

A measure of positive and negative perception of migration: Development and psychometric properties of the *Positive and Negative Perception of Immigrants Scale* (PANPIS)

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Abstract

This paper reports the validation and psychometric properties of the Positive and Negative Perception of Immigrants Scale (PANPIS)—a new measure to assess positive and negative attitude towards immigrants. Across two studies ($N = 956$), the psychometric evidence of the PANPIS is presented. As expected, exploratory factor analysis suggested a two factors and 14-item structure, which was ratified using a confirmatory factor analysis. Corroboration of the measure's robustness was provided by a multigroup-CFA, which yielded evidence for the gender invariance of the measure (Study 1). Study 2 showed measurement invariance of the online version with respect to the paper-and-pencil version. Reliability, discriminant, and criterion validities were examined across Studies 1 and 2 showing satisfactory results for both paper-and-pencil and online versions, respectively. These results suggest that the PANPIS is a psychometrically sound measure having the distinctive characteristic to simultaneously investigate

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prejudice by capturing both positive and negative attitudes towards immigrants.

INTRODUCTION

Our societies are worldwide facing a multiplicity of circumstances through which many people are forced or choose to leave their countries of origin looking for a better future elsewhere (Ceobanu & Escandell, 2010). People are forced to flee wars or persecutions (i.e., refugees and asylum seekers), while others may choose to leave for economic reasons (i.e., economic migrants). Regardless of the actual reason and the related typology of migrants, we are witnessing an exponential growth of migratory flows. Such social dynamics lead to place emphasis on the migratory phenomenon, underlining that immigration has become a matter of broad global magnitude. The United Nations High Commissioner for Refugees estimated that over 70 million people were forced to flee their land (UNHCR, 2019). Closely related to the high number of people moving from their countries of origin are the strategies that the host countries try to implement to adequately manage the migratory waves and find suitable solutions for natives and immigrants. Despite some glorious instances of integration policies, host governments have not always been able to cope with the mass arrival of immigrants (Schlueter et al., 2013). The lack of an adequate management through central governments might, in turn, support a negative perception of migratory phenomenon (Green et al., 2020). To this, it is often added the large cultural distance between natives and migrants, which causes a consistent decline in interpersonal trust (Pellegrini et al., 2021). The combination of these factors may give rise to ethnocentrism, often oriented towards nativism and nationalism, with the spread of negative attitudes towards immigrants (Ivaldi et al., 2017).

A greater number of studies focus on negative attitude towards immigration, but little attention is paid to positive aspects of this phenomenon. We can observe rare occasions in which immigrants are prospected as a cultural resource. Concerning this issue, it is the rareness and limitations of psychological measurements aimed at investigating attitudes towards immigrants with a positive frame. For example, the 15-item *Prejudice Scale* (Guimond et al., 2003) includes eight items for positive attitude towards immigrants (e.g., “It is pure nonsense to blame immigrants for the economic problems in France”) and seven items for negative attitude (e.g., “Those immigrants who do not have immigration documents should be sent back to their countries”). Also, the six-item *Anti-Immigrant Prejudice Scale* (Pehrson et al., 2009) includes two items worded in a way that agreement reflects positive attitude towards immigrants (e.g., “Immigrants are generally good for [country] economy”). However, the items are computed such that higher scores indicate a greater negative perception of immigrants. Similarly, although an agreement with two items of the five-item *Ethnic Exclusionism Scale* (Scheepers et al., 2002) reflects a positive attitude towards immigrants (e.g., “Legally established immigrants from outside the European Union should have the same social rights as the [nationality] citizens”), higher values on the scale indicate greater ethnic exclusionist reactions. Against this backdrop, some authors have deepened the analysis of the psychological dynamics connected to the development of positive attitudes towards immigrants by natives (e.g., Panno et al., 2022). For instance, Hoxhaj and Zuccotti (2021) showed that, in Europe, a higher concentration of immigrants at the local level is associated with more positive attitudes towards them. However, this effect diminished as socioeconomic conditions worsen. Consistently, Esses and colleagues (2001) have shown that zero-sum beliefs might determine positive—or negative—attitudes towards immigrants when framing attitudes in terms

of symbolic and realistic threat. Ha (2010) supported the idea that the positive effects of racial contexts are more salient in neighborhoods than in larger areas because people come into less contact with each other. Ward and Masgoret (2008) found that the adherence to a multicultural ideology and the intercultural contact produced a lower perception of the threat, thus supporting New Zealand immigration policies. Consistently, Salvati, Basili, et al. (2020) and Salvati, Carone, et al. (2020) showed that contact with immigrants was related to positive beliefs towards immigrants.

Thus, there is a strong body of literature investigating the antecedents and consequences of positive attitudes towards immigrants. However, to the best of our knowledge, a major limitation traceable in such literature concerns the way in which positive attitudes towards immigrants were assessed. Some studies on the psychometric properties of the measures of attitudes towards immigrants adopted to survey this phenomenon have shown some limits (Davidov et al., 2015). Often, these surveys employ not properly validated tools, whose psychometric properties were not tested and demonstrated. Most of them based the measurement of positive (and negative) attitudes towards immigrants on the use of a simple “*ad hoc*” aggregate of items (but see Guimond et al., 2003).

Therefore, the overarching aim of this work consists of developing a psychometrically solid, reliable, and valid measure assessing positive as well as negative attitude towards immigrants (i.e., *Positive and Negative Perception of Immigrants Scale*—PANPIS). To date, the investigation of this field has predominantly adopted a negative perspective (i.e., anti-immigration attitudes), and within this framework, some reliable tools have been developed. Varela et al. (2013) proposed a 12-item unidimensional measure of negative attitudes towards immigrants. Anderson (2018) developed a tool aimed at measuring negative attitudes towards asylum seekers. Social psychology has devoted much effort to the study of the determinants of ethnic prejudice and the development of tools to measure it. Nevertheless, to the best of our knowledge, there is scant evidence of a measure capturing both negative (e.g., the crime rate might increase through immigrants) and positive (e.g., the cultural life of the country could be enriched through immigrants) perspectives of immigration. Thus, we have an imbalance across research showing a pronounced focus on anti-immigration and an underestimated attention to pro-immigration that, instead, might provide an efficient leverage to stimulate integration. The focus on positive aspects might represent a proficient route to reduce prejudice because it sheds light on resources coming from immigrants. Contemporary cultures and societies are developing as progressively more varied, leading many to argue that diversity should be valued because it can benefit teams, organizations, and societies more widely. Indeed, applied and social psychology are paying a greater attention to diversity because it might be considered an added value giving rise to several positive outcomes (Kauff et al., 2021).

Thus, social psychology is still called upon to strive to propose measures able to grasp the current forms of attitudes towards the migration phenomenon (e.g., positive attitude towards immigration). New tools aimed at addressing this issue would seem to be needed. An instrument able to detect both degrees to which immigrants are considered positively and negatively could offer relevant evidence to detect the presence of ethnic prejudice because lower scores on a positive attitude dimension could detect a latent form of prejudice. From a theoretical point of view, assessment of positive aspects of immigration may stimulate reflection and insights concerning knowledge of immigration-related symbolic and realistic competition. It may overturn the perspective on this phenomenon in terms of cultural and economic resource for the host country (e.g., immigration improve our country, broadens our horizons, or enrich our cultural life); and accordingly, this might offer insights into the tailoring of policies and interventions in this direction.

Literature, to the best of our knowledge, does not yet contain a reliable unique measure that can simultaneously capture and distinguish the two dimensions of positive and negative attitudes towards immigrants. It would seem to be relevant to provide a measure usable across different contexts. Therefore, the main purpose of this work was to develop and present such a measure assessing simultaneously positive and negative attitudes towards immigrants, as well as to be usable across different contexts (e.g., paper and pencil and on-line survey). This characteristic is particularly relevant since it could help scholars to widely embrace the ethnic prejudice construct and to accurately measure attitudes towards immigrants. It would allow us to size the different facets that such attitudes can assume across individuals, overcoming the barriers related to the social desirability of the topic. For instance, people may be more willing to express their prejudice if framed in positive terms (i.e., lower scores on positive items detect a latent form of prejudice). Practically, having a scale measuring simultaneously positive and negative perceptions of immigrants represents itself a first mean to promote social inclusion. Indeed, just answering the items brings respondents to reflect on positive aspects in reference to immigrants. Thus, the resulting scale should be included as a pre- and post-test instrument to verify the effects of interventions aimed at enhancing social inclusion.

