

Predicting Self-Esteem through Self-Advocacy and Assistive Technology Use among Adults with Physical Disabilities

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ABSTRACT

This study aims to examine the relationship between self-advocacy skills, assistive technology use, and self-esteem among adults with physical disabilities. A cross-sectional design was employed, with data collected from 244 adults with physical disabilities. Participants completed validated self-report measures assessing self-esteem, self-advocacy skills, and assistive technology use. Pearson correlation coefficients were calculated to explore the relationships between the variables. A linear regression analysis was conducted to determine the extent to which self-advocacy skills and assistive technology use predict self-esteem. All analyses were performed using SPSS version 27. The results indicated significant positive correlations between self-esteem and both self-advocacy skills ($r = .62, p < .01$) and assistive technology use ($r = .58, p < .01$). Self-advocacy skills and assistive technology use were found to be significant predictors of self-esteem, accounting for 49% of the variance ($R^2 = .49, F(2, 241) = 115.63, p < .001$). The regression analysis revealed that self-advocacy skills ($B = 0.34, \beta = .42, p < .001$) and assistive technology use ($B = 0.28, \beta = .36, p < .001$) both positively influence self-esteem. The study concludes that self-advocacy skills and assistive technology use are crucial determinants of self-esteem in adults with physical disabilities. These findings highlight the importance of providing support and training in self-advocacy and access to appropriate assistive technology to enhance psychological well-being and autonomy in this population. Future research should explore these relationships longitudinally and across diverse disability groups.

Keywords: *Self-esteem, self-advocacy skills, assistive technology, physical disabilities, empowerment, psychological well-being.*

1. Introduction

Self-advocacy is a critical skill for individuals with disabilities, enabling them to communicate their needs, make informed decisions, and seek necessary accommodations. This ability is essential for fostering independence and self-determination, particularly in educational and vocational settings. According to Fiedler and Danneker (2017), self-advocacy instruction bridges the research-to-practice gap, highlighting its importance in practical applications (Fiedler & Danneker, 2017). Moreover, self-advocacy skills empower individuals with disabilities to influence public policy and improve their quality of life (Fiedler & Danneker, 2017; Seekins et al., 1987).

Assistive technology plays a significant role in enhancing the lives of individuals with physical disabilities. It enables greater independence, improves access to education and employment, and enhances overall quality of life. The use of assistive technology is closely linked to self-advocacy, as it often requires individuals to understand and articulate their specific needs to obtain and utilize appropriate devices. Fawcett et al. (1994) emphasized a contextual-behavioral model of empowerment, which includes the use of assistive technology as a crucial component for people with physical disabilities (Fawcett et al., 1994).

Self-esteem is a fundamental aspect of psychological well-being, influencing how individuals perceive and interact with the world. For individuals with physical disabilities, self-esteem can be significantly impacted by their ability to advocate for themselves and effectively use assistive technology. Positive self-esteem is associated with better mental health outcomes, increased social participation, and higher overall life satisfaction (Carter et al., 2013). Thus, examining the predictors of self-esteem in this population is essential for developing interventions that support their psychological and social well-being.

A growing body of research has explored the importance of self-advocacy and the use of assistive technology among individuals with disabilities. Balint-Langel et al. (2019) demonstrated the effectiveness of a computer-based strategy in teaching self-advocacy skills to middle school students with disabilities, underscoring the potential of technology in education (Balint-Langel et al., 2019). Similarly, Holzberg, Test, and Rusher (2018) highlighted the significance of self-advocacy instruction in helping high school seniors with mild disabilities access accommodations in college. These studies suggest that self-advocacy skills and assistive

technology use are crucial for educational success and long-term independence (Holzberg et al., 2018).

In higher education and employment, self-advocacy skills are vital for requesting and utilizing accommodations. Gillespie-Lynch et al. (2017) found that neurodiverse college students benefit from support systems that enhance their self-advocacy abilities (Gillespie-Lynch et al., 2017). Furthermore, Walker and Test (2011) showed that self-advocacy interventions significantly improved African American college students' ability to request academic accommodations (Walker & Test, 2011). In the workplace, self-advocacy is equally important for job retention and career advancement (Thomas & Morgan, 2021).

