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Implicit bias towards people with disability in Australia: relationship with personal values

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ABSTRACT

Objective: This study investigated implicit bias towards people with disability and the relationship between implicit bias and personal values.

Method: A convenience sample of 146 people living in Australia completed an online survey that included the Portrait Values Questionnaire – Revised (PVQ-RR), experience with disability questions, and two Implicit Association Tests (IAT) that measured stereotypes of incompetency and coldness towards people with disability.

Results: There was a moderate IAT effect, with 80.1% of participants implicitly stereotyping people with disability as incompetent and 74.1% implicitly stereotyping people with disability as cold. Personal values of universalism-concern and universalism-tolerance were significantly positively correlated, and security-society was significantly negatively corelated with the Competence IAT. Universalism-concern and Self-transcendence were significantly positively correlated with the Warmth IAT. Higher scores on universalism-concern and if a person had a disability predicted lower implicit stereotyping of people with disability as incompetent. Higher scores on universalism-concern and Self-transcendence predicted lower stereotyping of people with disability as cold.

Conclusion: People in Australia have similar moderate negative implicit biases towards people with disability as reported in other countries. Personal values identified could be targeted in reflective practice interventions with employment and healthcare professionals to reduce the effects of implicit bias towards people with disability.

KEY POINTS

What is already known about this topic:

(1) People with disability experience systematic barriers including in accessing healthcare and employment.
(2) Research has linked implicit biases to discriminatory behaviour and decision-making.
(3) There are no studies investigating implicit bias towards people with disability in Australia or the relationship between implicit biases and personal values.

What this topic adds:

(1) Most people in this study held negative implicit stereotypes of people with disability as incompetent and cold.
(2) Stereotyping people with disability as low in competence and warmth suggests feelings of contempt and disgust toward people with disability.
(3) Personal values of universalism were associated with lower negative implicit biases, and personal values of conservation were associated with greater negative implicit biases.

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Disability; implicit bias; personal values; stereotypes; inclusion; diversity

Introduction

There are an estimated 5.5 million people with disability in Australia (Australian Bureau of Statistics, 2024). People with disability experience significant barriers and discrimination in all aspects of their life. Specific to Australia, the Disability Royal Commission into Violence, Abuse, Neglect, and Exploitation of People with Disability found that people with disability experience higher rates of interpersonal and physical violence, were frequently denied access to assistance and services, and were subject to segregation in settings such as employment and education (Disability Royal Commission [DRC], 2023). Further, people with disability are more likely to have poorer physical and mental health compared to people without disability (Australian Institute of Health and Welfare [AIHW], 2024). The reported barriers faced by people with disability that impact their physical and mental health included cost in accessing services, lack of

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accessibility of the physical environment, and discrimination by health professionals (AIHW, 2024). Discrimination experienced by people with disability has been associated with increased psychological distress, lower life satisfaction, and poorer mental health functioning (Hackett et al., 2020; Temple, 2023). Further, discrimination and ableism has been linked to difficulties finding and obtaining employment for people with disability (Friedman, 2020; Lindsay et al., 2023). In recent years, the field of social psychology has focused on the effects of implicit bias and how this links to discrimination and experiences of people in marginalised groups (Greenwald et al., 2022; Rasmussen, 2020).

Implicit bias and stereotypes

Explicit attitudes, stereotypes, or beliefs are in a person's conscious awareness whereby resulting behaviours can be controlled. In contrast, implicit biases refer to attitudes, stereotypes, or beliefs a person may hold that are outside of awareness and result in automatic actions or behaviours (Greenwald et al., 2022). The most widely used measure of implicit bias is the Implicit Association Test (IAT) which uses word associations between target and attribute categories to measure a person's implicit preference or bias (Greenwald et al., 2009). The Disability Attitudes Implicit Association Test (DA-IAT) measures implicit attitudes to people with physical disability (Pruett & Chan, 2006). However, there are also study-specific IATs which measure attitudes (e.g., "good" or "bad", "desirable" and "undesirable") or stereotypes (e.g., "child-like", "ill", or "healthy"). Stereotypes may be important to understand in contexts such as healthcare and employment, rather than attitudes, as stereotypes attribute characteristics to a group that could lead to negative assumptions and prejudices, such as people with disability being incompetent. This could potentially negatively affect decision-making and treatment.

The Stereotype Content Model (SCM; Fiske et al., 2002) provides a theory whereby people or groups are evaluated based on the dimensions of competence and warmth. Competence refers to a person or group's capabilities, whereas warmth refers to trustworthiness or friendliness (Fiske, 2018). In the SCM, people are stereotyped into combinations of high and low on the two dimensions. For example, groups who are stereotyped as high on competence and low on warmth are perceived to be a competitive outgroup (Fiske et al., 2002). Groups that are considered non-competitive are stereotyped as low in competency and high in warmth (Fiske et al., 2002). When people with disability are stereotyped in this way, that is, a paternalistic stereotype, it may result in pity and beliefs that they need support and compassion (Fiske et al., 2002). Groups that are stereotyped as low in both competence and warmth are thought to be perceived with disgust and contempt (Fiske et al., 2002). Stereotyping people with disability as low on competence and high on warmth has been found in studies using explicit measures (Canton et al., 2023; Clément-Guillotin et al., 2018; Rohmer & Louvet, 2012; Wright & Cunningham, 2017). However, on implicit measures, people with disability have been perceived as low in both competence and warmth (Rohmer & Louvet, 2012, 2018).

A meta-analysis identified pervasive negative implicit biases towards people with disability, with mixed findings as to whether having experience with disability affected implicit biases (Antonopoulos et al., 2023). Where studies investigated implicit bias within specific settings, such as employment and healthcare settings, studies all found negative implicit biases towards people with disability and specific disability groups, such as people who are blind (Derbyshire et al., 2023; McDonnall & Antonelli, 2018; VanPuymbrouck et al., 2020). Despite these consistent findings, it is unclear what factors influenced implicit bias, particularly towards people with disability. However, a recent qualitative study found that personal values may be linked to explicit and implicit perceptions of hiring people with disability (Antonopoulos et al., 2024).