A further aim of the present work is constituted by providing a reliable tool regardless of its use with different respondents (men and women) and in different contexts. Specifically, we aimed to provide a measure that can be administered equivalently in men and women and indifferently in paper-and-pencil and online surveys. Since studies show gender differences in ethnic prejudice, then an invariance across gender would be relevant if found (Ponce, 2017). Moreover, invariance across methods of administration, (i.e., online and paper-and-pencil methods) is fundamental. Indeed, whether the same instrument can be administered through both the methods is a relevant resource for researchers as it allows to optimize the potentialities of such approaches. On the one hand, web-based surveys represent viable methods to collect data (Wells et al., 2012), are characterized by high levels of affordability, dissemination, and participants' perception of the anonymity and confidentiality of data collection (e.g., Lewis et al., 2009; Sue & Ritter, 2007). Moreover, online surveys are considered easier to use and friendly for researchers as well as participants (Davidov & Depner, 2011; Lewis et al., 2009). Finally, online surveys have been heavily implemented internationally due to the pandemic context. On the other side, the paper-and-pencil method of administration is still largely employed. This method does not have risks associated with the problem of not having access to the internet (Warschauer, 2004), and allow researchers to control the environment in which data collection occurred and to answer participants' questions during administration (Wood et al., 2006). Given the differences across the two methods of administration, psychometric evidence about the homogeneity of the measurement tool's functioning across the traditional and the web-based procedure is imperative.

The above-described aims are pursued through the implementation of three studies¹. The first study investigated the bi-dimensional structure of the proposed measure as well as reliability and validity. The second study supported the study of the dimensionality by conducting a cross-validation and by analyzing measurement invariance with respect to the respondents' gender. We also looked at reliability and validity. The third study, corroborating the findings of the other studies, investigated measurement invariance with respect to different methods of administration (i.e., paper-and-pencil and online), internal consistency, and validity of the online version.

All the studies were conducted in Italy. This represents an added value of this work given the state of exceptionality in terms of migratory flows that characterize this country. As highlighted

¹ All data and materials relative to the three studies are available under request to the Corresponding Author.

by UNHCR, in 2022, more than 76,646 migrants arrived in Italy. Most of these people come from North African countries (41%), Bangladesh (16%), the Middle East (9% Afghanistan; 7% Syria), while the remaining from South Saharan African countries. As for foreign citizens residing in Italy (8.7%), the majority (50%) come from other European countries, in particular from Eastern Europe (23% Romania; 8.4% Albania); 22% come from North or South Saharan Africa; 20% from Asian countries, half of which from the Indian subcontinent; 7% from the American continent.

STUDY 1

The aim of Study 1 was to develop the PANPIS and to analyze its psychometric properties. First, we investigated the dimensional structure of the scale through an explorative factor analysis (EFA). We hypothesized a bi-dimensional structure. Reliability and validity were also analyzed. Reliability was analyzed by calculating both the Cronbach's alpha values and the McDonald's Ω values, given the criticism against the Cronbach coefficient (Deng & Chan, 2017). Omega coefficient overtakes the weaknesses of Cronbach's alpha (McDonald, 1999).

As for validity, we investigated educational level differences as a proof of discriminant validity of the scale. We predicted that people with a lower educational level would obtain higher scores at the dimension relative to negative immigrant perceptions. Participants with a higher educational level were instead hypothesized to have a higher positive perception in comparison with those with a lower educational level (Cavallé & Marshall, 2019). To analyze the concurrent validity, we took into account the relationships with Social Dominance Orientation (SDO) as individuals high in SDO view intergroup interactions as competitive and ruthless, and the presence of migrants may elicit the tendency to defend and maintain order and social stability through power and dominance, and through attitudes glorifying inequality (Panno, 2018; Panno et al., 2022; Pellegrini et al., 2022). For these reasons, we expected SDO to be positively related to a negative perception of immigrants and negatively related to a positive perception of immigrants.

We also took into account the Need for Cognitive Closure (NCC), another relevant factor supporting ethnic prejudice, which is framed as a motivational drive to avoid ambiguity through quick judgments formulation and crystallized information, of which prejudice represents a vivid instance (Roets & Van Hiel, 2011). Research on the association between prejudice and NCC showed that immigration may represent a threat to the established shared social reality and, therefore, a potential source of an intolerable uncertainty (De Cristofaro et al., 2019, 2022; Kruglanski et al., 2006; Roets et al., 2015). Thus, we expected to find a negative association of NCC with positive attitudes towards immigrants and a positive association with negative attitudes towards immigrants. Finally, given the well-known positive associations of conservative political orientations with negative stance in matter of immigration (e.g., De Cristofaro et al., 2022; Federico et al., 2014), we also assessed the potential relationship between the positive and negative dimensions of attitudes towards immigrants (i.e., PANPIS) and political orientation. We hypothesized positive relationships between a negative perception of immigrants and conservative social and economic political orientations and negative relationships of these measures with a positive perception of immigrants.

METHOD

PANPIS development

To develop the PANPIS, we followed a four-step procedure: item generation, item screening, item testing, and factor structure phase. In the item generation phase, 30 items with a 5-point Likert scale ranging from 1 (*disagree*) to 5 (*agree*) were developed that would have appealing answers indicative of positive or negative attitude towards immigrants (i.e., the item would not require participants to think too much on the item response). Items indicating negative perceptions of immigrants were developed based on existing scales focused on negative attitudes towards immigrants (e.g., Anderson, 2018; Varela et al., 2013), whereas items related to positive perceptions of immigrants were designed starting from single items assessing positive attitude towards immigrants across massive surveys (e.g., European Social Survey, American National Election Studies). In the item screening phase, items were screened to ensure that they were aligned with the criteria set up in the first phase, to check for duplicates, and to identify any other concerns, which would make them unusable. The developed items were analyzed by three social psychologists with expertise in the field of immigration and one psychometrician, and a pilot study with a small sample ($n = 20$) was conducted to assess the adequacy of the items with regard to content and grammar. Accordingly, some items were rewritten and some deleted, obtaining the final version of the PANPIS, composed by 14 items.

Participants

The sample ($n = 656$) was composed of 63% women (two cases were gender missing). All the participants had Italian nationality. Sixty-five percent of the sample worked full time and 35% worked part-time. Socio-demographic characteristics are reported in Table 1.

Participants were provided an informed consent form and a self-report questionnaire, that they compiled in an online format. They were recruited via e-mail, online social networks, and snowball sampling, and completed the online questionnaire within a time limit of about 15 min. Anonymity was assured. They were asked to individually complete the questionnaire. Participants did not receive any incentive for their participation. The survey was anonymous, and confidentiality of information was assured, according to the provisions of General Data Protection Regulation (GDPR 679/2016).

Instruments and procedure

Preliminarily, socio-demographic information was collected (gender, age, nationality, educational level, and working conditions). *Education level* of participants was measured on a 7-point scale: 1 (*primary school*), 2 (*secondary school*), 3 (*high school*), 4 (*bachelor's degree*), 5 (*master's degree*), 6 (*post-graduate's degree*), and 7 (*PhD*). Participants were asked to indicate their nationality with an open question. Working conditions were explored by asking if the participant worked full or part-time.

The PANPIS is composed by 14 items with a 5-point Likert scale ranging from 1 (*disagree*) to 5 (*agree*) (see APPENDIX). The first four items were supposed to load to a dimension related to

TABLE 1 Socio-demographic characteristics for Studies 1–3

Study	<i>n</i>	Age	Educational level
1	654	<i>M</i> = 39.20 <i>SD</i> = 16.05 Range: 19–79 years	Lower than high-school diploma: 5% High-school diploma: 51% University degree: 40% Post-university degree: 4%
2	653	<i>M</i> = 31.76 <i>SD</i> = 14.89 Range: 18–78 years	Lower than high-school diploma: 3% High-school diploma: 50% University degree: 41% Post-university degree: 6%
3: Paper-and-pencil form	302	<i>M</i> = 37.78 <i>SD</i> = 16.47 Range: 19–79 years	Lower than high-school diploma: 3% High-school diploma: 51% University degree: 42% Post-university degree: 4%
3: Online form	327	<i>M</i> = 38.08 <i>SD</i> = 15.61 Range: 18–78 years	Lower than high-school diploma: 6% High-school diploma: 51% University degree: 37% Post-university degree: 6%

a positive perception of immigrants, as they referred to the perception of immigrants as human, social, and political resources (PPI = positive perception of immigrants). The other 10 items concerned the perception of immigrants as a threat and a danger (NPI = negative perception of immigrants). Together with the PANPIS, other two scales were administered.

The *Need for Closure* was measured using the Italian NCC version developed by Pierro and Kruglanski (2005). The measure taps the individual tendencies to avoid uncertainty through quick judgments formulation and retrieval of crystallized information. The scale is composed of 14 items that loaded on a singular factor score. Responses to the items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating high need for closure. In this sample, the internal consistency was .80.

To assess SDO, participants completed the eight-item short version of the *Social Dominance Orientation Scale* (SDO; Pratto et al., 1994), designed to measure individual differences in SDO. SDO gauges the adherence to an ideological attitude based on support for the social hierarchy and the desire that one's group is superior to the outgroup. Ratings were made on seven-point scales, ranging from 1 (*completely disagree*) to 7 (*completely agree*). The internal consistency of this scale was satisfactory ($\alpha = .72$).

Economic and social political orientations were assessed using economic and social items (Federico et al., 2014). Participants responded to the following items: “How would you describe your political outlook with regard to economic issues?” and “How would you describe your political outlook with regard to social issues?”. Ratings were made on a 5-point scale ranging from 1 (*strongly liberal*) to 5 (*strongly conservative*), so higher responses to both indicated greater conservatism.

