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Attitudes toward people with physical disabilities: An examination of social context, discipline, disability type, and demographics

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Abstract.
BACKGROUND: Despite the existence of studies examining attitudes toward people with disabilities (PWDs) in a workplace context, little is known about attitudes in other social contexts such as dating and marriage.
OBJECTIVE: The purpose of this study is threefold. First, the study seeks to examine how social context (i.e., work, dating, marriage) influences attitudes toward people with physical disabilities (PWPDs). Second, it examines potential influence of participant characteristics (i.e., gender, major, disability education, and frequency of contact). Third, it explores whether attitudes vary across different disability types.
METHODS: To measure the influence of social context on attitudes toward PWPDs, the study used the Disability Social Relationship Scale (DSR), which was completed by 395 undergraduate students in Austria.
RESULTS: Participants demonstrate more positive attitudes toward PWPDs in the workplace than in the social contexts of dating and marriage. Participants who had more frequent contact with PWDs (i.e., in a workplace/service setting or in a personal relationship) demonstrate more positive attitudes toward PWPDs. Participants have more positive attitudes toward some disability types (i.e., deafness/hardness of hearing) than others (blindness/visual impairment).
CONCLUSION: We offer recommendations for future research and practice aimed at creating awareness of biases toward PWDs while promoting social justice.

Keywords: Attitudes toward people with disabilities, physical disabilities, social context, Disability Social Relationship Scale (DSR), discipline, disability type

1. Introduction

One billion people, roughly 15 percent of the global population, live with some form of disability. Despite advances in legislation and technology, people with disabilities (PWDs) continue to face social injustices and marginalization (World Health

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Organization, 2019). Several scholars have studied stereotyping and attitudes toward people with disabilities in the workplace (Gröschl, 2013; Houtenville & Kalargyrou, 2015; Kalargyrou & Volis, 2014; Kalargyrou et al., 2018b; Siperstein et al., 2006), but the literature is scarce when it comes to examining other social contexts. Attitudes toward PWDs are both multidimensional and influenced by social context (Grand et al., 1982; Hergenrather & Rhodes, 2007).

The purpose of this study is threefold. First, the study seeks to examine how social context (i.e., work, dating, marriage) influences attitudes toward people with physical disabilities (PWPDs). Second, it examines potential influence of participant characteristics (i.e., gender, major, disability education, and frequency of contact). Third, it explores whether attitudes vary across different disability types.

2. Literature review and hypotheses

2.1. Disability statistics

The American Community Survey (ACS) estimates the overall rate of people with disabilities in the U.S. in 2016 to be 12.8% (Institute on Disability, 2018). Among working age Americans (ages 18–64), the rate of disability in 2016 was 10.6%. The rate of disability among this 18–64 year old population can be further broken down by disability type: 2.0% of the total 18–64 year old population has a hearing disability, 2.0% have a visual disability, and 5.1% have an ambulatory disability. According to the 2016 data, the rate of employment among individuals with a hearing disability was 51.7%, the employment rate among individuals with a vision disability was 43.5%, and the employment rate among individuals with an ambulatory disability was only 24.8%. This breaks down to 2,023,945 out of 3,969,691 individuals with a hearing disability (51%), 1,583,184 out of 3,788,786 individuals with a visual disability (41.8%), and 2,435,850 out of 10,092,267 individuals with an ambulatory disability (24.1%) (Institute on Disability, 2018).

The European Union (EU) is home to 508 million inhabitants, of which approximately 70 million people (13.78% of the total EU population) have a disability (Disability Statistics, 2017; Europa, 2016). Among those 70 million, 42 million fall between the ages of 16–54. This group represents 12.8% of the population (Disability Statistics, 2017). In the EU, PWDs comprise 16% of the workforce (Campbell, 2010). The unemployment rate for PWDs is two to three times higher than the average unemployment rate (Campbell, 2010). The unemployment rate in the EU fell from 10.5% in 2015 to 9.6% in 2016 (States News Service, 2016). During that same period, the number of unemployed people in Austria dropped only by 0.2%.

There are 653,000 people between the ages of 16 and 54 that have a disability in Austria, representing 11.5% of its population (Disability Statistics, 2017). According to the Austrian National Council of Persons with Disabilities, PWDs account for 15.03% of the country's unemployed population (Austrian National Council, 2010). Companies with more than 25 employees are required by law to employ one benefitted, registered person with a disability for every 25 employees hired. Research has shown that two-thirds of companies choose to accept a fine rather than adhere to the employment obligation (Austrian National Council, 2010). If a public or private company does not meet the 4% quota rate, it will be subject to an equalization levy of approximately 238 euros per month (Cuppage, 2013).

2.2. Social context

Globally, it has been found that people with disabilities are 2.5 times less likely to find employment than persons without disabilities (Cuppage, 2013). These startling statistics stress the need to research the ways in which people view PWDs in the workplace. Countries around the world are trying to raise the numbers through anti-discrimination laws and the implementation of hiring quotas. Austria, France, and Germany already have laws in place.

Hergenrather and Rhodes (2007) evaluated attitudes of undergraduate students in the United States and found that they have more positive attitudes toward PWDs in the workplace than in a dating or marriage context. This suggests that attitudes toward PWDs are both multidimensional and influenced by social context. They concluded that work relationships are less intimate than dating or marriage, and as such are viewed more positively.

