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# Attitudes to Gender Inequality in South Africa: Evidence from Implicit and Explicit Attitudes<sup>\*</sup>

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#### Abstract

We use the Harvard Gender-Career Implicit Association Test (IAT)) and a selfreport questionnaire on 402 respondents in South Africa to explore the factors that contribute to implicit and explicit gender attitudes, moreso the discrepancy between implicit and explicit attitudes. Our initial findings indicate that implicit gender attitudes do not necessarily correlate with explicit gender attitudes in the sample, confirming the implicit-explicit discrepancy (IED) theory. On further investigation, we observe that women appear to hold implicit traditional gender role ideology compared to men, even though women are more likely than men to explicitly self-report for gender equality. We also find that some parental factors, such as being raised by a mother only, are associated with the IED. Overall, these results suggest that in order to effectively tackle gender inequality, a wider policy approach is required, one that can address some of these factors that contribute to gender unequal outcomes.

Keywords: implicit-explicit discrepancy (IED), gender attitudes, gender inequality, South Africa

## 1 Introduction

Addressing gender inequality continues to be a global priority. However, despite some progress, women remain disproportionately underrepresented on several dimensions. Pre-

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vailing social norms and structural barriers such as employer discrimination, gender-based violence, and access to assets are among the factors that contribute to gender inequalities.

Various studies suggest that the origins of gender inequality are rooted in economic, cultural, and social institutions that asymmetrically organise gender roles between men and women (Alesina & Giuliano, 2015; Duflo, 2012; Mabsout & Van Staveren, 2010). While research has focused on these institutions as important drivers of gender inequality, evidence shows that in some cases, even when institutional conditions such as discriminatory political, educational and labour market practices change for the better, gender gaps do not automatically close (Alesina, Giuliano, & Nunn, 2013; Almond & Edlund, 2008; Fernandez, 2007; Fernández, Fogli, & Olivetti, 2004). This persistence suggests the presence of other influences that reinforce gender inequality even in the face of positive legal, economic, and political changes.

In this study, we focus on gender attitudes as one of those influences that may underpin gender inequality. In particular, we are interested in the differences between implicit and explicit gender bias and in exploring the factors that influence these different types of bias. According to Karpinski and Hilton (2001), attitudes are like icebergs. What lies above are explicit attitudes which are subject to conscious control and underneath the unconscious space are implicit attitudes. Explicit bias is defined as conscious attitudes that are formed deliberately, which implies that people can self-report on their explicit attitudes (e.g. in a questionnaire). Explicit attitudes are easily observable via an individuals' actions and expressions.

In more recent literature, implicit bias, also referred to as unconscious bias, has gained increased attention as a factor in predicting behaviours (Alzahrani et al., 2022; Cvencek, Greenwald, McLaughlin, & Meltzoff, 2020; McKenzie & Carrie, 2018; Muschalik, Elfeddali, Candel, Crutzen, & de Vries, 2019). Implicit bias is defined as attitudes and beliefs that occur outside one's conscious awareness and control. The bias is unintentional, emerges spontaneously and involves attitudes based on stereotypes that affect one's understanding, actions, and decisions. It stems from traditional beliefs, social norms, and/or experience. Implicit attitudes are often hidden because they exist outside of conscious awareness (A. G. Greenwald & Banaji, 1995). People might not even be aware of when these biases occur. These implicit attitudes are prevalent and can permeate various circumstances, such as informing individuals' perceptions on the appropriate roles and expectations of women in the household, in labour markets, and even in the political arena, causing structural inequalities. For example, implicit gender biases against women can influence hiring decisions and act as a barrier to women's career advancements (ILO, 2017).

While implicit and explicit biases can be strongly correlated, emerging evidence highlights that these two measures do not always coincide, implying that people can hold different implicit and explicit attitudes. This has been called the implicit-explicit discrepancy (Muschalik et al., 2019). Implicit attitudes are strongly associated with spontaneous decisions, learnt from an individual's long-term socialisation experience and, are considered to be relatively resistant to change. Implicit bias measures are therefore often more predictive of behaviour when bias may be socially undesirable. Explicit attitudes, on the other hand, are more deliberative, measure controlled responses influenced by social desirability bias, and can be changed quickly. Explicit responses are sensitive to social desirability, in that people may inhibit their automatic thoughts and replace them with more socially accepted thoughts. Explicit beliefs may therefore reflect individual's knowledge or awareness of common stereotypes, instead of their personal endorsement of the stereotype. In contrast, implicit measures assess unconscious and automatic responses that may reflect the personal acceptance of the stereotype (Cvencek, Meltzoff, & Greenwald, 2011; Devine, 1989). Importantly, this is not to say that implicit measures are accurate or real and explicit measures are not. Rather, it indicates that explicit and implicit measures are both important to consider when studying stereotypical beliefs (Nosek, Hawkins, & Frazier, 2011). Given these differences between implicit and explicit beliefs and measures, there exists a possibility for a mismatch between these two, with important implications for gender outcomes. As such, any implicit–explicit discrepancy (IED) can be an indication of attitude change in progress at a given point in time (Perugini, 2005).