The questionnaires took about 30 min to complete. The PANPIS, the SDO, and the economic and social items were administered to all the participants, while the NCC was administered to a subsample of 267 participants, and the economic and social items to 301 participants. The

order of administration was PANPIS, NCC, the economic and social items, and SDO. Participants independently rated the questionnaire on a laptop.

RESULTS

Prior to performing the analyses, we looked at missing values in the data. A listwise deletion was conducted excluding cases with at least one missing response on the PANPIS. Only .003% ($n = 2$) of participants were excluded. Thus, the following analyses were conducted with 654 cases. The same missing treatment procedure was applied for the other scales. In detail, we had 633 respondents for the SDO, 271 for the social items, 277 for the economic items, and 267 for the NCC.

Dimensionality

Exploratory factor analysis (EFA)

As a first step, item distributions and descriptives were analyzed in order to assess for normality. Skewness values ranged from $-.05$ to 1.29 , while Kurtosis indices ranged from -1.18 to $.24$. However, all the items evidenced a normal distribution (Curran et al., 1996).

Then, an EFA was conducted with SPSS Statistics 26 by applying a principal component analysis (PCA) with Oblimin rotation. Parallel analysis was used to determine the number of factors to be extracted since it estimates the number of factors more accurately than the eigenvalue > 1 criterion and/or examining the scree plot of the eigenvalues for breaks or discontinuities (Brown, 2006; Fabrigar et al., 1999). Indeed, Parallel analysis compares the eigenvalues of the sample correlation matrix with the eigenvalues obtained from a random correlation matrix for which no factors are assumed.

The factorability was supported by the Bartlett's test of sphericity ($\chi^2 = 5113.64$, $df = 91$, $p < .001$) and the Kaiser–Meyer–Olkin measure of sampling adequacy (.93) (Tabachnick & Fidell, 2001). Using the conventional criterion for retaining factors with eigenvalues > 1.0 and the scree plot (Kaiser, 1961), we extracted three latent factors explaining 66.47% of the variance. However, parallel analysis (Horn, 1965) suggested a two-component solution as the eigenvalues reported for Roots 1 (1.24) and 2 (1.19) were lower than the eigenvalues reported for Component 1 (6.64) and 2 (1.53), while the eigenvalue reported for Root 3 (1.49) was lower than eigenvalue reported for Component 3 (1.14). Consequently, a PCA by fixing two components was performed by applying an Oblimin Rotation. Analyses showed that any items had factor loadings lower than .30 and items with cross-loadings on other factors exceeded .25 (Hair et al., 1998). Any items were deleted following these indications. The first factor was composed of 10 items. It referred to the perception of immigrants as a threat and a danger. For this reason, it was named *Negative Perception of Immigrants* (NPI). The second factor, that consisted in four items, concerned the perception of immigrants as resources and enrichment tools. It was labeled *Positive Perception of Immigrants* (PPI). The correlation between the two detected factors indicated that these were two distinct and not completely overlapping concepts ($r = .57$). In Table 2, we present the factor loadings and the commonalities for each item and the eigenvalues and the explained variance for each component.

TABLE 2 Factor loadings and communalities of the items, eigenvalues, and percentage of accounted variance for the two-component solution of the Positive and Negative Perceptions of Immigrants Scale (PANPIS)

Item	NPI factor loadings	NPI communalities	PPI Factor Loadings	PPI communalities
1			.707	.702
2			.840	.812
3			.910	.809
4			.885	.804
5	.596	.412		
6	.659	.486		
7	.766	.605		
8	.590	.528		
9	.768	.682		
10	.572	.452		
11	.336	.640		
12	.781	.524		
13	.702	.438		
14	.604	.269		
	NPI		PPI	
Proportion of explained variance	47.39%		10.91%	
Eigenvalue	6.64		1.53	

Note: $N = 654$.

Abbreviations: NPI, negative perception of immigrants; PPI, positive perceptions of immigrants.

Reliability and validity

Cronbach's alpha was .88 for the NPI subscale and .91 for the PPI subscale. All corrected item-total correlations were above .40. Regarding McDonald's Ω values, they were equivalent to the Cronbach's alpha values, and, respectively, .89 and .91.

To investigate how educational status was related to attitudes towards immigration, the original seven categories were grouped into: (1) up to middle school diploma, (2) up to high-school diploma, (3) up to Bachelor/Master's degree, (4) up to post-university studies. Results indicated significant differences based on educational status on both negative and positive attitude towards immigration. Specifically, participants with an educational level up to middle-school diploma had significantly higher scores on the NPI subscale with respect to those with high-school diploma and those with a university degree. Any significant difference with the other groups was found for the participants with a post-university degree. Concerning the PPI subscale, participants with an educational level up to middle-school diploma had significantly lower scores with respect to those with high-school diploma, with a university degree, and with a post-university degree (see Table 3). Overall, the results confirmed the predictions that people with a lower education show higher negative perceptions and lower positive perceptions towards immigrants in comparison with those with a higher educational level.

Then, we investigated the relationships of the two subscales with SDO, NCC, and social and economic political orientation. As expected, the score at the NPI subscale was significantly and

TABLE 3 Independent *t*-tests and factorial ANOVAs with pair comparisons for the categorical validity measures with the two scores at the Positive and Negative Perceptions of Immigrants Scale (PANPIS) as dependent variable by study

Gender		PANPIS subscale score		Males (n = 216)		Females(n = 437)		t (df)	p	Cohen's d	
Study 2	NPI	M		SD		M		SD		.17	
		22.95		9.22		21.53		8.33			
	PPI	SD		M		SD		SD		-.25	
		12.47		13.60		4.56		-2.95 (651)			
PANPIS subscale score		Males (n = 129)		Females (n = 198)		t (df)		p		Cohen's d	
Study 3	NPI	M		SD		M		SD		.41	
		25.83		8.52		22.42		8.14			
	PPI	M		SD		M		SD		.40	
		13.15		4.51		14.84		-3.53 (325)			
Educational level											
Study1	PANPIS subscale score	Up to middle school diploma (n = 31)		Up to high-school diploma (2) (n = 333)		Up to Bachelor/Master's degree (3) (n = 258)		Up to post-university studies (4) (n = 27)		Significant pair comparisons	
		M		SD		M		SD			1>2 (p = .032)
	32.45		10.29		27.66		8.23		25.80 8.61		
	PPI	M		SD		M		SD		M	
10.32		4.99		12.69		4.14		12.98 3.95		1<2 (p = .025)	
F (df)		p		η _p		F (df)		p			1<3 (p = .009)
6.69 (3,642)		<.001		.030		6.69 (3,642)		<.001		(Continues)	

positively correlated with SDO, NCC, conservative social, and economic political orientation. Significant and negative correlations were evidenced considering the associations of the total score at the PPI subscale with SDO and NCC, as well as with conservative social and economic political orientation (see Table 4).

DISCUSSION

Study 1 was conducted to test the dimensional structure, reliability, and validity of the PAN-PIS. The EFA results showed that all items were good indicators of a bi-dimensional underlying construct, and that a strong and negative relationship exists between the negative and positive perception towards immigrants subscale scores. The two subscales also demonstrated good internal consistency values. As regards the validity, less educated people emerged as having a high negative perception of immigrants and low positive attitudes with respect to more educated people. A pattern of correlations consistent with the hypotheses was found concerning the relationships of the two subscales with SDO and NCC, confirming that people with a higher propensity towards SDO and NCC are also more prone to have a negative perception of immigrants, whereas the opposite was valid for the positive perception of immigrants, although a small correlation emerged between PPI and NCC. Finally, a conservative people stance, concerning both economic and social political orientations, was significantly and positively related to NPI and conversely to PPI. Indeed, despite a consistent pattern of results, which was found for the two subscales in their relationships with the criterion variables, some differences referred to the significance and size of the results were found, suggesting the utility of having two different and polarized dimensions of the perception towards immigrants.

STUDY 2

After having detected the factorial structure through an exploratory analysis, we aimed at providing support of that solution by conducting a confirmative factor analysis (CFA) through a new study. We then tested measurement invariance applying a multigroup confirmatory analysis in order to probe the replicability of the detected factors on an independent sample.

The analysis of measurement invariance across different groups of respondents is central for an instrument as it ensures that any differences found with such an instrument between groups are related precisely to differences in the construct and not to the fact that people belonging to different groups, despite having similar levels of the psychological characteristic in question, respond differently to the items due to a problem with the items themselves in functioning equivalently across the groups. We also took into account gender invariance in order to develop an instrument that could be used in men and women, allowing fair comparisons across the two groups. Past research findings regarding gender differences and similarities about immigrant attitudes can be considered valid only if they have been obtained through the use of tools with proven gender invariance. Otherwise, it is impossible to know whether the detected differences depend on actual differences in the psychological characteristic in the two groups or on differences due to being male or female.