Grand et al. (1982) completed a study using a group of non-disabled adults from Northeastern University and tested their attitudes toward PWDs in relation to situational context. The participants showed significantly higher acceptance on the work scales compared with the dating or marriage scales. Two years later, Strohmer and colleagues (1984) con-

ducted a similar study on faculty and staff from Northeastern University. The results were re-confirmed: when measuring attitudes toward PWDs, the highest acceptance rates were found on the work scale, as opposed to dating and marriage scales.

Gordon and colleagues (1990) also studied attitudes toward PWDs by testing a group of 259 university students studying occupational therapy, physical therapy, nursing, medicine, and clinical psychology. They found that attitudes vary depending on disability, context, and interaction (Gordon et al., 1990). It was also noted that the combination of disability and context contributes to attitudes that mirror social stigma, social distance, and the way PWDs are negatively viewed. The highest acceptance rate for the student group was found in the work subscale. In this way, the results produced were similar to those from Strohmer et al.'s (1984) research. Gordon et al. proposed that social relationships with people with disabilities in a work setting are more acceptable than more intimate relationships found in dating and marriage (Gordon et al., 1990). Following this literature, we predict that participants in our study will demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating context (H1).

2.3. Disciplines

Bean and Hedgpeth (2014) researched a group of social work students from the United States during the last semester of their studies. Results indicated that social work education (which included readiness to work with PWDs) had an impact on social discrimination toward PWDs. They proposed that students who felt their education helped them be more knowledgeable and confident when working with PWDs exhibited a decreased social discrimination toward them (Bean & Hedgpeth, 2014).

Horner-Johnson et al. (2002) focused their experiment on attitudes of Japanese students toward people with intellectual disability. Results indicated that students studying social work and psychology had more positive attitudes toward people with intellectual disability than students studying physical science, economics, engineering, and other unspecified studies. Students who had an interest in working with people with an intellectual disability in future careers also had more positive attitudes.

Stachura and Garven (2007) completed an experiment in the United Kingdom that evaluated students in physiotherapy and occupational therapy programs. Results showed that initially physiotherapy students' attitudes were more negative than occupational therapy students, but that over the course of their studies those attitudes became more positive. The occupational students, on the other hand, showed little change in attitude from the beginning to end of their studies. Overall, both student programs proved to have a positive effect on attitudes toward PWDs.

A study conducted by Luck (2011) tested college students studying sociology and psychology. Participants were surveyed about their attitudes toward various disabilities, including intellectual, developmental, learning, and physical. Results showed that social science students were more compassionate than other areas of study with regard to PWDs (Luck, 2011). Therefore, we predict that social work students will demonstrate more positive attitudes toward PWPDs than hospitality/tourism and business administration students in our study (H2).

2.4. Gender

Hergenrather and Rhodes (2007) evaluated attitudes of undergraduate students toward specific disabilities (loss of a limb, visual impairment, cerebral palsy, and epilepsy) in social situations, including working, dating, and marriage. Results showed that that both male and female college students had positive attitudes toward PWDs regarding the social contexts they tested; however, female students were found to be more positive than males. Tervo et al. (2002) surveyed first-year medical students in the United States and Canada and also found that female medical students had more positive attitudes than male students. Similarly, Perry and colleagues (2008) researched attitudes of undergraduate students in a recreation and leisure program. They found that females were likely to have higher and more positive attitudes toward PWDs than men. They point out that both genders who fill upper-level administration positions will have the power to make executive decisions that could impact the lives of many people with disabilities (Perry et al., 2008).

A study conducted by Luck (2011) tested 100 U.S. college students who were registered in a sociology or psychology course. The participants were surveyed in order to learn more about their attitudes toward intellectual, developmental, learning, and physical disabilities. Results showed that females were more compassionate than males. In another cross-cultural study, Chen, Brodwin, Cardoso, and Chan (2002) examined the attitudes of a sample of American,

Taiwanese, and Singaporean college students toward PWDs in the social contexts of dating and marriage. They found significant differences in the attitudes displayed by Asian and American students in both contexts, with American females consistently displaying the most positive attitudes toward PWDs. Based on this prior work, we predict that female participants in our study will demonstrate more positive attitudes toward PWPDs than male participants (H3).

2.5. Disability education

Daruwalla and Darcy (2005) researched the effectiveness of disability awareness training and whether it could change students' attitudes toward PWDs. Participants included a sample of hospitality and tourism students from Australia. Results showed that intervention programs that included a lecture, video, and contact with people with disabilities positively changed student attitudes toward PWDs. The effects were longer lasting when the intervention included direct contact with PWDs. They also found that second-year students tended to have a longer lasting change in attitude compared to first-year students due to the higher level of education and experience. However, they found that personal attitudes reverted to more negative levels after one month. These results show how important it is for education regarding PWDs to be reinforced over time. Training on a more frequent basis would increase exposure and ultimately improve attitudes more fully. Their findings stress the need for hospitality/tourism and other academic programs to provide more training programs to students to ensure positive attitudes toward PWDs.

Bizjak and colleagues (2011) researched undergraduate tourism programs in 12 European countries (including Austria) to see if they included disability studies courses. They found that none of the tourism programs had courses featuring training regarding PWDs and that disability awareness training yielded more positive attitudes toward PWDs. This suggests that raising disability awareness through appropriate curriculum development can influence attitudes toward PWDs (Bizjak et al., 2011).

