

# Research

Relationships Between Occupational Therapy  
Students' Understandings of Disability and  
Disability Attitudes



[www.c-q-l.org](http://www.c-q-l.org)

Running head: DISABILITY DEFINITIONS AND ATTITUDES

## **Relationships Between Occupational Therapy Students' Understandings of Disability and Disability Attitudes**

Laura VanPuymbrouck & Carli Friedman

Laura VanPuymbrouck, PhD, OTR/L  
Rush University  
600 S. Paulina St.  
1010F  
Chicago, IL 60612  
Laura\_VanPuymbrouck@rush.edu

Carli Friedman, PhD  
CQL | The Council on Quality and Leadership  
100 West Road, Suite 300  
Towson, MD 21204  
cfriedman@thecouncil.org

### *Acknowledgements:*

This study was funded by a grant from the Spencer Foundation (201700112).

### *Reference:*

VanPuymbrouck, L. & Friedman, C. (2019). Relationships between occupational therapy students' understandings of disability and disability attitudes. *Scandinavian Journal of Occupational Therapy*, 27(2), 122-132. <https://doi.org/10.1080/11038128.2019.1596310>

### Abstract

**Background:** Entering occupational therapy (OT) students have established beliefs, informed by sociocultural backgrounds. Understanding how students define and understand disability, and the relationships these understandings have to disability bias, can guide curriculum design decisions to integrate meso and macro level perspectives of disability into clinical reasoning.

**Aim/Objective:** This study's aim was to explore incoming occupational therapy students' ( $n = 67$ ) understandings of disability and their attitudes towards it.

**Material and method:** An online survey was used to collect data on students' attitudes and definitions of disability. Mixed research methods were used to analyze students' definitions of disability (content analysis) in relation to disability attitudes (Disability Attitudes Implicit Association Test).

**Results/Finding:** Findings reveal students enter curriculums with vast differences in understandings of people with disabilities and these may provide a basis for and contribute to differences in attitudes of disability.

**Conclusions:** OT students have established beliefs of disability as individualized or more socially constructed and these influence disability biases.

**Significance:** Students' education has considerable influence in shaping attitudes and ways of interacting with people with disability. Understanding students' assumptions as they enter a program is a first step to evaluate how curriculum design may influence development of student clinical reasoning strategies.

**Keywords:** Occupational therapy education; disability; implicit attitudes; social model; medical model

## **Relationships Between Occupational Therapy Students' Understandings of Disability and Disability Attitudes**

Occupational therapy strives to be client-centered, grounding the professional philosophy in optimizing clients' opportunity for "achieving health, well-being, and participation" in society (1). However, the profession is commonly housed within rehabilitation or medical models where perceptions of disability are individualized as impairments or pathologies. These beliefs reduce the person to their inabilities and creates an environment that advocates ability (2). The bias toward 'ability' or ableism is embedded throughout interventions, making one question how client-centered our interventions are and requiring critical reflection on traditional practice approaches (3). Despite professional models that focus on participation and occupational performance, critiques from outside and inside the profession suggest medical or impairment based models as too entrenched within our approaches to client intervention and our approaches too directed at eliminating individual impairment in order to eliminate disability (4). Furthermore, criticism from within the profession acknowledges students leave their professional programs with philosophic understandings of the many social barriers that produce disability and directly prohibit participation in occupation but with limited knowledge on methods for directing interventions to reduce these causes of disability (5). Having an academic understanding of the social barriers that produce disability may be insufficient in supporting the development of clinical reasoning strategies to address them when working in impairment and bio-mechanical assessment-based service settings.

Occupational therapy students enter their programs with established beliefs, informed in part by their own social and cultural backgrounds. If these students have negative attitudes of disability how might a programs' curriculum attend to producing clinicians who have a broader

definition of disability that support developing practice interventions that correspond with the profession's philosophic tenets? Understanding how entry-level occupational therapy students define and understand disability, as well as the relationships these understandings relate to prejudiced attitudes, may help guide curriculum design decisions to emphasizing micro-level causes located in the person to more equally incorporate meso and macro-level perspectives with associated intervention design, advancing clinical reasoning strategies. Understanding students' initial positionalities is critical to explore how new knowledge might support or challenge their conceptual underpinnings of disability.

### **Background**

Occupational therapy programs are committed to delivering the foundational standards of education (6). In fact, the Accreditation Council for Occupational Therapy Education (ACOTE) B-Standards from the United States certifying board specifically require students are trained to understand how cultural and disability status might bias assessment results (7). However, how different programs implement this standard is flexible. Influences from the field of disability studies and the disability community have been increasingly woven into the standards and educational material (8). Disability studies' tenets of interdependence, lived experience, personal expertise, and social-political environmental barriers as causes of disability have growing recognition within occupational therapy literature and research (9, 10) that provide a foundation for non-traditional practice areas. Despite this discourse shift, practitioners in the field describe a lack of knowledge of how to translate disability studies perspectives into practice and largely retain an impairment based lens on intervention delivery (11). This may be due to the large (46%) and growing (up 9% between 2010 and 2015) percentage of practitioners working in

traditional medically oriented hospital and long-term care facilities in the United States (12).

These incongruities lead to an important translational gap that is little understood or examined.

### **Disability Attitudes**

Knowledge of attitudes is important because they help us understand social interactions. Attitudes can be learned and unconscious, meaning they can also provide information about socialization and prejudice formation (13). There are two levels of attitudes: explicit (conscious) attitudes and implicit (unconscious) attitudes (13, 14). As people may feel pressured to conceal their biases, or may be unaware they hold biased attitudes, there are concerns that explicit measures do not capture all attitudes (13, 14). This may be especially true for topics where it is socially undesirable to have negative attitudes, such as against people with disabilities.