Additionally, we were interested in replicating results obtained in Study 1 concerning reliability and in supporting and extending validity evidence. Concerning reliability, we looked at the internal consistency through Cronbach's alpha and Mc Donald's Omega. As for the validity, we

TABLE 4 Pearson's correlations between the quantitative validity measures and the two scores at the Positive and Negative Perceptions of Immigrants Scale (PANPIS) for each study

Study	PANPIS subscale score	Social dominance orientation	Need for cognitive closure	Conservative social political orientation	Conservative economic orientation	Political orientation	Ingroup identification	Empathy towards immigrants
Study 1	NPI	.42*** <i>n</i> = 633	.27* <i>n</i> = 267	.46*** <i>n</i> = 271	.29*** <i>n</i> = 277	–	–	–
	PPI	–.34*** <i>n</i> = 633	–.13* <i>n</i> = 267	–.56*** <i>n</i> = 271	–.33*** <i>n</i> = 277	–	–	–
Study 2	NPI	.43*** <i>n</i> = 653	–	–	–	–.52*** <i>n</i> = 653	.27*** <i>n</i> = 653	–.51*** <i>n</i> = 653
	PPI	–.45*** <i>n</i> = 653	–	–	–	.53*** <i>n</i> = 653	–.13** <i>n</i> = 653	.56*** <i>n</i> = 653
Study 3 (online form)	NPI	.42*** <i>n</i> = 327	.33*** <i>n</i> = 327	.55*** <i>n</i> = 327	.30*** <i>n</i> = 327	–	–	–
	PPI	–.40*** <i>n</i> = 327	–.25*** <i>n</i> = 327	–.53*** <i>n</i> = 327	–.27*** <i>n</i> = 327	–	–	–

p* < .05, *p* < .01, ****p* < .001.

analyzed gender differences to attest the discriminant validity of the scale. Consistent with literature, we aimed at confirming that men have a higher negative perception towards immigrants (Ponce, 2017). We also tried to establish if women had higher positive perceptions with respect to men. Finally, we looked at the correlation between political orientation and positive and negative perception of immigrants. We expected to find that a less conservative political orientations would be positively correlated with positive perception of immigrants and negative correlated with negative perception of immigrants (e.g., De Cristofaro et al., 2022). Additionally, we expected that empathy towards immigrants—the ability to appreciate and provide adequate responses to immigrants' social suffering (e.g., Coll et al., 2017)—would be positively related to a positive perception of immigrants, whereas negatively related to a negative perception of immigrants. Finally, identification with the ingroup (i.e., Italians in this context) was expected to be negatively associated with a positive perception of immigrants, whereas positively associated with a negative perception of immigrants. This is because the greater the bond Italians feel with their national ingroup, the less favorable their perception of outgroup members such as immigrants.

METHOD

Participants

Participants were 653 adults (67% women). The 99% of participants had Italian nationality. Socio-demographic characteristics are reported in Table 1. They were provided an informed consent form and a self-report questionnaire, that they compiled in an online format. Confidentiality of information was assured, according to the provisions of General Data Protection Regulation (GDPR 679/2016).

Instruments and procedure

Beyond gender and age, *education level* of participants was measured on a 7-point scale, where 1 = *primary school*, 2 = *secondary school*, 3 = *high school*, 4 = *bachelor's degree*, 5 = *master's degree*, 6 = *post-graduate's degree*, and 7 = *PhD*. Participants were asked to indicate their nationality with an opened question.

Together with the PANPIS, participants completed the eight-item short version of the SDO (Pratto et al., 1994), to measure individual differences in SDO (see Study 1). The internal consistency of this scale was satisfactory ($\alpha = .72$).

Empathy towards immigrants was measured using the seven-item *Empathic Concern Subscale* of the *Interpersonal Reactivity Index* (IRI; Davis, 1980), which we adapted to the immigration context. An example of item is: "I often have tender, concerned feelings for immigrants." Responses to the items were rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*), with higher scores indicating greater empathy towards immigrants ($\alpha = .80$).

Identification with the Italian ingroup was measured using the 15-item *Ingroup Identification Scale* (Leach et al., 2008), which we adapted to the Italian context. An example of item is: "I feel a bond with Italians." Responses to the items were rated on a seven-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*), with higher scores indicating greater identification with the Italian ingroup ($\alpha = .93$). We also measured political orientation by asking participants to

politically classify themselves on a scale that ranged from 1 (*extremely right-wing*) to 7 (*extremely left-wing*).

The questionnaires took about 30 min to complete. The order of administration was SDO, *Empathy towards immigrants*, PANPIS, *Ingroup identification*, the education level item, and the political orientation item. Participants independently rated the questionnaire on a laptop. Participants were involved in the study on a voluntary basis. They were recruited via e-mail, online social networks, and snowball sampling, and completed an online questionnaire. They did not receive any financial compensation for participating.

RESULTS

Multigroup confirmatory factor analysis (MCFA)

As the multigroup confirmatory analysis allows us to examine whether the internal structure detected in a sample can be generalized to another independent dataset, the total sample was randomly split in a calibration sample ($n = 323$, 67% women, mean age: 31.84 years, $SD = 14.86$) and a validation sample ($n = 330$, 67% women, mean age: 31.78 years, $SD = 15.04$). The samples were randomly generated using SPSS 27 version for Windows.

As a first step, the two-factor structure of the PANPIS was tested on the calibration and the validation samples, separately, through a CFA by employing the maximum likelihood (ML) method using AMOS 16.0 (Arbuckle, 2007). The two-factor model indicated by the EFA was tested. To verify the model's fit, the Comparative Fit Index (CFI; Bentler, 1990), the Tucker–Lewis Index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Steiger & Lind, 1980) were taken into account. For the TLI and CFI indices, values above .90 are indicative of acceptable fit, while values above .95 indicate excellent fit (Hu & Bentler, 1999). The RMSEA value is considered acceptable when it is below .08 and good when it is below .05 (Kline et al., 2010).

Results in the calibration sample showed a not completely good overall fit as the residual was slightly bigger than the cut off (CFI = .932, TLI = .918, RMSEA = .089, 90% CI [.077, .100]). Modification indices (MI) suggested the addition of two covariance errors between items 1 and 2 of the PPI factor and between items 11 and 12 of the NPI factor. These links were theoretically justified given that the two items were consecutive inside the respective dimension. Moreover, there is a semantic similarity between these two couples of items. In detail, both in item 1 (“Immigrants make our country a better place in which to live”) and item 2 (“The cultural life of our country is enriched through the presence of immigrants”), there is a reference to the own country and the value added by the presence of immigrants in social (item 1) and cultural terms (item 2). For items 11 and 12, both of them have a negative formulation, that is, they report statements about things that immigrants should not have: Item 11 with regards to opportunities in general (“Immigrants should not have the same opportunities as us”) and item 12 concerning social services (“Immigrants should not have access to our own social services (health, welfare, etc.)”).

The modified model showed a more adequate fit (CFI = .966, TLI = .958, RMSEA = .064, 90% CI [.051, .076]). Each item loaded strongly and significantly on its factor (expected from the EFA, with the factor loadings ranging from .464 to .940, and the correlation between the two factors was significant, negative, and high ($r = -.64$, $p < .001$) (Figure 1a).

In the following step, the two-factor model with the two previously detected covariance errors was tested on the validation sample. The model showed a good fit (CFI = .940, TLI = .926, RMSEA

