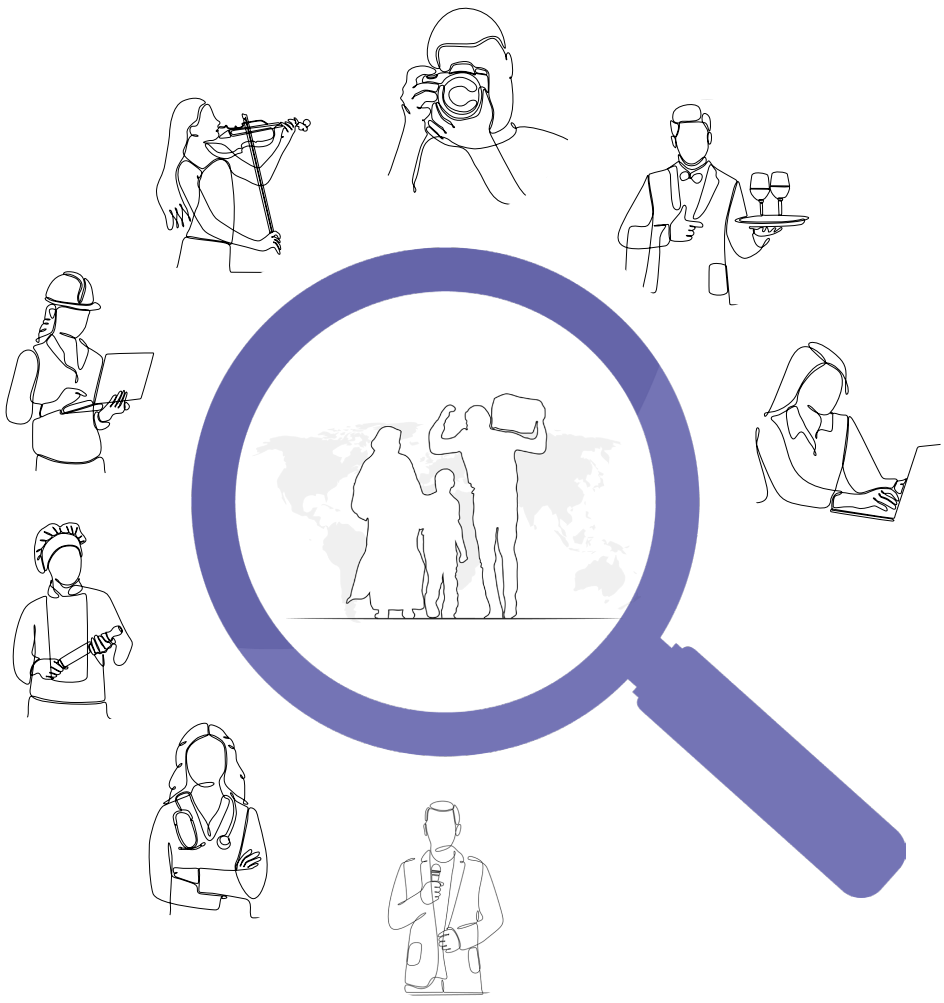
THE PSYCHOLOGICAL ASSESSMENT OF REFUGEES IN THE CONTEXT OF WORK-RELATED INTEGRATION

DAN ASFAR



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VRIJE UNIVERSITEIT

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CHAPTER 1

General Introduction

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GENERAL INTRODUCTION

The share of foreign-born (non-European) population in Europe was 3.5% at the end of the 1990s, and this number has increased to 12.8% by 2021 (Eurostat, 2021a). Almost two-thirds (64.2%) of the foreign-born population in 2020 in Europe were non-European Union (EU) nationals (Eurostat, 2021a), which is primarily the consequence of forced replacement of large groups of refugees due to war and persecution in the MENA (Middle East and North Africa) region. Between 2014 and 2021, in total 6,204,095 asylum seekers requested humanitarian protection in EU countries, and 199,620 of them did so in the Netherlands (Eurostat, 2021a). The influx of these recently arrived refugees has increased the cultural diversity in the Netherlands but has also raised the question of how our society can effectively help refugees successfully integrate into their new host country. In this dissertation, I address this question from an individual-level psychological approach. I demonstrate that psychological individual characteristics can influence refugees' integration outcomes and must therefore be examined to design effective customized integration trajectories. Additionally, with the aim to improve the psychological assessment of refugees, I have developed and validated a novel implicit instrument with potential utility for refugee assessments.

REFUGEE INTEGRATION

In order to study the factors that influence the successful integration of refugees, it is necessary to first define and describe the term *integration*, and to subsequently clarify what constitutes *successful*. Yet, after several decades of research, there is still no clear consensus on how to define and assess migrants' integration (e.g., Castles et al., 2002; Saharso, 2019; Schinkel, 2018). Several authors have even argued that integration is a "chaotic concept" (e.g., Ager & Strang, 2008; Penninx, 2019; Schneider & Crul, 2010). This unclarity is reflected in studies on migrants' and refugees' integration that usually either avoid using or proposing a definition of the term, or that stress its complex nature (Harder et al., 2018; Puma et al., 2018). In research, until now two definitions have been most influential. In one definition, integration is described as a two-way process of becoming an accepted part of society (Bijl & Verweij, 2012; Council of Europe, 1997). In another definition, integration is referred to as the process through which immigrants come to a similar socioeconomic position as native-born people (OECD/EU, 2015; Schneider & Crul, 2010). However, the following issues have been raised about these definitions: they are ambiguous and hence multi-interpretable, do not specify the dimensions through which migrants should be compared with the native population, are normative and assume that immigrants should assimilate into the host country, and are influenced by policies (Abdou, 2019; Faist, 2000; Loch, 2014; Puma et al., 2018; Saharso, 2019; Schneider & Crul, 2010).

In an attempt to address the above-mentioned issues, Harder et al. (2018) recently proposed a framework that has received much scientific interest. The authors define integration as the "degree to which immigrants have the knowledge and capacity to build a successful, fulfilling life in the host society" (Harder et al., 2018, p. 11484). In this framework, six dimensions of integration have been conceptualized and operationalized: The psychological dimension (one's sense of belonging in the host society), the economic dimension (employment outcomes and income), the political dimension (political and civic participation), the social dimension (social ties with natives), the linguistic dimension (the ability to use the local language), and the navigational dimension (managing basic needs in the host country).

This dissertation primarily concentrates on the economic and linguistic integration dimensions for three main reasons. First, this Ph.D. project has been conducted in the domain of industrial and organizational psychology, where the economic and the linguistic dimensions are highly relevant. Second, there is robust evidence for a positive link between local language proficiency (the linguistic dimension) and employment (the economic dimension), and social well-being (e.g., Beiser & Hou, 2001; Paul & Moser, 2009), stressing the importance of investigating these integration dimensions. Third, a higher workforce participation (economic integration) and its prerequisite local language proficiency (linguistic integration) are important during the current labor market shortages, as refugees can help to diminish the employment gaps (UNHCR, 2013).