For this reason, much attitude research has shifted towards examining implicit attitudes. Implicit attitudes can relate to automatic processes triggered by external cues and reflect associations between attitudes and concepts; “‘implicit’ refers to [lack of] awareness of how a bias influences a response, rather than to the experience of bias or to the response itself” (14). As they are rooted in normal cognitive processes, including those related to social norms, it is theorized the majority of people hold negative implicit attitudes towards social minority groups (15).

The majority of research about occupational therapy students’ disability attitudes has focused on explicit attitudes. Moreover, research exploring occupational therapy students’ attitudes toward disability, including how learning activities and exposure to clients on field work influence beliefs and behaviors, has resulted in conflicting findings. Research by Sullivan and Mendonca (16) suggests traditional occupational therapy lectures on disability stigma and cultural competency insufficiently impact explicit attitudes; however, fieldwork has

demonstrated positive change in explicit attitudes. Other studies have found just the opposite. In fact, a study by Lee, Paterson (17) found fieldwork exposure to people with disabilities reinforced established bias of students. Although some research has found that occupational therapy students' explicit attitudes reduces over time compared to other professional programs (17), Lyons (18) found no differences between occupational therapy and business students' attitudes over time. In fact, social relationships with people with disabilities (outside of formal curricula) have been noted to lead to a greater influence on students' attitudes (18).

None of these previous studies on occupational therapy students' bias and attitudes explored how department program differences might influence and impact the students' incoming attitudes toward disability. Moreover, these studies only focused on explicit attitudes, utilizing the Attitudes toward Disabled Persons Scale (19) or its derivatives, which, like all explicit measures, does not capture all level of attitudes and is susceptible to response bias (13, 14). For these reasons, the purpose of this study was to explore incoming occupational therapy graduate students' understandings of disability – how they define disability – and their implicit attitudes towards it. To do so, we used mixed methodologies, including content analysis of students' definitions of disability from open-ended survey questions, and the quantitative Disability Attitudes Implicit Association Test (DA-IAT) measure to track their implicit attitudes. This allowed us to explore relationships between participants' understandings of disability and their unconscious attitudes towards it, using the themes that emerged from content analysis as variables in the quantitative analysis.

## Methods

### Participants

After this study was approved by Institutional Review Board, participants were recruited from three universities of a large urban setting within the United States. Incoming students were forwarded the study information via email by department administrators. To be included in the study participants had to be in the incoming class of graduate programs of which we were recruiting.

### Measures

The Implicit Association Test (IAT) is one of the most prominent methods to measure people's implicit attitudes (20). IATs present people with two concepts (e.g., Black people and White people) and two attributes (e.g., pleasant and unpleasant) and asks them to categorize stimuli according to those categories when presented in ways that are congruent and incongruent with stereotypes. The IAT examines attitudes by measuring reaction time when items are sorted in stereotype congruent and incongruent ways; the quicker the reaction time, the stronger the association between groups and traits (21).

The DA-IAT is the most commonly used disability related IAT. The DA-IAT presents participants with 'disabled persons' and 'abled persons' categories and asks them to sort word and symbol stimuli accordingly. For example, the wheelchair symbol would be sorted into the 'disabled persons' category. Participants are then later required to associate the symbol as relating to attributes of 'good' or 'bad'. Much literature has noted that the IAT is internally consistent, valid, and has high test-retest reliability (20, 22). In addition, studies have shown the DA-IAT in particular has construct validity (23-25), discriminant validity (26), and reliability

(23, 24, 27). Moreover, the IAT has built in safeguards against participants selecting at random or trying to fake their results (28).

In addition to the DA-IAT, participants also answered additional open-ended survey questions that asked about their demographics, their relationships with disabled people, and other viewpoints. One of the questions asked during this stage was *“How do you define disability?”* Students were given as much space and time to reply as necessary. The data from participants’ responses to this question was collected and qualitatively analyzed using methods of content analysis (29).

### **Procedure**

After accessing the study website, participants completed the informed consent then received instructions about how to complete the DA-IAT. They were told to push the ‘E’ key if the stimuli belonged in the categories listed on the left and the ‘I’ on the right as quickly as possible but with the least amount of errors. If participants placed stimuli to the wrong side a red X appeared in the middle of the screen until they made the correct choice. The DA-IAT then presents participants with seven blocks (rounds) of categorization tasks. During the first practice block, which lasts 20 trials, the participants *only* sort the target-concept discriminations with ‘abled-persons’ on one side of the screen and ‘disabled persons’ on the other. The second practice block is similar; ‘good’ is presented on one side of the screen and ‘bad’ on the other for 20 trials. For blocks three (20 trials) and four (40 trials) the target-concept discriminations and the attribute dimensions are both presented on the screen at the same time. For example, ‘abled persons’ and ‘bad’ may be on the left with ‘disabled persons’ and ‘good’ on the right. The computer system randomizes if they are presented with stereotype consistent or inconsistent items during these blocks. Block five (40 trials) is then a practice block where only good and bad

are presented on opposite sides of the screens. This allows participants to become familiar with the switched location of these two attribute dimensions. Block six (20 trials) and seven (40 trials) are then very similar to blocks three and four except if they received the stereotype inconsistent layout in those blocks they will receive the stereotype consistent ones in blocks six and seven and visa-versa. Participants' implicit disability attitudes (DA-IAT) were then calculated by comparing participants stereotype congruent and incongruent blocks using response latencies. After completing the DA-IAT participants were presented with the remaining open-ended survey questions.