Tervo et al. (2002) surveyed first-year medical students in the United States and Canada and found that students from both countries had similar attitudes toward PWDs. Background in disability was found to play a role in influencing attitudes. This finding prompted them to suggest that educational experiences and interventions could promote more positive awareness of PWDs. Role models displaying positive attitudes toward PWDs might also play a valuable role in adjusting attitudes.

A cross-sectional survey of 2,299 occupational and physiotherapy students was completed in the United Kingdom (Stachura & Garven, 2007). Students were tested at the beginning and end of their studies to see if curricular and non-curricular activities played a role in attitudes toward PWDs. Results showed that curriculum alone was enough (without extracurricular activities) to have a positive impact on attitudes.

An experiment completed by Luck (2011) proved that education and exposure to disabilities is key to generating positive attitudes regarding PWDs. This research supports the implementation of better educational programs. Luck (2011) cites the U.S. Census, which predicts disabilities will rise by seven percent by 2030. These statistics show the importance of disability awareness in the future. With regard to our study, we predict that participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not (H4).

2.6. Frequency of contact

Research suggests that frequency of contact with PWDs affects personal attitudes. Luck (2011) found that people who had personal experience with disability were more compassionate than those without such experience. Luck concluded that personal experience and education affect both attitudes and compassion levels with regard to PWDs.

Darcy and Daruwalla (1999) studied employees from a government tourism organization in Australia who were taking part in disability awareness training. Individual attitudes toward PWDs were measured before and after the training. Results showed that employees who had contact with a person with a disability during training had a longer lasting positive change in attitude. This could be due to the fact that the staff had an opportunity to learn more about PWDs firsthand. These findings have implications for the tourism management field. Intervention programs that include contact with a PWD will be more effective in changing personal attitudes toward PWDs, and allow staff to provide better personal one-on-one service.

Several studies found that more direct contact with PWDs (this included having a family member with a disability and other social interactions with PWDs) allowed for more positive attitudes and less stereotyping (Kalargyrou et al., 2018a, 2020; Stachura &

Garven; 2007). Also, work experience with a colleague who has a disability proved to have a positive effect on students' attitudes. Following this previous research, we propose: 1) Students who have had more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs (H5a); 2) Students who have a family member or friend with a disability will demonstrate more positive attitudes toward PWPDs (H5b); 3) Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs (H5c).

2.7. Disability type

Previous research supports the notion that individual attitudes toward PWDs vary across different disability types. A study by Hughes et al. (1999), for example, showed that adolescents hold stronger negative attitudes toward individuals with impaired language and social skills compared to individuals with physical impairments. Similar findings were reported by Nowicki (2006); Brown et al. (2011); and Barr and Bracchitta (2015). In their comprehensive literature review of 48 articles regarding the factors affecting acceptance of PWDs in the workplace, Vornholt, Uitdewilligen, and Nijhuis (2013) found three categories of influential variables: characteristics of coworkers, characteristics of the employers/organization, and characteristics of the individual with a disability. One of the most prominent variables in this third category was disability type. Another literature review conducted by Ju, Roberts, and Zhang (2013) also reached the conclusion that attitudes toward PWDs vary for different disability types.

In a workplace context, Andersson and colleagues (2015) conducted a vignette study in Sweden with a total of 212 employers taking part. One of the main findings from this study was the fact that employer attitudes toward hiring an individual with a disability depend significantly on the type of disability the individual has. McLaughlin et al. (2004) conducted a study with more than 600 participants which explored the factors impacting individual attitudes toward PWDs. The authors found that disability type had a significant impact on an individual's acceptance of a coworker with a disability. Similarly, Zissi et al. (2007) examined the attitudes of Greek employers toward hiring PWDs and it was found that employers' opinions differed greatly based on disability type. In particular, the employers tended to believe that blindness made it especially difficult to hire someone, even more so than other types of disabilities such as diabetes, thalassemia, or renal inefficiency.

In a personal context, Miller and colleagues (2009) examined the willingness of a sample of primarily female Hispanic students to engage in personal relationships with PWDs. It was found that both disability type and severity had significant impacts on the willingness of respondents to have a relationship with PWDs. Additionally, the results indicated that respondents were most willing to engage in friendships or acquaintanceships with PWDs, while they were less willing to engage in dating relationships and even less willing to engage in marriage relationships with PWDs.

In a service context studies found that individuals who received service from a service industry employee with a physical disability were significantly more likely to stereotype the employee and perceive a decreased level of service quality when the employee was visually impaired (Kalargyrou et al., 2018a; Kalargyrou et al., 2020). Based on this literature, we predict that attitudes toward people with physical disabilities will vary significantly in relation to different disability types in our study (H6).

3. Methods

3.1. Instrument

To measure the influence of the social context on attitudes toward PWPDs, the present study used a self-report attitudinal survey. Specifically, it used the Disability Social Relationship Scale (DSR), which measured three social contexts (workplace, dating, and marriage) using six questions for each context (Hergenrather & Rhodes, 2007; Strohmer et al., 1984). Each question clearly indicated a specific disability group and social situation (Strohmer et al., 1984). Responses were measured on a 5-point Likert Scale with a range of "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree."