THE PREDICTORS OF REFUGEES' INTEGRATION SUCCESS

To explain and predict differences in refugees' integration success, several factors have been investigated until now. These can be organized on three different levels: The institutional (or macro) level, the organizational (or meso) level, and the individual (or micro) level (e.g., Al Ariss et al., 2012; Lee et al., 2020). The institutional level consists of factors that pertain to international, national, and local policies, and to regulations and legislation. Most empirical work has focused on migrants' and refugees' employment, indicating integration success. Examples of factors and procedures that have shown to affect integration success include the length of the asylum process (e.g., Bakker et al., 2014; Hainmueller et al., 2016), housing allocation policies (e.g., Beckers & Borghans, 2011, Fasani et al., 2022), and the accreditation of foreign credentials (Krahn et al., 2000).[1]

The organizational level pertains to factors that support refugees and employers toward societal integration. In the Netherlands, for example, governmental, non-governmental, and non-profit organizations such as the Dutch council for refugees (Vluchtelingenwerk) and the Foundation for Refugee Students (UAF) assist refugees in local language learning, education, and employment. These organizations provide resources, information, and a social network to refugees that help them with access to facilities, learning, education, and employment, and as such, help them towards integration (Garkisch et al., 2017; Lacroix

1 For a recent review on integration policies in the Netherlands, readers are referred to Dagevos et al. (2020).

et al., 2015). Additionally, employers can exert influence on the economic integration of refugees through inclusive and fair personnel recruitment and selection, and training and development opportunities (Szkudlarek, 2019). In fact, several studies have shown that employers who had hired refugees were mostly satisfied with their performance and were likely to recruit refugees in the future and recommend refugee job seekers to other organizations (Lundborg & Skedinger, 2016; Szkudlarek, 2019).

The individual level – the last of the three levels – pertains to refugees' individual differences characteristics that are associated with integration outcomes. The most frequently studied individual difference predictors of linguistic and economic integration are sociodemographic and human capital variables such as age, gender, educational attainment, and work experience, and local language proficiency has been studied as a predictor of economic integration, see Chapter 2 to Chapter 4. However, this dissertation draws upon the literature on applied psychology to study refugees' integration outcomes from the individual-level perspective. A long tradition of research in this literature has identified and studied numerous psychological traits and categories of traits in which people differ from each other (e.g., Sackett et al., 2017). The most frequently studied traits are cognitive abilities (general intelligence or specific abilities; Carroll, 2005), personality (typically through five or six dimensions; Ashton et al., 2004; Costa & McCrae, 1992), vocational interests (such as through six typological domains; Holland, 1959), and values (e.g., the ten basic human values; Schwartz, 1992). These psychological individual differences, particularly cognitive ability and personality, have frequently been associated with performance and behavior at work and in education (e.g., Connelly & Ones, 2010; Poropat, 2009; Sackett et al., 2022).

Given the importance of psychological individual differences in predicting outcomes in these domains, it is surprising that only a handful of studies has investigated psychological traits among refugees as predictors of education- and work-related integration outcomes (for exceptions, see Hahn et al., 2019; Kosyakova & Laible, 2021; Thum, 2014). There are two probable explanations for the limited applied psychological work on this issue. One explanation is that the domain of applied personality is relatively small in comparison to other research domains, and hence, comparatively few scholars take an applied psychological approach to the literature on refugees' integration success. Another explanation is that psychological traits are relatively difficult and time-consuming to study. Whereas sociodemographic variables are available in governmental databases, the study of psychological traits requires special assessments. This dissertation aims to address this research gap by studying psychological individual differences, among which general mental ability (GMA; or intelligence) and personality traits, with respect to refugees' integration outcomes.

BEYOND TRADITIONAL (PERSONALITY) SELF-REPORT MEASURES

Many psychological individual differences, including personality traits, have typically been assessed using self-report measures, where participants indicate the extent to which they agree with items presented on a Likert-scale. Concentrating on the assessment of personality, decades of research, primarily in Western samples, revealed robust evidence for the validity of personality inventories such as the (five-dimensional) NEO PI-R (Costa & McCrae, 1992) and the (six-dimensional) HEXACO-PI-R (Ashton et al., 2004). There is some support for the cross-cultural validity of such inventories (cf. Ion et al., 2017; Schmitt et al., 2007), although such studies have typically examined only few non-Western samples (Heine & Buchtel, 2009). In fact, there is empirical work that has raised several issues about the cross-cultural validity of traditional personality inventories (cf. Gurven et al., 2013; Laajaj et al., 2019; Smaldino et al., 2019).

One of these issues pertains to response styles, which are a systematic tendency to select particular scale options, regardless of the target construct (Paulhus, 1991). As such, response styles introduce error and therefore interfere with the measurement of the target construct (Podsakoff et al., 2012). Commonly studied response styles are the acquiescent response style (the tendency to agree regardless of item content), the extreme response style (the tendency to overuse the endpoints of a scale), the midpoint response style (the tendency to overuse the middle point of a scale), and socially desirable responding (the tendency to answer questions in a way that makes oneself look good). Abundant research has shown that response styles vary between cultural groups (cf. Danner et al., 2015). For example, higher rates of acquiescent and extreme response styles have been observed among Arab versus Jewish Israelis (Baron-Epel et al., 2010) and among first-generation versus second-generation migrants (Morren et al., 2012). Given the variations in response styles across cultures, some researchers have tried to "correct" for response style. Yet, despite such attempts, correcting for response styles has yielded no meaningful positive effects on the structural validity and the national-level criterion-related validity of personality inventories (e.g., Diamantopoulos et al., 2006; Dudley et al., 2005; Hoffmann et al., 2013).

Another issue with traditional personality measures in the cross-cultural context pertains to self-presentation, which concerns having unrealistic positive views of the self (Taylor & Brown, 1988). Self-presentation on self-report measures occurs cross-culturally, although differences have been observed in the traits in which cultures tend to self-enhance (Sedikides et al., 2003). For example, in two studies, Japanese people rated themselves as more positive than the midpoint on collectivistic attributes such as "cooperative" and "respectful", but did not self-enhance on individualistic attributes such as "self-reliant" and "unique", whereas the reverse pattern was found among American participants (Sedikides et al., 2003). As such, cultural self-presentation tendencies pose a threat to the validity of cross-cultural personality assessments.

Finally, cross-cultural personality assessments with traditional inventories may be problematic due to the reference-group effect (RGE; Heine et al., 2002). This effect refers to "the tendency for people to respond to subjective self-report items by comparing themselves with implicit standards from their culture" (Heine et al., 2008, p. 309). Several studies have shown that using different references based on age, gender, relative, and nationality affects mean-level personality trait test scores (Credé et al., 2010; De Vries et al., 2014; Wood et al., 2012). Thus, differences in mean-level test scores of different cultural or social groups might be masked and hence have suboptimal validity (Allik & Realo, 2016).

Altogether, the issues described above pose a threat to the validity of cross-cultural personality assessments. One potential viable solution for these issues is measuring personality through implicit instruments (Uhlmann et al., 2012). Implicit instruments assess individual attributes that people might not be willing to disclose or are unaware of (Moors et al., 2010), and thus might be less prone to biases of self-report measures (e.g., Vianello et al., 2013). One of the aims of this dissertation therefore was to develop and validate a new implicit instrument based on an existing paradigm (i.e., a method of assessing implicit cognition, such as the implicit association test [IAT; Greenwald et al., 1998] and the conditional reasoning test [CRT; James, 1998]), with the ultimate goal to make this instrument a valid and useful tool in the assessment of refugees. To this end, the existing implicit paradigms were reviewed based on the following criteria: The evidence for their (1) content- and (2) criterion-related validity, their (3) cross-cultural applicability, (4) applicant reactions, (5) susceptibility to faking, and (6) whether automatic scoring is possible.[2] Based on this review, an implicit instrument was developed based on the partially-structured attitude paradigm, where individuals judge trait levels of hypothetical persons who are described in vignettes (Vargas et al., 2004). As explained in Chapter 5, these judgments indicate something about the trait level of the respondents.