### **Analysis**

The two primary researchers independently coded students' responses to the open-ended survey question asking their definition of disability. Open-ended questions are used as a means to give subjective feedback on surveys to provide more depth to understanding the meaning of a topic or subject matter (30). We used a systematic approach of qualitative content analysis to identifying broad themes that emerged from the open-ended survey questions. Qualitative content analysis is an accepted and frequently used form of analysis of text-based data when the research aims to describe a phenomenon where existing literature is limited (31). The researchers initially independently assigned a code to each open-ended response to the survey question '*in your own words define disability*' of each participant. We then independently created an emergent codebook with a definition of preliminary codes. Once all participant responses were independently analyzed the researchers came together to compare and contrast analysis of their preliminary codes and aligning definitions. Here the researchers performing a dialogical intersubjective framework of analysis (32) that involved multiple rounds of narrowing code categories, creating and updating the codebook. For example, two different codes were used

initially by the researchers: ‘it’s a struggle’ and ‘capacity to function’ each with their own definitions. However, in comparison and returning to the epitomizing quotes, it was confirmed both these codes meanings shared common concepts characterized by the larger code category of ‘individualization’. Using this iterative process of discussion, common concepts of codes were placed together into broad themes deductively informed from each investigator’s a priori concepts as well as from within disability studies or occupational therapy literature. These themes grouped codes that shared unifying concepts from the codebook definitions or statements within the responses (33). Each researcher then returned to the responses to confirm the theme assigned to a response fell into the definition assigned to it in the codebook (34). Upon achieving a consensus of meaning the researchers then aligned epitomizing quotes/definitions for each theme.

To ensure qualitative rigor, continuous critical reflection was used throughout the study by both researchers. During the intersubjective dialogue each researcher challenged the other to return and reflect on their own process for assigning codes and themes. This included reflecting on how knowledge of personal biases might negatively impact a person and recognizing the biases we also carry toward others. This process prolonged the engagement of the researchers with the data in an intense, multi-stage and over-time, in-depth analysis of each participants’ responses in an attempt to accurately interpret participants’ meanings to improve the dependability of the codes and final themes.

In order to examine the relationships between occupational therapy students’ definitions of disability and their disability attitudes, we then quantified the qualitative data; doing so also served as a form of across-methods triangulation recognized as a reliable and valid method by other researchers (29, 35-38). Mixing methods in this way also allows one to “incorporat[e]

multiple viewpoints in defining the theoretical boundaries of assessment practice, allowing numbers to 'speak' in order to enhance our understanding of data" (38). For these reasons, after the qualitative analysis was complete, we also quantified participants' definitions of disability using binary indicator coding; participants received a 'one' when their response corresponded or reflected a code and a 'zero' when it did not. Definition codes were not mutually exclusive – participants could receive ones for multiple codes. Using the thematic categories that emerged in qualitative analysis, both authors completed the indicator coding independently and then came to agreements about any discrepancies.

Participants' implicit disability attitudes (DA-IAT) were calculated using Greenwald et al.'s (28) updated IAT scoring procedure, which compares participants' stereotype congruent and incongruent blocks using response latencies. Scores of .15-.34 reveal a slight preference for nondisabled people, .35-.64 a moderate preference, and .65+ a strong preference (25, 28). Negative scores of the same values above reveal preferences for people with disabilities, and scores from -.14 to .14 reveal no prejudice (25, 28).

A multiple regression model was utilized to explore the relationships between the definitions (independent variables (IVs)) and participants' implicit prejudice scores (dependent variable (DV)). To explore relationships of attitudes and students' definitions we also included close relationships with people with disabilities as an IV. Previous research has suggested having a family member or social contact with people with disabilities can increase favorable attitudes, including of occupational therapy students (39, 40).

## **Results**

### **Participant characteristics**

A total of 67 people consented to participate in this study. The majority of participants were White (83.6%), women (89.6%), and nondisabled (97.0%) (Table 1). The mean age of participants was 24.8 ( $SD = 4.8$ ). Slightly more than half of participants (52.2%) had a *close* relationship with someone with a disability. 70.1% had taken at least one undergraduate class on disability, taking an average of 2.3 disability undergraduate courses ( $SD = 2.6$ ). 56.7% had participated in disability field work.

### **Disability Attitudes**

The average implicit prejudice score was .49 ( $SD = .44$ ) (moderate prejudice). 83.6% ( $n = 56$ ) of participants preferred nondisabled people implicitly, while 7.5% ( $n = 5$ ) preferred people with disabilities, and 9.0% ( $n = 6$ ) had no preference (Figure 1).

### **Defining Disability**

The findings of the qualitative analysis of participant responses to the online survey question “*How do you define disability*” resulted in five thematic categories that represent like segments of data. These thematic categories represent the distinct meanings of the participants’ interpretation of what ‘disability is’ and are described using ‘In Vivo’ or participants’ own words to elucidate the meanings of the participants’ definitions.

- Individualization: Participants often understood disability as individualized – locating the cause for being disabled within the person. This was evident through the ways they defined disability, often as a ‘individual’s problem with functioning’. ‘Inability to participate’ due to ‘not having the full use of the body’.
- In/ability: Disability aligns specifically with a level of ‘dependency’ for ‘performing a task or occupation’, ‘lack of independence’, or being a ‘burden’. Although similar to

individualization these definitions specified the lack of capacity as it is coupled with a ‘need for outside assistance’ as the qualifier of being a person with disability.

- **Impairment:** A state of being that is an anomaly; an ‘undesirable or adverse quality’ or characteristic. This definition moves beyond locating disability just within the individual to differently focus on the visible, measurable, or recognizable feature(s) of a person as the qualifier for being defined as disabled. This could be ‘physical, cognitively, or both. It affects your body or mind’. It is recognized as ‘A physical or mental limitation that interferes with participation’ or ‘A deviance from the standard human abilities’ and the main marker of a person’s identity.
- **Functioning:** Places the location of the cause of disability as a mis-match between the person and the environment. Disability is a circumstance that ‘hinders a person from adapting to society’s culture and daily life without additional resources’. Disability occurs when a ‘person might have to do something in a different way’ or when ‘something restricts or modifies the way activities of daily living’ need to be performed.
- **Social norms:** Disability is ‘just a difference and an aspect of living’ and while this means it might require modification of how activities of daily living are performed it is ‘not necessarily a negative attribute’. This definition specifically aligns disability with a state of otherness or being that those without disability might find hard to recognized due to its minority status. Disability is recognized as a fluid part of a person’s identity, similar to gender or ethnicity.