Personal values

Values are beliefs that underpin a person's motivations and can reflect actions and behaviour (Perrin et al., 2021; Schwartz et al., 2012). People use their personal values to determine behaviours and define what is socially acceptable, to justify the expectations of others, and to produce desired behaviours (Sagiv & Schwartz, 2022; Schwartz et al., 2012). Generally, personal values are mostly unconscious when they are guiding actions. However, they become conscious when a person experiences conflicts between their personal values and decision-making (Schwartz et al., 2012).

The theory of basic human values is the most widely used model to conceptualise personal values (Sagiv & Schwartz, 2022; Schwartz, 1992). This model arranges personal values in a circular continuum whereby values closer to each other represent more similar underlying motivations. There are 19 personal values which combine to produce four higher order values (Self-transcendence, Self-enhancement, Conservation, and Openness to Change). Self-transcendence values include

universalism and benevolence (concern for the welfare of the wider community and those close to us). Opposite on the continuum are Self-enhancement values which include achievement and power over others and resources. Conservation values include conformity, tradition, and maintaining current society structures. Openness to Change values are opposite on the continuum and include self-direction (thinking independently) and stimulation (pursuing new and exciting activities; Schwartz et al., 2012). Personal values and their order of importance have been found to remain stable over time (Sagiv & Schwartz, 2022). Therefore, understanding how people's personal values influence their actions and behaviours, particularly towards people with disability, may be a contributing factor to systemic barriers that have been difficult to change.

Of the few studies that have investigated relationships of personal values to attitudes towards people with disability, all measured explicit attitudes. Most findings found that Self-transcendence and Openness to Change personal values were related to more positive attitudes, including in inclusive education and towards people using cochlear implants (Freeman, 2018; Perrin et al., 2021). Conversely, people who valued Self-enhancement, which includes achievement and power, less than Self-transcendence, had more positive attitudes towards empowering people with disability (Tartakovsky et al., 2013). While there are few studies measuring personal values and attitudes towards people with disability, there have been studies investigating links between personal values and social justice more broadly. For example, people who value Openness to Change rather than Conservation have a greater social justice orientation and question decisions made in the workplace that appear to be unjust or inequitable (Fischer & Smith, 2006). Further, higher Self-transcendence and Openness to Change predicted greater social justice actions towards racial discrimination, whereas higher scores on Self-enhancement and Conservation predicted lower social justice action (Tittler et al., 2022). While these studies indicate personal values are linked to explicit attitudes towards people with disability and social justice action more broadly, how personal values may be linked to implicit bias remains unknown. Personal values and implicit bias may differ as explicit attitudes can be affected by socially desirable responding, hence exploring the relationship between personal values and implicit bias is important.

The current study

While considerable attention has been provided to the impacts of implicit bias amongst disability community groups, government, and media in Australia, there is no data measuring the implicit biases of Australians towards people with disability. While there is considerable overlap between life in Australia and other developed nations, there have been some cross-cultural differences in implicit bias reported, mostly between collectivist and individualistic cultures (Dunham et al., 2006; Kim et al., 2023; Steele et al., 2018). Australia is considered an individualistic nation, although more than a quarter of its people are born overseas, making Australia a multi-cultural nation that includes a large proportion of people from collectivist cultures, including Australian First Nations people (Australian Bureau of Statistics, 2022). Furthermore, Australia's disability landscape is different to that of other nations, which might impact the perceptions of people with disability. For example, Australia has an individualised funding system (the National Disability Insurance Scheme; NDIS) to support people with disability, whereas countries such as the United States do not (Dickinson et al., 2015). This unique system for funding of supports may affect how a population perceives people with disability. Therefore, establishing a baseline of implicit bias towards people with disability in Australia is important to better understand cultural specificity. Furthermore, as implicit biases can underpin behaviours and motivations, investigating whether there is a link between implicit bias and personal values may lead to further understanding of implicit bias towards people with disability and possible mechanisms for targeted action. As past findings have been mixed on whether implicit bias and experience with disability are related, this study includes measures of experience with disability. Therefore, the gaps in the literature this research will aim to address include creating IATs to measure stereotypes towards people with disability broadly (rather than specific disability types), measuring implicit bias towards people with disability in an Australian sample and which personal values may be linked to implicit bias specifically towards people with disability. The research questions addressed were:

(1) What level of implicit stereotypes do Australians have towards people with disability?
(2) Does experience with disability affect implicit biases?
(3) Are personal values associated with implicit biases?

(4) Can personal values and experience with disability be used to predict implicit biases?

Materials and methods

Participants were Australian citizens or permanent residents aged over 18 years. Participants were recruited using a third-party company, Qualtrics ($n = 21$), undergraduate students ($n = 71$), and via social media and professional networks ($n = 54$). Participants were renumerated depending on their recruitment method. For example, Qualtrics renumerated participants based on an agreement, student participants received course credit, and social media/professional network participants entered a draw to win 1 of 5 $200 vouchers.

A priori analysis using G-Power determined that a minimum of 138 participants were required to achieve statistical significance at the 0.05 level. The sample was a convenience sample, and no stratification occurred. The total sample consisted of 146 participants ranging in ages from 18 to 75 years. Table 1 summarises the demographic characteristics of the sample. Table 2 summarises the experience with disability characteristics of the sample.

Table 1. Summary of demographic characteristic.

Variable	*M*	*SD*
Age	39.05	14.35
Device used	*n*	%
Laptop	104	71.2
Desktop	34	23.3
iPad/tablet	8	5.5
Gender		
Male	47	32.2
Female	95	65.1
Non-binary/different term	4	2.8
State		
New South Wales	98	67.1
Victoria	13	8.9
Queensland	15	10.3
South Australia	9	6.2
Western Australia	5	3.4
Tasmania	2	1.4
Australian Capital Territory	1	0.7
Northern Territory	3	2.1
Location		
Metropolitan	79	54.1
Rural	64	43.8
Remote	3	2.1
Education level		
Year 9 or below	1	0.7
Year 10–Year 12	32	21.9
Certificate	17	11.6
Diploma or Advanced Diploma	14	9.6
Bachelor's degree	53	36.3
Postgraduate degree	29	19.9
Disability type[a]		
Physical	3	9.7
Hearing	5	16.1
Vision	1	3.2
Psychosocial	8	25.8
Other	4	12.9
Two or more disability types	10	32.3
Occupation		
Managers	13	8.9
Professionals	52	35.6
Technicians & trades	5	3.4
Community & personal service	19	13.0
Clerical & administrative	8	5.5
Sales	9	6.2
Machinery operators & drivers	2	1.4
Labourers	1	0.7
Students	16	11.0
Unemployed or retired	15	10.3
Unknown	6	4.1

$N = 146$.
[a]For participants who had a disability, $n = 31$.