Hergenrather and Rhodes (2007) have thoroughly evaluated the validity and reliability of the DSR as a survey instrument. They establish the validity of the DSR by conducting factor analyses for each of the three contextual subscales and finding each to be in alignment with the overall dimensionality of the DSR. To assess the reliability of the DSR, we used two statistical measures to estimate tau-equivalent reliability and internal consistency. The first of these

measures, known as Cronbach's alpha, was reported as 0.89 (excellent) for the overall scale, 0.92 (excellent) for the Dating subscale, 0.83 (good) for the Marriage subscale, and 0.81 (good) for the Work subscale. The second measure, called the Spearman-Brown split-half corrected correlation, was found to be 0.89. Together, these two results indicate a satisfactory level of reliability in the DSR. More recently, a 2018 study by Ayse et al. utilized a Turkish translation of the generalized Disability Social Relationship Scale in their examination of undergraduate student attitudes toward individuals with disabilities. As part of their analysis, the authors assessed the reliability of the DSR using Cronbach's alpha, which for the overall DSR was 0.81 (a high level of reliability), and for each of the three contextual subscales the Cronbach's alpha fell between 0.61 and 0.64 (an acceptable level of reliability). Thus, the authors conclude that the generalized DSR has a strong-acceptable reliability level.

Three disability types—amputation (see Appendix), deafness/hardness of hearing, and blindness/visual impairment—were used to test the attitudes using the three social contexts. The three disability types used in these scales were selected to include a relative representation of different degrees of functional impairment and social meanings. Items on each scale were presented in a random order to eliminate order effects. The questionnaire also consisted of questions measuring frequency of contact with PWPDs in different contexts, knowledge of disability-related issues (see Appendix), and other demographics.

3.2. Sample

The DSR was completed by 395 undergraduate students from two public universities in Austria and the final usable questionnaires totaled 390. In some cases, respondents did not answer a question and thus different sample sizes are reported; however, in all cases a percentage is offered. Students majored in tourism/hospitality management, management, and social work and the programs they attended were in English.

3.3. Data analysis

The study employed the Statistical Package for the Social Sciences (SPSS). A number of different statistical techniques were utilized throughout this study. To evaluate research hypotheses H1 and H6, pairwise *t*-tests were employed. To evaluate research hypotheses H3 and H4, independent-samples *t*-tests were conducted. To evaluate research hypotheses H2 and H5a-c, ANOVA (analysis of variance) was utilized. In these cases, once the ANOVA F-statistic was assessed for overall statistical significance, a series of *post-hoc* pairwise comparison tests were employed using Tukey's Honest Significant Difference approach.

4. Results

Participant demographic information is presented in Table 1. A greater number of females (71.5%) compared to males (28.5%) completed the survey and the majority of respondents were Hospitality and Tourism majors (74.9%).

The results of hypothesis testing are summarized in Table 2. Hypothesis 1: "*Participants demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating contexts*" was supported, according to the results from paired-sample *t*-tests. The findings suggest that attitudes toward PWPDs in the Work context are more positive than the Marriage context with strong significance [$t = 4.776$, $p < 0.001$], and also more positive than the Dating context with weak significance [$t = 1.749$, $p = 0.081$]. Furthermore, attitudes toward PWPDs in the Dating context are more positive than the Marriage context with strong significance [$t = 3.241$, $p = 0.001$]. Taken together, these results imply that the most positive attitudes toward PWPDs are shown in the Work context, while the least positive attitudes are shown in the Marriage context.

Hypothesis 2: "*Social work students demonstrate more positive attitudes toward PWPDs than hospitality/tourism and business administration students*" was not supported. To test this hypothesis, a 3x3 ANOVA was conducted. Results indicate that there are no significant differences between the attitudes displayed toward PWPDs by the participants in these three academic majors [$F = 2.073$, $p = 0.127$]. *Post-hoc* testing reveals no significant pairwise differences between the overall attitudes shown by participants in any two of the three academic majors. There is not enough evidence to refute the claim that participants in all three academic majors display equally positive overall attitudes toward PWPDs.

Hypothesis 3: "*Female participants demonstrate more positive attitudes toward PWPDs than male participants*" was not supported. Instead, the results of an independent-samples *t*-test suggest that there is

Table 1
Demographics and construct means ($n = 395$)

Demographics	Frequency	DSR social context			
		Work	Marriage	Dating	Overall
Gender					
Male	28.5%	3.6512	3.5426	3.6358	3.6577
Female	71.5%	3.6872	3.6672	3.6547	3.6219
Academic major					
Hospitality/tourism	74.9%	3.7003	3.5755	3.6471	3.6410
Business administration	10.5%	3.4702	3.4309	3.4959	3.4657
Social work	7.4%	3.7203	3.6782	3.7184	3.7056
Other	7.1%	—	—	—	—
Have you taken a course that addresses disability issues?					
Yes	19.0%	3.7245	3.7200	3.6877	3.7107
No	81.0%	3.6658	3.5448	3.6303	3.6136
Frequency of prior contact with PWPDs in the workplace					
Never	20.3%	3.5127	3.4297	3.5183	3.4869
Very rare	22.8%	3.6667	3.5780	3.6554	3.6334
Rare	20.0%	3.6496	3.5114	3.5463	3.5691
Occasional	21.3%	3.7189	3.6312	3.6653	3.6718
Frequent	9.0%	3.8937	3.7873	3.7619	3.8143
Very frequent	6.7%	3.8675	3.7778	4.0107	3.8853
Frequency of prior contact with PWDs who are family members or friends					
Never	25.4%	3.5488	3.4338	3.4635	3.4820
Very rare	19.7%	3.7273	3.5693	3.7453	3.6806
Rare	15.9%	3.5511	3.4785	3.5045	3.5114
Occasional	23.3%	3.7063	3.6105	3.6484	3.6551
Frequent	8.5%	3.8653	3.8030	3.8013	3.8232
Very frequent	7.2%	3.9524	3.9623	4.0732	3.9960
Frequency of prior contact with PWDs in the service industry					
Never	23.8%	3.5125	3.4116	3.4642	3.4628
Very rare	22.8%	3.6298	3.5630	3.6685	3.6205
Rare	17.7%	3.7142	3.6071	3.6723	3.6645
Occasional	23.3%	3.7418	3.6502	3.6698	3.6772
Frequent	7.9%	3.8513	3.6720	3.8315	3.7849
Very frequent	4.4%	4.0065	3.8922	4.0000	3.9662

