

Assessing Children's Attitudes Toward Inclusion in Physical Education: Validation of the Hebrew Multi-Scenario CAIPE-IL-MS Questionnaire

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ABSTRACT

This study evaluates the validity and reliability of the Hebrew version of the Children's Attitudes Toward Inclusion in Physical Education – Israel, Multi-Scenario (CAIPE-IL-MS) questionnaire, aimed at assessing attitudes towards including children with disabilities in physical education (PE) classes. A sample of 258 students aged 11 to 15 from five schools participated, responding to four case studies involving children with various disabilities through 13 questions rated on a 4-point scale. One questionnaire was removed due to inconsistent structure. Data analysis utilized exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), dividing responses into two subsamples ($n=83$ for EFA, $n=175$ for CFA). EFA revealed a two-factor model, each with three items addressing (1) general attitudes toward inclusion and (2) willingness to modify game rules for children with disabilities. CFA confirmed the model's fit with strong indices ($CFI=0.963$, $SRMR=0.042$, $RMSEA=0.036$). Internal reliability was assessed, yielding Cronbach's alpha values of 0.825 for Factor 1 and 0.657 for Factor 2, with an overall scale reliability of 0.792. These results indicate that this questionnaire is a valid and reliable instrument for measuring attitudes towards inclusion in PE environments.

Keywords: Integration, disabilities, school, adaptation

INTRODUCTION

Based on a nationally representative sample reported by the Central Bureau of Statistics, approximately 326,000 children and youth up to the age of 18 in Israel, constituting around 11% of the total, experience at least one functional health problem or disability significantly impacting their lives (Barlev et al., 2022). Further data analysis by the Brookdale Institute, using administrative information from the Ministry of Education in 2020, reports that around 265,000 students are officially recognized within the special education system and classified as having special needs. Of these students, 11% attend special education schools, 19% are in special classes, and 61% are integrated into

general education classrooms or receive support services (Barlev et al., 2022). The highest rate of integration is observed in primary education at 68%. However, pre-primary education shows a lower integration rate at 46%, and elementary school integration is at 56% (Majadley, 2020). Notably, the integration rate of students with disabilities in the Arab population exceeds that in the Jewish population in Israel, with 69% in Arabic and 61% in Jewish settings (Shwed et al., 2014). Nevertheless, physical integration does not guarantee complete inclusion (Majadley, 2020; Rodriguez & Garro-Gil, 2015), emphasizing the need for a comprehensive approach to ensure the meaningful inclusion of students with disabilities in the educational system.

One significant challenge in conducting research within school settings is finding appropriate times during lessons or breaks for data collection. This is compounded by students' impatience and the time constraints faced by schools. To address these limitations and ensure effective exploration of complex scenarios, it is essential to reduce the number of items in research tools.

INCLUSION OF CHILDREN AND TEEN-AGERS WITH DISABILITIES

The inclusion of youth with disabilities in physical education (PE) and associated physical activities represents a multifaceted challenge globally (Lieberman et al., 2025). In the context of Israel, the recently introduced Para Report Card on children and adolescents with disabilities (CAWD) has provided valuable insights into the physical activity (PA) landscape for children and adolescents with disabilities (Hutzler et al., 2022). Notably, the commendable grade (B-) assigned to PE indicators in schools signifies the potential of the school environment in promoting participation in physical activities among CAWD. This underscores the significance of schools in shaping the PA behaviors of this demographic, emphasizing the importance of targeted interventions and support within the educational system.