Measures

Implicit Association Test

Two Implicit Association Tests (IATs) were used based on the Stereotype Content Model (SCM; Fiske et al., 2002). The first IAT used attribute categories "competent" and "incompetent" (Competence IAT), and the second IAT used attribute categories "warm" and "cold" (Warmth IAT). Target category stimuli were identical for both IATs ("disabled people" and "Abled people").

Category and stimulus selection followed recommendations by Greenwald et al. (2022). A pilot study was conducted to determine the most appropriate stimulus words using a representative sample of the Australian population ($n = 301$). Table 3 summarises participant characteristics. Pilot study participants were presented with lists of words for each category to measure which words best described each concept. Words were chosen rather than other stimulus forms, such as images or photos, to limit the effects of confounding bias; for example, gender, age, or ethnicity (Greenwald et al., 2022). Words for the "disabled" category were chosen to represent different types of disability, and disability as a general concept. Words for the "non-disabled" category were chosen to reflect aspects of living without a disability (e.g., walking, running, sighted). For each attribute category (e.g., competency, incompetency, warmth, and coldness) synonyms were chosen using an online thesaurus.

In the pilot study, participants were shown blocks of words relating to target and attribute concepts. For each block of words, participants were asked to rate each word according to how linked it was to the overall concept on a 7-point Likert scale (1 = *not at all linked*, 4 = *moderately linked*, 7 = *absolutely linked*). This procedure requiring participants to rate strength of links between concepts and words has been used in other IAT research where study specific IATs have been constructed (Clément-Guillotin et al., 2018; McDonnall &

Table 2. Summary of experience with disability characteristics.

Variable	*N*		%
Family or friend with disability			
Yes	82		56.2
No	64		43.8
Colleague with disability			
Yes	49		33.6
No	97		66.4
Degree of knowledge of disability			
No knowledge	1		0.7
A little knowledge	16		11.0
Somewhat knowledgeable	27		18.5
Moderately knowledgeable	55		37.7
Very knowledgeable	34		23.3
Extremely knowledgeable	13		8.9
	M	*SD*	Range
Years of experience with disability	11.94	12.89	0–60

Table 3. Summary of participant characteristics for pilot study.

Variable	*M*	*SD*
Age	39.05	14.35
	n	%
Gender		
Female	165	54.8
Male	134	44.5
Non-binary	2	0.7
Disability status		
Non-disabled	246	81.7
Disabled	55	18.3
Location		
New South Wales	103	34.2
Australian Capital Territory	4	1.3
Victoria	81	26.9
Queensland	39	13.1
South Australia	41	13.6
Western Australia	20	6.6
Tasmania	13	4.3

$N = 301$.

Antonelli, 2018). Table 4 summarises the stimulus words used.

The IATs were created using Inquisit and followed best practice guidelines (Greenwald et al., 2022). Both IATs consisted of seven blocks, summarised in Table 5. Participants were asked to categorise each word by pressing the "D" and "K" keys on their keyboard. In both IATs, the temporal order was counterbalanced for the combined tasks (Greenwald et al., 2022). Therefore, some participants were required to complete the combined task of Disabled People and Competency and the "D" key first, and other participants received Abled People and Competency as the first combined task on the "D" key. The attribute category was on the same key for all participants in both IATs. For example, competency, and warmth were on the "D" key and incompetency and coldness on the "K" key. To limit the possible effects of positioning the positive valance category on the right-hand key, positive valance attribute categories were always positioned on the left hand ("D" key; i.e., Competency and Warmth). Intertrial intervals were set at 250 ms (Greenwald et al., 2022).

Participants could complete the IATs on laptops, desktop computers, or tablet devices. Participants first viewed instructions, including a table of the stimulus words and their categories. The screen was a black background, with instructions and target words in white font, and attribute words in green font. The colour scheme was consistent throughout the IAT. Different colours were used to assist participants in distinguishing between target and attribute stimuli (Greenwald et al., 2022).

For each IAT, a *D*-score was calculated using the updated scoring algorithm (Greenwald et al., 2003). This included eliminating participants who had more than 10% of trials with latencies less than 300 ms and eliminating trials with latencies greater than 10,000 ms. Data from combined blocks (e.g., blocks 4, 5, 6, and 7) were used to compute the *D*-scores. *D*-scores range from −2 to 2. Negative scores indicate a stronger association between disabled and incompetent/cold and able-bodied and competent/warm. Thus, negative scores represent a negative implicit stereotype of people with disability as incompetent and/or cold. Positive scores indicate a stronger association between disabled and competent/warm, and able-bodied and incompetent/cold. Table 6 outlines the interpretation of *D*-scores.

The Competence IAT and the Warmth IAT were significantly positively correlated ($r = .377$, $p < .001$). This suggests that there is some overlap between the IATs, which is expected as they measure identical target concepts. However, as the correlation is low, it suggests that the two IATs are different, likely, in their measurement of the two attribute categories (competent/incompetent and warm/cold).

Revised Portrait Values Questionnaire

The PVQ-RR is a 57-item scale that measures personal values based on Schwartz's refined theory of basic values (Schwartz et al., 2012). Each item presents a description of a person and asks the respondent to rate how similar they are to the person described on a 6-point Likert scale where 1 = *not at all like me*, and 6 = *very much like me*. There is a male and female version, and this study included a non-binary version where pronouns were changed from he/she to they/them. Scores are derived by summing raw scores to calculate 19 basic personal values and four higher order personal values (Schwartz, 2021). The four higher order personal values are Self-Transcendence, Self-Enhancement,

Table 4. Stimulus words used in pilot study.

Disabled people	Abled people	Competent	Incompetent	Warm	Cold
Disability	Non-disabled	Competent	Incompetent	Warm	Cold
Quadriplegia	Able-bodied	Productive	Inadequate	Loving	Frosty
Blind	Walking	Capable	Useless	Friendly	Distant
Intellectual disability	Seeing	Efficient	Unskilled	Kind	Emotionless

Table 5. Example of block presentation in the IAT.