The implicit instrument which was developed aims to measure the personality trait Honesty-Humility, which has been defined as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156). Honesty-Humility is a relevant trait to measure as it is an important predictor of several employee behaviors and work outcomes (e.g., see Lee et al., 2019). Additionally, Honesty-Humility has been shown to be associated with the cultural adaptation of sojourners (Geeraert et al., 2019). The instrument was labeled as the Normative Judgment Test of Honesty-Humility (NJT-H). This dissertation provides some initial evidence for the validity and usefulness of the NJT-H, albeit among native Dutch samples.

2 Given that the applied psychological literature on implicit instruments has only recently been started to emerge, there is limited robust evidence for each criteria mentioned above for each implicit method (for a review, see Uhlmann et al., 2012).

THE CONTEXT OF THIS DISSERTATION

In an influential article, Henrich et al. (2010) introduced the acronym WEIRD, which stands for Western, Educated, Industrialized, Rich, and Democratic. The authors showed that the majority of the participants in psychological studies are characterized as being WEIRD, and argued that research should focus on human psychology and behavior that is more reflective of the global human diversity. However, this is particularly a challenging task with the so-called "hard-to-reach" populations, such as people with disabilities, elderly people, and traveler families, but also migrants and refugees (e.g., Jones & Newburn, 2001). Nonetheless, as a consequence of the great influx of refugees in the Netherlands since 2014, in this dissertation, it was possible to collect data on thousands of refugees. The great influx of refugees induced the need for an assessment that portrays the profile of a refugee – their motivations, capabilities, personal barriers, and values – as this profile could be used to offer optimal and custom integration trajectories. Such an assessment could have several benefits: it is systematic as it screens refugees in a similar way, objective because it provides normative responses and test scores, and practical as it offers a lot of information about the refugee, which is less prone to cultural and linguistic communicative issues like in interviews. Such an assessment was developed by NOA BV, a consultancy agency that focuses on the development and the assessment of psychological instruments for work- and education-related purposes. The implementation of the refugee assessment started in June 2016. By June 2022, 88 Dutch municipalities and organizations have used the refugee assessment to assist refugees in their integration, which resulted in approximately 27.000 individual assessments – and thus a unique (psychological) dataset of refugees became available. However, by the time of launching this assessment, little was known about the psychometric properties (such as reliability and validity) of the assessment components among the understudied group of refugees. To provide such insights, the present Ph.D. project was initiated.

OUTLINE OF THIS DISSERTATION

This dissertation is organized as follows. The first and present chapter (Chapter 1) is the General Introduction. Next, this dissertation includes four empirical chapters (Chapter 2 to Chapter 5). These chapters all related to individual and psychological differences and the integration of refugees and work outcomes. Finally, the last chapter (Chapter 6) presents the General Discussion. Each chapter can be read independently from the other chapters.

Chapter 2 identifies four statistically derived psychological clusters of refugees based on their GMA, achievement motivation, and psychological distress. These psychological clusters are compared in terms of their level of work search intention and local (Dutch) language proficiency. This chapter explores to what extent the psychological clusters differentiate refugees in terms of these integration outcomes. Also, it examines whether the clusters differ in refugees' demographic characteristics, namely nationality, gender, age, and educational level.

Chapter 3 focuses on the importance of psychological individual difference characteristics as predictors of refugees' local language proficiency. In a cross-sectional study among Syrian and Eritrean refugees in the Netherlands, this chapter examines the effects of several sociodemographic factors and psychological distress, next to the potential effects of GMA, work search intention, and the personality traits Conscientiousness and Openness to Experience on refugees' level of local language proficiency.

Chapter 4 concentrates on the individual-difference factors of refugees' workforce participation. This chapter introduces and investigates a novel integrative framework for predicting refugees' workforce participation, which organizes individual-difference factors into hindering (impeding demographics and health- and family-related challenges) and facilitating (acquired human and social capital and work-relevant traits) characteristics. This framework was examined among Syrian and Eritrean refugees in the Netherlands through a time-lagged data design.

Chapter 5 describes the validation of an implicit instrument – the Normative Judgment Test of Honesty-Humility (NJT-H) – to measure the personality trait Honesty-Humility in the organizational context. In this chapter, the NJT-H is examined with respect to employees' work performance and behaviors in two studies among employees living in the Netherlands who do not necessarily have a foreign cultural background.

Chapter 6 presents a general discussion of the four empirical chapters of this dissertation. I summarize and integrate the main findings which emanated from the four studies, describe their theoretical implications and contributions to the literature, offer practical implications to support flourishing refugees' integration trajectories, and shed light on future research opportunities.