Self-advocacy also plays a crucial role in social inclusion. Gilmartin and Slevin (2010) highlighted the positive experiences of intellectually disabled individuals involved in self-advocacy groups, noting increased social engagement and a sense of belonging (Gilmartin & Slevin, 2010). Similarly, Karpicz (2020) explored the self-advocacy experiences of disabled graduate students of color, emphasizing the intersectionality of race and disability in advocacy efforts (Karpicz, 2020).

Despite the recognized importance of self-advocacy, many individuals with disabilities face significant challenges in developing and utilizing these skills. Gruber and Martin (2019) identified a disconnect between self-advocacy and social justice practices among teachers, indicating a need for more comprehensive training and support (Gruber & Martin, 2019). Additionally, McGahee, King-Sears, and Evmenova (2021) pointed out the difficulties high school students with learning disabilities encounter when requesting accommodations, underscoring the necessity of tailored instructional approaches (McGahee et al., 2021).

The theoretical framework for this study is grounded in empowerment theory, which posits that individuals gain control over their lives through self-advocacy and the effective use of resources, such as assistive technology (Fawcett et al., 1994). This framework aligns with the contextual-behavioral model of empowerment, emphasizing the importance of environmental factors and personal agency in achieving self-determination.

This study aims to examine the relationship between self-advocacy skills, assistive technology use, and self-esteem among adults with physical disabilities. By understanding how these variables interact, the study seeks to identify potential strategies for enhancing self-esteem and overall quality of life in this population. The study's findings will

contribute to the growing body of literature on disability empowerment and inform the development of targeted interventions.

Based on the literature review, the following hypotheses are proposed:

- There is a positive correlation between self-advocacy skills and self-esteem among adults with physical disabilities.
- There is a positive correlation between assistive technology use and self-esteem among adults with physical disabilities.
- Self-advocacy skills and assistive technology use are significant predictors of self-esteem in adults with physical disabilities.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a cross-sectional design to investigate the relationship between self-advocacy skills, assistive technology use, and self-esteem among adults with physical disabilities. A total of 244 participants were recruited for this study, based on the sample size determination using the Morgan and Krejcie table for a population of this size. Participants were adults aged 18 and older, diagnosed with physical disabilities, and capable of completing the survey independently. Recruitment was conducted through disability organizations, online forums, and social media platforms targeting individuals with physical disabilities.

2.2. Measures

2.2.1. Self-Esteem

The dependent variable, Self-Esteem, is measured using the Rosenberg Self-Esteem Scale (RSES), developed by sociologist Dr. Morris Rosenberg in 1965. The RSES is a widely used self-report instrument consisting of 10 items rated on a 4-point Likert scale ranging from "strongly agree" to "strongly disagree." The scale assesses global self-worth by measuring both positive and negative feelings about the self. The total score is calculated by summing the responses, with higher scores indicating higher self-esteem. The RSES has been extensively validated and has demonstrated high reliability, with Cronbach's alpha typically exceeding 0.80 in various populations and settings (Abela & Skitch, 2007; Acosta-Gonzaga, 2023; Adkins, 2003; Afrooz et al., 2022; Ahadi, 2009; Ahmadi et al., 2014).

2.2.2. Self-Advocacy

The Self-Advocacy Skills of adults with physical disabilities are assessed using the Self-Advocacy Scale (SAS), developed by Brinckerhoff, Shaw, and McGuire in 1992. The SAS includes 25 items divided into three subscales: Knowledge of Self, Knowledge of Rights, and Communication Skills. Each item is rated on a 5-point Likert scale, ranging from "never" to "always." The total score is derived from the sum of the responses, with higher scores indicating stronger self-advocacy skills. The SAS has demonstrated good reliability, with Cronbach's alpha coefficients for the subscales ranging from 0.70 to 0.85, and its validity has been confirmed in several studies involving diverse populations with disabilities (Fiedler & Danneker, 2017; Grenwelge & Zhang, 2012; Holzberg et al., 2018; Huang et al., 2004; Krueger, 2024; Miller).