However, the Para Report Card also identifies critical weaknesses and threats that warrant attention. For instance, the lack of sufficient data on physical fitness poses a challenge in comprehensively understanding and addressing the health-related aspects of CAWD. Additionally, the low grade assigned to organized sport participation underscores the need for focused efforts to enhance policies and infrastructure supporting organized sports for individuals with disabilities. The identified gaps in data and policy support for organized sports necessitate a comprehensive and collaborative approach involving stakeholders from education, health, and sports sectors. One potential reason for the limited participation in inclusive physical activity among CAWD appears to be the enhanced degree of bullying and loneliness among children with disabilities in general schools (Haegele & Sutherland, 2015; Hutzler et al., 2021; Kwan et al., 2020; Ruscitti et al., 2017). Participation in appropriately designed and presented physical education can positively impact prosocial development of children (Bailey, 2006). However, factors such as motor ability, gender, race, ethnicity, and social class influence children's experiences and participation in physical education

(Solmon & Lee, 2008). Therefore, it is important to better understand the factors associated with attitudinal construction and change toward participation of CAWD in physical education among their peers in general schools.

ATTITUDES TOWARD INCLUSION IN PE OF CAWD

Attitudes are understood as evaluative judgments about objects, events, oneself, and others that involve affect, beliefs, and behaviors (Albarracín et al., 2005), expressing some degree of favor or disfavor (Eagly & Chaiken, 2007). Peer and parental support have been addressed among PE teachers as one of the themes emerging from a meta-analysis of qualitative and quantitative studies (Tarrantino et al., 2022). For students in general education environments, factors influencing attitudes include ability beliefs, gender, and previous experiences with disabled peers (Reina et al., 2019). Girls and students with prior contact with disabled children tend to have more positive attitudes (Reina et al., 2019; Delgado-Gil et al., 2023).

Several instruments have been developed in order to measure children's attitudes towards the inclusion of CAWD in PE lessons. One instrument is the Attitudes Toward Inclusion of Students with Disabilities in Physical Education Questionnaire (AISDPE), developed by Reina et al. (2016) and the Children's Attitudes towards Inclusion in Physical Education (CAIPE-R) developed by Block (1995). The AISDPE uses a 5-point Likert scale to assess respondents' agreement with statements related to the key factors: Behavioral readiness, i.e. participants' willingness to interact with CAWD, and Cognitive perception, which explores respondents' beliefs and stereotypes about people with disabilities. This instrument has been reported in several studies in Spain, generally suggesting favorable attitudes. Furthermore, based on findings of Reina et al. (2019), students who believed that abilities are fixed and unchangeable tended to have less positive attitudes towards inclusion, girls generally expressed more favorable attitudes towards inclusion compared to boys and students with prior experience in physical activities with CAWD exhibited more positive attitudes. A more widely-used tool for measuring how students without disabilities feel about including their peers with disabilities in physical education classes is the CAIPE-R. Developed by Block (1995) this is a 13 items (8-general and 5 sport-specific) questionnaire,

which refers to a specific disability and sport scenario (i.e. baseball with a student who has intellectual disability). Originally validated with a small sample of US sixth-grade students (Block, 1995), the scale has undergone revisions and has been successfully used in various countries, including Peru (Percy et al., 2024), the Czech Republic (Kudláček et al., 2011), Greece (Bebetsos et al., 2013; Christodoulou et al., 2017; Panagiotou et al., 2008; Xafopoulos et al., 2009), Israel (Hutzler and Levi, 2008), Lithuania (Selickaitė et al., 2018), Portugal (Campos et al., 2013), Slovakia (Nemček, 2024), and Spain (Cordente-Mesas et al., 2016). Despite cultural and linguistic adaptations, the scale consistently demonstrates strong internal consistency reliability. For example, Hutzler and Levi (2008) reported Cronbach's alpha coefficients of .77 for the general scale and .62 for the sport-specific subscale. Factor analysis has also supported the scale's construct validity, with a bi-factor solution explaining a significant portion of the variance. The CAIPE-R, as demonstrated by studies like Campos et al. (2013), provides valuable insights into students' attitudes towards inclusion, aiding in the development of more inclusive physical education environments and enabling the assessment of interventions' impact. More recently, using an adapted Spanish version, less favorable attitudes toward children with intellectual disability were reported in Spain compared to visual disability scenarios (Cabeza-Ruiz, & Rodríguez-Serván, 2023).