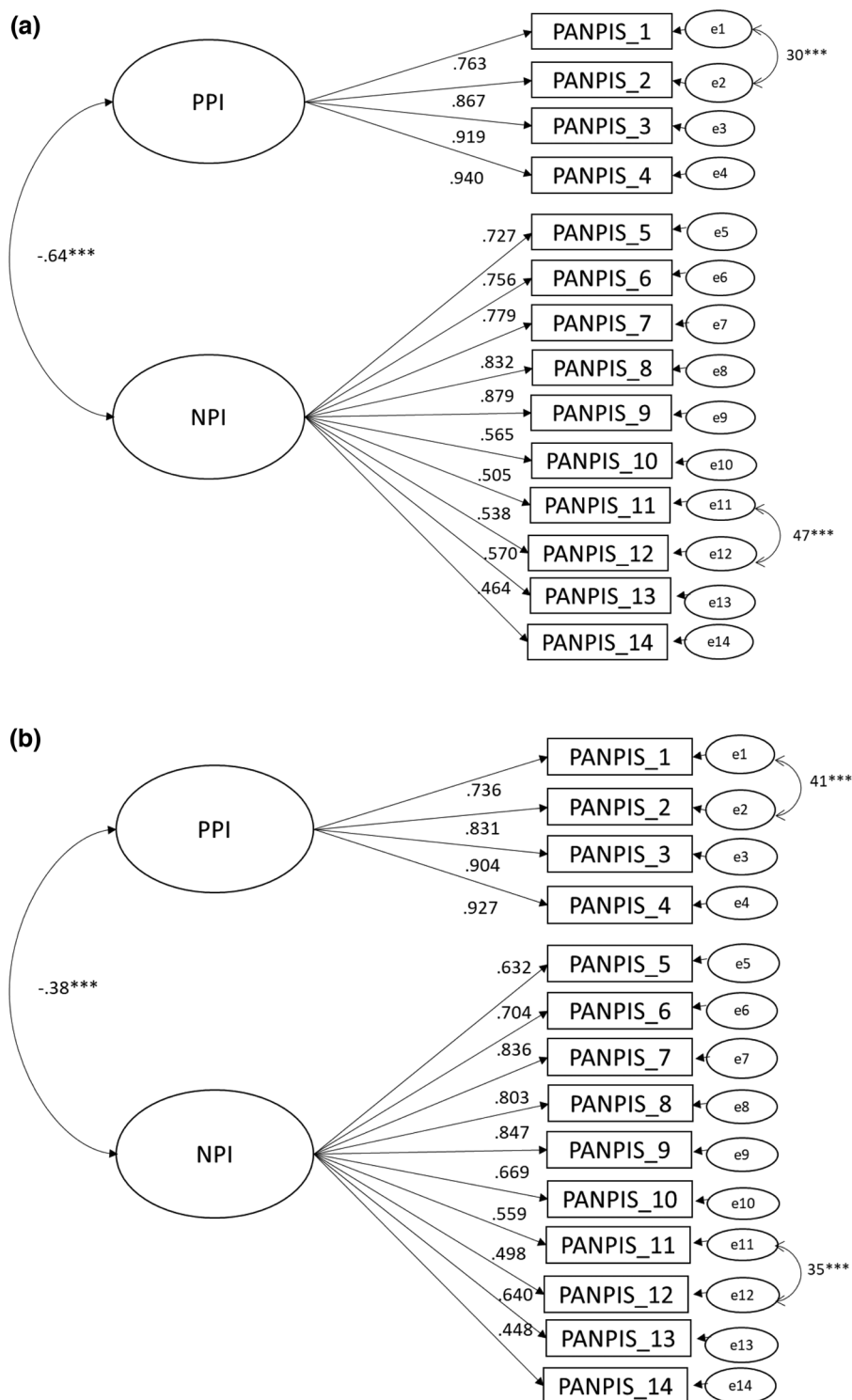


FIGURE 1 The two-factors model of the *Positive and Negative Perceptions of Immigrants* (PANPIS) in the Calibration sample (a; $n = 323$) and in the Validation sample (b; $n = 330$). Factor loadings are significant at the .001 level. *** $p < .001$

= .082, 90% CI [.071, .094] with each item loading strongly and significantly on its hypothesized factor (the factors loading ranged from .498 to .927), and the correlation between the two factors was still significant, negative, and moderate ($r = -.38$, $p < .001$) (Figure 1b).

To test for cross-validation with a multigroup confirmatory analysis on the calibration and the validation samples, analyses were conducted by performing hierarchically nested confirmatory factor analyses (Byrne, 2004), and invariance was evaluated not only with $\Delta\chi^2$, which is sensitive to sample size (Chen, 2007), but also using the criteria of ΔCFI less than .01 and the equivalent cutoff of .015 for RMSEA (Chen, 2007).

Following the guidelines for testing measurement invariance (Vandenberg & Lance, 2000), first, the independence model was fitted ($\chi^2 = 5760.87$, $df = 182$, $p < .001$). In addition to configural invariance, weak or metric factorial invariance was supported, confirming that the factor loadings were equal across samples. Then, scalar or strict invariance, which constrained intercepts to be invariant across groups, and, subsequently, the equivalence of structural variances and covariances, were also tested. Finally, we attested the equality of the items' variances and covariances (Table 5).

Gender invariance

Having verified that the two-factor solution was adequate both in the calibration and in the validation samples, we considered the total sample as a whole ($n = 653$). Gender invariance of the PANPIS was tested by comparing men ($n = 216$) with women ($n = 437$). First, the two-factor model was tested separately in the two groups, and the model showed acceptable fit indices among men ($CFI = .950$; $TLI = .939$; $RMSEA = .076$, 90% CI [.061, .092]), with standardized factor loadings significant at the .001 level and ranging from .436 to .964 (Figure 2a). An adequate fit was also obtained for women ($CFI = .956$; $TLI = .946$; $RMSEA = .071$, 90% CI [.061, .081]). The standardized factor loadings ranged from .469 to .918 and were all significant at the .001 level (Figure 2b).

Preliminarily, the independence model was fitted ($\chi^2 = 5730.79$, $df = 182$, $p < .001$). Then, after configural invariance was established, metric invariance was obtained. Further levels of equivalence of intercepts, structural variances and covariances, and measurement residuals were supported by referring to the ΔCFI and the $\Delta RMSEA$ criteria (Table 6).

Reliability and validity

Results showed that Cronbach's alpha was .89 for the NPI subscale and .93 for the PPI subscale. All corrected item-total correlations were above .40. McDonald's Ω values were equivalent to the Cronbach's alpha values, that is, respectively .89 and .93.

After having verified that the PANPIS was invariant across gender, we look at gender differences in negative and positive perceptions towards immigrants. We found that men had significantly higher scores on the NPI subscale with respect to women, and women obtained significantly higher scores on the PPI subscale in comparison with men. Thus, we confirmed the expected gender-related differences.

As shown in Table 4, as expected, we found that the score at the NPI subscale was significantly and negatively correlated with political orientation, indicating that the more the participants tended to report a left-wing political orientation, the less they had a negative perception of immigrants. Instead, the score at the PPI subscale was significantly and positively correlated with

TABLE 5 Goodness-of-fit statistics for each level of structural and measurement invariance of the cross-validation

Model	χ^2 (df)	χ^2/df	p	CFI	RMSEA [90% CI]	Model comparison	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
1. Invariance of model configuration (Configural invariance)	414.81 (148)	2.80	<.001	.952	.053 [.047, .059]	–	–	–	–	–	–
2. Invariance of factor loadings (Weak or metric invariance)	425.93 (160)	2.77	<.001	.952	.050 [.045, .056]	Model 1–Model 2	11.12	12	.519	.000	.003
3. Invariance of intercepts (Scalar or strict invariance)	435.76 (174)	2.50	<.001	.953	.048 [.042, .054]	Model 2–Model 3	9.83	14	.774	.001	.002
4. Invariance of structural variances/covariances	436.52 (177)	2.40	<.001	.953	.047 [.042, .053]	Model 3–Model 4	.76	3	.861	.000	.001
5. Invariance of measurement error variances/covariances	463.77 (193)	2.54	<.001	.951	.046 [.043, .052]	Model 4–Model 5	14.93	16	.530	.000	.002

Note: χ^2 = chi-square test; df = degrees of freedom; CFI = robust comparative fit index; RMSEA = robust root mean square error of approximation; $\Delta\chi^2$ = Satorra–Bentler scaled difference; Δdf = difference in degrees of freedom between nested models; p = probability value of $\Delta\chi^2$ test; ΔCFI = difference between robust CFIs of nested models; $\Delta RMSEA$ = difference between RMSEAs of nested models, n = 653 (Calibration sample = 323, validation sample = 330).