Block	Key allocation example	Trials (*n*)
1. Target concept practice	Disabled people = "D" Key Abled people = "K" key	16
2.Attribute concept practice	Competent = "D" Key Incompetent = "K" key	16
3.Combined block practice	Disabled/Competent = "D" Key Abled/Incompetent = "K" key	24
4.Combined block	Disabled/Competent = "D" Key Abled/Incompetent = "K" key	40
5.Target concept practice	Abled people = "D" key Disabled people = "K" key	24
6.Combined block practice	Abled/Competent = "D" Key Disabled/Incompetent = "K" key	24
7.Combined block	Abled/Competent = "D" Key Disabled/Incompetent = "K" key	40

Number of trials refers to the total number of stimulus words presented in the block.

Openness to Change, and Conservation. Examples of the 19 personal values include values relating to benevolence (helping others), universalism (care for equity/justice), tradition (maintaining structures), and security (valuing social order). When calculating the 19 basic personal values, corrections were made to limit scale use bias (Schwartz et al., 2012). This was completed by first creating each personal value score by calculating the mean of the relevant personal value items. Secondly, a mean rating score was calculated by finding the mean of all 57 items. The mean rating score was then subtracted from each mean personal value score which centred the personal value score around the participant's overall mean rating.

The 19 basic personal values and overall personal values of the PVQ-RR had adequate reliability in a cross-cultural sample which included Australians, with a mean Cronbach's alpha coefficient of .70 (Schwartz & Cieciuch, 2022). In this sample, Cronbach's alpha coefficient for the four higher order personal values was above .8. For the 19 personal values, there were several personal values that had Cronbach's alpha coefficient values less than .7 (see Table 7). This is similar to the reliability previously reported in Australian samples.

Experience with disability

Experience with disability was measured through six questions, adapted from previous research (Hein et al., 2011; McDonnall & Antonelli, 2018; Popovski et al., 2018; Rojahn et al., 2008; Wilson et al., 2015). This included using similar dichotomous questions relating to whether a participant had contact with people with disability and in what context. Questions were adapted to be generalised to general disability rather than specific disability types (Hein et al., 2011; McDonnall & Antonelli, 2018; Wilson et al., 2015). Participants were asked if they had a disability (yes/no) and the type of disability, whether they had a friend or family member with disability (yes/no), and whether they had a colleague with disability (yes/no). Participants were also asked to rate their knowledge of disability on a 6-point Likert scale where 0 = *no knowledge* to 5 = *extremely knowledgeable*, and their years of experience with disability.

Procedure

This study received university ethics approval. Participants were directed to Qualtrics where they viewed the Participant Information Sheet and provided consent. Participants then completed demographic and screening questions, the PVQ-RR,

Table 6. Interpretation of D-scores.

D-score	Interpretation
≤ −0.65	Strong negative implicit bias
−0.35 to − 0.64	Moderate negative implicit bias
−0.15 to − 0.34	Slight negative implicit bias
−0.14 to 0.14	No implicit bias
0.15 to 0.34	Slight positive implicit bias
0.35 to 0.64	Moderate positive implicit bias
≥0.65	Strong positive implicit bias

experience with disability questions, and the IATs. The order of IATs was counterbalanced between participants. After completing the IATs, participants were automatically re-directed back to the survey for a debrief statement.

Data analysis was conducted using IBM SPSS Version 29. Only participants who had completed all questions and both IATs were included in analysis. Independent one sample *t*-tests were conducted to examine the IAT effect. This contrasted the mean *D*-score with a value of 0, where 0 indicates neither positive nor negative implicit associations. Comparison then determines whether there is a difference in the implicit associations of concepts (Clément-Guillotin et al., 2018). Planned comparisons were used to measure differences between groups. Correlations were used to explore relationships between personal values and implicit bias. Multiple linear regression was used to identify models to predict implicit bias. As past research is mixed on factors influencing implicit bias, demographic, experience with disability, and personal values were entered into regression models.

Results

Implicit bias towards people with disability

To interpret IATs, negative *D*-scores below –0.15 indicate negative implicit biases, and *D*-scores above 0.15 indicate positive bias. Figures 1 and 2 summarise scores on the Competence IAT and Warmth IAT. The mean *D*-score for the Competence IAT was –0.483, with 80.1% of participants ($n = 117$) scoring in the range indicating negative implicit biases, stereotyping people with disability as incompetent. The mean *D*-score for the Warmth IAT was –0.424, with 74.7% ($n = 109$) stereotyping people with disability as cold.

There was a significant IAT effect on the Competence IAT ($M = -0.48$, $SD = 0.41$, $t(144) = -14.29$, $p < .001$, two-tailed), suggesting participants implicitly stereotyped people with disability as incompetent. The IAT effect was moderate (Greenwald et al., 2003). Similarly, there was a significant IAT effect on the Warmth IAT ($M = -0.42$, $SD = 0.41$, $t(145) = -12.65$, $p < .001$, two-tailed), suggesting participants stereotype people with disability as cold. This was also a moderate effect.

Table 7. PVQ-RR Cronbach's alpha coefficients.

Value	Cronbach's α
Self-direction-Thought	.770
Self-direction-Action	.702
Stimulation	.764
Hedonism	.805
Achievement	.675
Power-Dominance	.686
Power-Resources	.787
Face	.679
Security-Personal	.531
Security-Societal	.834
Tradition	.845
Conformity-Rules	.879
Conformity-Interpersonal	.808
Humility	.460
Universalism-Nature	.850
Universalism-Concern	.830
Universalism-Tolerance	.747
Benevolence-Care	.673
Benevolence-Dependability	.622
Higher order values	
Self-transcendence	.874
Self-enhancement	.829
Openness to change	.841
Conservation	.868

Differences in implicit bias between groups

Differences in implicit bias based on age, gender, education, and experience with disability were investigated using planned comparisons. Age groups were defined based on generational cohorts as per the Australian Bureau of Statistics (2022). There was no significant difference of either the Competence IAT or Warmth IAT for age (Competence IAT: $F(3,141) = 2.623$, $p = .53$; Warmth IAT: $F[3,142] = 1.513$, $p = .214$), gender (Competence IAT, $t[95.3] = 1.001$, $p = .320$; Warmth IAT, $t[90.98] = 2.297$, $p = .133$), education (Competent IAT: $F[2,142] = 1.965$, $p = .144$; Warmth IAT: $F[2,143] = 0.204$, $p = .816$), family member with disability (Competence IAT, $t[123.33] = 3.16$, $p = .078$; Warmth IAT, $t[132.22] = 1.77$, $p = .185$), or colleague with disability (Competence IAT, $t[95.35] = 0.499$, $p = .482$; Warmth IAT, $t[96.02] = 1.78$, $p = .185$).