Figure 1. *A Visual Representation of the Content of this Dissertation*

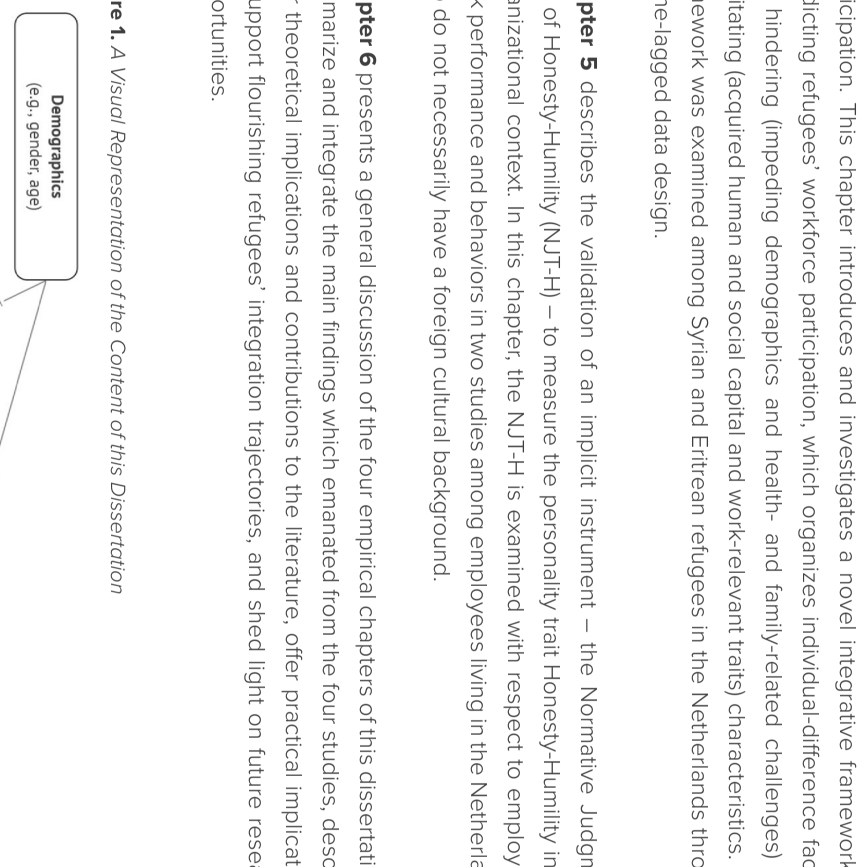

Table 1. *Chapter Overview of this Dissertation*

Chapter/title	Studies	Independent Variables	Dependent Variables	Methodology	Purpose	Status
2. Psychological Clusters and Integration Outcomes of Recently Arrived Refugees in the Netherlands	1	▪ Demographics: nationality, gender, age, educational level ▪ Psychological clusters based on GMA, achievement motivation, and psychological distress	▪ Work search intention ▪ Local language proficiency	Sample ▪ Refugees from Syria, Eritrea, Iran, Iraq, and Afghanistan (*N* = 4648) Design ▪ Cross-sectional	To identify refugee clusters based on psychological traits and examine how these clusters relate to integration outcomes	Manuscript in preparation
3. Psychological Individual Differences as Predictors of Refugees' Local Language Proficiency	1	▪ Demographics: gender, age of arrival, educational level ▪ Psychological distress ▪ GMA ▪ Work search intention ▪ Conscientiousness ▪ Openness	▪ Local language proficiency	Sample ▪ Refugees from Syria (*n* = 1054) and Eritrea (*n* = 500) Design ▪ Cross-sectional	To investigate the influence of psychological traits on refugees' local language learning, and their incremental validity over demographics	Published: Asfar, D., Born, M. P., Oostrom, J. K., & Vugt, M. (2019). Psychological individual differences as predictors of refugees' local language proficiency. *European Journal of Social Psychology, 49*(7), 1385–1400. https://doi.org/10.1002/ejsp.2592
4. A Hindering and Facilitating Individual-Difference Factors Framework for Predicting Refugees' Workforce Participation	1	▪ Impeding demographics: age sex, nationality ▪ Health- and family-related challenges: physical health problems, PTSD symptoms, spouse/children in country of origin ▪ Acquired human and social capital: PM educational level, PM work experience, local language proficiency, frequency of contact with natives ▪ Work-related traits: Agreeableness, Extraversion, Emotional Stability, GMA, Conscientiousness, work centrality	▪ Workforce participation (employment and longest employment duration) ▪ Highest hourly wage	Sample ▪ Refugees from Syria (*n* = 1867) and Eritrea (*n* = 844) Design ▪ Time-lagged (assessment data matched to governmental data with a time span of five years)	To introduce and test a new framework of the individual-difference predictors of refugees' workforce participation	Submitted for publication
5. The Normative Judgment Test of Honesty-Humility: An Implicit Instrument for the Organizational Context	2	▪ HEXACO personality traits ▪ NJT-H	▪ Study 1: self-ratings of CWB and OCB ▪ Study 2: CWB (self- and supervisory ratings), OCB and task performance (supervisory ratings)	Sample ▪ Dutch and foreign participants living in the Netherlands (Study 1, *N* = 230; Study 2, *N* = 124) Design ▪ Cross-sectional (matched data of employee-supervisor in Study 2)	To develop and validate an integrity-related implicit instrument of the personality trait Honesty-Humility for the organizational context – with the ultimate aim to make this instrument a valid tool for the assessment of refugees	Submitted for publication

Note. PM = Pre-migration, NJT-H = Normative Judgment Test of Honesty-Humility, OCB = Organizational citizenship behavior, CWB = Counterproductive work behavior.

CHAPTER 2

Psychological Clusters and Integration Outcomes of Recently Arrived Refugees in the Netherlands

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ABSTRACT

When examining refugees, researchers and practitioners tend to focus on the demographic subgroups to which they belong. The present study investigated whether it is useful and beneficial to examine refugees as part of psychological clusters (groups of individuals that share similar profiles) through means of cluster analysis. The study was conducted among recently arrived refugees from Syria (*n* = 2881), Eritrea (*n* = 1183), Iran (*n* = 270), Iraq (*n* = 188), and Afghanistan (*n* = 126) living in the Netherlands. Drawing upon the ability-motivation-opportunity (AMO-)framework, we assessed refugees' general mental ability (GMA), achievement motivation, and psychological distress to identify and explore psychological clusters. The cluster analysis revealed four clusters, namely a bright, incapable, distressed, and undistinctive-ordinary cluster. We related these clusters and refugee demographics (i.e., nationality, gender, age, and educational level) to refugees' level of work search intention and local language proficiency. The results showed that the psychological clusters differ particularly in the latter outcome, and did so more than the demographic subgroups. These results provide some evidence for the utility of using psychological clusters in the domain of refugee integration.

KEYWORDS

refugees, integration, psychological clusters, demographic subgroups

PSYCHOLOGICAL CLUSTERS AND INTEGRATION OUTCOMES OF RECENTLY ARRIVED REFUGEES IN THE NETHERLANDS

War, persecution, and unsettled social conditions in many world regions, in particular Africa and the Middle East, have resulted in large groups of refugees coming to Europe from 2014 onwards. In the Netherlands alone, a total of 230,686 asylum applications were submitted from 2014 to 2020, of which 61.8% were granted (Eurostat, 2022a). The influx of these refugees has underscored the importance of understanding the factors that influence refugees' integration success into their new host country. Examples of such factors include governmental integration policies (e.g., Jongen et al., 2020; Koopmans, 2010), support from NGOs and non-profit organizations (Garkisch et al., 2017; McIntosh & Cockburn-Wootten, 2019), and the length of the asylum process in a country (e.g., Bakker et al., 2014). Besides such situational factors, demographic variables, such as refugees' gender and educational attainment, may also affect integration success (e.g., Bloch, 2002).

In the Dutch context, several studies and reports have been published on the link between demographic variables and integration success, both among the earlier waves (i.e., the 1990s; Dourleijn & Dagevos, 2011; Jennissen, 2011; Maliepaard et al., 2017), and more recent waves of refugees (i.e., 2014 and later; CBS, 2022; Dagevos et al., 2018; Jongen et al., 2020; Odé & Dagevos, 2017). The insights from these studies and reports are important for at least two reasons. First, differences between demographic subgroups help to identify the barriers that certain subgroups face, and as such, serve to identify solutions. Examples of refugee subgroup barriers include the large cultural distance between Eritrean refugees' home country and their European country of residence (Sterckx et al., 2018), and women's difficulties to enter the labor market in Western societies due to the traditional gender roles in their home countries according to which men are the income providers (Baranik, 2020; Bear & Glick, 2017; Razenberg et al., 2018). Second, a better understanding of demographic variables in relation to integration success is useful in practice, as these will help practitioners to examine which refugees will and which refugees will not need individual assistance (Miltenburg & Dagevos, 2021). For example, the finding that pre-migration educational attainment is associated with faster local language acquisition suggests that refugees with lower levels of pre-migration education might generally benefit more from intensive language courses (e.g., Asfar et al., 2019; Van Tubergen, 2010). Such insight can be taken into consideration by constructing custom integration trajectories.