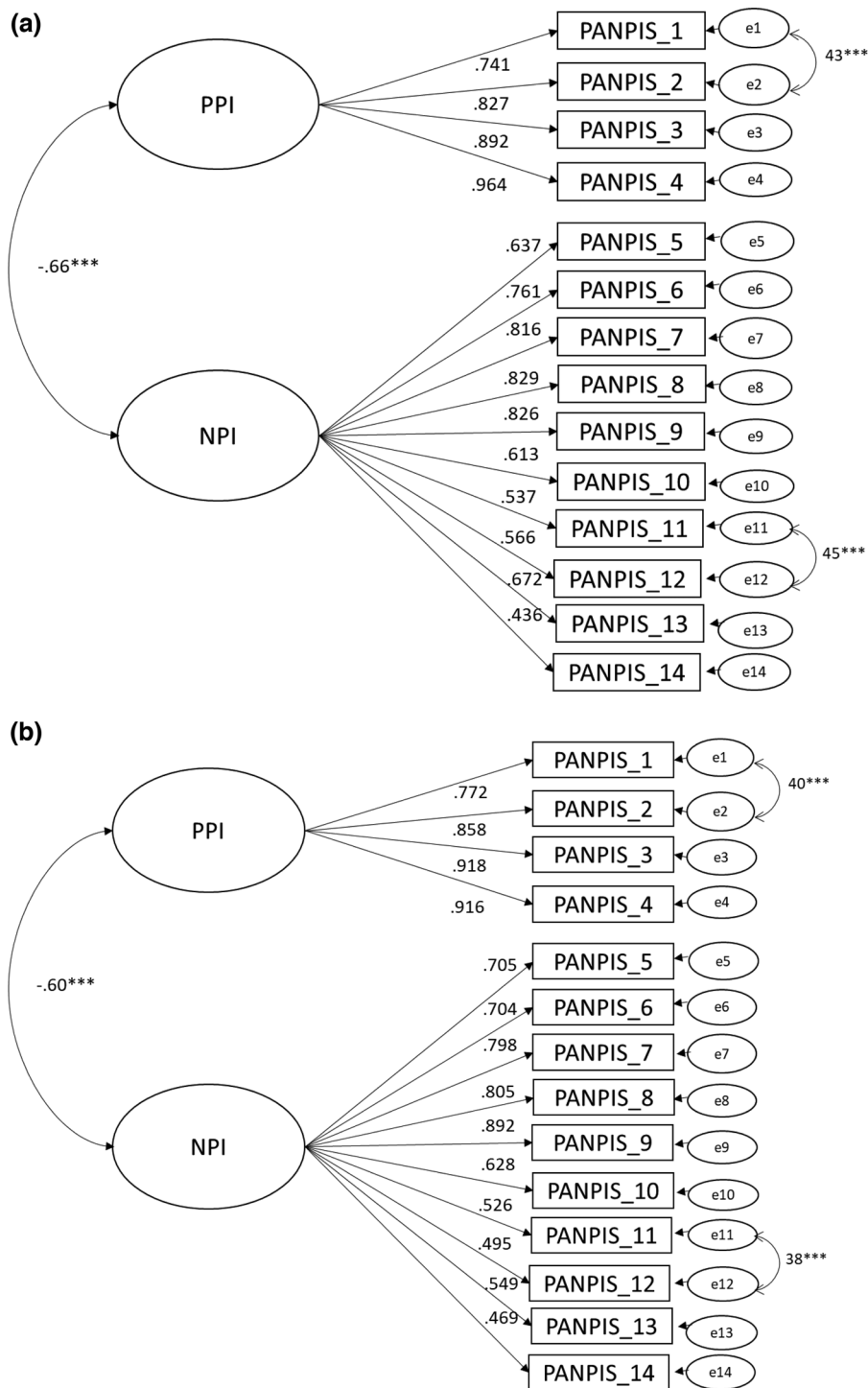


FIGURE 2 The two-factors model of the *Positive and Negative Perceptions of Immigrants* (PANPIS) in men (a; $n = 216$) and in women (b; $n = 437$). Factor loadings are significant at the .001 level. *** $p < .001$

TABLE 6 Goodness-of-fit statistics for each level of structural and measurement invariance across gender

Model	χ^2 (df)	χ^2/df	p	CFI	RMSEA [90% CI]	Model comparison	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
1. Invariance of model configuration (Configural invariance)	401.16 (148)	2.71	<.001	.954	.051 [.045, .057]	–	–	–	–	–	–
2. Invariance of factor loadings (Weak or metric invariance)	429.80 (160)	2.69	<.001	.951	.051 [.045, .057]	Model 1–Model 2	28.70	12	.004	.003	.003
3. Invariance of intercepts (Scalar or strict invariance)	468.92 (174)	2.70	<.001	.947	.051 [.045, .056]	Model 2–Model 3	39.12	14	.000	.004	.003
4. Invariance of structural variances/covariances	471.80 (177)	2.67	<.001	.947	.0451 [.046, .056]	Model 3–Model 4	2.90	3	.411	.000	.000
5. Invariance of measurement error variances/covariances	520.66 (193)	2.70	<.001	.941	.015 [.035, .056]	Model 4–Model 5	48.86	16	.000	.006	.002

Note: χ^2 = chi-square test; df = degrees of freedom; CFI = robust comparative fit index; RMSEA = robust root mean square error of approximation; $\Delta\chi^2$ = Satorra–Bentler scaled difference; Δdf = difference in degrees of freedom between nested models; p = probability value of $\Delta\chi^2$ test; ΔCFI = difference between robust CFIs of nested models; $\Delta RMSEA$ = difference between RMSEAs of nested models, n = 653 (men = 216, women = 437).

political orientation, indicating that the more they tended to report a left-wing political orientation, the more they had a positive perception of immigrants. We also found that the score at the NPI subscale was significantly and positively correlated with SDO and ingroup identification, and negatively associated with empathy towards immigrants. Significant and negative correlations were evidenced considering the associations of the score at the PPI subscale with SDO and ingroup identification, whereas a positive correlation was observed with empathy towards immigrants.

DISCUSSION

A robust confirmation of this structure was also provided by the multigroup CFA. Gender invariance was supported, indicating that the scale can be adequately used to measure perceptions towards immigrants both in men and women. Furthermore, measurement invariance of the PANPIS provides the possibility to interpret the detected difference across genders as real differences in the perception of immigrants

STUDY 3

Study 3 was aimed at analyzing the measurement invariance of the PANPIS across different types of administration (paper-and-pencil and online). Once establishing the equivalence, a further goal was to investigate the psychometric properties of the online version of the PANPIS in terms of internal consistency and validity.

METHOD

Participants

In this study, to verify invariance across paper-and-pencil versus web-based administration, we recruited two samples: A group of participants ($n = 302$) who filled out the research protocol in a paper-and-pencil form, and another group ($n = 327$) that compiled the scales online. The sample who responded to the scale in the paper-and-pencil form was composed of 66% women (one case was gender missing). All the participants had Italian nationality. Considering working conditions, 65% of the sample worked full time and 35% worked part time. Participants were provided an informed consent form and a self-report questionnaire. They were asked to individually complete the questionnaire. Participants did not receive any incentive for their participation.

The online sample ($n = 327$) was composed of 61% women. Considering working conditions, 17% of the sample was freelance worker, 5% was a training worker, 35% was employee, 5% was casual worker, 20% were students, 5% were retired workers, and 9% of the sample was unemployed.

Participants could stop the survey at any time, and they could interact with the principal investigators of the study through email message at any time during and after study participation. The survey was anonymous, and the confidentiality of information was assured. Both the paper-and-pencil and online administrations occurred according to the provisions of GDPR 679/2016.

Instruments and procedure

An equivalent research protocol was administered in this study. First, socio-demographic questions concerning gender, age, nationality, educational level, and working conditions were proposed. Then, together with the PANPIS, the short version of the SDO (Pratto et al., 1994) (in the paper-and-pencil sample = .72; in the online sample = .73), the NCC (Pierro & Kruglanski, 2005) (in the paper-and-pencil sample = .80; in the online sample = .82), and the economic and social-political orientation items (Federico et al., 2014) were administered.

The questionnaires took about 25 min to complete, and the order of administration was PANPIS, NCC, the economic and social political orientation, and SDO for the online administration. Concerning the paper and pencil form, a convenience sample of local-born Italians was recruited during their leisure time on a voluntary basis. Data were collected through paper and pencil questionnaires administered by trained research assistants. Respondents were contacted by the research assistant in public areas, as well as common areas of the European University of Rome. Participants were assured about the anonymity of their responses and not given any financial compensation. Participants completed the paper-and-pencil questionnaire within a time limit of about 15 min. As for the online administration, we followed the same procedure reported in Studies 1 and 2.

RESULTS

First, we looked at missing values in the PANPIS considering data collected in the paper-and-pencil format. None of the participants missed responses on the PANPIS or in the other scales in the online database.

Then, we checked for a baseline equivalence across the two samples with respect to gender, age, and educational level. Results showed that nonsignificant differences existed with regards to gender ($\chi^2(1) = 1.84, p = .175$), age ($t(626) = -.24, p = .812$), and educational level ($\chi^2(6) = 8.66, p = .194$).

To verify invariance, as a first step, the two-factor model was tested separately in the two groups. The model showed acceptable fit indices among participants who compiled the paper-and-pencil form of the PANPIS ($\chi^2/df = 2.90$; CFI = .937; TLI = .922; RMSEA = .080, 90% CI [.067, .092]), with standardized factor loadings significant at the .001 level and ranging from .300 to .882 (Figure 3a). A good fit was also obtained for respondents at the web-based data collection ($\chi^2/df = 2.10$; CFI = .969; TLI = .962; RMSEA = .058, 90% CI [.045, .071]). The standardized factor loadings ranged from .404 to .933 and were all significant at the .001 level (Figure 3b).

Preliminarily, the independence model was fitted ($\chi^2 = 5030.55, df = 182, p < .001$). Then, after configural invariance was established, equivalence of factor loadings, intercepts, structural variances and covariances, and measurement residuals were obtained (Table 7).

Reliability and validity

After having evaluated the equivalence of the online administered version of the PANPIS with respect to the paper-and-pencil form of administration, we analyzed the internal consistency of this form in terms. Cronbach's alpha was .87 for the NPI subscale and .93 for the PPI subscale.