no significant difference between the overall attitudes displayed toward PWPDs by male and female participants [$t = 0.613$, $p = 0.541$]. There is not enough evidence to refute the claim that participants of both genders display equally positive overall attitudes toward PWPDs.

Hypothesis 4: "*Participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not*" was not supported. Just like the previous hypothesis, to test this particular hypothesis, an independent-samples *t*-test was completed. The results indicate no significant difference between the overall attitudes displayed toward PWPDs by participants who took a course that addressed disability and those who did not [$t = 1.258$, $p = 0.211$]. There is not enough evidence to refute the claim that participants show equally positive overall attitudes toward PWPDs regardless of whether or not they have taken a course that addressed disability issues in the past. However, if we examine the results for each of the three social contexts individually, we find that this hypothesis is supported in the Marriage context [$t = 2.046, p < 0.050$]. However, this hypothesis is neither supported nor refuted in either the Work context [$t = 0.743$, $p = 0.459$] or the Dating context [$t = 0.700$, $p = 0.485$].

Hypothesis 5a: "*Students who have had more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs*" was supported. ANOVA results suggest that participants with different levels of prior exposure to PWPDs in the workplace do, in fact, have different overall attitudes toward PWPDs [$F = 3.337$, $p = 0.006$]. *Post-hoc* testing reveals that the most statistically significant pairwise differences exist between participants who never had any contact with PWPDs in the workplace and participants who had either frequent ($p = 0.038$)

Table 2
Results of hypothesis testing (all social context)

Hypotheses	*t*-tests	Analysis of variance testing	*Post-hoc* testing	Supported
H1: Participants demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating context.	Work vs. Marriage: $t = 4.776$, $p < 0.001$ Work vs. Dating: $t = 1.749$, $p = 0.081$ Marriage vs. Dating: $t = -3.241$, $p = 0.001$	Not performed	Not performed	Yes
H2: Social work students demonstrate more positive attitudes toward PWPDs than hospitality/ tourism and business administration students.	Not performed	$F = 2.073$, $p = 0.127$	No significant differences between any two academic majors	No
H3: Female participants demonstrate more positive attitudes toward PWPDs than male participants.	$t = 0.613$, $p = 0.541$	Not performed	Not performed	No
H4: Participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not.	t = 1.258, $p = 0.211$	Not performed	Not performed	No
H5a: Students who have had a more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 3.337$, $p = 0.006$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.038$) or very frequent ($p = 0.006$) prior contact	Yes
H5b: Students who have a family member or friends with a disability will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 5.765$, $p < 0.001$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.020$) or very frequent ($p < 0.001$) prior contact	Yes
H5c: Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	F = 3.779, $p = 0.002$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.050$) or very frequent ($p = 0.006$) prior contact	Yes
H6: Attitudes toward people with physical disabilities will vary significantly in relation to different disability types.	Amputee vs. Blind: $t = 0.524$, $p = 0.601$ Amputee vs. Deaf: $t = -1.017$, $p = 0.310$ Blind vs. Deaf: $t = -2.437$, $p = 0.015$	Not performed	Not performed	Yes (Partially)

Table 3
Results of hypothesis testing (work context)

Hypotheses	*t*-tests	Analysis of variance testing	*Post-hoc* testing	Supported
H1: Participants demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating context.	Work vs. Marriage: $t = 4.776$, $p < 0.001$ Work vs. Dating: $t = 1.749$, $p = 0.081$ Marriage vs. Dating: $t = -3.241$, $p = 0.001$	Not performed	Not performed	Yes
H2: Social work students demonstrate more positive attitudes toward PWPDs than hospitality/tourism and business administration students.	Not performed	$F = 3.286$, $p < 0.050$	No significant differences between any two academic majors	Yes
H3: Female participants demonstrate more positive attitudes toward PWPDs than male participants.	$t = 0.617$, $p = 0.538$	Not performed	Not performed	No
H4: Participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not.	t = 0.743, $p = 0.495$	Not performed	Not performed	No
H5a: Students who have had a more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 3.489$, $p = 0.004$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.006$) or very frequent ($p = 0.039$) prior contact	Yes
H5b: Students who have a family member or friends with a disability will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 4.419$, $p = 0.001$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.036$) or very frequent ($p = 0.005$) prior contact	Yes
H5c: Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 4.269$, $p = 0.001$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.026$) or very frequent ($p = 0.006$) prior contact	Yes

Table 4
Results of hypothesis testing (marriage context)