There was a significant difference between participants with and without a disability on both IATs (Competence IAT, $t(45.4) = 12.758$, $p < .001$; Warmth IAT: $t(44.53) = 4.90$, $p = .032$). There was a medium effect ($\acute{\eta}^2 = 0.09$) on the Competence IAT, and a small effect ($\acute{\eta}^2 = 0.03$) on the Warmth IAT. However, while participants with a disability had lower mean D-scores on both IATs, the mean scores of both groups indicated negative implicit bias (Table 8).

Most participants rated their knowledge of disability as "somewhat knowledgeable" or "moderately knowledgeable" (61%). The mean reported years of experience with disability was 11.94 ($SD = 12.89$). There was no significant correlation between knowledge of disability and either IAT (Competence IAT, $r[143] = .081$, $p = .333$, $\acute{\eta}^2 \leq .01$; Warmth IAT, $r[144] = .100$, $p = .231$, $\acute{\eta}^2 \leq .01$). There was no significant correlation between years of experience with disability and the

Competence IAT (r_s[143] = .132, p = .112, $\acute{\eta}^2 \leq .01$) or Warmth IAT (r_s[144] = .152, p = .067, $\acute{\eta}^2 \leq .01$).

Implicit bias and personal values

Table 9 summarises the correlations between implicit biases and personal values. There was a significant medium positive correlation between the Competence IAT and Universalism-Concern (r[143] = 0.365, $p < .001$), suggesting higher scores on Universalism-Concern are associated with less implicit stereotyping of people with disability as incompetent. Similarly, there was a significant small positive correlation between the Competence IAT and Universalism-Tolerance (r[143] = 0.239, p = .004). This suggests higher scores on Universalism-Tolerance was associated with less implicit stereotyping of people with disability as incompetent. Security-Societal and the Competence IAT had a significantly small negative correlation (r[143] = −0.201, p = .015), suggesting that higher scores on Security-Societal are associated with greater implicit stereotyping of people with disability as incompetent.

There was a significant small positive correlation between Universalism-Concern and the Warmth IAT (r[144] = 0.224, p = .007), suggesting higher scores on Universalism-Concern were associated with less implicit stereotyping of people with disability as cold. There was also a significant small positive correlation between the Warmth IAT and Self-Transcendence (r[144] = 0.163 p = .50), suggesting that higher scores on Self-Transcendence were associated with less negative implicit stereotyping of people with disability as cold. Similarly, the Warmth IAT and Self-Enhancement had a significantly small positive correlation (r[144] = 0.165, p = .047), suggesting higher scores on Self-Enhancement were associated with less implicit stereotyping of people with disability as cold.

Predictors of implicit bias

Linear multiple regression was carried out to determine whether demographic variables (age, gender, education) and personal values predicted implicit bias. Firstly, to predict scores on the Competence IAT, demographic variables, experience with disability, and correlated personal values (Universalism-Concern, Universalism-Tolerance, Security-Societal) were entered into the model (Table 10). This model was significant, F(11, 133) = 3.850, $p < .001$, explaining 24.2% of the variance in the Competence IAT. As most variables did not contribute unique variance to the model, these were removed in the subsequent model. Model 2 included the variables that were significant in Model 1 (Universalism-Concern and disability status). Model 2 was significant (F[2,142] = 16.199, $p < .001$), explaining 18.6% of the variance in the Competence IAT. Therefore, Model 2 was accepted as

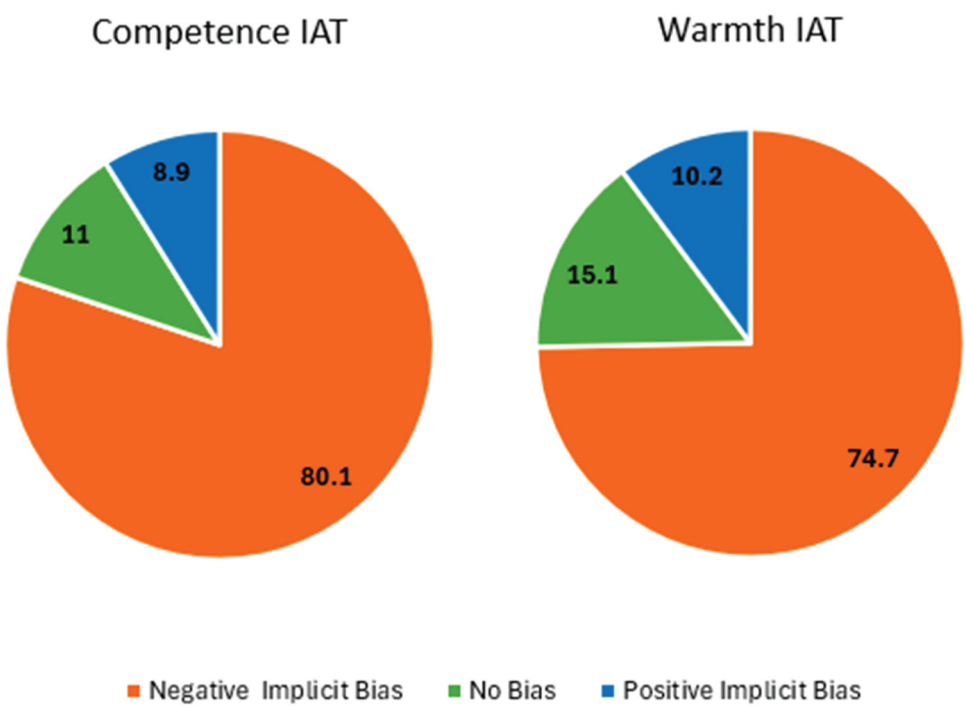

Figure 1. Summary of Competence IAT and Warmth IAT scores.