### **Relationships Between Disability Definitions and Attitudes**

We wanted to explore the relationships between thematic categories (i.e., individualization, in/ability, functioning, impairment, and social norms) and disability attitudes.

A multiple linear regression model between the definitions (IVs) and participants' implicit prejudice scores (DV) was significant,  $F(6, 56) = 3.96, p = .002, R^2 = .30$  and supports the development of a theory to explain student attitudes of disability. Regression coefficients are presented in Table 2. The regression equation for predicting implicit prejudice is:

$$\begin{aligned} \text{Implicit Disability Prejudice} = & .42 + .25(\text{Individualization}) + .15(\text{In/ability}) \\ & - .13(\text{Functioning}) + .33(\text{Impairment}) - .39(\text{Social norms}) - .27(\text{Close disability} \\ & \text{relationship}). \end{aligned}$$

The following terms were significant: impairment ( $t = 2.27, p = .03$ ); social norms ( $t = -2.47, p = .02$ ); and, close disability relationship ( $t = -2.53, p = .01$ ).

According to the regression model, controlling for close disability relationships, *impairment, individualization, in/ability* are associated with more implicit prejudice than *functioning, and social norms*. People who defined disability as *impairment* or *individualization* are, according to the model, expected to strongly prefer nondisabled people (.75 and .67 respectively) (Figure 2). Someone with no disability relationships who defined disability as *inability* (.57) were moderately prejudiced. According to the model, those who define disability as *functioning* and with no disability relationships are expected to slightly prefer nondisabled people, having a predicted implicit prejudice of .29. Those that define disability in relation to social norms who have no close disability relationships are expected to have no preference for nondisabled people or people with disabilities – implicit prejudice of .03. For example, based on the model, someone with no close disability relationships who individualize disability, define it as an *impairment* and relate it to *functioning*, are expected to have an implicit prejudice score of .87 (highly prejudiced).

According to the regression model, people who have close relationships with people with disabilities have lower implicit disability prejudice across all definition types. For example, someone who has no close disability relationships and defines disability as an inability is expected to moderately prefer nondisabled people (.57 implicit prejudice), whereas someone who defines it the same way but has close disability relationships is expected to have an implicit prejudice of .30, slightly preferring nondisabled people. Moreover, according to the model, people with close relationships who defined disability in relation to social norms are actually expected to slightly prefer people with disabilities over nondisabled people (-.24 implicit prejudice).

### **Discussion**

This study explored occupational therapy students' understandings of disability and attitudes toward disability prior to beginning their professional program. Findings revealed occupational therapy students enter their curriculum with vast differences in understandings and views of people with disabilities and these may provide a basis for and contribute to differences in attitudes of disability.

Participants often understood disability as individualized – locating the cause within the person. This was evident through the ways they defined disability, often as an impairment or problem with functioning strictly from a biomechanical stance. The consistent feature of the participants' definitions that fell into the thematic categories of individualization, in/ability, impairment, was aligning the cause of disability within the person; by doing so they ignore limitations or barriers imposed upon people that may construct disabling environments. Individualizing disability, and ignoring environmental, social, and political impacts, mirrors traditional medical model approaches to overcoming differences of the body through

interventions directed at the person's identified limitations, inabilities, and impairments. The medical model of disability frames disability as an individualized problem one "suffers" from and needs treatment for. It echoes the mantra of rehabilitation that hard work will pay off. This system reinforces a predisposition towards cure rather than directing any attention to societal barriers. As such, participants' definitions often directly attributed impairments as the cause for exclusion from society. These findings align with previous research reporting that allied health providers often have negative attitudes and stereotypes of disability (41). As these understandings of disability ignore disability oppression and other equalities, it is not surprising that those who defined disabilities in individualistic terms or focused on deficits in ability were more likely to have higher levels of implicit prejudice.

Conversely, some students invoked the concept of social norms to recognize how society 'others' people with disabilities based on arbitrary norms about what is average or typical. These participants' definitions fell into the thematic categories of functioning and social norm which acknowledged the 'otherness' people with disabilities often experience. Rather than inherently marking those with disabilities as others themselves they defined disability specifically to social expectations and norms. These participants' definitions include social, cultural, and political perspectives rather than diagnostic classifications similar to definitions suggested for use by healthcare professionals from members of the disability community (42). In doing so, they placed the onus for disability on society rather than placing it on the person, invoking more of a minority group model of disability than medical.

Previous research suggests having a family member or close social contact with people with disabilities is one factor that can increase favorable (conscious) attitudes towards people with disabilities because it is theorized that comfort level increases with exposure (39, 40).

However, Hein, Grumm (43) found contact with people with disabilities had no impact on implicit disability prejudice for special education students. These conflicting findings – the difference in impact – may be related to casual contact versus more intimate close relationships; we specifically asked participants about *significant* relationships they had with people with disabilities. The findings from this study imply implicit attitudes may be dependent upon social relationships and exposure to persons with disability outside of the medical context, supporting previous research (18). Other studies also suggest health professionals', including OTs', attitudes toward disability, are very similar to those of the general public (44); this is problematic as the general public's implicit disability bias is resistant to change (45). As close relationships with people with disabilities may serve as an intervention for negative disability attitudes, more research is needed to explore exactly how different types of relationships and contact impact occupational therapy students' implicit attitudes.