Varied disabilities may require distinct instructional approaches, accommodations, or resources, influencing educators' perceptions of feasibility and efficacy (Hutzler et al., 2019). Given the findings in Spain, attitudes toward including a student with a physical disability might differ from those toward a student with a cognitive or emotional impairment, indicating the need for tailored interventions and support structures (Hastings & Oakford, 2003; Polo Sánchez & Aparicio Puerta, 2023; Vaíllo et al., 2016). Therefore, the purpose of the current study was to examine the structure, validity, and reliability of a multi-scenario version of the CAIPE-R, titled CAIPE-IL-MS, developed in Hebrew and based on the Israeli context. A secondary purpose was to identify differences across gender in order to account for gender-specific adaptive strategies utilized by the PE teacher.

METHODS

PARTICIPANTS

The participants were recruited from five

different schools located in the northern and the center regions of the country. These schools were chosen by convenience to represent a range of geographic and social backgrounds to enhance the representativeness of the target population. All students of the 7th to 12th grades in these schools were approached. Prior to participation, students and their guardians provided informed consent, ensuring ethical compliance with institutional guidelines. The study was approved by the Ethics Committee of the Academic College and the Chief Scientist of the Ministry of Education.

INSTRUMENTATION

Participants completed the CAIPE-IL-MS (Children's Attitudes towards Integrated Physical Education – Revised) questionnaire, a multi-scenario version based on the CAIPE-IL translated and adapted into Hebrew Hutzler and Levi (2008). The questionnaire was designed to measure students' attitudes toward the inclusion of a peer with a physical disability in a game activity during a physical education (PE) class. The CAIPE-IL- instrument was adapted to reflect a culturally relevant sport context – basketball – rather than the original baseball setting (as per Block, 1995).

In order to increase the scope toward additional disability contexts, the CAIPE-IL-MS questionnaire consisted of four scenarios, each on a separate page. Each page presented a hypothetical peer with a different type of disability: (1) a student with an intellectual disability, (2) a student with a walking impairment, (3) a student who uses a wheelchair, and (4) a student with a severe visual impairment. Each scenario introduced a different fictional student with a unique name to prevent carry-over effects and maintain engagement across scenarios. Below is an example of the vignette describing the wheelchair user:

NATI'S STORY:

"Nati was injured in a car accident when he was two years old. As a result, he now requires a wheelchair to move around. While the wheelchair allows him to get from place to place, he cannot run or jump. Nati has typical cognitive abilities and is an average student in his class. He is a friendly and polite child who communicates openly with others. Nati enjoys playing the piano and surfing the internet." Each scenario was followed by a series of 13 questions, intended to assess the participants' acceptance of the hypothetical student in a PE

basketball activity. Responses were measured on a 4-point Likert scale, ranging from 1 (No) to 4 (Yes), with intermediate options of 2 (Probably No) and 3 (Probably Yes). These responses provided quantitative data on participants' attitudes toward inclusion in each scenario.

PARTICIPANTS, PROCEDURE & DATA COLLECTION

The questionnaires were filled in person in 15 randomly chosen classes in the five schools selected for the study during a period of three weeks. Data collection took place during the first half hour of the class, with the support and approval of school administrations. The CAIPE-IL-MS questionnaire was administered by trained research staff following a standardized briefing, explaining the purpose of the study, confidentiality assurances, and instructions for how to disseminate and collect the questionnaires. The administration was conducted in a quiet classroom setting to minimize distractions. Participants were encouraged to ask questions if they needed clarification on any part of the questionnaire. Individual attention was provided as needed to ensure full understanding, reduce errors, and decrease the likelihood of incomplete responses. For the purpose of conducting factor analysis, the total sample was randomly divided into two subsamples: one for Exploratory Factor Analysis (EFA) and one for Confirmatory Factor Analysis (CFA). The division details and analytic procedures are further described in the Results section.