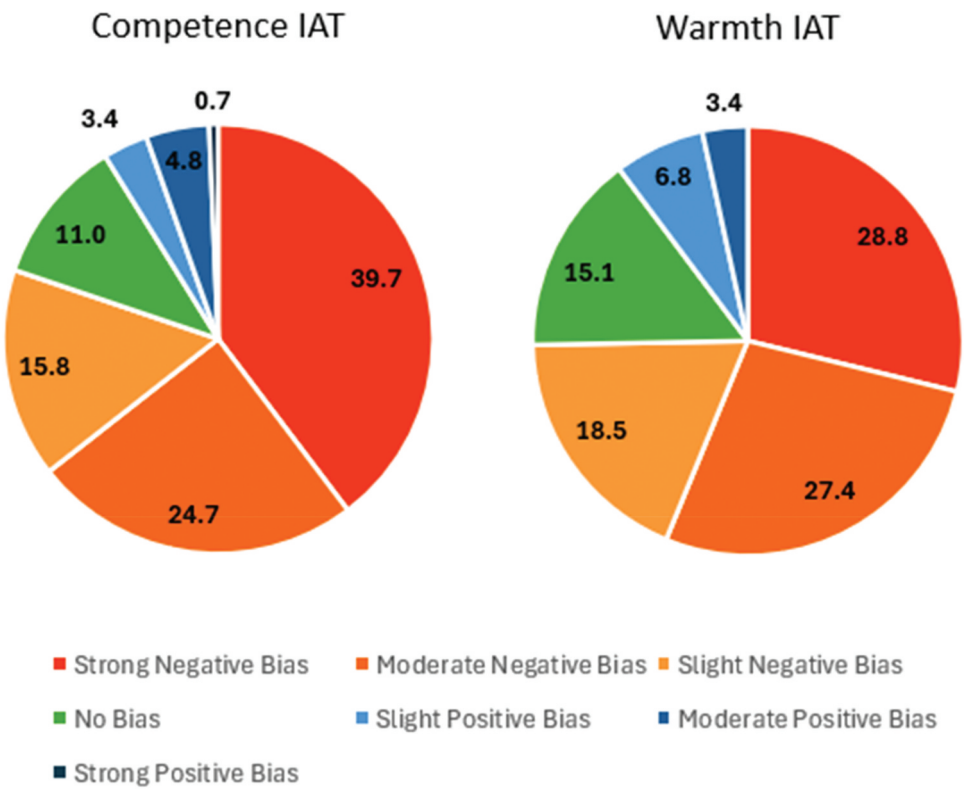

Figure 2. Summary of Competence IAT scores by degree of bias.

the final model and scores on the Competence IAT can be predicted using the model:

Competence IAT score = −0.238 + (0.194 × Universalism-Concern) + (−0.240 × disability status)

For the Warmth IAT, Model 1 used demographic variables (age, gender, education), personal values that were correlated in the previous analysis (Universalism-Concern, Universalism-Tolerance, Self-Enhancement), and experience with disability variables to predict scores (Table 11). This model was significant (F[11,134] = 3.174, $p < .001$), explaining 20.7% of the variance in the Warmth IAT. As most of the variables did not contribute a significant unique variance to the model, these were removed in the subsequent model. Model 2 included Universalism-Concern and Self-enhancement, and was significant (F[2, 143] = 13.082, $p < .001$), explaining 15.5% of the variance in the Warmth IAT. Therefore, Model 2 was accepted as the final model and scores on the Warmth IAT can be predicted using the model:

Warmth IAT score = −1.221 + (0.239× Universalism-Concern) + (0.061 × Self-enhancement)

Discussion

The aims of this study were to investigate implicit bias towards people with disability in an Australian sample, and to explore the relationship between implicit bias and personal values. This study is novel as it has piloted two new IATs to measure stereotypes of disability and has explicitly linked personal values to implicit bias towards people with disability. The majority of participants had negative implicit bias on both IATs, implicitly stereotyping people with disability as incompetent and cold. Furthermore, significant relationships between personal values and implicit bias were discovered. Having a disability and the personal values of Universalism-Concern and Security-Society significantly predicted competence IAT scores. Warmth IAT scores were predicted by Universalism-Concern and Self-enhancement.

Table 8. Difference of IAT scores between people with and without disability.

	Competence IAT		Warmth IAT	
Disability	*n*	*M* (SD)	*n*	*M* (SD)
Respondent with disability	31 (21.5%)	−0.243 (0.08)	31 (21.2%)	−0.276 (0.43)
Respondent without disability	114 (78.6%)	−0.548 (0.40)	115 (78.8%)	−0.464 (0.39)

$N = 145$ for Competence IAT, $N = 146$ for Warmth IAT.

Table 9. Correlations PVQ-RR and IATs.

Variable	Competence IAT[a]	Warmth IAT[a]
Self-transcendence	0.126	0.163*
Universalism-Nature	0.103	0.029
Universalism-Concern	0.365**	0.224**
Universalism-Tolerance	0.239**	0.044
Benevolence-Care	0.156	−0.009
Benevolence-Dependability	−0.130	−0.129
Self-enhancement	−0.063	0.165*
Achievement	−0.010	0.084
Power-dominance	−0.030	0.054
Power-resources	−0.041	0.021
Openness to change	0.002	0.135
Self-direction thought	0.045	−0.120
Self-direction action	0.041	−0.030
Stimulation	0.046	0.083
Hedonism	0.015	0.038
Conservation	−0.143	0.047
Security-personal	−0.032	−0.002
Security-society	−0.201*	−0.006
Tradition	−0.113	−0.154
Conformity-rules	−0.026	−0.054
dConformity-interpersonal	−0.079	0.052
Face	−0.124	0.025
Humility	0.009	0.004

For Self-transcendence, $N = 145$; for all other personal values, $N = 146$.
[a]Pearsons *r*.
*$p < .05$.**$p < .01$.