### **Implications for Occupational Therapy**

Compulsory able-bodiedness is at the core of rehabilitation professions. However, over the last few decades, the profession of occupational therapy has begun to re-align itself more closely with disability studies tenets that allow for interdependence, occupational participation, and engagement in meaningful occupation despite bodily difference. However, if students enter professional training with conceptualizations of disability as negative how might curriculum design attend to this deeply grounded bias?

For example, there were a few instances where participants paraphrased the Americans with Disabilities Act's definition of disability which problematically locates the cause of disability with the individual. This suggests students' may enter occupational therapy programs simply parroting ideas about disability from dominant culture; the problem with this is the

dominant conceptualizations of disability are grounded in individualization, individualism, and ideas of inability, all of which relate to higher levels of implicit prejudice according to our findings. As such, it is critical that occupational therapy programs intentionally facilitate critical reflection on preconceived assumptions that can exist toward disability that may nurture development of higher levels of clinical reasoning from more diagnostic to narrative and ethical pathways (46).

Moreover, although some students defined disability as a social construction in relation to the norm, there was little discussion of disability as an identity and social minority group. Disability identity is important, not only because it pushes back against oppression, but also because according to Shakespeare as cited by Young and Quibell (47),

‘identity is an aspect of the stories we tell ourselves, to others... Previously there was a limited range of narrative devices and themes available to people with impairment: now, new stories are being told, and we are creating ourselves for ourselves, rather than relying on the traditional narratives of biomedical intervention or rehabilitation, of misery, decline and death. Doing it for ourselves, perhaps we can reconcile tensions and produce alternative, happier endings.’ (p. 761)

As students entering their program of study will have undoubtedly been exposed to different societal attitudes about disability, there needs to be intentionality about program design and a culture that reflects on presumptions of student beliefs. Although research suggests curriculum changes alone may have little effective change on students’ attitudes toward people with disabilities (48), research also suggests the culture of a program may be critical to informing the students’ attitudes (49). Currently, program culture in occupational therapy programs in the

United States and internationally range from being influenced by the profession's early social-political activism roots (50), to medical foundations that primarily explore how occupation can be used as an intervention at the individual level (51). As program culture can inform student understandings and attitudes, thereby potentially reducing their ableism, it is imperative program culture align more with the former model rather than the latter to produce leaders in "changing policies, environments, and complex systems" (52, n.p.) that directly impact occupational participation.

Importantly, this survey was done prior to the OT students entry into their professional programs and as such concepts of occupation-based performance and engagement models and theories unique to the profession may be unknown to the students. These models and the Occupational Therapy Practice Framework are largely influenced by the World Health Organization's International Classification of Functioning, Disability and Health (ICF) that shifts focus away from the more a biomedical perspective to include activity and participation limitations as definers of disability (1, 53).

More research is needed to examine how students' understandings of disability change as they move through occupational therapy programs. How exposure to these occupation-based models and theories grounded in concepts of participation versus impairment influence implicit attitudes of disabilities would be of significant interest and future studies in this area are recommended. Doing so may offer insight into how conceptualizations of disability can evolve into more nuanced and complex understandings, and if so, how to replicate these effects. For those students who enter programs with medical model or social model understandings, it is also important to examine how these students' views progress throughout a program – if the program curricula and culture reinforces and expands these understandings or diminishes them. Based on

these preliminary findings, as well as existing research (49), we believe occupational therapy programs need to infuse stronger social justice and advocacy based community intervention methods into their training and culture.

### **Limitations**

When interpreting our findings, a number of limitations should be noted. Although participants were compensated for their time, they all volunteered to participate so there is a chance of self-selection bias. The majority of participants were White and women; however, this is representative of the profession (54). In our quantitative analysis, we did not explore interactions; given disability attitudes and understandings are complex, future research should do so. Moreover, participants completed the DA-IAT prior to providing definitions and this could have resulted in priming. Qualitative findings are limited by the potential for researcher bias during coding and analysis. Students who participated did so anonymously and therefore member checking to determine reliable interpretations of student definitions could not occur. However, every attempt was made by both researchers to critically reflect on the creation of specific codes as they emerged inductively or deductively (55).

### **Conclusion**

The medical model shapes both societal perceptions of disability and supports processes of hyper-medicalization that results in oppressing, isolating, and stigmatizing people with disabilities. Rehabilitation has traditionally used outcome measures and interventions directed on impairment. Increasingly however, occupational therapy is recognizing the impact of only focusing on impairment (56) and critical reflection from within the profession challenges why we continue to focus so strongly on impairment in assessment and intervention design. Occupation, participation, health and wellness models are part of professional curricula,

accreditation standards to education, and the U.S. practice framework. However, occupational therapy graduate programs within the US are still largely guided by impairment and restorative focusing educational standards (52) despite the growing recognition of the interactional role of environments to disability (53).

Students' education has considerable influence in shaping their attitudes and ways of interacting with people with disabilities (18). Occupational therapy programs have the flexibility in curriculum design to incorporate concepts of social and occupational justice, tenets shared with concepts from the social model of disability, into their more traditional medical model teachings. If occupational therapy turns its attention away from normalizing texts (57) in curricula to embrace completely disability as a natural part of the human condition, interventions might attend better to optimizing conditions for "facilitating participation in everyday living" (American Occupational Therapy Association, 58, para. 1). However, addressing these concerns, requires foundational evidence to recognize how, and to what extent, a program's curriculum influences beliefs and attitudes toward disability. The first step is understanding students' assumptions as they enter programs. Armed with this information, occupational therapy programs can continue to move forward on the work to change their curriculum, and more importantly, their cultures, to reflect and build on the profession's early social-political activism roots (50) and achieve the goals established in Vision 2025 (52).