Various studies indicate that gender attitudes (implicit and/or explicit) are associated with a number of key gender outcomes in and outside the home, including entry into marriage and childbearing; distribution of household labour; labour force participation and earnings; female political participation and education (Blair & Lichter, 1991; Cunningham, Beutel, Barber, & Thornton, 2005; Ortiz Rodríguez & Pillai, 2019; Paxton & Kunovich, 2003). For example, Kramer, Heyligers, and Könings (2021) and Salles et al. (2019) find evidence of implicit gender-career bias (i.e. in favour of men working vs women working) in the healthcare profession, while Alzahrani et al. (2022) find that both explicit and implicit gender bias in favour of men as leaders is present among primary healthcare professionals. Moreover, studies show that men and women consistently hire male candidates over females, even when applications are identical, due to unconscious implicit biases of gender assigned roles in society (Correll, Benard, & Paik, 2007). In addition, studies on the topic of IED examine the effects on behavioural outcomes, such as language attitude change, childhood depressive symptoms, eating disorders, self-esteem, leadership roles and performance in science, technology, engineering and mathematics (STEM) subjects (Alzahrani et al., 2022; Cvencek et al., 2020; Goldstein et al., 2014; Jordan, 2012; McKenzie & Carrie, 2018). However, while several of these studies tend to focus on the effects or impacts of implicit and/or explicit gender biases in career choices, typically in male-dominated work fields, or in STEM subject choices, very few studies attempt to identify the factors that influence implicit and explicit biases.

We therefore position our study within this gap in the literature by investigating the determinants of implicit and explicit gender biases, particularly the factors associated with IED where evidence is even more scant. We explore whether the biases are related to gender or parental roles in the household. We start by investigating predictors of explicit and implicit attitudes separately. Next, after establishing evidence of a discrepancy between implicit and explicit gender attitudes (i.e. the IED), we investigate the predictors of this IED, including demographic factors as well as the roles of parents in the household in which respondents grew up. To do this, we conduct a study on a sample of 402 respondents in South Africa, where we use an explicit measure (i.e. a self-report questionnaire based on questions similar to the World Value Survey (WVS)), and an implicit measure (i.e. an attitude assessment tool based on the Harvard Gender-Career Implicit Association Test (IAT)) to investigate implicit biases around gender and career.<sup>1</sup>

The historical institutions and current economic climate in South Africa provide us with an interesting testing ground. South African women continue to be disadvantaged and lag behind men on critical measures of welfare such as employment and political

<sup>&</sup>lt;sup>1</sup>In attempting to understand and detect implicit bias, this concept has been operationalised as a cognitive preference for one category over another, such as taking longer to associate female terms with managerial terms on a computerized task, and has been shown to impact organizational decision making regarding women (Rudman & Kilianski, 2000).

participation.<sup>2</sup> For example, women are more likely to be unemployed or engaged in lower-paid jobs than men. Recent research suggests a persistent significant gender wage gap in South Africa (Pleace, Clance, & Nicholls, 2023). Women also have higher poverty rates than their male peers (Gradin, 2021). In addition, South Africa has one of the highest rates of Intimate Partner Violence (IPV) in the world, influenced in part by certain social norms which tend to tolerate violence against women (Thaler, 2012).

The stereotypes around women as homemakers and men as breadwinners are largely based on the different social roles that men and women perform. As such, stereotypes adversely affect societies because they cultivate and perpetuate attitudes and behaviours that exclude people based on their genetic differences, delaying social change towards inclusion and equality. We are therefore concerned with the factors that might influence differences between implicit and explicit gender attitudes because such discrepancies can have profound consequences, contributing, for example, to discrimination and delayed gender transformation in economic and political sectors (Jordan, 2012). It is important to understand both implicit and explicit biases in order to reduce social inequality and discrimination, particularly as implicit biases are persistent and slow-changing over time, even as work environments today become increasingly dominated by women. People are unaware of their implicit biases, which can also be in contrast to their explicit attitudes, and may affect their actions and decisions in a negative way (Kramer et al., 2021). On the other hand, explicit biases, which can change at a faster rate than implicit attitudes, may provide us with an entry point for effective transformative policies towards encouraging gender equality.

Key findings from this study show a negative correlation between implicit and explicit attitudes, indicating the presence of implicit-explicit discrepancy (IED) in the sample of respondents. We find that the main factor that is consistent in explaining the IED is gender. We find that women are more likely than men to exhibit a discrepancy with more progressive explicit gender attitudes than their implicit views, likely contributing to the persistence of gender inequality. If implicit and explicit gender attitudes correlate, then what an individual thinks, believes, or feels about gender equality matches their expressions and actions. However, if there is any discrepancy between implicit and explicit

<sup>&</sup>lt;sup>2</sup>Department of Women, Draft analysis report on existing country gender indicators, 2018.

gender attitudes, then the individual has divergent views with regards to gender equality. This discrepancy can take two forms: first, the individual is openly vocal and supports gender equality but internally does not support it; alternatively, respondents express more traditional views, yet their internal attitudes are pro-gender equality. Particularly where implicit attitudes are less progressive than explicit ones, this likely contributes to the persistence of gender inequality, despite explicitly supported measures to address this.

# 2 Study Design

The study consists of two main parts, an attitude assessment tool survey to measure explicit attitudes, and an Implicit Association Test (IAT) to measure implicit attitudes.

### 2.1 The Survey

A secure, web-based survey was administered to a sample of 402 respondents in South Africa, where gender and race distributions were aligned with the demographic composition of the country. The survey included questions on demographics (gender, age, race and income), family characteristics (upbringing and parental roles) and gender attitudes. The research was approved by University of Pretoria Economic and Management Sciences Ethics committee (EMS 176/22).

To measure explicit attitudes about gender, we drew from the World Value Survey (WVS) database and asked questions concerning gender identities, women's role as mothers and workers, beliefs about gender ordering and preferences in the labour market, education and political participation. Some of the gender attitude questions in the WVS that we include to capture these explicit attitudes are: (1) When jobs are scarce men should have more right to a job than women; (2) Being a housewife is just as fulfilling as working for pay; (3) A pre-school child suffers with a working mother; (4) University is more important for a boy than a girl; (5) Men should have the final say in all family decisions.<sup>3</sup> We create an explicit index using 12 gender attitude questions, where responses are coded from 1 to 5, with higher values indicating more progressive attitudes. This gives

<sup>&</sup>lt;sup>3</sup>Detailed survey questions available on request from the authors.

us an explicit index with possible values ranging from 12 (least progressive attitudes) to 60 (most progressive attitudes).