Hypotheses	*t*-tests	Analysis of variance testing	*Post-hoc* testing	Supported
H1: Participants demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating context.	Work vs. Marriage: $t = 4.776$, $p < 0.001$ Work vs. Dating: $t = 1.749$, $p = 0.081$ Marriage vs. Dating: $t = -3.241$, $p = 0.001$	Not performed	Not performed	Yes
H2: Social work students demonstrate more positive attitudes toward PWPDs than hospitality/tourism and business administration students.	Not performed	$F = 1.447$, $p = 0.237$	No significant differences between any two academic majors	No
H3: Female participants demonstrate more positive attitudes toward PWPDs than male participants.	$t = 1.906$, $p = 0.058$	Not performed	Not performed	Refuted (weakly)
H4: Participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not.	$t = 2.046$, $p < 0.050$	Not performed	Not performed	Yes
H5a: Students who have had a more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 2.549$, $p = 0.025$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.049$) prior contact	Yes
H5b: Students who have a family member or friends with a disability will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 4.672$, $p < 0.001$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.031$) or very frequent ($p = 0.001$) prior contact	Yes
H5c: Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 2.698$, $p = 0.021$	Significant differences between students who never had prior contact and students who had very frequent ($p = 0.037$) prior contact	Yes

Table 5
Results for hypothesis testing (dating context)

Hypotheses	*t*-tests	Analysis of variance testing	*Post-hoc* testing	Supported
H1: Participants demonstrate more positive attitudes toward PWPDs in the work context than the marriage and dating context.	Work vs. Marriage: $t = 4.776$, $p < 0.001$ Work vs. Dating: $t = 1.749$, $p = 0.081$ Marriage vs. Dating: $t = -3.241$, $p = 0.001$	Not performed	Not performed	Yes
H2: Social work students demonstrate more positive attitudes toward PWPDs than hospitality/ tourism and business administration students.	Not performed	$F = 1.278$, $p = 0.280$	No significant differences between any two academic majors	No
H3: Female participants demonstrate more positive attitudes toward PWPDs than male participants.	$t = 0.286$, $p = 0.775$	Not performed	Not performed	No
H4: Participants who took a course that addressed disability issues will have more positive attitudes toward PWPDs than participants who did not.	$t = 0.700$, $p = 0.485$	Not performed	Not performed	No
H5a: Students who have had a more frequent contact in the workplace with PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 3.117$, $p = 0.009$	Significant differences between students who never had prior contact and students who had frequent ($p = 0.007$) prior contact	Yes
H5b: Students who have a family member or friends with a disability will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 6.008$, $p < 0.001$	Significant differences between students who never had prior contact and students who had very frequent ($p < 0.001$) prior contact	Yes
H5c: Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs.	Not performed	$F = 3.300$, $p = 0.006$	Significant differences between students who never had prior contact and students who had very frequent ($p = 0.015$) prior contact	Yes

or very frequent prior contact ($p = 0.016$). This hypothesis is strongly supported in all three social contexts. ANOVA results in the Work context [$F = 3.489$, $p = 0.004$], the Marriage context [$F = 2.549$, $p = 0.025$], and the Dating context [$F = 3.117$, $p = 0.009$] all indicate that participants with different levels of exposure to PWPDs in the workplace have different attitudes toward PWPDs across all three contexts. Also, as was true in the overall case, *post-hoc* testing in all three contexts reveals that the most significant pairwise differences in attitudes exist between students who had never had any prior contact with PWPDs in the workplace and students who had frequent prior contact [Work: $p = 0.006$; Marriage: $p = 0.031$; Dating: $p = 0.049$].

Hypothesis 5b: "*Students who have a family member or friends with a disability will demonstrate more positive attitudes toward PWPDs*" was also supported. ANOVA results indicate that participants with different levels of prior exposure to PWPDs as family members or friends do, in fact, demonstrate different overall attitudes toward PWPDs [$F = 5.765$, $p < 0.001$]. *Post-hoc* testing shows that there are strongly significant negative differences between the attitudes demonstrated by participants who have never had contact with PWPDs among their family/friends and participants who have either had frequent contact ($p = 0.020$) or very frequent contact ($p < 0.001$). Also, there are significant positive differences between the attitudes of participants who had very frequent contact with PWDs among their family/friends and those who had only rare contact ($p = 0.001$) or occasional contact ($p = 0.040$). Thus, the most positive attitudes are clearly demonstrated by the participants with the most frequent contact with PWDs in their family or circle of friends. Examining this hypothesis in each individual social context suggests that it is supported in all three cases. The ANOVA results in all three contexts indicate that there are significant differences in participant attitudes toward PWPDs depending on the level of contact the participant has had with PWPDs among their family/friends [Work: $F = 4.419$, $p = 0.001$; Marriage: $F = 4.672$, $p < 0.001$; Dating: $F = 6.008$, $p < 0.001$]. *Post-hoc* testing for all three contexts shows that the participants with very frequent prior contact with PWDs among their family/friends have significantly more positive attitudes than participants who have never had any such contact [Work: $p = 0.005$; Marriage: $p = 0.001$; Dating: $p = 0.006$].