### References

1. American Occupational Therapy Association. Occupational therapy practice framework: domain and process 3rd ed. Bethesda, MD: AOTA Press/American Occupational Therapy Association; 2014.
2. Crisp R. A qualitative study of the perceptions of individuals with disabilities concerning health and rehabilitation professionals. *Disability & Society*. 2000;15(2):355-67. doi: 10.1080/09687590025720.
3. Hammell KR. Client-centred occupational therapy: the importance of critical perspectives. *Scandinavian Journal of Occupational Therapy*. 2015;22(4):237-43. doi: 10.3109/11038128.2015.1004103.
4. Gupta J, Taff SD. The illusion of client-centred practice. *Scandinavian Journal of Occupational Therapy*. 2015;22(4):244-51.
5. Fisher A, editor Thinking about our evaluation and intervention methods - are they occupation-based and occupation focused? *The Scholarship of Practice*; 2018; Chicago, Illinois
6. American Occupational Therapy Association. Accreditation Council for Occupational Therapy Education (ACOTE) standards and interpretive guide 2011. Available from: <https://www.aota.org/~media/Corporate/Files/EducationCareers/Accredit/StandardsReview/guide/2011-Standards-and-Interpretive-Guide.pdf>.
7. American Occupational Therapy Association. Accreditation Council for Occupational Therapy Education (ACOTE) Standards and Interpretive Guide. Bethesda, MD2011.
8. Loukas D. The evolution of language and perception of disability in occupational therapy. *Special Interest Section Quarterly: Education*. 2008;18(2):1-4.

9. Magasi S. Disability studies in practice: A work in progress. *Topics in Stroke Rehabilitation*. 2008;15(6):611-7.
10. McCormack C, Collins B. Can disability studies contribute to client-centered occupational therapy practice? *British Journal of Occupational Therapy*. 2010;73(7):339-42. doi: 10.4276/030802210X12785840213328.
11. Citation removed for review.
12. American Occupational Therapy Association. Surveying the profession: The 2015 AOTA salary & workforce survey OT Practice. 2015:7-11.
13. Antonak R, Livneh H. Measurement of attitudes towards persons with disabilities. *Disability and Rehabilitation*. 2000;22(5):211-24. doi: 10.1080/096382800296782.
14. Amodio DM, Mendoza SA. Implicit intergroup bias: cognitive, affective, and motivational underpinnings. In: Gawronski B, Payne BK, editors. *Handbook of implicit social cognition: Measurement, theory, and applications*. New York City: Guilford Press; 2011. p. 353-74.
15. Gaertner SL, Dovidio JF. The aversive form of racism. In: Gaertner SL, Dovidio JF, editors. *Prejudice, discrimination, and racism: Theory and research*. Orlando: Academic Press; 1986. p. 61-89.
16. Sullivan A, Mendonca R. Impact of a fieldwork experience on attitudes toward people with intellectual disabilities. *American Journal of Occupational Therapy*. 2017;71(6):1-8. doi: 10.5014/ajot.2017.025460.
17. Lee T, Paterson J, Chan C. The effect of occupational therapy education on students' perceived attitudes toward persons with disabilities. *American Journal of Occupational Therapy*. 1994;48(7):633-8. doi: 10.5014/ajot.48.7.633.

18. Lyons M. Enabling or disabling? Students' attitudes toward persons with disabilities. *American Journal of Occupational Therapy*. 1991;45(4):311-6.
19. Yuker HE, Block JR, Campbell WJ. A scale to measure attitudes toward disabled persons: Human Resources Foundation, Division of Abilities; 1960.
20. Greenwald AG, McGhee DE, Schwartz JLK. Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*. 1998;74(6):1464-80.
21. Karpinski A, Hilton JL. Attitudes and the Implicit Association Test. *Journal of Personality and Social Psychology*. 2001;81(5):774-88. doi: 10.1037/0022-3514.81.5.774.
22. Greenwald AG, Nosek BA. Health of the Implicit Association Test at age 3. *Zeitschrift für Experimentelle Psychologie*. 2001;48(2):85-93.
23. Pruett SR. A psychometric validation of a disability attitude implicit association test: University of Wisconsin--Madison; 2004.
24. Pruett SR, Chan F. The development and psychometric validation of the Disability Attitude Implicit Association Test. *Rehabilitation Psychology*. 2006;51(3):202-13. doi: 10.1037/0090-5550.51.3.202.
25. Aaberg VA. A path to greater inclusivity through understanding implicit attitudes toward disability. *The Journal of Nursing Education*. 2012;51(9):505-10. doi: 10.3928/01484834-20120706-02.
26. White MJ, Jackson V, Gordon P. Implicit and explicit attitudes toward athletes with disabilities. *Journal of Rehabilitation*. 2006;72(3):33-40.

27. Thomas A, Vaughn ED, Doyle A, Bubb R. Implicit Association Tests of Attitudes Toward Persons With Disabilities. *The Journal of Experimental Education*. 2013;82(2):184-204. doi: 10.1080/00220973.2013.813357.
28. Greenwald AG, Nosek BA, Banaji MR. Understanding and using the implicit association test: I. an improved scoring algorithm. *Journal of Personality and Social Psychology*. 2003;85(12):197-216.
29. Sandelowski M, Voils CI, Knafl G. On quantizing. *Journal of Mixed Methods Research*. 2009;3(3):208-22.
30. Cho JY, Lee E-H. Reducing confusion about grounded theory and qualitative content analysis: Similarities and differences. *The Qualitative Report*. 2014;19(32):1-20.
31. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qualitative Health Research*. 2005;15(9):1277-88.
32. Saldaña J. *The coding manual for qualitative researchers*. London: Sage; 2015.
33. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Services Research*. 2007;42(4):1758-72.
34. MacQueen KM, McLellan E, Kay K, Milstein B. Codebook development for team-based qualitative analysis. *CAM Journal*. 1998;10(2):31-6.
35. Chi MT. Quantifying qualitative analyses of verbal data: A practical guide. *The Journal of the Learning Sciences*. 1997;6(3):271-315.
36. Fielding NG. Triangulation and mixed methods designs data integration with new research technologies. *Journal of Mixed Methods Research*. 2012;6(2):124-36.
37. Jick TD. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*. 1979;24(4):602-11. doi: 10.2307/2392366.