Despite these benefits, a focus on demographic variables could result in an irrelevant salience and stereotyping of demographic subgroups, which have been associated with several negative effects. The salience of negative stereotypes can trigger the activation of stereotype threat, which is the psychological discomfort that is thought to arise when

individuals are confronted with a negative stereotype about their own group in a situation in which the negative stereotype could be confirmed (Steele & Aronson, 1995; Steele et al., 2002). Stereotype threat has for instance been found to negatively influence cognitive ability test scores, including those of migrants (Appel et al., 2015). Negative stereotypes of refugee subgroups can also result in discrimination, prejudice, and unethical practices. For example, several meta-analyses on fictitious job applications have shown that ethnic minorities, particularly female ethnic minorities, with a comparable resume and application letter, face substantial hiring discrimination compared to natives (Lippens et al., 2022; Thijssen et al., 2022; Zschirnt & Ruedin, 2016). Another recent example of unethical practices related to demographic data is the "Dutch childcare benefits scandal" (in Dutch: "Toeslagenaffaire"), where between 2013 and 2019, the authorities used data on citizens' second nationality to identify individuals who made fraudulent benefit claims for day-care (Huisman, 2020). Consequently, 26,000 parents were wrongly accused of fraud and were required to pay back the allowances they had received, which drove many families into severe financial hardship.

These issues motivated us to investigate an alternative way of describing and examining refugees. One potentially effective way is to array refugees into clusters based on relevant psychological traits. As we explain below, psychological traits related to one's ability, motivation, and opportunity are important and could hence be used for this purpose. Numerous studies have shown that arraying individuals into groups (clusters) based on psychological traits can help identify individuals at "risk" and serve to apply customized interventions. For example, Cerda-Navarro et al. (2019) used engagement factors to identify the profiles of students that were at risk of dropouts, which could, in turn, be used to prevent such occurrences. Similarly, in the present research, we use measures of general mental ability (GMA), achievement motivation, and psychological distress to identify psychological clusters and to investigate whether and to what extent these clusters are associated with integration outcomes, namely work search intention and local language proficiency. As such, we can establish whether it is useful to examine refugees by their psychological profile. Additionally, it allows comparing the usefulness of psychological clusters in comparison to demographic subgroups. In this study, these are nationality (Syria, Eritrea, Iran, Iraq, and Afghanistan), gender (men and women), age (three age groups), and educational level (five levels). Taken together, in this study, we address three research questions:

> *Research Question 1 (RQ1)*: What clusters among refugees can we identify based on psychological traits?
>
> *Research Question 2 (RQ2)*: To what extent do psychological clusters differ in the studied integration outcomes?
>
> *Research Question 3 (RQ3)*: How large are the differences in integration outcomes of the psychological clusters compared to demographic subgroups?

INTEGRATION OUTCOMES

There has been a long debate on the definition and the assessment of migrants' integration (e.g., Castles et al., 2002; Saharso, 2019; Schinkel, 2018). Recently, however, Harder et al. (2018) proposed a framework for refugees' integration that has received considerable scientific interest. In this framework, the authors define integration as the "degree to which immigrants have the knowledge and capacity to build a successful, fulfilling life in the host society" (Harder et al., 2018, p. 11484). This framework differentiates six dimensions of integration: The psychological dimension (the sense of belonging in the host society), the economic dimension (employment outcomes and income), the political dimension (political and civic participation), the social dimension (social ties with natives), the linguistic dimension (the ability to use the local language), and the navigational dimension (managing basic needs in the host country). In the present research, we focus on the economic and linguistic dimensions.

Most research on the economic dimension of integration has focused on refugees' quick and successful employment, as employment is regarded as a key aspect of integration (e.g., Ager & Strang, 2008; Esser, 2004), and as many refugees end up unemployed (Fasani et al., 2022). To illustrate, in the Netherlands, only 19% of the refugees who had received a residence permit in 2014 found a job within three years (CBS, 2021). This high unemployment rate among refugees is worrisome because it is associated with negative consequences, both on the macroeconomic (community) level (such as high economic costs for governments; Aiyar et al., 2016) and the individual level (such as poor mental health; McKee-Ryan et al., 2005; Paul & Moser, 2009). In the present study, we do not examine actual employment, but instead, focus on an important predictor of actual employment, namely, work search intention (Van Hooft & Noordzij, 2009; Van Hooft et al., 2021). Work search intention has been defined as the extent to which individuals are willing to try hard to perform necessary job-search behaviors, or the effort they are planning to exert engaging in job-search behavior (Van Hooft et al., 2004). Work search intention is a relevant alternative to actual employment in the present study, as the majority of participants are still unemployed by the time of the research due to their relatively short length of stay in the Netherlands. Thus, a measure of their employment intentions can, in comparison to actual employment, provide more power to detect significant differences between the psychological clusters and demographic subgroups.

Furthermore, we examine local language proficiency as a measure of linguistic integration of refugees. Local language proficiency has been related to refugees' higher well-being

(Beiser & Hou, 2001), lower psychological distress (Asfar et al., 2019), faster employment (Aldashev et al., 2009; Bloch, 2002; also, see Chapter 4), higher income (Chiswick & Miller, 2007; Dustmann, 1994; Shields & Price, 2002; also, see Chapter 4), and lower odds of marginalization (Bloch, 2002; Schellekens, 2001). Many previous studies have assessed refugees' local language proficiency through self-reports (e.g., Carliner, 2000; Chiswick & Miller, 2002; Van Tubergen, 2010) or interviews (e.g., Van Tubergen & Kalmijn, 2005; Van Tubergen & Wierenga, 2011). However, in the present research, we measured local language proficiency through an objective and validated standardized instrument (Edele et al., 2015).

THE PRESENT RESEARCH

The present research aimed to (1) identify clusters of refugees based on psychological traits, (2) examine the extent to which de clusters differ in integration outcomes, and (3) compare these differences with differences between demographic subgroups. With regard to demographic characteristics, a recent report of the Dutch Central Bureau of Statistics (CBS) has revealed that, three years after receiving a residence permit in the Netherlands, refugees from Afghanistan have the highest workforce participation (37%), whilst the other four nationalities show lower but about similar workforce participation rates, varying from 15% (Eritrea) to 20% (Iraq) (CBS, 2022). This CBS report also revealed that refugees from Iran have the highest local language proficiency, followed by refugees from Syria, Afghanistan, Iraq, and Eritrea. Furthermore, empirical work among recently arrived refugees in the Netherlands has shown that gender is associated with workforce participation (higher among male refugees; see Chapter 4), but not associated with local language proficiency (Asfar et al., 2019). These two studies have also shown that age is negatively associated with workforce participation and local language proficiency, and that educational level is not significantly associated with workforce participation but is positively associated with local language proficiency.

In this study work search intention and local language proficiency between the demographic subgroups were examined, but also examine psychological clusters. Through the statistical technique of cluster analysis, refugees were classified into clusters: groups of individuals who are similar in terms of the variables entered into the analysis. To our knowledge, only a few studies have employed cluster analysis among refugee samples (e.g., to identify rehousing trajectories, participation profiles, and socio-cultural starting positions; Damen et al., 2022; De Hoon et al., 2021; Miltenburg & Dagevos, 2021). Here, we apply cluster analysis using refugees' psychological individual differences by drawing upon the ability-motivation-opportunity (AMO) framework (Appelbaum et al., 2000). The AMO framework posits that employee performance – and in turn organizational performance – depends on three fundamental individual factors: ability (which represents a person's ability to perform the task), motivation (which represents an individual's willingness to act), and opportunity (which refers to the extent to which circumstances facilitate or hinder behavior) (Appelbaum et al., 2000). The three factors in the AMO framework are essential features of several influential psychological theories, such as expectancy theory (Vroom, 1964) and social exchange theory (Blau, 1964).