After completing the survey, respondents were routed to the Implicit Association Test (IAT), where a unique identifier was passed through to the IAT platform to allow us to associate individuals' responses to the survey questions with their responses to the IAT.

A concern with self-report surveys is whether they elicit socially desirable responding (SDR) where the respondent presents oneself in an excessively favourable light and downplays the negative attributes (Lanz, Thielmann, & Gerpott, 2022). For example, in our study, individuals may distort their self-presentation in a positive way so that they appear as someone who upholds gender equality. SDR can bias the survey responses and attenuate the validity of the findings. However, our concern is mitigated by evidence surrounding SDR. First, the context of the study matters. According to Tracey (2015), SDR is more problematic in surveys when there are high stakes testing where the individual is identified and there are gains and/or costs associated with the study. In such an instance, the individual is more likely to want to portray a positive self-image and reputation or to impress someone. In our survey, the stakes are low, anonymity of responses is strongly emphasised at the beginning of the survey, and there are no gains or costs associated with completion or non-completion of the survey. As such, there are no incentives to try impress someone or to exaggerate responses. Second, evidence is emerging that SDR scales may not be effective for correction of scores because SDR presence and amount differs across individuals and contexts, and therefore scholars are being advised against putting too much emphasis on SDR scales' validity as they neither clearly measure bias nor substantive traits (Lanz et al., 2022; Tracey, 2015). In addition, evidence also shows that there is no advantage gained with regards to SDR between online, offline and paper-and-pencil surveys (Dodou & de Winter, 2014; Gnambs & Kaspar, 2017). Lastly, we are interested in whether the implicit gender attitudes show differences (including respondents' true biases) relative to their self-reported responses.

### 2.2 The Gender-Career Implicit Association Test (IAT)

To measure implicit attitudes, we applied a commonly used computer-based Gender-Career Implicit Association Test (A. G. Greenwald, McGhee, & Schwartz, 1998), administered by Harvard University<sup>4</sup>. The IAT to date is still considered an effective tool in assessing implicit biases across different dimensions such as gender or race (A. Greenwald et al., 2022).

In taking the test, male or female names and words associated with career or family appear in the middle of the computer screen. As each word (name or career or family noun) appears, the respondent must click the side of the screen to which the word belongs, based on varying in-program instructions. The program compares the average time taken where respondents are told to group male names and career-based nouns together on one side of the screen (with female names and family-based nouns on the other side) in one task; and the time taken where respondents are instructed to group female names and career-based nouns together on one side, and male names and family-based nouns on the other side in another task. The response time difference between these tasks is taken as indicative of whether respondents associate female names more strongly or automatically with family-related concepts and male names more strongly or automatically with career related concepts.<sup>5</sup> Faster response times where male names are associated with career than where female names are associated with career are taken as indicative of stronger associations between male and career (and female with family). The test is taken in 7 rounds, some of which are practice rounds familiarising respondents with the categories.

Figure 1 shows the scenario where male names and career nouns are grouped together on one side of the screen, with female names and family nouns on the other side.

<sup>&</sup>lt;sup>4</sup>www.https://implicit.harvard.edu/implicit/

<sup>&</sup>lt;sup>5</sup>A measure referred to as d-score is generated from the response time data. The d-score is a variation on Cohen's d and is calculated by taking the difference in the mean response times for any 2 sequences divided by the pooled standard deviation.

Figure 1: Gender IAT with male-career and female-family associations



Figure 2 shows the second scenario, where male names are grouped with family nouns, while female names are grouped with career nouns.





The basic assumption of the IAT is that if a mental task is easy to carry out, then one's responses would be faster and the likelihood of making mistakes lower. If the male-career (female-family) matching takes a shorter time than male-family (female-career), then the individual is said to have a strong association for men with careers and women with families. The reverse will be suggested if the male-career (female-family) matching takes longer than male-family (female-career) matching takes longer. We use the d-score calculated from the Gender IAT as the implicit index, with higher values indicating stronger association between female-career and male-family (i.e. progressive gender attitudes).

## 3 Analysis

In the following section, we begin by providing some descriptive statistics of the sample. We examine whether the explicit and implicit indices are correlated to investigate the presence of IED discrepancy. We then consider the factors that predict the implicit and explicit attitudes separately, before concluding the analysis by examining the factors that contribute to the discrepancy between the two types of attitudes (i.e., the IED).

#### 3.1 Descriptive statistics

We provide a brief overview of the sample distribution across gender and race in Table 1. The table shows that the race and gender splits in our population are similar to the national population statistics at the time of conducting the survey.<sup>6</sup> Since the IAT requires an online response, our sample is less representative in other areas: as is typical of online samples, higher income, urban and highly educated respondents are overrepresented relative to national population statistics.

Table 2 shows the descriptive statistics by gender. Recall that the implicit and explicit attitudes indices are coded such that higher values indicate more progressive gender views. The statistics show that in relation to the sample means and to the men's means, women's explicit attitudes tend towards the upper end of the index (i.e. they associate with progressive gender roles), whereas their implicit attitudes tend towards the lower end of the implicit index (i.e. stronger association with traditional gender roles). From these numbers, there appears to be a story emerging on diverging implicit and explicit attitudes.