38. Ward T, editor Re-gendering data: Quantifying qualitative. annual forum of the Association for Institutional Research, Atlanta, Georgia Paper retrieved from [http://www2.gsu.edu/~wwwire/pdf/Quantifying% 20Qualitative% 20Data pdf](http://www2.gsu.edu/~wwwire/pdf/Quantifying%20Qualitative%20Data.pdf); 2007.
39. Yuker HE. Variables that influence attitudes towards people with disabilities: Conclusions from the data. *Journal of Social Behavior and Personality*. 1994;9(5):3-22.
40. Stachura K, Garven F. A national survey of occupational therapy students' and physiotherapy students' attitudes to disabled people. *Clinical Rehabilitation*. 2007;21(5):442-9.
41. Shakespeare T, Kleine I. Educating health professionals about disability: a review of interventions. *Health and Social Care Education*. 2013;2(2):20-37. doi: 10.11120/hsce.2013.00026.
42. Gross BH, Hahn H. Developing issues in the classification of mental and physical disabilities. *Journal of Disability Policy Studies* 2004;15(3):130-4. doi: 10.1177/10442073040150030101.
43. Hein S, Grumm M, Fingerle M. Is contact with people with disabilities a guarantee for positive implicit and explicit attitudes? *European Journal of Special Needs Education*. 2011;26(4):509-22. doi: 10.1080/08856257.2011.597192.
44. French S. Attitudes of health professionals towards disabled people: A discussion and review of the literature. *Physiotherapy* 1994;80(10):687-93. doi: 10.1016/S0031-9406(10)60932-7.
45. Charlesworth T, Banaji M. Patterns of implicit and explicit attitudes: I. long-term change and stability from 2007 to 2016. *Psychological Science* 2019;1-19. doi: 10.1177/0956797618813087.

46. Henderson W, Coppard B, Qi Y. Identifying Instructional Methods for Development of Clinical Reasoning in Entry- Level Occupational Therapy Education: A Mixed Methods Design. *Journal of Occupational Therapy Education*. 2017;1(2). doi: 10.26681/jote.2017.010201.
47. Young DA, Quibell R. Why rights are never enough: Rights, intellectual disability and understanding. *Disability & Society*. 2000;15(5):747-64. doi: 10.1080/713661998.
48. Zychlinski E, Ben-Ezra M, Raz Y. Changing attitudes about disability: The impact of the 'Accessible Community' program. *Journal of Social Work* 2015;16(6):742-57.
49. Longmore P. Medical decision making and people with disabilities: A clash of cultures. *The Journal of Law, Medicine, & Ethics*. 1995;23(1):82-7. doi: <https://doi.org/10.1111/j.1748-720X.1995.tb01335.x>.
50. Frank G. Occupational therapy/occupational science/occupational justice: Moral commitments and global assemblages. *Journal of Occupational Science*. 2012;19:25-35. doi: <https://doi.org/10.1080/14427591.2011.607792>.
51. Frank G, Zemke R. Occupational therapy foundations for political engagement and social transformation. In: Pollard N, Sakellarios D, Kronenberg F, editors. *A Political Practice of Occupational Therapy*. Edinburgh: Elsevier/Churchill Livingstone; 2008. p. 111-36.
52. American Occupation Therapy Association. AOTA unveils vision 2025 2016. Available from: <https://www.aota.org/AboutAOTA/vision-2025.aspx>.
53. World Health Organization. *International Classification of Functioning, Disability and Health: ICF*: World Health Organization; 2001.
54. American Occupational Therapy Association. Work-force trends in occupational therapy 2012. Available from: <http://www.aota.org/-/media/Corporate/Files/EducationCareers/Prospective/Workforce-trends-in-OT>.

55. Callary B, Rathwell S, Young B. Insights on the process of using interpretive phenomenological analysis in a sport coaching research project. *The Qualitative Report* 2015;20(2):63-75.
56. Dawson D, Binns M, Hunt A, Lemsky C, Potlatajko H. Occupation-based strategy training for adults with traumatic brain injury: a pilot study. *Archives of Physical Medicine and Rehabilitation* 2013;94(10):1959-63. doi: 10.1016/j.apmr.2013.05.021.
57. Erevelles N. Understanding curriculum as normalizing text: Disability studies meet curriculum theory. *Journal of Curriculum Studies*. 2005;37(4):421-39. doi: 10.1080/0022027032000276970.