THE STATISTICAL ANALYSIS

Descriptive statistics, including frequencies, means, and standard deviations, were calculated for each of the scenarios. exploratory factor analysis (EFA) with robust rotation was conducted to validate the internal structure of the CAIPE-IL-MS in this new cultural and linguistic context. Factors with eigenvalues greater than one were retained, and factor loadings below 0.4 and/or cross loadings were omitted to ensure clarity. Cronbach's alpha coefficients were calculated to assess internal consistency for each subscale. Correlation analyses were performed to examine relationships between the general acceptance attitudes and specific sport modification attitudes. Finally, confirmatory factor analysis (CFA) was employed to evaluate the goodness-of-fit for the model structure proposed through the EFA procedure, using indices such as the chi-square statistic, the goodness-of-fit index (GFI),

and the root mean square error of approximation (RMSEA), as recommended by Hair et al. (2010).

Following preliminary analyses of each case scenario, we identified inconsistent outcomes related to the questionnaire portraying a student with a severe visual impairment scenario, leading to its omission to ensure data consistency and validity. The remaining three scenarios were consolidated into a single general score that applies to CAWD in physical education game activities, specifically basketball.

RESULTS EXPLORATORY FACTOR ANALYSIS (EFA)

In total 258 questionnaires (137 boys and 121 girls) who completed the Children's Attitudes Toward Inclusion in Physical Education – Israel, Multi-Scenario (CAIPE-IL-MS) questionnaires. The average scores from the questionnaires were used for the factor analysis. The sample was randomly divided into two subsamples: one for Exploratory Factor Analysis (EFA; $n = 83$) and one for Confirmatory Factor Analysis (CFA; $n = 175$). Both samples meet the minimum sample size requirements for both procedures (Clark and Watson, 1995; Floyd and Widaman, 1995). Exploratory Factor Analysis was performed using Principal Component Analysis with varimax rotation on 13 questionnaire items. Items were removed during this process for one or more of the following reasons: (a) low correlation (<0.4) with all other items in the questionnaire, (b) high collinearity (>0.7) with other items, (c) no loading with any of the factors generated in the factor analysis, or alternatively, (d) multiple loadings. The adequacy of the data for factor analysis and the model fit were tested using Bartlett's Test of Sphericity, which measures the statistical likelihood that the correlation matrix has significant correlations among its components, and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy.

EFA was performed using SPSS 29. In the next stage, Confirmatory Factor Analysis (CFA) was conducted to confirm the results of the exploratory factor analysis, which indicated a model comprising several latent factors. The model fit was measured using three indices: 1. Comparative Fit Index (CFI), which represents the extent to which the data fit better under the alternative hypothesis than under the null hypothesis. A CFI value greater than 0.94 indicates a good model fit, 2. Standardized Root Mean Square Residual (SRMR), which represents

the difference between observed and predicted correlation coefficients in the hypothesized model, and 3. Root Mean Square Error of Approximation (RMSEA), which represents the extent to which the model fits the data in relation to the general population. Values lower than 0.55 for both SRMR and RMSEA indicate a good model fit.

Five items were removed during the EFA process. The model fit indices Bartlett's Test of Sphericity ($\chi^2(n=15) = 161.540$ ($p < 0.001$)) and KMO (0.776) show that the current data are suitable for factor analysis. Based on Eigenvalues = 1, the inclusion characteristics of disabilities in physical education classes are best described by six items in two factors: 1 – General attitude towards the inclusion of children with disabilities in physical education classes (including the following items: 4,6,7), and 2 – Willingness

to change the game rules in physical education classes (including the following items: 8,10,12), which explain a cumulative variance of 52.32%.