<sup>&</sup>lt;sup>6</sup>For example, the proportion of females in the country was 51.1% in 2022, whilst the proportion of females in our sample was 51.49. We compare the statistical difference in the sample and population means across gender and race using a proportions test to check if this difference is significant. We find that there is no statistically significant difference in the proportions for gender and all 4 races included in the sample. We can therefore conclude that our sample composition is representative of the population's composition on these dimensions.

	National		Sample	
	population 2022	%	2022	%
Gender				
Female	$30 \ 980 \ 110$	51.1	207	51.49
Male	$29 \ 624 \ 882$	48.9	195	48.51
Race				
African	49 070 809	80.9	315	78.4
Coloured	$5 \ 339 \ 919$	8.8	36	8.96
Indian	1 554 996	2.6	8	2.0
White	$4 \ 639 \ 268$	7.7	43	10.7

Table 1: Comparison of sample to population statistics by gender and race

Note: National population statistics are obtained from StatsSA (2022).

#### 3.2 Implicit-explicit discrepancy (IED)

To determine whether the implicit and explicit attitudes are diverging in the sample of respondents, we observe their distributions. Figure 3 indicates that the attitudes do not follow a similar distribution, suggesting implicit-explicit discrepancy (IED) as the attitudes do not align. The implicit index distribution (left panel) is marginally skewed to the left of the mean, suggesting that respondents are relatively in favour of traditional gender roles (i.e. men-career/women-family). On the other hand, the explicit index distribution (right panel) is skewed to the right of the mean, suggesting that respondents self-reported progressive attitudes in favour of gender equality (i.e. men-family/women-career). The differences in the distributions highlight how respondents consciously endorse egalitarian views, yet their automatic responses still reflect traditional gender views.

Columns by: Gender	Male	Female	Total
n (%)	195 (48.5)	207 (51.5)	402 (100.0)
	***	***	***
Implicit Index Score, mean (sd)	-0.220(0.389)	-0.306(0.368)	-0.264(0.380)
Explicit Index Score, mean (sd)	46.020(5.627)	50.493 (5.380)	48.323(5.933)
Age, mean (sd)	35.559(12.981)	34.850(11.948)	35.194(12.450)
***	***	***	***
Categorical			
Income, n (%)			
R0 – R2499 per month, n $(\%)$	13 (6.7)	9(4.3)	22(5.5)
R2500 - R4999 per month, n $(\%)$	14(7.2)	9(4.3)	23(5.7)
R 5 000 - R 9999 per month, n $(\%)$	18 (9.2)	22(10.6)	40 (10.0)
R10 $00-R20$ 000 per month, n $(\%)$	50(25.6)	52(24.2)	102 (22.9)
R20 001 – R30 000 per month, n $(\%)$	42(21.5)	50(24.4)	92(23.1)
R30 001 – R60 000 per month, n $(\%)$	38(19.5)	45(21.7)	83 (20.6)
R60 001 – R120 000 per month, n $(\%)$	12(6.2)	16(7.7)	28 (7.0)
R120 001+ per month, n $(\%)$	8 (4.1)	4(1.9)	12(3.0)
Race, n (%)	***	***	***
Black African, n (%)	149(76.4)	166 (80.2)	315(78.4)
Coloured, n (%)	21 (10.8)	15(7.2)	36(9.0)
Indian/Asian, n (%)	3(1.5)	5(2.4)	8 (2.0)
White, n (%)	22(11.3)	21(10.1)	43(10.7)
Raised by, n (%)	***	***	***
Both mother/female guardian and father/male guardian, n $(\%)$	111 (56.92)	$127 \ (61.35)$	238 (59.20)
Only a mother/female guardian, n (%)	74(37.95)	78 (37.68)	152 (37.81)
Only a father/male guardian, n (%)	4(2.05)	2(0.97)	6(1.49)
Neither mother/female guardian and father/male guardian, n $(\%)$	6(3.08)	0 (0.0)	6(1.49)
Better off when mother works, $n\ (\%)$	***	***	***
Did not work, n (%)	44 (22.6)	56(27.1)	100(24.9)
No, n (%)	61 (31.3)	56(27.1)	117(29.1)
Yes, n (%)	90(46.2)	95~(45.9)	185 (46.0)
Father supports mother working, $n$ (%)	***	***	***
No father or mother or both, n $(\%)$	57(29.2)	73 (35.3)	130 (32.3)
Strongly Disagree, n (%)	60 (30.8)	42 (20.3)	102 (25.4)
Disagree, n (%)	13 (6.7)	19 (9.2)	32 (8.0)
Neither, n (%)	11 (5.6)	18 (8.7)	29(7.2)
Agree, n (%)	41 (21.0)	42 (20.3)	83~(20.6)
Strongly Agree, n (%)	13(6.7)	13 (6.3)	26(6.5)

# Table 2: Descriptive Statistics by gender



Figure 3: Implicit and Explicit attitudes

Note: The dashed lines indicate the means of the respective distributions.

We further unpack this finding of divergence between implicit and explicit attitudes by gender to establish where the differences lie. We notice an interesting trend in Figure 4. We observe in the explicit gender attitudes' distribution (right panel) that women self-report rather strongly in favour of progressive gender attitudes in relation to men's explicit attitudes. The women's distribution is skewed further to the right of their mean than the men. However, at the same time women's implicit gender attitudes' distribution (left panel) is skewed further to the left of their mean than men, suggesting women favour traditional gender roles where men work and women take care of the family in relation to men's implicit views.



Figure 4: Implicit and Explicit attitudes between gender

Note: The dashed lines indicate the means of the respective distributions.