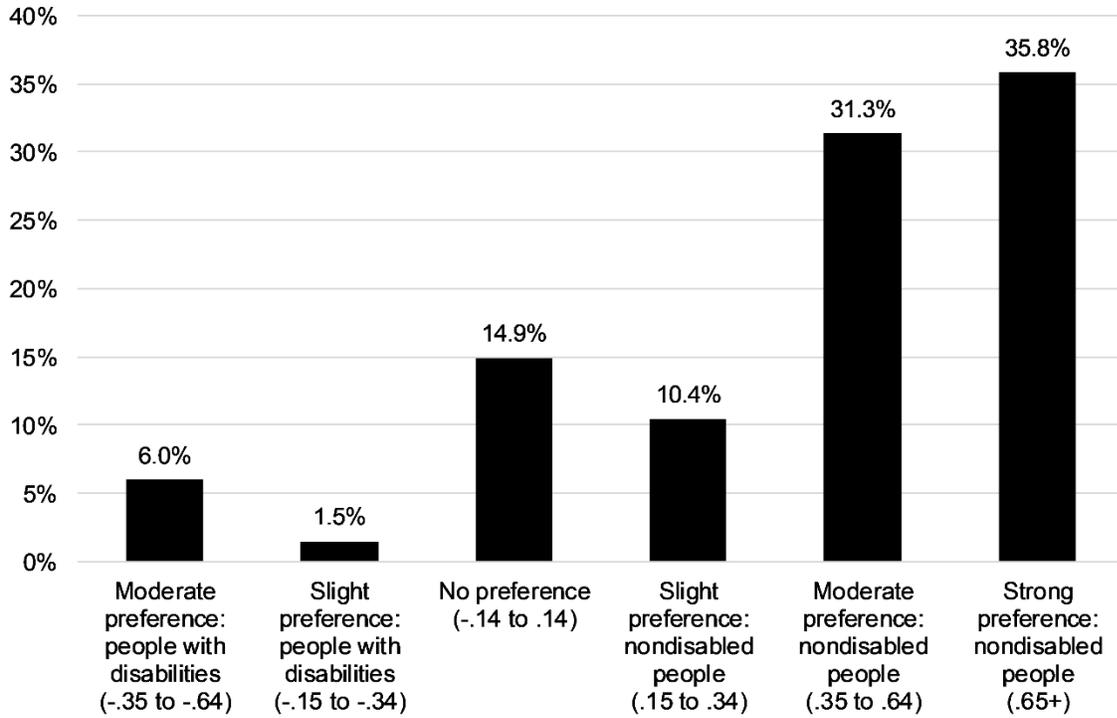


Figure 1. Implicit prejudice of participants.

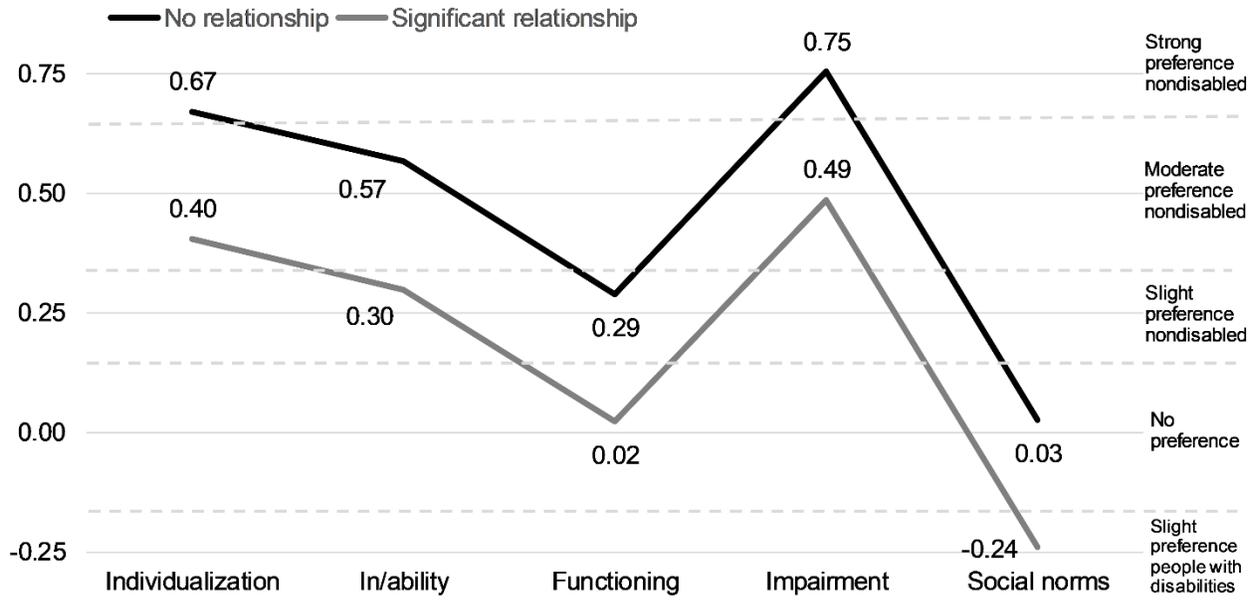


Figure 2. Relationship between definitions of disability and implicit attitudes.

Table 1  
*Demographics (n = 67)*

Characteristic	<i>n</i>	%	Characteristic (cont.)	<i>n</i>	%	<i>m (SD)</i>
Gender			Age			24.8 (4.8)
Woman	60	89.6%	Disabled			
Man	7	10.4%	No	65	97.0%	
Race			Yes	0	0.0%	
White	56	83.6%	Prefer not to say	2	3.0%	
Asian or Pacific Islander	5	7.5%	Anyone significant in your life disabled?			
Latinx	3	4.5%	Yes	35	52.2%	
Black	2	3.0%	No	28	41.8%	
Middle Eastern	2	3.0%	Prefer not to say	4	6.0%	
Other	1	1.5%	Field work area			
Family socioeconomic status			Didn't have fieldwork	29	43.3%	
Less than \$20,000	1	1.5%	community	7	10.4%	
\$20,000 to \$39,999	7	10.4%	early intervention	3	4.5%	
\$40,000 to \$59,999	14	20.9%	mental health	6	9.0%	
\$60,000 to \$79,999	9	13.4%	physical disabilities	14	20.9%	
\$80,000 to \$99,999	7	10.4%	other	8	11.9%	
\$100,000 to \$149,999	13	19.4%	Number undergraduate disability courses			2.3 (2.6)
\$150,000 or more	10	14.9%				

*Note.* People could be from more than one race.

Table 2

*Regression Coefficients*

Coefficient	<i>t</i>	<i>p</i>	<i>B</i>
Definition theme			
Individualization	1.17	0.25	0.25
In/ability	1.32	0.19	0.15
Functioning	-1.14	0.26	-0.13
Impairment	2.27	0.03	0.33
Social norms	-2.47	0.02	-0.39
Significant disability relationship	-2.53	0.01	-0.27
(Constant)	1.75	0.08	0.42