Hypothesis 5c: "*Students who have been served by PWDs will demonstrate more positive attitudes toward PWPDs*" was supported as well. ANOVA results imply that participants with different levels of contact with PWPDs in the service industry have different overall attitudes toward PWPDs [$F = 3.779$, $p = 0.002$]. Moreover, *post-hoc* testing indicates that participants with frequent ($p = 0.050$) or very frequent ($p = 0.006$) prior contact with PWDs in the service industry have significantly more positive overall attitudes toward PWPDs than participants who have never had such contact. If we examine this hypothesis in each social context separately, we find that it is supported in all three cases. ANOVA results indicate that participants with different levels of contact with PWPDs in the service industry have different attitudes toward PWPDs in each social context [Work: $F = 4.269$, $p = 0.001$; Marriage: $F = 2.698$, $p = 0.021$; Dating: $F = 3.300$, $p = 0.006$], and *post-hoc* testing further reveals that, in all three contexts, participants who have had very frequent prior contact with PWDs in the service industry have significantly more positive attitudes toward PWPDs than those who have never had such contact [Work: $p = 0.006$; Marriage: $p = 0.037$; Dating: $p = 0.015$].

Hypothesis 6: "*Attitudes toward people with physical disabilities will vary significantly in relation to different disability types*" received only partial support. To test this hypothesis, paired-sample *t*-tests were run between each of the three distinct disabislity types examined by our survey: blind/visually impaired, deaf/hard of hearing, and amputee. The results suggest that participants demonstrate significantly more positive overall attitudes toward individuals who are deaf/hard of hearing than toward individuals who are blind/visually impaired ($p = 0.015$), but demonstrate no significant differences in overall attitudes toward individuals who are amputees and individuals who are blind/visually impaired ($p = 0.601$) or deaf/hard of hearing ($p = 0.310$).

5. Discussion

The present study was conducted in Austria where there is scarce literature on disability studies and is one of the few studies to examine such attitudes in different social contexts. The results present implications for scholars and educators who desire to advance disability research and examine biases toward PWDs in different social contexts. In addition, the findings can inform practitioners such as employers and managers who work with PWPDs to raise disability awareness and better integrate PWPDs into the

workplace and other social contexts. Healthcare and vocational rehabilitation professionals can also benefit by better understanding the biases toward PWPDs and some of the remedies that suggest more frequent social and service encounters.

Our findings are similar to the studies that evaluated attitudes of students and faculty in the United States and found that people have more positive attitudes toward PWPDs in the workplace than in a dating or marriage context (Grand et al., 1982; Hergenrather & Rhodes, 2007). This is the first study conducted in Europe using the DSR scale to suggest that attitudes toward PWPDs are parallel in different cultural settings and are both multidimensional and influenced by social context. This is the result of work relationships being viewed as less intimate than dating or marriage, and as such are evaluated more positively. Attitudes toward PWPDs are not only multidimensional and influenced by social context, but also by disability type. Consistent with previous studies (Kalargyrou et al., 2018a; Zissi et al., 2007), our findings indicate that people have more positive attitudes toward people who are deaf/hard of hearing when compared to individuals who are blind/visually impaired. This might partially explain why people who are blind and visually impaired have higher unemployment rates than those who are deaf or hard of hearing (Kraus, 2017).

Several studies conducted in the United States, Canada, Australia, and several European countries support that educational experiences and interventions are critical in promoting positive awareness for PWDs (Bizjak et. al, 2011; Daruwalla & Darcy, 2005; Stachura & Garven, 2007). However, more studies need to examine if education is simply improving social desirability and masking prejudicial attitudes, since there is not a strong correlation between expressed attitudes and actual behaviors in the attitudinal literature.

Our findings are consistent with the existing literature, specifically in the marriage context where attitudes toward PWPDs are the least positive among other social contexts. As we predicted, participant attitudes toward PWPDs were most positive in the Work context, and least positive in the Marriage context. This is likely a reflection of the level of commitment each social context demands, as well as the level of intimacy the social relationship requires. For example, at work, a coworker's physical disability might have from zero to very little impact on peers' performance, so there would be no reason to have a negative attitude toward the employee with a disability. Marriage, on the other hand, is a highly intimate lifelong commitment between two individuals, and having a partner with a physical disability could feasibly impact his/her partner every day. This might explain why young people today are hesitant to enter into married relationships with individuals who have physical disabilities. After all, the data show that the first-marriage rate for people with disabilities ages 18–49 is 41.1 per 1,000, which is 75 percent lower than the first-marriage rate of the general population (Austrian National Council on Contemporary Families, 2014). Therefore, our findings support the notion that a way to create more intimate relationships in the context of marriage is to educate people about unconscious biases and create disability awareness. This process should start from a very early age, and families and educators should be the pivotal role models to future generations.

This study did not find any significant differences in the attitudes of students by major; specifically, social work students did not demonstrate more positive attitudes toward PWPDs than hospitality/tourism and business students. This was the first study to test hospitality/tourism majors and its findings can be explained as hospitality students pursue a profession that focuses on serving people (guests) and catering to their needs, the same way social workers do.