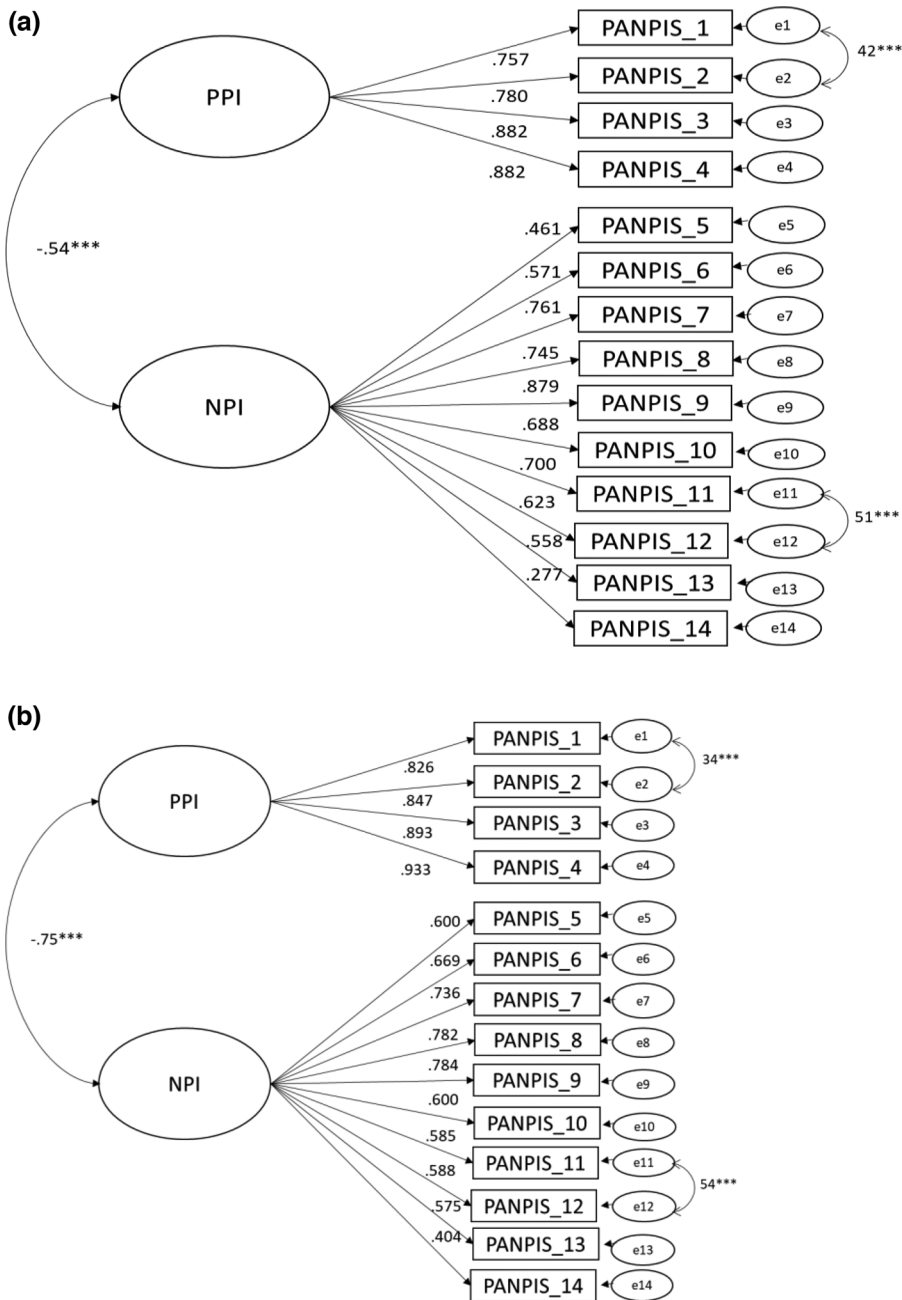


FIGURE 3 The two-factors model of the *Positive and Negative Perceptions of Immigrants* (PANPIS) for the paper-and-pencil form (a; $n = 302$) and the web-based form (b; $n = 327$). Factor loadings are significant at the .001 level. *** $p < .001$

TABLE 7 Goodness-of-fit statistics for each level of structural and measurement invariance across data collection mode

Model	χ^2 (df)	χ^2/df	p	CFI	RMSEA [90% CI]	Model comparison	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
1. Invariance of model configuration (Configural invariance)	370.70 (148)	2.51	<.001	.954	.049 [.043, .055]	-	-	-	-	-	-
2. Invariance of factor loadings (Weak or metric invariance)	393.91 (160)	2.46	<.001	.952	.048 [.042, .054]	Model 1–Model 2	23.21	12	.026	.002	.001
3. Invariance of intercepts (Scalar or strict invariance)	445.77 (174)	2.56	<.001	.944	.050 [.044, .056]	Model 2–Model 3	51.86	14	.000	.008	.002
4. Invariance of structural variances/covariances	463.12 (177)	2.61	<.001	.941	.051 [.045, .056]	Model 3–Model 4	17.34	3	.001	.003	.001
5. Invariance of measurement error variances/covariances	501.83 (193)	2.60	<.001	.936	.051 [.045, .056]	Model 4–Model 5	38.71	16	.001	.005	.000

Note: χ^2 = chi-square test; df = degrees of freedom; CFI = robust comparative fit index; RMSEA = robust root mean square error of approximation; $\Delta\chi^2$ = Satorra–Bentler scaled difference; Δdf = difference in degrees of freedom between nested models; p = probability value of $\Delta\chi^2$ test; ΔCFI = difference between robust CFIs of nested model; $\Delta RMSEA$ = difference between RMSEAs of nested models, n = 629 (respondents at the paper-and-pencil form = 302, respondents at the online form = 32).

All corrected item-total correlations were above .40. Regarding McDonald's Ω values, they were equivalent to the Cronbach's alpha values, and, respectively, .88 and .93.

We also looked at the validity of the online version of the PANPIS, by taking into account gender and educational level for the discriminative validity, and by analyzing the relationships with SDO, NCC, and the economic and social political orientation, as for the concurrent validity.

Concerning gender, men obtained higher scores on the NPI subscale with respect to women, whereas the opposite was found for the PPI subscale. These differences were associated with a moderate effect size (Table 2). These results confirmed the expected gender-related differences also for the online form of the PANPIS. Consistent with Study 1, to analyze how educational status was related to attitudes towards immigration, the original seven categories were grouped into the same four categories. Results indicated significant differences based on educational status on both negative and positive attitude towards immigration. In particular, participants with an educational level up to middle-school diploma had significantly higher scores on the NPI subscale with respect to those with high-school diploma, with a university degree and with post-university studies. Concerning the PPI subscale, participants with an educational level up to middle-school diploma had significantly lower scores with respect to those with high-school diploma, with a university degree, and with a post-university degree. Thus, we confirmed what found for the paper-and-pencil form of the PANPIS, that is, that people with a lower educational show higher negative perceptions and lower positive perceptions towards immigrants in comparison with those with a higher educational level. Finally, as reported in Table 4, the score at the NPI subscale was significantly and positively correlated with SDO, NCC, social conservative orientation, and economic conservative orientation. Significantly negative correlations were evidenced, considering the associations of these measures with the total score at the PPI subscale. Overall, the validity findings supported those obtained for the paper-and-pencil form of the PANPIS.

DISCUSSION

The aim of Study 3 was twofold: testing measurement invariance across the type of administration of the PANPIS and investigating reliability and validity of the online form of the scale. The results showed that the scale allows us to equivalently assess the underlying construct regardless of an online or paper-and-pencil way of administration. This allows us to compare and consider equivalent scores at the scale obtained through these two versions. The online version of the PANPIS has good internal consistency values and validity findings evidenced for the paper-and-pencil form of the scale were substantially confirmed. We found that men scored higher than women in the negative perception of immigrants, whereas the opposite emerged for the positive perception. Less educated people emerged as having high negative perception of immigrants and low positive attitudes towards them. Then, people with a higher tendency towards social dominance, NCC, and both economic/social conservative orientation are also more prone to having a negative perception of immigrants whereas the opposite was valid for the positive perception of immigrants. Overall, the results indicate that the PANPIS is an adequate measurement tool to assess people's perception towards immigrants also using an online form of administration.

GENERAL DISCUSSION

The political attention to develop effective strategies to support integration and the increasing interest in investigating consequences and antecedents of attitude towards immigrants has resulted in the need to design reliable measures that effectively assess multidimensional aspects of such an attitude. To efficiently assess the contemporary phenomenology of prejudice towards immigrants, we need multidimensional instruments able to catch both negative and positive views about immigration. The current study was aimed at providing a new scale that could be a valid tool for this goal. Findings indicated that the PANPIS is a valid and reliable tool that measures a bi-dimensional construct, namely the perception of immigrants intended as negative and/or positive in terms of personal, cultural, economic, and social resources/obstacles. Thus, with just one tool, it is possible to detect the location of people both in the negative as well as in the positive perception of the prejudice. The PANPIS's ability of assessing both positive and negative dimensions of attitudes about immigrants represents a key feature. Such a characteristic of the scale may provide a noteworthy theoretical contribution. Specifically, it may help to portray the ethnic prejudice in its entirety and enrich current literature with an innovative facet linked to the positive evaluative dimension of the immigrants as social entity. From a theoretical perspective, this might represent an appreciable step forward for a deep understanding of ethnic prejudice and incentivise contemplations concerning the perception of this phenomenon as a resource to valorize. Looking at the phenomenon in terms of pro-immigrant attitudes could function as an overwhelming trigger for promoting integration. The focus on positive aspects could shed light on resources coming from immigrants and thus embody a profitable direction for decreasing prejudice.