We also check the IED within each gender and the distributions in Figure 5 corroborate the findings in Figure 4. Women exhibit a stronger discrepancy between their explicit and implicit attitudes compared to men. Women (right panel) are self-reporting more progressive responses regarding gender equality, perhaps reflecting what they consider more socially acceptable. However, unconsciously they are harbouring more traditional gender attitudes in favour of men-career/women-family. It is possible, then, that their actions are not aligning with their beliefs on gender roles. This is concerning because implicit biases are slow-changing (Muschalik et al., 2019) and as such women may be delaying their own progressive transformation in society. Furthermore, explicit biases can easily change to match implicit biases.

Men (left panel), on the other hand, appear to exhibit a smaller IED, suggesting that their implicit and explicit attitudes are relatively similar. Their implicit attitudes indicate relatively less association with traditional gender roles than is observed for women in the sample. However, men's self-reported attitudes (explicit attitudes) show a flatter distribution and, if anything, are less progressive than their implicit attitudes. To the extent that these implicit and explicit attitudes do differ, this finding may highlight the complex social dynamics that men face in 'keeping up appearances' set by society's expectations to be the provider. As such, men may not openly show their true implicit less traditional attitudes about gender roles.



Figure 5: IED within gender

Note: For comparison purposes in these graphs, we standardised the indices by subtracting their means and dividing by the standard deviations.

## 3.3 Results

Having established that there is evidence of divergent implicit and explicit gender attitudes within the sample, we examine the possible factors that are correlated with implicit and explicit gender attitudes separately, and then determine what contributes to the implicitexplicit discrepancy. In the first analysis, we use ordinary least squares (OLS) to estimate the following model:

(1) 
$$Y_j^{i,e} = \beta \mathbf{X}_j + \mu_j$$

where  $Y_j^{i,e}$  is the outcome for respondent j, with superscripts i and e representing implicit and explicit index attitudes, respectively. The vector  $X_j$  includes a set of explanatory variables along with a constant term. The demographics include gender, race, age and income levels of the respondents. We also include some parental influence characteristics, such as whether the respondent was raised by a mother, father, both or neither; whether the respondent self reports having been better off with their mother working (among those who reported their mothers having worked during their childhood); and whether the father supported the mother working. Evidence by Vollebergh, Iedema, and Raaijmakers (2001), Gähler and Oláh (2020), Patel, Santhya1, and Haberland (2021), Kågesten et al. (2016) and Streatfield et al. (2023) suggests that parents play an important role in shaping and reinforcing their children's beliefs on various socio-cultural issues, including those pertaining to gender roles.

In this and the following analyses, some respondents who could not answer the questions pertaining to parental influence due to their circumstances (i.e. single parent, no parents or mother did not work) fall out of the estimations.<sup>7</sup> We report the OLS results in Table 3. We find that being female and affirming being better off when the mother works are statistically significant and positively associated with progressive explicit attitudes. In addition, we observe that respondents who agree with the statement that their father supported their mother working self-report in favour of gender equality more than respondents in other categories. As noted in Figures 4 and 5, being female is also negatively associated with progressive implicit attitudes. These findings associated with gender specifically are in line with other studies. For example, Kramer et al. (2021) finds that among a sample of 403 participants in the Netherlands, women held stronger implicit gender-career bias (i.e. in favour of men) than men in postgraduate medical training. Similarly, Salles et al. (2019) reports that women health care professionals held stronger gender-career bias than men and that in general, respondents had a tendency to associate men with career and

 $<sup>^{7}</sup>$ We conduct a robustness check by including the missing respondents and find the results remain consistent. Results are available in the Appendix.

women with family. Moreover, Alzahrani et al. (2022) finds that in Saudi Arabia, implicit gender bias is in favour of male leaders over female leaders across both men and women in primary healthcare professions. We discuss these findings in further detail when we analyse the factors contributing to the divergent implicit and explicit gender attitudes.

	(1)	(2)	(3)	(4)
	Implicit	Implicit	Explicit	Explicit
Gender (Reference: Male)				
Female	-0.094**	-0.081*	4.416***	4.659***
	(0.038)	(0.047)	(0.547)	(0.659)
Race (Reference: Other)				
Black	$0.128^{**}$	0.105	1.272	$2.037^{*}$
	(0.055)	(0.078)	(0.875)	(1.163)
White	0.081	0.055	-0.807	0.266
	(0.088)	(0.109)	(1.249)	(1.651)
Income group (Reference: Low income)				
Middle income	0.017	0.047	$1.360^{**}$	0.929
	(0.040)	(0.051)	(0.591)	(0.725)
High income	-0.069	0.008	0.452	-0.807
	(0.060)	(0.072)	(0.904)	(1.068)
Age group (Reference: Young)				
Middle-aged	-0.065	-0.021	$1.411^{*}$	1.020
	(0.061)	(0.076)	(0.843)	(1.082)
Old-aged	0.021	0.042	0.062	-0.105
	(0.042)	(0.052)	(0.595)	(0.703)
Raised by (Reference: Both parents)				
Mother only		-0.033		0.989
		(0.045)		(0.700)
Better off when mother works (Reference: No)				
Yes		0.035		2.088***
		(0.048)		(0.682)
Father supports mother working (Reference: Disagree)				
Agree		-0.037		$1.542^{**}$
		(0.051)		(0.730)
Neither agree or disagree		0.030		-1.758*
		(0.078)		(1.019)
Observations	402	272	402	272
R-squared	0.038	0.031	0.166	0.238

### Table 3: Predictors of implicit and explicit attitudes

Note: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Race = other (combines Coloured and Indian/Asian). Age = young (below 30 years old), middle-aged (between 30 and 49 years old), old-aged (above 49 years old). Income = low (below R20,000), middle (between R20,000 and R60,000), high (above R60,000). In column 2 & 4, we do not include raised by father only and raised by neither parents due to low number of observations.