The extensive literature from applied psychology was used to select and to justify the constructs for the three AMO factors (Sackett et al., 2017). In applied psychology, ability has generally been studied as general mental ability (GMA, or intelligence), which is "the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought" (Neisser et al., 1996, p. 77). As several authors have contended, the measurement of skills is intimately connected to the measurement of GMA (Kuncel & Beatty, 2013; Lubinski & Dawis, 1992). Across industries and jobs, GMA affects one's capability to learn and perform well on tasks (e.g., Nye et al., 2022; Schmidt & Hunter, 2004). Moreover, in research, GMA is usually positioned as the standard against which other predictors are compared (Ree et al., 1994). Among refugees, GMA has also been positively associated with workforce participation (see Chapter 4) and local language proficiency (Asfar et al., 2019; Edele et al., 2015). Altogether, GMA is an important psychological trait that pertains to individual differences in ability, and is therefore used in the present research.

Achievement motivation has been considered the trait that best reflects individual differences in motivation (e.g., Kanfer & Heggestad, 1997). Individuals high in achievement motivation set high standards and aspire to accomplish difficult tasks (Jackson, 1974). Correspondingly, achievement motivation is a positive predictor of academic performance (Spence et al., 1989) and job performance (Dudley et al., 2005). To the best of our knowledge, there are no studies on the relationship between achievement motivation and the integration outcomes examined in this research. Altogether, in this research, we use a measure of achievement motivation to assess AMO's motivation factor.

Finally, opportunity in the AMO framework has been more broadly interpreted and used in the literature. Opportunity has typically been studied as a situational variable (e.g., job autonomy, involvement in policymaking; Boselie, 2010). However, individual-level variables can also facilitate or hinder behavior, and could therefore be considered under the umbrella of the opportunity factor in the AMO framework. For example, factors that negatively influence (re)employment include disabilities and illness (Wanberg et al., 2002), larger households (Van Hooft et al., 2005), and psychological distress (McKee-Ryan et al., 2005; Paul & Moser, 2009). However, psychological distress is highly relevant among refugee samples, as poor psychological health is an important issue among such groups given the traumatic experiences they had to go through and may still encounter (e.g., Blackmore et al., 2020; Bogic et al., 2015; Charlson et al., 2019; Fazel et al., 2005). Therefore, the present

study used a psychological distress scale as a measure of the opportunity factor in the AMO framework.

In sum, in the present research, GMA, achievement motivation, and psychological distress were used to identify psychological clusters among refugees. Since cluster analysis is an exploratory method, no predictions were formalized about the actual clusters or their relations with dependent variables (Maxwell et al., 2002). The psychological clusters are compared for the two integration outcomes to identify which psychological cluster(s) secure more or less favorable integration success. Furthermore, the magnitude of the integration outcome differences between the refugee demographic subgroups and psychological clusters are also examined.

METHOD

PARTICIPANTS AND PROCEDURE

In total, 34 municipalities and organizations that are involved with refugees (such as employment organizations and educational institutions) invited refugees within a few months to a few years after arriving in the Netherlands to complete a digital psychological assessment to support them in their integration into the Dutch society. Participating in the assessment was voluntary, and although exact numbers about the response rate are unavailable, assessment administrators estimated it to be at least 95%. The assessment was offered by a consultancy agency that focuses on the development and the assessment of psychological instruments for work- and education-related purposes. The assessments were usually administered in distraction-free rooms in the municipality or the organization, and took about two hours to complete. During the assessments, one or more staff members were present, and no communication with other candidates was allowed. The assessment consists of sociodemographic questions and several psychological measures (for details, see Chapter 3 and Chapter 4 of this dissertation). The criteria for participating in the assessment were being at least 18 years old, having a residence permit, and being literate. Participating in the assessment was not monetarily compensated.

The data were collected from June 2016 to November 2019. In this period, 7609 refugees completed the assessment. However, we only used the data of the five largest nationalities in our dataset (N = 4648), which were Syria (n = 2881; 62.0%), Eritrea (n = 1183; 25.5%), Iran (n = 270; 5.8%), Iraq (n = 188; 4.0%) and Afghanistan (n = 126; 2.7%). Most of the refugees were male (3141; 67.6%). The mean age was 30.50 years (SD = 9.44; Mdn = 28 years). The educational levels of the refugees in the country of origin had been converted to the Dutch education system using the Nuffic classification (Nuffic, 2022). In terms of this system, 15.2% of the candidates had no or basic education (though they were literate), 39.6% of the candidates had attained secondary education, 17.1% of the candidates had attained secondary vocational education, 18.1% of the candidates had attained higher education (cf. bachelor's degree), and 10.0% of the candidates had attained university master's level. In total, 64.7% of the refugees reported having pre-migration work experience. The median year in which refugees completed the assessment was 2017. The average duration between arriving in the Netherlands and completing the assessment was 22.99 months (SD = 15.75). The descriptive statistics for the study variables are reported in Table 2 to Table 5 for the nationalities, genders, age groups, and educational levels, respectively.

MATERIALS

All measures had been developed in the Dutch language, but a certified translation agency had translated the measures into different languages, including English, Modern Standard Arabic (for Arabic refugees, including refugees from Syria and Iraq), Tigrinya (for Eritrean refugees), and Farsi (for refugees from Iran and Afghanistan). The refugees completed the assessment in their native language (92.3%), in English (7.2%), or in Dutch (0.6%), according to their own preference.

General Mental Ability

Two non-verbal subtests of the multicultural capacities test were used to assess GMA, which had been developed to measure fluid intelligence and to minimize any potential bias that might be imposed by cultural background (e.g., due to language or knowledge domain differences) (MCT-M; Van Breemen et al., 2018; Van den Berg, 2001).[3] The subtest *Components* consists of 30 items with a time limit of 9 minutes, in which participants must select two out of six spatial parts that can make up one displayed figure. The subtest *Exclusion* consists of 30 items with a time limit of 7 minutes, in which participants must select the figure that does not match the other four presented figures. Research has supported the cross-cultural validity and applicability of the MCT-M (Asfar et al., 2019) and provided evidence for its predictive validity in the domains of social functioning and academic achievement among native Dutch candidates and several Dutch migrant groups (Van den Berg, 2001). The correlation between the two MCT-M subtests in the present research was r = .57, p < .001. Earlier research revealed support for the aggregation of the two subtests into one total score of GMA (Asfar et al., 2019). The raw total score on the two subtests is M = 33.00 (SD = 11.00). In a representative sample of the Dutch population, a raw score of M = 44.44 (SD = 9.19) corresponds to an IQ score of 100. Correspondingly, GMA was computed as the average of the standardized scores on both subtests. To provide more insights into the reliability of the MCT-M subtests, a sample of 35 refugees completed Components twice and 29 refugees completed Exclusion twice with average time intervals between the

3 To see the test environment and some sample items of the two GMA subscales, readers can visit the webpage https://www.noa-online.net/practicequestions/mct-m. After entering one's email address, the login instructions are sent.

assessments of respectively 6.5 and 6.2 months. These data revealed test-retest reliabilities of r = .88 for Components and r = .93 for Exclusion.