A further theoretical implication relating to the scale's ability of capturing positive and negative dimensions of attitude towards immigrants lies in the opportunity of measuring a latent form of prejudice. This represents a notable advantage as individuals may tend not to explicitly display negative attitudes due to issues related to social desirability. In contrast, answers provided to items formulated on a positive side may be more truthful and less prone to distortions. Measuring both positive and negative facets of attitude towards immigration can, therefore, help to overcome this obstacle and obtain an accurate assessment of individuals' ethnic prejudice.

Moreover, the PANPIS was also found to be invariant across genders, thus allowing researchers to employ it with men and women and to interpret the detected similarities/differences across genders as real similarities/differences in the perception of immigrants. This property is particularly relevant given the presence of gender differences in ethnic prejudice (Ponce, 2017). Of fundamental importance in this historical era, the online version of the PANPIS is as efficient as the paper-and-pencil form. This property maximizes the adequacy of the instrument as it allows researchers, particularly in the current pandemic emergency, to include the PANPIS in web-based surveys. Moreover, it would seem to be relevant to have a measure showing an invariance across methods, because online data collections reflect a more general efficiency. Finally, the results of the current research indicate that the PANPIS is a valid scale, and it shows high levels of reliability as pointed out by estimated internal consistency coefficients (minimum value observed across these studies is .87). Concerning validity, it is important to underline that despite a consistent pattern of results found for the two subscales in their relationships with the criterion variables and in their ability to discriminate across people with different relevant characteristics, some differences referred to the significance and size of the results were found, suggesting the utility of having two different and polarized dimensions of the perception towards immigrants.

Overall, the above-discussed results showed that the PANPIS is a robust and valid measure with the distinctive characteristic of simultaneously catching positive and negative attitudes towards immigrants. Thus, the PANPIS represents a unique measure that might facilitate studies investigating anti-immigrant as well as pro-immigrant attitudes.

PRACTICAL IMPLICATION AND FUTURE DIRECTIONS

The measure herein presented may have practical implications across several contexts, which embrace theoretical and empirical research, as well as an applied perspective. The PANPIS may be used across different fields (e.g., social, organizational, political, applied psychology, as well as sociological and education science), when assessing attitude towards immigrants and promoting change is of interest.

First of all, the PANPIS fits into the research strand on ethnic prejudice that historically marks social psychology tradition. It may be implemented in research with different theoretical backgrounds, which propose different explanations for the rise and the outcome of attitude towards immigrants. In terms of antecedents, the measure could be used to detect the level of prejudice as a function of belonging—or not—to a minority group, as postulated by the cultural marginality theory (Rustenbach, 2010). As hypothesized by contact theory, the measure could be implemented to investigate the reduction of natives' prejudicial attitudes through direct positive interactions by which building shared factors and trust towards immigrants (Allport et al., 1954; Pettigrew, 1988). Focusing on consequences, the PANPIS could turn out to be useful in research on social inclusion, by investigating whether the distinct dimensions of positive and negative attitudes may modulate the different level of immigrants' integration in the host country. In each of these research areas, the PANPIS could be a valid tool to profitably shed light on constructs and phenomena related to prejudice, showing asymmetrical relations between positive and negative attitude towards immigrants. In particular, negative attitude could point out barriers giving rise to intergroup conflict, whereas positive attitude could highlight resources and levers to support integration.

In the same vein, organizational and applied psychology could also benefit from this measure because it is a challenge of our era to promote diversity across groups in organizational settings. This measure could be a fruitful tool to cope with this issue since it offers a bi-dimensional view (i.e., positive and negative) in assessing diversity across such contexts. Even in education and other applied contexts, evidence-based interventions aimed at promoting integration and reducing intergroup conflict might use the PANPIS to assess the efficiency of the intervention through pre- and post-assessment of attitude towards immigrants across groups involved in the design research. Also, in this case, positive dimension could be a helpful tool to reflect on diversity resources, and accordingly, offer levers to foster integration. In particular, the school context would offer an insightful perspective concerning adolescents' and children's attitude towards immigrants and would offer possibilities to test psychometric properties of an adapted version in these populations.

To date, to the best of our knowledge, we cannot observe reliable and validated instruments aimed at assessing positive attitude towards immigrants across massive surveys (e.g., European Social Survey, American National Election Studies, etc.), thus a reliable measure designed to address this issue might represent a profitable instrument to be included in these massive surveys.

Finally, the current measure could be helpful for political psychologists interested in investigating the support for conciliatory policies aimed at reducing discrimination towards immigrants.

Moreover, the positive dimension could stimulate potential insights on “how” to design framing messages aimed at supporting this disadvantaged social group.

Some limitations need to be considered when interpreting the results of the current research. First, although the items of the measures were designed to be free of cultural underpinnings, future studies should confirm the factor structure across other cultures. Further studies are also needed to confirm the validity of the scale without a loss of participants with respect to the study of the dimensionality, as it occurred in Study 1. More specifically, it would be useful to examine whether the PPI and the NPI subscales predict differences in immigration policy preferences and support for inclusion for immigrants. Second, the collected data came from Italian participants, thus data coming from countries with different exposure to migration waves are needed to test the validity of the measure across such countries. Finally, we know that immigrants constitute an intersectional group showing characteristics and ethnic identity of several stigmatized minorities (e.g., Muslims, Romanians). Although the terms “immigrants” and “ethnic minority” are often used interchangeably to indicate non-native ethnic groups, it should be kept in mind that closely related terms may have different implications for natives’ attitudes, and accordingly for social responses. For instance, Hellwig and Sinno (2017) have shown that the context, and framing immigration concerns, lead individuals to associate different types of immigrants with different threats. An issue context diminishing positive attitudes towards stigmatized minorities can boost it for another. It can be also possible that natives’ positive and negative attitudes vary depending on which ethnic identity is more salient. In the present study, we cannot rule out that such intersectionality could have an interaction effect on the observed results. Hence, future studies involving the PANPIS are recommended to consider such a contingency.

CONCLUSIONS

The nature of attitude towards immigrants is changing. Thus, the continual refinement of measures assessing multidimensional aspects of this phenomenon allows the advance of social sciences that may continue to increase our knowledge to engender theories as well as evidenced-based interventions. Taken together, the results of our studies support the idea that PANPIS has the potential to represent a helpful measure of a comprehensive assessment of positive and negative attitude towards immigrants. With the impressive growing of the immigrant population, which might further increase after the COVID-19 outbreak, understanding how they are managed and treated is a relevant public health and human rights issue.

ACKNOWLEDGMENTS

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. We formally declare that the manuscript has not been previously published in any form. It is neither under consideration nor in press with another publication.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data and material will be made available on request without restrictions.

CONSENT TO PARTICIPATE

Informed consent was obtained from all individual participants included in the studies.

CONSENT FOR PUBLICATION

The manuscript has been seen and reviewed by all authors, and all authors agree to the submission of the manuscript in its current form.

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How to cite this article: Panno, A., Pellegrini, V., De Cristofaro, V. & Donati, M.A. (2023) A measure of positive and negative perception of migration: Development and psychometric properties of the *Positive and Negative Perception of Immigrants Scale* (PANPIS). *Analyses of Social Issues and Public Policy*, 1–33. <https://doi.org/10.1111/asap.12338>

APPENDIX
THE PANPIS ITEMS IN THE ENGLISH VERSION

Here below you will find a series of statements concerning migration. People can have different perspectives concerning such a phenomenon. Do not think too long about the exact meaning of the statements. Work quickly and try to answer as accurately as possible. There are no right or wrong answers. Please answer each statement below by putting a circle around the number that best reflects your degree of agreement or disagreement with that statement. Remember that:

- 1 = disagree
- 2 = quite disagree
- 3 = neither agree nor disagree
- 4 = quite agree
- 5 = agree

1	Immigrants make our country a better place in which to live.	1 2 3 4 5
2	The cultural life of our country is enriched through the presence of immigrants.	1 2 3 4 5
3	Immigrants make us feel part of a bigger world.	1 2 3 4 5
4	The presence of immigrants broadens our horizons.	1 2 3 4 5
5	Immigrants can carry unknown and rare diseases.	1 2 3 4 5
6	The presence of immigrants could expose us to the risk of terrorism.	1 2 3 4 5
7	Immigrants could put our jobs at risk.	1 2 3 4 5
8	The crime rate increases with the presence of immigrants.	1 2 3 4 5
9	Immigrants undermine the stability of our country.	1 2 3 4 5
10	There is not enough room for immigrants in our country.	1 2 3 4 5
11	Immigrants should not have the same opportunities as us.	1 2 3 4 5
12	Immigrants should not have access to our own social services (health, welfare, etc.).	1 2 3 4 5
13	Immigrants should pay more taxes in our country.	1 2 3 4 5
14	Immigrants should be helped in their country.	1 2 3 4 5