To explore the factors that contribute to the gaps between implicit and explicit attitudes (i.e. the IED), we create two binary outcomes that capture respondents with diverging attitudes<sup>8</sup>. One outcome  $(att_{i(prog),e(trad)})$  captures respondents whose implicit attitudes associate with progressive gender roles (i.e., male-family / female-career), but who self-report explicit attitudes that are not in favour of gender equality. We are using "trad" abbreviation to indicate traditional, and the "prog" abbreviation to indicate progressive. In this case the binary variable is coded as one if the implicit index is greater than zero and the explicit index is less than or equal to 48, and zero otherwise. The implicit index has a zero point implying a lack of bias in either direction (male-career and femalefamily or male-family and female-career). Since the explicit index does not have a specific zero point, we use the mean of the explicit index. Above the mean captures respondents who self-report in favour of gender equality, while below the mean captures respondents who self-report less favourably for gender equality. The second outcome  $(att_{i(trad),e(proq)})$ captures respondents who self-report explicit attitudes in favour of gender equality, but whose implicit attitudes associate with less progressive (or more traditional) gender roles (i.e., male-career / female-family). In this case the binary variable is coded as one if implicit attitudes are less than or equal to zero and explicit attitudes are greater than 48, and zero otherwise. We specify the following two probit models with the two binary outcomes and the same predictors from the initial model:

(2) 
$$att_{i(prog),e(trad),j} = \mathbf{X}_j \alpha + \varphi_j$$

(3) 
$$att_{i(trad),e(prog),j} = \mathbf{X}_j \gamma + \epsilon_j$$

The results in Table 4, where the IED dependent variable is  $att_{i(prog),e(trad)}$ , captures respondents who harbour progressive implicit gender attitudes in favour of men-family / woman-career but at the same time self-report traditional gender roles, such as agreeing that a child suffers when the mother works, etc. We find that respondents that are women and those who are raised by mothers only are less likely to fall into the IED category of combining progressive implicit views about gender with traditional explicit views in

<sup>&</sup>lt;sup>8</sup>Since we are interested in understanding the factors that contribute to the IED in this study, we do not examine outcomes for implicit and explicit attitudes that align perfectly

relation to their respective reference groups.

Dependent Variable: $att_{i(prog),e(trad)}$	(1)	(2)	(3)	(4)
Gender (Reference: Male)				
Female	-0.128***	-0.129***	-0.106***	-0.123***
	(0.032)	(0.032)	(0.036)	(0.037)
Race (Reference: Other)				
Black	0.055	0.058	0.041	0.028
	(0.038)	(0.037)	(0.047)	(0.053)
White	0.059	0.035	0.023	-0.026
	(0.066)	(0.059)	(0.073)	(0.061)
Income group (Reference: Low income)				
Middle income	-0.028	-0.023	-0.021	0.007
	(0.033)	(0.033)	(0.039)	(0.037)
High income	-0.067	-0.068*	-0.045	-0.012
	(0.041)	(0.040)	(0.053)	(0.054)
Age group (Reference: Young)				
Middle-aged	-0.039	-0.040	-0.020	-0.002
	(0.043)	(0.042)	(0.052)	(0.058)
Old-aged	-0.004	0.005	0.013	-0.003
	(0.035)	(0.035)	(0.040)	(0.038)
Raised by (Reference: Both parents)				
Mother only		-0.072**	-0.056	-0.078**
		(0.029)	(0.035)	(0.032)
Better off when mother works (Reference: No)				
Yes			0.038	0.012
			(0.035)	(0.034)
Father supports mother working (Reference: Disagree)				
Agree				-0.028
				(0.035)
Neither agree or disagree				-0.010
				(0.069)
Observations	402	390	302	272
Pseudo R-sq	0.069	0.090	0.057	0.085
LogLik	-136.901	-130.521	-104.003	-88.246

Table 4: Predictors of discrepancy: implicit attitudes in favour of genderequality while explicit attitudes are more traditional

Note: Marginal effects reported. Robust standard errors in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. In column 2, we do not include raised by father only and raised by neither parents due to low number of observations. In Column 3, we lose 100 respondents who either have no mother or mother does not work. In Column 4, we lose 130 respondents who either have no parents or mother does not work. Race = other (combines Coloured and Indian/Asian). Age = young (below 30 years old), middle-aged (between 30 and 49 years old), old-aged (above 49 years old). Income = low (below R20,000), middle (between R20,000 and R60,000), high (above R60,000).

Table 5 considers predictors of the combination of progressive explicit attitudes with traditional implicit biases  $att_{i(trad),e(prog)}$ . In this case, the dependent variable captures respondents who harbour traditional implicit attitudes in favour of men-career / woman-family while at the same time self-reporting progressive gender roles, such as disagreeing that a child suffers when the mother works, etc. This discrepancy highlights respondents who espouse more socially acceptable progressive views on gender equality that might not align with their subconscious biases. We note that women, those who agree that they are better off when the mother works and those that agree that their fathers support their mothers working are more likely to combine explicit gender equal attitudes with traditional implicit views than their respective reference groups. The main takeaway from Tables 3-5 is the consistency of gender across the results. Women are falling in the categories where their implicit gender attitudes are relatively traditional while they self-report explicit progressive gender attitudes.