This study has found that Australians have moderate negative implicit biases towards people with disability. Participants implicitly, negatively stereotyped people with disability as incompetent and cold, which supports previous findings conducted outside of Australia (McDonnall & Antonelli, 2018; McDonnall et al., 2019; Rohmer & Louvet, 2012, 2018). According to the Stereotype Content Model, low competence and low warmth elicit feelings of contempt and disgust towards the group, which can lead to harm and neglect (Fiske, 2015). This has been shown in other marginalised groups, such as people experiencing homelessness, people with a criminal history, and people who have low income (Berry & Wiener, 2020; Boysen et al., 2023; Lindqvist et al., 2017). It could be that people explicitly have positive attitudes and stereotypes; however, the implicit stereotypes impede decision-making. As people with disability historically and currently experience increased risk of harm, neglect, and discrimination (Broady et al., 2024; Clifton, 2020; Hackett et al., 2020; Temple et al., 2023), these findings also suggest that negative implicit stereotypes might play a role. For example, there has been substantial focus on developing strategy and policies in Australia to improve the experiences of people with disability. However, decision makers could potentially be influenced by their negative implicit stereotypes, which may lead to policies and strategies that do not actually benefit people with disability. Such policies may be altering behavioural intent but may not be changing behaviours. This is supported by findings of the Disability Royal Commission including widespread negative attitudes towards people with disability and the recommendation of prioritising the use of co-design into policy, research, and service delivery (DRC, 2023). Uncovering and understanding people's negative implicit stereotypes towards people with disability could be helpful in opening conversations and thinking differently about ways to improve the experiences of people with disability.

There were no differences in implicit biases based on age, gender, education, or experience with disability. Furthermore, this study did not find a relationship between knowledge of disability and years of experience with disability and implicit bias. This is similar to previous findings in which differences in biases based on age, gender, education, and experience with disability varied between studies (Antonopoulos et al., 2023). There was a significant difference in implicit bias on both IATs between people with and without a disability: people with a disability demonstrated less negative implicit bias. However, mean IAT scores for people with disability indicated implicit bias remaining in the slight range for negative implicit biases, as compared to the moderate range for people without a disability. This could suggest internalised ableism, wherein people with disability internalise beliefs about being disabled, often from a societal norm based in the medical model of disability (David & Derthick, 2014; Jóhannsdóttir et al., 2022). This finding of potential internalised ableism suggests that people with disability continue to experience societal pressures which can impact their health and wellbeing (Jóhannsdóttir et al., 2022). Overall, these findings suggest that even with lived experience with disability in different forms, people had negative implicit biases. There may be more complex pathways that contribute to implicit biases beyond experience and knowledge about disability, such as societal norms or quality of the relationships and experiences with people with disability, which could be explored in future research. Furthermore, there may be a Dunning-Kruger effect in relation to report of knowledge of disability with participants overestimating their knowledge and true awareness of disability (Dunning, 2011). Development of a knowledge of disability scale may be useful in further understanding true knowledge, and how this might relate to other variables, such as implicit bias.

Personal values were correlated with implicit bias. The higher order value Conservation, and Security-Society were negatively correlated with the Competence IAT. People who value conservation and security within society tend to value preserving the

Table 10. Multiple regression Competence IAT..

Variable		B[a]	*SE*	Beta[b]	*t*	*p*
Model 1	Constant	0.350	0.394		0.887	.377
	Age	−0.004	0.003	−0.126	−1.375	.171
	Gender	0.056	0.066	0.070	0.849	.398
	Location	−0.039	0.062	−0.050	−0.633	.528
	Universalism-Concern	0.185	0.060	0.307	3.080	.003
	Universalism-Tolerance	0.039	0.059	0.063	0.653	.515
	Security/Society	0.000	0.040	0.000	−0.003	.998
	Disability status	−0.338	0.105	−0.326	−3.225	.002
	Family/Friend with disability	−0.024	0.074	−0.028	−0.326	.745
	Colleague with disability	−0.069	0.079	−0.077	−0.878	.382
	Knowledge of disability	−0.045	0.034	−0.119	−1.319	.189
	Years of experience	−0.003	0.004	−0.099	−0.876	.383
Model 2	Constant	−0.238	0.161		−1.480	.141
	Universalism-Concern	0.194	0.047	0.321	4.161	<.001
	Disability status	−0.240	0.080	−0.232	−3.000	.003

$N = 145$.
[a]Beta coefficient. [b]Standardised beta coefficient.

Table 11. Multiple regression warmth IAT.

	Variable	B[a]	*SE*	Beta[b]	*t*	*p*
Model 1	Constant	−0.799	0.423		−1.888	.061
	Age	−0.003	0.003	−0.114	−1.190	.236
	Gender	0.050	0.062	0.066	0.801	.424
	Education	−0.003	0.023	−0.010	−0.115	.908
	Universalism-Concern	0.241	0.062	0.419	3.904	<.001
	Self-Enhancement	0.056	0.016	0.344	3.441	<.001
	Universalism-Tolerance	−0.040	0.058	−0.068	−0.685	.494
	Disability Status	−0.159	0.098	−0.161	−1.623	.107
	Family/Friend with disability	0.013	0.073	0.016	0.174	.862
	Colleague with disability	0.002	0.079	0.002	0.024	.981
	Knowledge of disability	−0.021	0.033	−0.060	−0.657	.512
	Years of experience with disability	0.002	0.004	0.076	0.679	.498
Model 2	Constant	−1.221	0.169		−7.242	<.001
	Universalism-concern	0.239	0.051	0.415	4.646	<.001
	Self-enhancement	0.061	0.015	0.375	4.205	<.001

$N = 146$.
[a]Beta coefficient. [b]Standardised beta coefficient.

status quo, and respect and adhere to the current procedures or customs (Fischer & Smith, 2006). In this study, the more participants valued Security-Society, the greater negative implicit bias they held stereotyping people with disability as incompetent. Practically, this may be exhibited in hiring behaviour where people who value conservation may be less willing to hire people with disability. They may also be hesitant to adapt to policies encouraging changes to workplace culture or systemic structures, such as ending segregation in education settings, as they value maintenance of current systems and order. Maintaining the status quo would include being less likely to hire a person with a disability where the company has few or no employees with a disability. Further, people who value conservation are less likely to scrutinise decisions relating to justice (Fischer & Smith, 2006; Schwartz et al., 2012). Therefore, people who value conservation would not be likely to raise issues of injustice or discrimination towards people with disability. The Security-Societal value presents as a paramount consideration for employment-related decision rights within a company.