CONFIRMATORY FACTOR ANALYSIS (CFA)

To validate the EFA results, a CFA was performed, and model fit was evaluated using the Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). The hypothesized model demonstrated a good fit, with CFI = 0.963, SRMR = 0.036, and RMSEA = 0.042, all meeting the accepted thresholds (CFI > 0.94; SRMR, RMSEA < 0.05).

Figure 1: Relationships between latent factors identified through Confirmatory Factor Analysis (CFA)

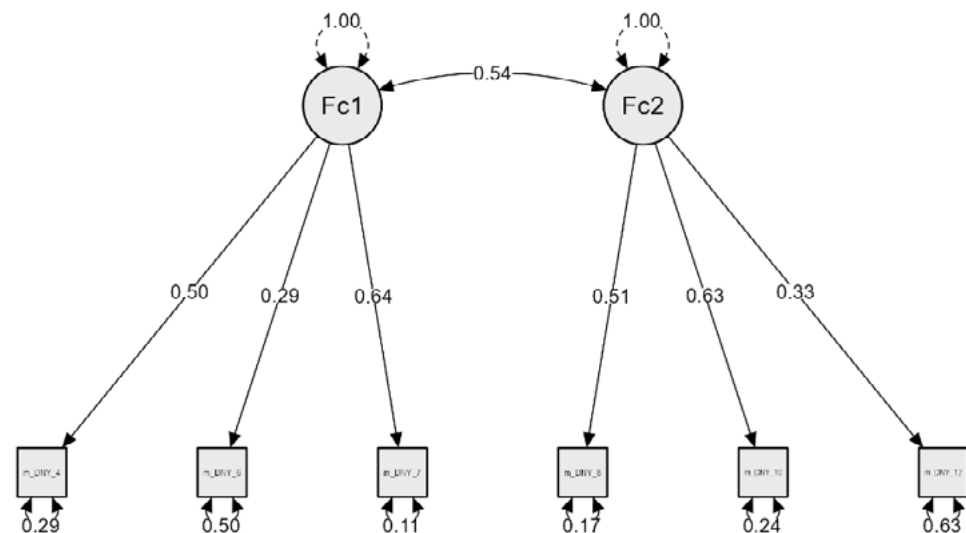


Figure 1 illustrates the relationships between two latent factors, Fc1 and Fc2, identified through Confirmatory Factor Analysis (CFA). These factors represent underlying dimensions of attitudes toward inclusive physical education practices. Fc1, or Factor 1, reflects general attitudes toward the inclusion of children with disabilities in physical education classes and is associated with items 4, 6, and 7 from the questionnaire. Fc2, or Factor 2, captures the willingness to modify game rules in physical education to promote inclusion and includes items 8, 10, and 12.

Each latent factor is associated with specific questionnaire items, as shown in the figure. Factor loadings (λ) represent the strength of association between the items and their respective factors. Residual variances (ϵ) illustrate unexplained variability. The correlation between the

two factors ($r=0.54$) suggests a moderate positive relationship between the dimensions.

The CFA results validate the questionnaire's structure, which consists of six statements divided into two distinct factors. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the overall model is 0.681, indicating an acceptable level for factor analysis, while Bartlett's test of sphericity is significant ($\chi^2 = 249.511$, $p < .001$). R-squared values for individual items range from 0.147 to 0.599, reflecting moderate to strong explanatory power of the latent factors.

INTERNAL RELIABILITY

Cronbach's alpha was used to evaluate internal consistency. Table 1 presents the Cronbach's alpha

values for each factor, showing good internal reliability for the factors individually and for the total scale. In addition, the table reports differences

between the boys and girls participating in the analysis.