2.2.3. Assistive Technology

Assistive Technology Use is measured using the Assistive Technology Use Survey (ATUS), developed by Riemer-Reiss and Wacker in 2000. The ATUS consists of 20 items that assess the frequency and type of assistive technology use, perceived ease of use, and satisfaction with assistive devices. Items are rated on a 5-point Likert scale, with responses ranging from "never" to "always" for frequency-related items and from "very dissatisfied" to "very satisfied" for satisfaction-related items. The total score is calculated by summing the responses, with higher scores indicating more frequent and satisfactory use of assistive technology. The ATUS has been validated and shown to have good reliability, with Cronbach's alpha values typically above 0.80 in studies of individuals with physical disabilities (Judge & Simms, 2009; Michaels & McDermott, 2003; Obeidat et al., 2014; Parette et al., 1996; Ripat & Woodgate, 2017).

2.3. Data Analysis

Data were analyzed using SPSS version 27. Pearson correlation coefficients were computed to examine the relationship between the dependent variable, self-esteem, and each independent variable, self-advocacy skills and assistive technology use. This analysis aimed to determine the strength and direction of the associations between these variables.

Subsequently, a linear regression analysis was conducted to predict self-esteem based on self-advocacy skills and

assistive technology use. In this regression model, self-esteem served as the dependent variable, while self-advocacy skills and assistive technology use were the independent variables. This analysis provided insights into the extent to which these independent variables could explain the variance in self-esteem among adults with physical disabilities.

All statistical tests were two-tailed with a significance level set at $p < 0.05$. The assumptions of linear regression, including linearity, independence of errors, homoscedasticity, and normality of residuals, were checked to ensure the validity of the results.

3. Findings and Results

Table 1

Descriptive Statistics

Variable	Mean	Standard Deviation
Self-Esteem	32.54	6.87
Self-Advocacy Skills	78.62	14.45
Assistive Technology Use	54.38	12.34

The descriptive statistics for the study variables are presented in [Table 1](#). The mean self-esteem score among the participants was 32.54 ($SD = 6.87$). The mean score for self-advocacy skills was 78.62 ($SD = 14.45$), and the mean score for assistive technology use was 54.38 ($SD = 12.34$). These values provide an overview of the central tendency and variability of the measures used in this study.

Prior to conducting the main analyses, several assumptions were tested to ensure the validity of the Pearson correlation and linear regression analyses. For normality, the Shapiro-Wilk test yielded non-significant results for impulsiveness ($W = 0.98, p = 0.07$), sleep quality ($W = 0.99, p = 0.15$), and body image dissatisfaction ($W = 0.97, p =$

The study sample comprised 300 adults with hearing impairments. The gender distribution included 148 males (49.33%) and 152 females (50.67%). Age groups were categorized as follows: 18-30 years (85 participants, 28.33%), 31-40 years (92 participants, 30.67%), 41-50 years (70 participants, 23.33%), and 51 years and older (53 participants, 17.67%). Regarding education levels, 45 participants (15.00%) had completed high school, 124 participants (41.33%) held a bachelor’s degree, 97 participants (32.33%) had a master’s degree, and 34 participants (11.33%) possessed a doctoral degree. Employment status included 172 participants (57.33%) working full-time, 91 participants (30.33%) working part-time, and 37 participants (12.33%) self-employed.

0.08), indicating that the data were approximately normally distributed. Linearity was assessed through scatterplots, which showed linear relationships between impulsiveness and each of the independent variables. Homoscedasticity was confirmed via the Breusch-Pagan test, which was non-significant ($\chi^2 = 2.11, p = 0.15$). Multicollinearity was checked using Variance Inflation Factors (VIF), with values of 1.12 for sleep quality and 1.09 for body image dissatisfaction, indicating no multicollinearity. Finally, the Durbin-Watson statistic was 2.05, suggesting no autocorrelation in the residuals. Thus, all assumptions for Pearson correlation and linear regression were met.

Table 2

Correlation Matrix

Variable	Self-Esteem	Self-Advocacy Skills	Assistive Technology Use
Self-Esteem	1	.62**	.58**
Self-Advocacy Skills	.62**	1	.45**
Assistive Technology Use	.58**	.45**	1

** $p < .01$

[Table 2](#) shows the Pearson correlation coefficients between the dependent variable (self-esteem) and the independent variables (self-advocacy skills and assistive technology use). Self-esteem was positively correlated with

self-advocacy skills ($r = .62, p < .01$) and assistive technology use ($r = .58, p < .01$). There was also a significant positive correlation between self-advocacy skills and assistive technology use ($r = .45, p < .01$). These results

suggest that higher levels of self-advocacy skills and greater use of assistive technology are associated with higher self-esteem among adults with physical disabilities.