The results of Daruwalla and Darcy (2005) showed that employees who had contact with a person with a disability during training had a longer-lasting positive change in attitude. The change of attitude allowed staff working in the tourism industry to improve their customer service. Several other studies found similar results demonstrating people stereotype less when they have a close friend or family member with a disability (Kalargyrou et al., 2018a, 2020) and that working side by side with a person with a disability has a more positive effect on attitudes (Stachura & Garven, 2007). The current study provides similar supporting evidence that students who had more frequent contact in the workplace with PWDs or had a family member or friend with a disability demonstrated more positive attitudes. It also provides the first evidence that students who were served by PWDs demonstrated more positive attitudes than people who were not served. This finding has important implications for the hospitality industry, since employees with disabilities mainly work in back-of-the-house positions in hotels and restaurants where there is no direct contact between employees and guests. In the current economy where the unemployment rate is below four percent (Bureau of Labor Statistics, 2019),

employers should call upon untapped employment sources such as people with disabilities. Especially in the hospitality industry, where turnover rates are high due to seasonality and demanding working schedules, human resources professionals should place PWPDs in front-of-the-house positions to increase the pool of qualified candidates and improve customer service. A recent review of literature from the past 20 years indicates that the benefits of hiring PWDs include improving profitability, increasing productivity and competitive advantage, and creating an inclusive environment to be enjoyed by both employees and customers with disabilities (Lindsay et al., 2018).

This inclusive strategy is further supported by new research which found evidence that guest perceptions about the service quality delivery of employees with physical disabilities were positive and the purchase intention for customers to revisit a restaurant with a large number of employees with disabilities was high (Kalargyrou, 2014; Kalargyrou et al., 2018a, 2018b, 2020; Kuo & Kalargyrou, 2014). Thus, research supports that hiring PWDs in the service industry in front-of-the-house positions is a viable and rewarding solution for businesses.

6. Study limitations and research recommendations

The study used a convenience sample since it collected data from a student population. Future studies should analyze data collected from the general population for generalizability purposes. Other types of disabilities can be studied, including mental, developmental, or other types of physical disabilities. Although the researchers provided the participants a detailed definition of visual impairment/blindness and hard of hearing/deafness, new studies should make a clear distinction between the two categories, since people might have different attitudes toward a person who has a visual impairment versus a person who is blind.

Often, participants in self-report attitudinal surveys can mask unconscious or conscious biases for reasons of social desirability. Therefore, future studies should use implicit measures that can measure the unconscious roots of attitudes toward PWDs. Lastly, research is scarce in European and Asian countries studying attitudes toward people with disabilities and using different social contexts. Cross-cultural studies can shed light on best practices about better social justice implementation.

7. Conclusion

Attitudes toward PWPDs are multidimensional and influenced by social context and disability type. People have more positive attitudes when working with PWPDs and less positive attitudes when they enter more intimate relationships such as dating and marriage. Educating people about unconscious biases and creating disability awareness will facilitate and enable more intimate relationships specific to the social context of marriage. Furthermore, people have more positive attitudes toward deaf/hard of hearing persons than toward blind/visually impaired individuals. Therefore, there is more stigma associated with certain types of disabilities over others.

Our findings support that people who had more frequent contact in the workplace with employees with disabilities or had a family member or friend with a disability demonstrated more positive attitudes. This study also provides the first evidence that guests who are served by staff with disabilities demonstrate more positive attitudes than guests who did not have a similar experience. Therefore, drawing from existing literature and our findings, we can support that the service industry should look into staffing front-line positions with PWDs as beneficial to all involved stakeholders (i.e., businesses, guests, and employees) alike.

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Conflict of interest

None to report.

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Appendix: Survey Questionnaire

DSR Measuring Social Context (this same set of questions applies to hard of hearing/deaf and visually impaired/blind)

1. I would have friendship, nothing more, with a person who is an amputee. (Amputee is a person who has had a limb amputated/cut off).
2. When dating a person who is an amputee, I would not feel uncomfortable if people would stare.
3. When dating a person who is an amputee, I would not be embarrassed to help the person eat in public.
4. In the workplace, I would be comfortable eating lunch with a co-worker who is an amputee.
5. When dating a person who is an amputee, I would not find sex or physical contact with him or her embarrassing.
6. In the workplace, I would be comfortable socializing with a co-worker who is an amputee.
7. In considering marriage, I would not exclude a person who is an amputee.
8. In dating a person who is an amputee, I would not worry what others think.
9. If I loved a person who is an amputee, I would try to marry him or her.
10. In the workplace, I would not expect a co-worker who is an amputee to require extra help and attention that would disrupt normal activities.
11. A spouse who is an amputee would not be too dependent on me.
12. In the workplace, I would be surprised if a co-worker who is an amputee fell behind in his or her work.
13. In marriage to a person who is an amputee, my partner would be able to earn an adequate income.
14. When dating a person who is an amputee, I would be willing to have a sexual relationship with him or her.
15. In marriage to a person who is an amputee, a partner would take full responsibility as a parent.
16. In the workplace, I would have a close relationship with a co-worker who is an amputee.
17. In marriage to a person who is an amputee, I would feel comfortable making love to my partner.
18. In the workplace, I would be considerate of the words I would use during my conversation with a coworker who is an amputee.

For the next section, please answer in bold to the best of your as knowledge:

1. Do you have a disability? □ Yes □ No
2. I have taken a course, which addresses issues of disabilities: Yes No
   -If yes, which course(s)?
3. In the past five years, my contact with people with disabilities in the workplace was:
   Never Very rare Rare Occasional Frequent Very Frequent
4. In the past five years, my contact with people with disabilities who are family members was:
   Never Very rare Rare Occasional Frequent Very Frequent
5. In the past five years, my contact with people with disabilities who are friends was:
   Never Very rare Rare Occasional Frequent Very Frequent
6. In the past five years, my contact, as a guest, with people with disabilities who serve me was:
   Never Very rare Rare Occasional Frequent Very Frequent