Dependent Variable: $att_{i(trad),e(prog)}$	(1)	(2)	(3)	(4)
Gender (Reference: Male)				
Female	0.318***	0.319***	0.313***	0.359***
	(0.046)	(0.047)	(0.054)	(0.057)
Race (Reference: Other)				
Black	0.026	0.041	0.013	0.024
	(0.083)	(0.085)	(0.099)	(0.110)
White	-0.132	-0.104	-0.065	0.000
	(0.105)	(0.108)	(0.129)	(0.138)
Income group (Reference: Low income)				
Middle income	0.084	$0.094^{*}$	0.057	0.058
	(0.053)	(0.054)	(0.063)	(0.070)
High income	0.056	0.057	0.002	-0.042
	(0.088)	(0.089)	(0.101)	(0.098)
Age group (Reference: Young)				
Middle-aged	0.103	0.076	0.111	0.116
	(0.082)	(0.084)	(0.097)	(0.103)
Old-aged	0.026	0.025	-0.003	0.025
	(0.055)	(0.057)	(0.064)	(0.070)
Raised by (Reference: Both parents)				
Mother only		0.001	-0.007	0.078
		(0.054)	(0.060)	(0.071)
Better off when mother works (Reference: No)				
Yes			$0.104^{*}$	0.083
			(0.060)	(0.066)
Father supports mother working (Reference: Disagree)				
Agree				$0.181^{***}$
				(0.068)
Neither agree or disagree				-0.071
				(0.099)
Observations	402	390	302	272
Pseudo R-sq	0.091	0.092	0.091	0.132
LogLik	-243.915	-237.468	-184.846	-160.209

Table 5: Predictors of discrepancy: explicit attitudes in favour of gender equal-ity while implicit attitudes are more traditional

Note: Marginal effects reported. Robust standard errors in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. In column 2, we do not include raised by father only and raised by neither parents due to low number of observations. In Column 3, we lose 100 respondents who either have no mother or mother does not work. In Column 4, we lose 130 respondents who either have no parents or mother does not work. Race = other (combines Coloured and Indian/Asian). Age = young (below 30 years old), middle-aged (between 30 and 49 years old), old-aged (above 49 years old). Income = low (below R20,000), middle (between R20,000 and R60,000), high (above R60,000).

## 4 Discussion

The findings indicate that women's implicit attitudes associate on average with traditional views of men working and women taking care of family than men's implicit attitudes. These findings are in line with existing evidence that find that women in general tend to have stronger male-career biases than their counterparts (Kramer et al., 2021; Montalvo, Alimonti, Reiland, & Vernos, 2020; Salles et al., 2019). Yet at the same time, it appears that women explicitly self-report progressive gender roles than men do. These findings are mainly consistent with some studies. For example, Salles et al. (2019) finds that while women hold stronger implicit gender-career biases associating men with careers and women with family, they also find that women in healthcare were less likely than men to explicitly associate men with career and women with family. Similarly, Rudman and Kilianski (2000) find that although women show less explicit prejudice than men, their implicit attitudes are similarly traditional. However, we do note that the literature is limited in this scope, suggesting that more evidence on differences between implicit and explicit gender attitudes, such as our study, require further exploration.

Our findings, surprisingly, indicate that the men's implicit attitudes in South Africa associate on average with progressive views of women-career and men-family. This is contrary to evidence from previous studies that find that men tend to exhibit implicit biases associated with men-career and women-family. For example, Montalvo et al. (2020) finds that male scientists have a high level of male-science association in an IAT study undertaken for a large sample of European researchers in biomedical research centers, while Alzahrani et al. (2022) finds that men exhibit a higher IAT mean score than women in favouring male leadership roles. On the other hand, the men in our sample self-report on traditional views which supports findings by Vander Heyden, van Atteveldt, Huizinga, and Jolles (2016) that boys self report more male stereotyped explicit attitudes than girls. Perhaps men holding implicit progressive views do not feel that they can explicitly express these opinions. However, we do find that the discrepancy between implicit and explicit gender attitudes is marginal for men compared to the women in our sample, suggesting that the divergence (IED) is associated with women. The findings from other demographics, such as race, income and age are not statistically significant.

When it comes to the factors that capture parental influence, we find that respondents

who agree that their fathers supported their mothers working self-report progressive gender roles in relation to respondents that disagree with this statement. This finding is in line with Gähler and Oláh (2020) who finds that in settings where fathers and mothers equally share housework and the mothers are employed, then traditional gender role attitudes are minimised as children are less likely to learn that roles are gendered and thus may adopt less rigid traditional gender role attitudes. According to Patel et al. (2021), gender attitudes for boys and girls are influenced by family, peer, societal levels and community engagement.

We also find that respondents who agree that they were better off when their mother worked self-report progressive gender roles. Similar to the previous findings on parental influence, children learn gender norms from observing and modelling their parents' behaviours (Patel et al., 2021; Streatfield et al., 2023).

Respondents that were raised by a mother only, relative to being raised by both parents, are less likely to fall into the IED category of progressive implicit but traditional explicit views. This is an interesting finding as one might assume that being raised by a single mother may also elicit more progressive implicit views on gender roles. However, evidence in the literature speaks to the different roles that mothers and fathers can play in encouraging gender-typed behaviour in their children (Vollebergh et al., 2001). According to Denzin (1977), one of the building blocks of the socialisation theory is that attitudes pertaining to socio-cultural issues such as gender are formed and developed during childhood and adolescence. Since mothers undertake most of the housework and childcare when the children are younger, young children can be disproportionately exposed to role modelling from their mothers, which may help to explain the extent to which they adopt or reject parental beliefs and attitudes towards gender roles in adulthood (Perales, Hoffmann, King, Vidal, & Baxter, 2020). In this case, children observing mothers undertaking unpaid care work, whether the mother is single or married, may implicitly believe that housework and childcare is a woman's role.

## 5 Conclusion

We conduct a pilot study on a sample of residents of South Africa to investigate the factors that contribute to implicit and explicit gender biases, and to determine whether there is a discrepancy between these implicit and explicit attitudes. We find a negative correlation between implicit and explicit attitudes, indicating evidence of implicit-explicit discrepancy (IED). Moreover, we find that gender is a consistent predictor contributing to the IED, depending on whether respondents have progressive implicit attitudes in relation to their explicit attitudes or vice versa.