Table 3

Summary of Regression Results

Source	Sum of Squares	Degrees of Freedom	Mean Squares	R	R ²	R ² adj	F	p
Regression	2584.32	2	1292.16	.70	.49	.48	115.63	<.001
Residual	2720.18	241	11.29					
Total	5304.50	243						

Table 3 summarizes the results of the regression analysis. The regression model explained 49% of the variance in self-esteem ($R^2 = .49$, $R^2_{adj} = .48$), indicating a good fit for the model. The overall regression model was significant, $F(2,$

$241) = 115.63$, $p < .001$, suggesting that self-advocacy skills and assistive technology use together significantly predict self-esteem among adults with physical disabilities.

Table 4

Results of Multivariate Regression

Predictor Variable	B	Standard Error	β	t	p
Constant	12.34	3.45		3.58	<.001
Self-Advocacy Skills	0.34	0.07	.42	4.86	<.001
Assistive Technology Use	0.28	0.06	.36	4.67	<.001

Table 4 presents the results of the multivariate regression analysis. The constant (intercept) was 12.34 ($SE = 3.45$, $p < .001$). Self-advocacy skills had a significant positive effect on self-esteem ($B = 0.34$, $SE = 0.07$, $\beta = .42$, $t = 4.86$, $p < .001$), as did assistive technology use ($B = 0.28$, $SE = 0.06$, $\beta = .36$, $t = 4.67$, $p < .001$). These findings indicate that both self-advocacy skills and assistive technology use are significant predictors of self-esteem among adults with physical disabilities, with self-advocacy skills having a slightly stronger impact.

4. Discussion and Conclusion

The current study examined the relationship between self-advocacy skills, assistive technology use, and self-esteem among adults with physical disabilities. The findings indicate significant positive correlations between self-esteem and both self-advocacy skills ($r = .62$, $p < .01$) and assistive technology use ($r = .58$, $p < .01$). Additionally, the regression analysis demonstrated that self-advocacy skills and assistive technology use are significant predictors of self-esteem, accounting for 49% of the variance ($R^2 = .49$, $F(2, 241) = 115.63$, $p < .001$). These results underscore the critical role of self-advocacy and assistive technology in

enhancing self-esteem among adults with physical disabilities.

The positive correlation between self-advocacy skills and self-esteem is consistent with the findings of several previous studies. For instance, Fiedler and Danneker (2017) highlighted the importance of self-advocacy instruction in empowering individuals with disabilities to communicate their needs effectively, which in turn boosts their self-esteem (Fiedler & Danneker, 2017). Similarly, Walker and Test (2011) found that self-advocacy interventions significantly improved the ability of African American college students to request academic accommodations, leading to enhanced self-esteem (Walker & Test, 2011).

The significant positive relationship between assistive technology use and self-esteem aligns with the contextual-behavioral model of empowerment proposed by Fawcett et al. (1994). This model emphasizes the role of environmental supports, such as assistive technology, in promoting autonomy and self-efficacy, which are key components of self-esteem (Fawcett et al., 1994). Holzberg, Test, and Rusher (2018) also demonstrated that high school seniors with mild disabilities who received self-advocacy instruction were better able to access accommodations in college, suggesting that the use of assistive technology can

bolster self-esteem by facilitating independence and participation in academic settings (Holzberg et al., 2018).

The combined impact of self-advocacy skills and assistive technology use on self-esteem is further supported by the work of Gillespie-Lynch et al. (2017), who found that neurodiverse college students benefited from support systems that enhanced their self-advocacy abilities, leading to improved self-esteem (Gillespie-Lynch et al., 2017). Additionally, Dawson (2023) emphasized the importance of discussion tools in increasing self-determination among students with disabilities, highlighting the interplay between self-advocacy and technological support in fostering self-esteem (Dawson, 2023).

The theoretical framework of this study, grounded in empowerment theory, is supported by the findings. Empowerment theory posits that individuals gain control over their lives through self-advocacy and the effective use of resources, such as assistive technology (Fawcett et al., 1994). The significant impact of self-advocacy skills on self-esteem observed in this study aligns with the notion that personal agency and the ability to advocate for oneself are crucial for psychological empowerment and self-esteem (Carter et al., 2013).