Table 1: Internal reliability value of the research questionnaires by factors

Questionnaire	Statements	Alfa value	Boys Mean (SD)	Girls Mean (SD)	F	P
Factor 1	4, 6, 7	0.825	3.08 (0.66)	3.37 (0.49)	15.931	<.001*
Factor 2	8, 10, 12	0.657	2.81 (0.64)	3.19 (0.48)	28.500	<.001*
Total scale	4, 6, 7, 8, 10, 12	0.792	2.95 (0.55)	3.28 (0.37)	31.360	<.001*

Table 2: Comparison of Boys' and Girls' Attitudes Toward the Inclusion of Students with Disabilities in Physical Education Classes

Disability	Gender	Factor 1			Factor 2			Questionnaire		
		Mean (SD)	F	P	Mean (SD)	F	P	Mean (SD)	F	P
Walking impaired	Male	2.58 (0.49)	4.542	0.034*	2.92 (0.70)	14.482	<.001*	2.75 (0.49)	15.104	<.001*
	Female	2.70 (0.43)			3.23 (0.56)			2.96 (0.38)		
Wheelchair user	Male	2.54 (0.52)	4.027	0.046*	2.81 (0.77)	19.412	<.001*	2.67 (0.51)	19.381	<.001*
	Female	2.66 (0.41)			3.19 (0.60)			2.93 (0.37)		
Intellectual impaired	Male	2.63 (0.60)	0.979	0.323	2.68 (0.82)	25.454	<.001*	2.66 (0.59)	17.231	<.001*
	Female	2.69 (0.41)			3.16 (0.65)			2.92 (0.41)		

The table illustrates the differences in attitudes between male and female students toward the inclusion of students with disabilities in physical education classes. The results are categorized into: Factor 1, Factor 2, and the overall questionnaire, across three scenarios: walking impaired, wheelchair users, and intellectual impairments.

The findings indicate that girls consistently exhibit significantly higher mean scores than boys in Factor 1, Factor 2, and the overall questionnaire across all scenarios, except for Factor 1 in the intellectual impairment scenario. In the case of walking-impaired students, girls demonstrated a higher mean score ($M = 2.70$, $SD = 0.43$) than boys ($M = 2.58$, $SD = 0.49$) in Factor 1, with a statistically significant difference ($F = 4.542$, $p = 0.034$). Similarly, for the wheelchair user scenario, girls scored higher ($M = 2.66$, $SD = 0.41$) than boys ($M = 2.54$, $SD = 0.52$) in Factor 1, with a significant difference ($F = 4.027$, $p = 0.046$). However, in the intellectual

impairment scenario, no significant difference was found between boys ($M = 2.63$, $SD = 0.60$) and girls ($M = 2.69$, $SD = 0.41$) in Factor 1 ($F = 0.979$, $p = 0.323$).

In Factor 2, girls consistently scored higher than boys in all scenarios, with significant differences observed. For the walking-impaired scenario, girls ($M = 3.23$, $SD = 0.56$) scored higher than boys ($M = 2.92$, $SD = 0.70$), with $F = 14.482$ and $p < 0.001$. In the wheelchair user scenario, girls ($M = 3.19$, $SD = 0.60$) again had higher scores than boys ($M = 2.81$, $SD = 0.77$), with $F = 19.412$ and $p < 0.001$. Similarly, for the intellectual impairment scenario, girls scored higher ($M = 3.16$, $SD = 0.65$) than boys ($M = 2.68$, $SD = 0.82$), with $F = 25.454$ and $p < 0.001$.

The overall questionnaire results further support these trends, as girls consistently scored higher than boys in all three scenarios. For walking-impaired students, the mean score for girls ($M = 2.96$,

SD = 0.38) was significantly higher than that for boys ($M = 2.75$, $SD = 0.49$), with $F = 15.104$ and $p < 0.001$. Similarly, in the wheelchair user scenario, girls ($M = 2.93$, $SD = 0.37$) scored significantly higher than boys ($M = 2.67$, $SD = 0.51$), with $F = 19.381$ and $p < 0.001$. Lastly, for the intellectual impairment scenario, girls ($M = 2.92$, $SD = 0.41$) had significantly higher scores than boys ($M = 2.66$, $SD = 0.59$), with $F = 17.231$ and $p < 0.001$.