Achievement Motivation

To assess achievement motivation, the Competentietest was used (NOA, 2016). The scale includes ten items, but two items were excluded because of low item-rest correlations (r = .13 and r = .03). The items were rated on a 5-point Likert scale, ranging from 1 = *(Almost) never* to 5 = *(Almost) always*. An example item is "I make high demands on myself in my work". The raw mean score of the scale is M = 3.73 (SD = 0.66). In a representative sample of the Dutch population, a mean raw score of M = 4.08 (SD = 0.51) has been observed. In the current sample, the alpha coefficient of this scale equaled .77 (respectively .77, .72, .82, .83, and .81 for refugees from Syria, Eritrea, Iran, Iraq, and Afghanistan).

Psychological Distress

To assess psychological distress, the 10-item Kessler Psychological Distress Scale was used (K10; Kessler et al., 2002). In the K10, participants are asked to indicate on a 5-point Likert scale how often they experienced or felt something during the last 30 days. An example item is "About how often did you feel hopeless?". The raw total score on the K10 is M = 17.81 (SD = 7.74; range = 10-50). Several studies have shown that the K10 is a reliable and valid instrument to assess anxiety and depressive disorders in clinical and in non-clinical populations (e.g., Cairney et al., 2007; Furukawa et al., 2003; Kessler et al., 2003). Furthermore, the K10 also has shown good psychometric qualities among non-Western samples, supporting the cross-cultural validity of the instrument (Fassaert et al., 2009). In the current sample, the alpha coefficient of this scale equaled .89 (respectively .90, .83, .95, .93, and .94 for refugees from Syria, Eritrea, Iran, Iraq, and Afghanistan).

Work Search Intention

Work search intention was assessed with a 10-item subscale of a work motivation questionnaire (AWV; NOA, 2005). Research has revealed evidence for the convergent validity of this instrument with other work motivation instruments (Dusseldorp et al., 2018). An example item is "How much time do you spend on searching for vacancies on the internet?". Participants indicated how much time they spend on such activities using a 5-point Likert scale, ranging from 1 = *Not at all* to 5 = *Very frequently*. The raw mean score of the scale is M = 2.50 (SD = 0.94). The alpha coefficient of the work search intention scale in the current sample equaled .91 (respectively .91, .89, .93, .92, and .94 for refugees from Syria, Eritrea, Iran, Iraq, and Afghanistan).

Local Language Proficiency

A test developed by the psychological consultancy agency that gathered the data assessed local (Dutch) language proficiency (NOA, 2006). The Dutch language proficiency test contains two short stories written in Dutch with 80 incomplete words which need to be completed to make meaningful words within the context. Scores on this test can range from 0 (no word fragment completed correctly) to 80 (all word fragments completed correctly). The raw total score on the test is M = 22.41 (SD = 18.60). Several studies have provided support for the construct- and criterion-related validity of the Dutch language proficiency test among migrant and refugee groups (Asfar et al., 2019; CINOP et al., 2002; NOA, 2006). The alpha coefficient of the Dutch language proficiency test in the current sample equaled .97 (respectively .98, .96, .98, .97, and .97 for refugees from Syria, Eritrea, Iran, Iraq, and Afghanistan). Furthermore, a random sample of 119 refugees who had conducted the assessment, completed the Dutch language proficiency test twice with an average time interval between the assessments of 12 weeks and revealed a test-retest reliability of r = .84 (NOA, 2021).

STATISTICAL ANALYSIS

To identify psychological clusters, a cluster analysis was conducted with GMA, achievement motivation, and psychological distress according to a two-step approach. First, a hierarchical cluster analysis was performed to determine the number of clusters. Second, we conducted a non-hierarchical cluster analysis to assign participants to the clusters (Gore, 2000; Hair et al., 2010; Tan et al., 2016). The hierarchical cluster analysis was conducted using Ward's method based on squared Euclidian distances. Ward's method is one of the most robust methods in hierarchical cluster analyses (Gore, 2000), and minimizes the within-cluster differences (Brusco et al., 2017). The non-hierarchical cluster analysis was done with the k-means technique to assign each participant to one of the identified clusters.

One-way analysis of variance (ANOVA) was used to test whether demographic subgroups and psychological clusters differ in the studied variables. By means of the conservative post-hoc Tukey's Honest Significant Difference test, it was examined whether specific subgroups or clusters show significant differences in the integration outcomes. The magnitude of the differences in the study variables between refugee subgroups and psychological clusters were reported in partial eta squared values (η_p^2). Values of $\eta_p^2 < .035$, $.035 \leq \eta_p^2 \leq .10$, and $\eta_p^2 > .10$ are respectively considered small, medium, and large effects (Cohen, 1988). For ease of interpretability, the scores on the psychological traits (GMA, achievement motivation, and psychological distress) and the integration outcomes (work search intention and local language proficiency) were transformed to z-scores. The level of the mean scores and mean score differences were interpreted according to the Cohen's d guidelines, where values of d = 0.20, d = 0.50, and d = 0.80 are respectively considered small, medium, and large (Cohen, 1988). Based on these guidelines, we described mean differences of $z < 0.10$ as average, $0.10 \leq z \leq 0.35$ as slightly above (or below) average, $0.35 \leq z \leq 0.65$ as moderately high (or low), and $z > 0.65$ as very high (or low). The analyses were conducted in SPSS (version 26).

RESULTS

PRELIMINARY ANALYSES

The correlations between the study variables are reported in Table 1. Work search intention significantly correlated with gender (r = -.14, p < .001; males higher), age (r = -.03, p = .042), pre-migration educational level (r = .11, p < .001), pre-migration work experience (r = .14, p < .001), achievement motivation (r = .21, p < .001), and psychological distress (r = -.06, p < .001). Furthermore, local language proficiency significantly correlated with age (r = -.08, p < .001), pre-migration educational level (r = .26, p < .001), GMA (r = .32, p < .001), achievement motivation (r = .06, p < .001), and psychological distress (r = -.10, p < .001). Finally, work search intention and local language proficiency were positively correlated (r = .15, p < .001). Most significant correlations were small to moderate.

Table 1. *Bivariate Correlations between the Study Variables*

	1	2	3	4	5	6	7	8
1. Gender (Male = 0, Female = 1)	-							
2. Age	.03	-						
3. PM educational level	-.00	.20**	-					
4. PM work experience (yes)	-.31**	.34**	.21**	-				
5. GMA	-.02	.04*	.33**	.10**	-			
6. Achievement motivation	-.12**	.07**	.16**	.16**	.15**	-		
7. Psychological distress	.05**	.08**	-.07**	.04*	-.07**	-.14**	-	
8. Work search intention	-.14**	-.03*	.11**	.14**	.01	.21**	-.06**	-
9. Local language proficiency	.02	-.08**	.26**	.01	.32**	.06**	-.10**	.15**

Note. PM = pre-migration, GMA = general mental ability.
** p < .05, ** p < .01.*

DEMOGRAPHIC SUBGROUPS

The descriptive statistics of and differences in study variables for nationality, gender, age group, and educational level are reported in Table 2 to Table 5. The nationalities revealed medium differences in work search intention, F(4, 4643) = 81.34, p < .001, η_p^2 = .065, where refugees from Eritrea (M = 0.38, SD = 0.97) and Iran (M = 0.36, SD = 1.02) scored higher than refugees from the other nationalities (respectively p-values ≤ .001 and p-values ≤ .011), but did not differ from each other (p = .997). Furthermore, the nationalities revealed small differences in local language proficiency, F(4, 4643) = 13.65, p < .001, η_p^2 = .012, where Iran scored significantly higher than the other nationalities (p-values ≤ .001), except Afghanistan (p = .059).