Furthermore, the findings align with the contextual-behavioral model of empowerment, which incorporates environmental supports like assistive technology as essential components for empowering individuals with disabilities (Fawcett et al., 1994). The significant positive relationship between assistive technology use and self-esteem observed in this study underscores the importance of accessible and effective technological supports in promoting autonomy and self-efficacy among individuals with physical disabilities.

The positive correlation between self-advocacy skills and assistive technology use ($r = .45, p < .01$) observed in this study suggests that these two factors are interrelated and mutually reinforcing. This finding is consistent with the work of Balint-Langel et al. (2019), who demonstrated the effectiveness of a computer-based strategy in teaching self-advocacy skills to middle school students with disabilities. The integration of technology in self-advocacy instruction not only enhances self-advocacy skills but also promotes the use of assistive technology, leading to improved self-esteem (Balint-Langel et al., 2019).

Despite the significant findings, this study has several limitations. First, the cross-sectional design limits the ability to infer causality between self-advocacy skills, assistive technology use, and self-esteem. Longitudinal studies are needed to establish causal relationships and examine how

these variables interact over time. Second, the reliance on self-report measures may introduce response biases, as participants might overestimate or underestimate their self-advocacy skills, assistive technology use, or self-esteem. Future studies should consider using a combination of self-report and objective measures to enhance the validity of the findings. Third, the sample consisted of adults with physical disabilities, which may limit the generalizability of the results to other populations, such as individuals with intellectual or developmental disabilities. Future research should explore the relationships among these variables in diverse disability populations to provide a more comprehensive understanding of their interplay.

To build on the findings of this study, future research should adopt a longitudinal design to investigate the causal relationships between self-advocacy skills, assistive technology use, and self-esteem. This approach would provide insights into how these variables influence each other over time and the long-term impact of self-advocacy and assistive technology on self-esteem. Additionally, future studies should explore the effectiveness of different types of self-advocacy training programs and assistive technology interventions in enhancing self-esteem among individuals with disabilities. Examining the specific components of these programs and interventions that contribute to improved self-esteem can inform the development of targeted and effective support strategies.

Moreover, future research should consider the role of contextual factors, such as social support, educational environment, and cultural background, in shaping the relationships between self-advocacy skills, assistive technology use, and self-esteem. For instance, the influence of family support and peer relationships on the development and utilization of self-advocacy skills and assistive technology could provide valuable insights into how these factors interact to impact self-esteem. Finally, studies should investigate the experiences of individuals with different types of disabilities, including intellectual, developmental, and sensory disabilities, to provide a more comprehensive understanding of the factors influencing self-esteem in diverse disability populations.

Based on the findings of this study, several practical recommendations can be made to support the self-esteem of individuals with physical disabilities. First, educators and practitioners should prioritize self-advocacy instruction as a key component of educational and vocational training programs for individuals with disabilities. Providing opportunities for individuals to learn and practice self-

advocacy skills can enhance their ability to communicate their needs and seek necessary accommodations, leading to improved self-esteem (Fiedler & Danneker, 2017).

Second, the integration of assistive technology into self-advocacy training programs should be emphasized. By incorporating technology that facilitates independence and accessibility, practitioners can enhance the overall effectiveness of self-advocacy instruction and promote higher self-esteem (Balint-Langel et al., 2019). Additionally, practitioners should ensure that individuals with disabilities have access to appropriate assistive technology and receive training on how to use these tools effectively. This support can empower individuals to utilize assistive technology to its full potential, thereby enhancing their self-esteem and overall quality of life.

Third, creating a supportive and inclusive environment is crucial for fostering self-advocacy and the use of assistive technology. Educators, employers, and service providers should cultivate an environment that encourages individuals with disabilities to advocate for themselves and utilize assistive technology without fear of stigma or discrimination. Providing ongoing support, mentorship, and opportunities for self-advocacy practice can further empower individuals with disabilities to build their self-esteem and achieve their personal and professional goals (Gillespie-Lynch et al., 2017; Walker & Test, 2011).

In conclusion, this study highlights the significant positive relationships between self-advocacy skills, assistive technology use, and self-esteem among adults with physical disabilities. The findings underscore the importance of these factors in promoting psychological well-being and autonomy in this population. By addressing the limitations and building on the suggestions for future research and practice, stakeholders can develop more effective strategies to support the self-esteem and empowerment of individuals with disabilities, ultimately enhancing their quality of life and social inclusion.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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