Women are more likely than men to show a discrepancy between their explicit and implicit attitudes. They self-report progressive gender equality attitudes, but their implicit views highlight associations with traditional gender roles (i.e. men-career/women-family). The evidence suggests that even the increase of women entering the labour market has not yet reduced implicit gender-career bias in today's generation of career women. Men, on the other hand, exhibit a smaller discrepancy between their implicit and explicit attitudes. Where discrepancies exist for men, these are typically in the opposite direction to those seen for women, with implicit views associated with progressive gender roles, while explicit views are traditional. These findings raise two interesting questions for future exploration: 1. Why are women's implicit beliefs on gender roles taking longer to update and converge with current awareness/knowledge on progressive gender roles? 2. Why are men not openly self-reporting their implicit progressive gender beliefs?

We acknowledge the limitations of our pilot study, that the sample size is small and that certain demographic groups are less well-represented. The cross-sectional nature of our data means that we cannot make causal claims in our interpretations of the findings. Further, both our implicit and explicit measures are based on limited questions/tests. We note that altering attitudes might be difficult because they tend to be deep-rooted and are often entrenched in one's traditional beliefs. However, we believe that the findings from this study contribute to the ongoing discussion surrounding delays in achieving gender equality.

The findings from this study will contribute to a better understanding of some possible mechanisms that might underlie the transformative processes for gender equality in South Africa. In the past two decades, the government in South Africa has dedicated resources to putting in place various gender transformative policies such as the Gender Responsive Planning, Budgeting, Monitoring, Evaluation and Auditing Framework (GRPBMEAF)<sup>9</sup> and the Country Gender Indicator Framework (CGIF),<sup>10</sup> but the gains to date have been marginal. We believe that part of the problem is the impact of gender IED on behavioural change. Individuals may read and understand policies drafted and mandated for gender equality in various spheres of everyday life, but if their internal beliefs do not match the goals in these policies, it is highly unlikely that they will embrace and adopt such policies. The result will be slight to absent transformative behavioural changes in support of gender equality.

The findings can inform policymakers of the existence and role of IED in the persistence of gender inequality in South Africa to assist in the design and implementation of policies targeting gender transformation in the country. For an equal society to exist, it entails both men and women holding and acting on similar progressive gender attitudes.

# 6 Data Availability

Data will be made available on request from the authors.

 $<sup>^{9}</sup> http://www.women.gov.za/images/GRPB-framework-250119A.pdf.$ 

<sup>&</sup>lt;sup>10</sup>https://twendembele.org/reports/country-gender-indicator-framework/.

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# 7 Appendix

The results in Table A1 include the missing respondents that could not respond to questions related to parental influence. They are coded as 0 = missing depending on situation, i.e., mother does not work or no parents. The results are consistent with previous findings.

	(1)	(2)	(3)	(4)
	Implicit	Explicit	$att_{i(prog),e(trad)}$	$att_{i(trad),e(prog)}$
Gender (Reference: Male)				
Female	-0.091**	4.546***	-0.131***	0.328***
	(0.038)	(0.555)	(0.032)	(0.047)
Race (Reference: Other)				
Black	$0.136^{**}$	$1.693^{*}$	$0.061^{*}$	0.068
	(0.056)	(0.887)	(0.033)	(0.083)
White	0.079	-0.390	0.045	-0.106
	(0.088)	(1.280)	(0.053)	(0.101)
Income group (Reference: Low income)				
Middle income	0.012	$1.100^{*}$	-0.029	0.067
	(0.041)	(0.594)	(0.032)	(0.055)
High income	-0.060	0.104	-0.060	0.001
	(0.063)	(0.866)	(0.041)	(0.087)
Age group (Reference: Young)				
Middle-aged	-0.070	1.308	-0.033	0.104
	(0.062)	(0.846)	(0.041)	(0.085)
Old-aged		0.024	-0.201	0.004
0.008				
	(0.043)	(0.594)	(0.034)	(0.057)
Raised by (Reference: Both parents)				
Neither	0.143	0.932	-0.026	-0.035
	(0.172)	(2.108)	(0.126)	(0.231)
Mother only	-0.061	0.732	-0.099***	0.059
	(0.041)	(0.613)	(0.030)	(0.061)
Father only	0.080	4.110		-0.131
	(0.151)	(2.831)		(0.203)
Better off when mother works				
(Ref: Not work/no mother)				
Yes	$0.145^{*}$	1.317	0.111**	-0.122
	(0.087)	(1.374)	(0.047)	(0.129)
No	0.100	-0.459	0.064	-0.208
	(0.089)	(1.454)	(0.040)	(0.129)
Father supports mother working (Reference: No parents/not work)				
Agree	-0.122	1.772	-0.154**	$0.328^{***}$
	(0.081)	(1.331)	(0.078)	(0.109)
Disagee	-0.090	0.299	-0.136*	0.147
	(0.078)	(1.298)	(0.079)	(0.106)
Neither	-0.054	-1.337	-0.140	0.073
	(0.102)	(1.497)	(0.093)	(0.124)
Observations	402	402	396	402

### Table 6: Estimations including the missing respondents

Note: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In Column 3 there were not enough observations for those with progressive implicit attitudes but traditional explicit attitudes who were raised by father only. Race = other (combines Coloured and Indian/Asian). Age = young (below 30 years old), middle-aged (between 30 and 49 years old), old-aged (above 49 years old). Income = low (below R20,000), middle (between R20,000 and R60,000), high (above R60,000).