Self-transcendence personal values, which include personal values of universalism and benevolence, were positively correlated with both IATs. Universalism relates to concern about the welfare of all community members and benevolence relates to a concern for members of the in group (Schwartz et al., 2012, 2020). Lower negative implicit stereotyping of people with disability as incompetent and cold was associated with higher scores on Self-transcendence (Warmth IAT), Universalism-Concern (both IATs), and Universalism-Tolerance (Competence IAT). Therefore, people who value tolerance and protecting the welfare and interests of all community members, not just groups they belong to, had lower negative implicit bias. Benevolence personal values are based on the importance of cooperation with others and can act as an internal motivation to foster harmony, helpfulness,

and responsibility (Schwartz et al., 2012). Therefore, people who value benevolence and universalism may be more open to adapting to changes to improve outcomes for people with disability. This might include hiring and working with people with disability, including people with disability in leadership positions, providing accessible healthcare, or making the built environment more accessible. This is because they are concerned with the welfare of others, improving equality, and encouraging cooperation between communities. This has been suggested in previous research where leaders who value benevolence and social belonging were more likely to engage in altruistic or inclusive behaviours (Sholikhah et al., 2025). Practically, identification and exploration of personal values could be applied across various settings. In healthcare, professionals could have reflective practices on personal values and implicit bias included in their training and competencies. In employment, people making hiring decisions could explore their own personal values and the effects of these on their decision-making. Past research has highlighted the importance of value awareness and identification for health care professionals to improve decision-making, which could be designed to be more specific to people with disability (Gassas & Salem, 2022; Grace et al., 2017; McGinnis et al., 2016; Moyo et al., 2015). This could also be applied to organisational values and culture, and how this influences staff in general to create an inclusive environment.

Participants who valued Self-enhancement had less negative implicit stereotyping of people with disability as cold. This is in contrast to past research where Self-enhancement was associated with less positive attitudes (Tartakovsky et al., 2013). The difference may be because the current study used an implicit stereotype measure, whereas Tartakovsky et al. (2013) used an explicit measure of attitudes towards empowering clients with intellectual and psychosocial disability. People who value Self-enhancement may be focused on internal factors, such as sense of achievement, power, and dominance over others (Schwartz et al., 2012). It is thought that such people may tend to worry about issues relating to themselves or those immediately close to them (Schwartz et al., 2000). As Self-enhancement personal values are focused on motivations that produce internal feelings for a person, it could be that the relationship to implicit bias is linked to paternalistic stereotypes. For example, those who value Self-enhancement might implicitly stereotype people with disability as incompetent but warm, which is linked to a paternalistic stereotype evoking pity and the need to "help" people with disability. This may then lead to internal feelings for the person related to a sense of achievement or satisfaction from helping others, as well as maintaining a sense of power dominance (Fiske et al., 2002). This could be explored in future research to understand the relationship between personal values that focus on the wider community, personal values that focus on internal motivations, and how this may be related to implicit bias and discriminatory behaviours.

This study identified two significant models to predict implicit bias. As Universalism-Concern increased and if a person had a disability themselves, there was less negative implicit stereotyping of people with disability as incompetent. As Universalism-Concern and Self-enhancement increased, there was less negative implicit stereotyping of people with disability as cold. These models have highlighted how personal values can be used to understand implicit biases. Overall, people who valued universalism and concern for others more, and values that prioritise maintenance of the status quo and current structures less, demonstrated less negative implicit biases. Interestingly, people who valued both Self-transcendence and Self-enhancement, higher-order values opposite on the continuum of personal values and generally thought to be in conflict as motivators for action would be predicted to have lower negative implicit stereotyping of people with disability as cold (Schwartz et al., 2012). As previously discussed, it could be that a combination of personal values showing concern for others, but also the concern for their own internal experiences, would lead to more positive implicit biases towards people with disability, being underpinned by a paternalistic stereotype. This could be explored in future research to better understand the links between personal values and predicting implicit biases, and how these may be influencing individuals' actions and behaviours.

Limitations

This study used a convenience sample of Australians, which may not be representative of the entire Australian population. However, we found no differences in implicit biases based on age, gender and education, suggesting that a different demographic mix would not have changed the findings. Our study has provided the first insight into implicit biases in an Australian sample; a logical next step would be to investigate implicit biases, personal values and intervention strategies amongst specific groups such as hiring managers or health professionals. This would link implicit bias to specific outcomes such as increasing employment rates or decreasing reported discrimination in these settings. Further, future research

could investigate how these findings could be applied to practical interventions, such as through reflective professional development, awareness campaigns, or online training, and whether interventions could change implicit bias and lead to improved outcomes for people with disability.

This study has investigated disability as a general construct with stimuli in the IATs, including physical disability, sensory disability, and intellectual disability. While implicit biases are generally negative towards all groups of people with disability, there are some differences between types of disability. For example, there has been greater implicit bias reported towards people who have a psychosocial disability as compared to a physical disability (Teachman et al., 2006). As biases are affected by different intersections of marginalisation, future research could focus on developing methods to measure implicit bias through an intersectional lens, capturing the complexities of multiple, overlapping social identities.

Conclusions

People with disability experience inequalities and discrimination in all aspects of their lives (DRC, 2023). Often, barriers and prejudice towards people with disability are caused by other people and stem from negative attitudes and stereotypes. This study has confirmed that more than three quarters of the Australian sample implicitly stereotype people with disability as incompetent and cold, a stereotype profile that elicits feelings of contempt and disgust. This study is the first to link personal values with implicit bias. People who value benevolence and universalism reported less negative implicit biases, and people who value adherence to current structures, norms, and power have greater negative implicit bias towards people with disability. As people with disability historically and currently continue to experience inequality (DRC, 2023), uncovering mechanisms to target behaviour and influence decision-making is integral. There has been no shortage of attempts to improve outcomes for people with disability, with little change to outcome variables such as employment (Australian Bureau of Statistics, 2024b). Policymakers could utilize the findings to develop community strategies incorporating implicit bias and personal values awareness and training into education, employment, and healthcare. Our discovery of the relationship between personal values and implicit bias offers a different way forward.

To improve the lives of people with disability, the Australian community must look within at their implicit biases, their personal values, and how these may be impacting people with disability, particularly for those working in healthcare, employment, and government spaces.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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