These findings highlight a consistent trend where female students exhibit more positive attitudes toward the inclusion of students with disabilities in physical education classes, except in Factor 1 for the intellectual impairment scenario, where no significant gender difference was observed.

DISCUSSION

This study investigated the attitudes of students in Israeli schools toward the inclusion of children and adolescents with disabilities (CAWD) in physical education (PE) settings using a culturally adapted multi-scenario version of the CAIPE-IL-MS questionnaire. The findings provide insights into the factors shaping attitudes toward inclusion, contributing to the broader discourse on promoting inclusive physical education environments.

The findings of this study provide important insights into the attitudes of Israeli school students toward the inclusion of peers with disabilities in physical education (PE) settings. By adapting and validating the CAIPE-IL-MS questionnaire, we were able to assess attitudes in a culturally relevant and context-specific manner, focusing on scenarios involving basketball activities with peers with intellectual disabilities, walking impairments, and wheelchair use.

These results align with previous studies, such as those by Cabeza-Ruiz & Rodríguez-Serván (2023), which demonstrate that the type of disability significantly influences attitudes toward inclusion. Specifically, our findings reveal that disabilities perceived as less complex or requiring fewer accommodations – such as walking impairments – tend to elicit more favorable attitudes among students. This is consistent with prior research indicating that intellectual or more severe physical disabilities often face greater attitudinal barriers to inclusion. This highlights the need for targeted interventions that address misconceptions and provide adequate support for the inclusion of children with varying types of disabilities. Consistent with Reina et al. (2019) and Delgado-Gil et al. (2023), students who had

previous experiences interacting with peers with disabilities displayed a greater willingness to include them in PE activities. This suggests that creating opportunities for meaningful interactions in controlled and supportive environments can serve as a powerful tool for promoting inclusive attitudes.

The study also sheds light on the role of gender in shaping attitudes, with girls generally demonstrating more favorable perceptions of inclusion than boys. This gender difference has been observed in other research (Reina et al., 2019) and may reflect broader societal and cultural expectations regarding empathy and cooperation. These findings highlight the need for gender-sensitive approaches in developing inclusive PE programs that cater to the diverse perspectives of students.

In terms of methodological contributions, the rigorous adaptation and validation process of the CAIPE-IL-MS questionnaire provides a useful instrument for assessing attitudes toward inclusion in PE in the Israeli context. The use of scenario-based questions allowed for a more detailed exploration of students' perceptions, enabling a deeper understanding of the factors influencing their attitudes. However, the study also raises several challenges and limitations that warrant further investigation. While the CAIPE-IL-MS proved effective in measuring attitudes toward inclusion in basketball activities, its applicability to other sports or PE contexts remains uncertain. Future research could expand the scope of the questionnaire to include a wider range of physical activities and scenarios, ensuring its relevance across diverse PE environments. Additionally, the exclusion of the severe visual impairment scenario highlights the need for further refinement of tools to accurately capture attitudes toward less visible or more complex disabilities.

The implications of this study extend beyond the immediate context of physical education. Encouraging positive attitudes toward inclusion in PE can have broader social benefits, fostering empathy, cooperation, and mutual understanding among students. Schools play a critical role in shaping these attitudes, and educators must be equipped with the knowledge and resources to implement inclusive practices effectively. This includes providing professional development opportunities for PE teachers, creating accessible sports facilities, and promoting inclusive curricula that celebrate diversity and challenge stereotypes.

One of the key differences in our study compared to previous adaptations of the CAIPE-R questionnaire was the decision to reduce the number of

items in the final analysis to six, compared to the 10–12 items commonly found in other adaptations. This reduction was due to methodological considerations, particularly challenges related to reliability and validity when analyzing scenarios involving severe visual impairments. Initially our study included four separate scenarios, but only the items qualifying to be valid in all scenarios (excluding the visual impairment) were utilized for a consolidated questionnaire enabling comparative evaluation across scenarios. Thereby this questionnaire allows researchers to assess attitudes toward different types of disabilities within a unified framework.

