval Based on Group for Daily Living

Discussion

Comparison of Intervention Groups

Both the OT+PECS and OT-only groups showed improvements in daily living skills, highlighting the effectiveness of OT in promoting functional independence (Bhat, 2022; Park et al., 2012).



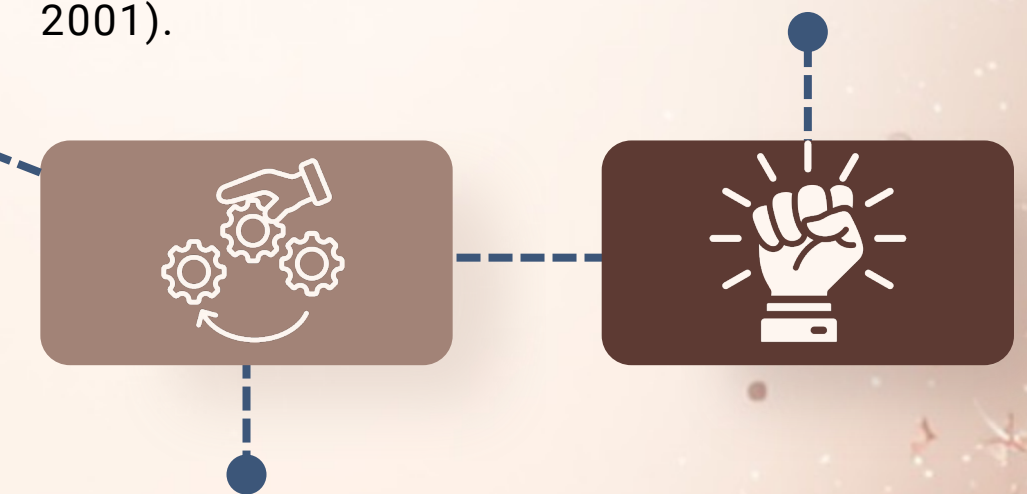
Progress Over Time

The OT+PECS group exhibited a plateau effect between weeks 8 and 12, suggesting a need for adjusted intervention strategies (Kasari et al., 2014; Rodger & Brandenburg, 2009).

Effect of PECS on Daily Living Skills at Week Four, Week Eight, and Week Twelve

Impact of Motivation and Engagement

Combining visual communication aids with traditional OT interventions addresses multiple aspects of communication development, enhancing practical language use (Tanner et al., 2015; Bondy & Frost, 2001).



Synergistic Effects of Combined Interventions

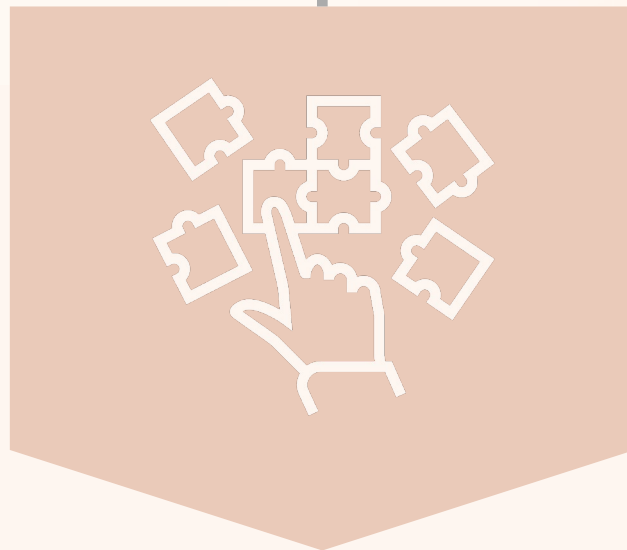
Integrating PECS with OT supports greater improvement over time, indicating that a multimodal approach enhances daily living skills more effectively (Frost & Bondy, 2002; Travis & Geiger, 2010).



Conclusion

Implication of the Study

01



Clinical Practice

Integration of PECS with OT enhances daily living skills, supporting a holistic approach in OT (Ganz et al., 2012; Case-Smith & Arbesman, 2008).

02



Advancement in ASD Research

Highlights the need for multi-component, integrated interventions in future ASD studies, pushing for more sophisticated methodologies (Landa 2018)

03



Impact on Special and Inclusive Education

Supports the creation of inclusive classrooms by providing tools for communication and engagement, enhancing participation (UNESCO, 1994; Kasari et al., 2012).



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