This methodological choice likely contributed to the high reliability of our six-item scale but also reduced the granularity of the data, which could have limited our ability to differentiate between attitudes toward specific types of disabilities. For example, previous studies, such as those by Campos et al. (2013) in Portugal, and Percy et al. (2023) in Peru, maintained 10 or more items, enabling a more detailed examination of attitudes toward specific disabilities. Similarly, Block's (1995) original CAIPE-R study involved 12 items with a focus on measuring both general and sport-specific attitudes. Adaptations in Lithuania (Selickaitė et al., 2018) and the Czech Republic (Kudláček et al., 2011) also emphasized item diversity to capture nuanced attitudes toward modifications in sport-specific activities.

In contrast, our approach aimed to simplify the instrument and improve its practicality, particularly for application in real-world school settings where time and clarity are essential. While this streamlined approach was effective in capturing general attitudes, it may not fully account for the complexities of students' perceptions of different disabilities or the impact of contextual factors such as previous contact or cultural norms. For example, adaptations in Spain (Cordente-Mesas et al., 2016) and Slovakia (Nemček, 2024) retained distinct scenarios for different types of disabilities, enabling detailed comparisons across disability types. By consolidating the items applying to all scenarios, our study provided a more general measure of inclusivity, potentially overlooking specific biases or barriers faced by students with particular disabilities.

Despite these limitations, the study's findings align with previous research regarding the importance of prior exposure and gender influences on attitudes toward inclusion. Greek studies, such as those by Panagiotou et al. (2008) and Bebetos et al. (2013), highlighted the role of gender and exposure to peers with disabilities in shaping inclusive

attitudes – patterns that were similarly observed in our study. However, these studies also incorporated specific interventions, such as the “Paralympic School Day” program, which directly influenced attitudes. Our study, focusing on baseline attitudes, underscores the potential for interventions to further enhance inclusivity.

In conclusion, this study highlights both the strengths and limitations of using a six-item scale to measure attitudes toward inclusion in PE. Compared to other studies employing 10–12 items and multiple scenarios, our approach emphasized simplicity and reliability, sacrificing some depth in exchange for broader applicability. These findings underscore the need for continued refinement of measurement tools to balance reliability, validity, and practical utility in diverse educational contexts. By addressing the barriers and leveraging the facilitators identified in this research, policymakers, educators, and practitioners can create more inclusive and equitable learning environments, fostering positive attitudes and practices in physical education and beyond.

CONCLUSIONS

This study validated a culturally adapted, scenario-based version of the CAIPE-IL-MS questionnaire for assessing attitudes toward the inclusion of children with disabilities in PE settings in Israeli schools. The results demonstrate the instrument's strong psychometric properties and its utility in capturing general attitudes and willingness to adapt game rules for inclusion. A key finding is the gender difference, suggesting that the females' attitudes were more favorable than that of the males, and thereby supporting previous research in this regard. While the streamlined six-item format enhances clarity and practicality, it limits detailed analysis across disability types. Future research should aim to balance brevity and depth by developing complementary tools or scenario-specific subscales. Overall, fostering inclusive attitudes in physical education can promote broader social cohesion, and the validated CAIPE-IL-MS provides a practical tool for advancing this goal in both research and practice.

DATA AVAILABILITY

We included all the data needed for the evaluation of the conclusions in the Results section or in the Supplementary Information file. Additional data related to this article may be requested from **the corresponding author (Dr. M. Sindiani, mahmoods@l-w.ac.il)**.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare, following the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

FUNDING

This work was supported by the President's Fund of the Levinsky-Wingate Academic College.

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Received on February 14, 2025

Accepted on May 30, 2025