Men and women revealed small differences in work search intention, F(1, 4646) = 89.37, p < .001, η_p^2 = .019, where men (M = 0.10, SD = 0.96) scored higher than women (M = -0.20, SD = 1.04). Furthermore, men (M = -0.01, SD = 0.98) and women (M = 0.03, SD = 1.04) showed no significant differences in local language proficiency, F(1, 4646) = 1.87, p = .171, η_p^2 = .000.

The age groups revealed small differences in work search intention, F(2, 4645) = 7.15, p = .001, η_p^2 = .003, where the age groups of 18-30 (M = 0.03, SD = 1.00) and 30-45 (M = 0.00, SD = 1.01) years old scored significantly higher than the 45-65 (M = -0.16, SD = 0.96) years old age group (respectively p < .001 and p = .006), but the former two age groups did not differ significantly from each other (p = .674). Similarly, the age groups revealed small differences in local language proficiency, F(2, 4645) = 17.71, p < .001, η_p^2 = .008, where the age groups of 18-30 (M = 0.03, SD = 1.02) and 30-45 (M = 0.02, SD = 0.98) years old scored significantly higher than the 45-65 (M = -0.26, SD = 0.87) years old age group (p-values < .001), but the former two age groups did not differ significantly from each other (p = .911).

The educational levels revealed small differences in work search intention, F(4, 4643) = 40.02, p < .001, η_p^2 = .033, where refugees with secondary education and master's level scored respectively significantly lower and higher than the other educational levels (respectively all p-values < .001 and all p-values ≤ .011). Furthermore, the educational levels revealed medium differences in local language proficiency, F(4, 4643) = 83.08, p < .001, η_p^2 = .067, where refugees with no or basic education scored significantly lower than refugees from the other educational levels (all p-values < .001).

Table 2. *Descriptive Statistics of and Differences in Study Variables between the Nationalities*

	Syria (*n* = 2881)	Eritrea (*n* = 1183)	Iran (*n* = 270)	Iraq (*n* = 188)	Afghanistan (*n* = 126)	*F (p)*	η_p^2
Gender (% male; ref = 67.6%)	66.9%	70.9%	61.9%	63.3%	69.8%	3.13 (.014)	.003
Age (ref = 30.50; 9.44)	31.87 (10.10)	26.67 (6.32)	32.91 (8.34)	31.91 (10.39)	27.90 (8.44)	76.14 (< .001)	.062
PM educational level (0-4; ref = 1.68; 1.22)	1.93 (1.11)	0.99 (1.21)	2.31 (1.06)	1.78 (1.14)	1.05 (1.20)	174.27 (< .001)	.131
No or basic education (ref = 15.2%)	76 (2.6%)	551 (46.6%)	8 (3.0%)	17 (9.0%)	54 (42.9%)		
Secondary education (ref = 39.6%)	1315 (45.6%)	343 (29.0%)	61 (22.6%)	83 (44.1%)	39 (31.0%)		
Secondary vocational education (ref = 17.1%)	577 (20.0%)	104 (8.8%)	76 (28.1%)	24 (12.8%)	12 (9.5%)		
Higher education (ref = 18.1%)	564 (19.6%)	120 (10.1%)	89 (33.0%)	52 (27.7%)	15 (11.9%)		
Master's level (ref = 10.0%)	349 (12.1%)	65 (5.5%)	36 (13.3%)	12 (6.4%)	6 (4.8%)		
PM work experience (% yes; ref = 64.7%)	68.1%	53.9%	80.4%	61.2%	57.9%	27.72 (< .001)	.023
GMA	0.24 (0.92)	-0.73 (0.82)	0.64 (0.86)	-0.01 (1.00)	-0.23 (1.07)	266.58 (< .001)	.195
Achievement motivation	0.10 (0.98)	-0.19 (0.94)	0.01 (1.04)	-0.18 (1.20)	-0.44 (1.12)	24.20 (< .001)	.022
Psychological distress	-0.05 (0.98)	-0.10 (0.85)	0.30 (1.23)	0.36 (1.23)	0.77 (1.29)	36.12 (< .001)	.031
Work search intention	-0.18 (0.96)^{2,3}	0.38 (0.97)^{1,4,5}	0.36 (1.02)^{1,4,5}	-0.22 (0.99)^{2,3}	0.02 (1.02)^{2,3}	81.34 (< .001)	.065
Local language proficiency	0.01 (1.05)^{2,3}	-0.10 (0.83)^{1,3}	0.38 (1.13)^{1,2,4}	-0.06 (0.97)^{3}	0.10 (0.98)	13.65 (< .001)	.012

Note. PM = pre-migration, GMA = general mental ability. For work search intention and local language proficiency, the numbers in superscript indicate that the subgroup scored differently from (an)other subgroup(s), where the 1, 2, 3, 4, and 5 respectively represent the groups of the 2nd, 3rd, 4th, 5th, and 6th column from the left.

Table 3. *Descriptive Statistics of and Differences in Study Variables between the Genders*

	Men (*n* = 3141)	Women (*n* = 1507)	*F (p)*	η_p^2
Age (ref = 30.50; 9.44)	30.32 (9.42)	30.89 (9.48)	3.74 (.053)	.001
PM educational level (0-4; ref = 1.68; 1.22)	1.69 (1.23)	1.67 (1.21)	0.08 (.775)	.000
No or basic education (ref = 15.2%)	479 (15.2%)	227 (15.1%)		
Secondary education (ref = 39.6%)	1235 (39.3%)	606 (40.2%)		
Secondary vocational education (ref = 17.1%)	556 (17.7%)	237 (15.7%)		
Higher professional education (ref = 18.1%)	536 (17.1%)	304 (20.2%)		
Master's level (ref = 10.0%)	335 (10.7%)	133 (8.8%)		
PM work experience (% yes; ref = 64.7%)	74.8%	43.5%	488.13 (< .001)	.095
GMA	0.02 (1.00)	-0.03 (0.99)	2.43 (.119)	.001
Achievement motivation	0.08 (0.96)	-0.17 (1.07)	57.62 (< .001)	.013
Psychological distress	-0.03 (0.99)	0.06 (1.01)	9.27 (.002)	.002
Work search intention	0.10 (0.96)	-0.20 (1.04)	89.37 (< .001)	.019
Local language proficiency	-0.01 (0.98)	0.03 (1.04)	1.87 (.171)	.000

Note. PM = pre-migration, GMA = general mental ability.

Table 4. *Descriptive Statistics of and Differences in Study Variables between Age Groups*

	18-30 y/o (*n* = 2682)	30-45 y/o (*n* = 1515)	45-65 y/o (*n* = 452)	*F (p)*	η_p^2
Gender (% male; ref = 67.6%)	68.6%	66.9%	63.9%	2.17 (.114)	.001
Age (ref = 30.50; 9.44)	23.95 (3.36)	36.00 (4.13)	50.94 (4.38)		
PM educational level (0-4; ref = 1.68; 1.22)	1.50 (1.19)	1.89 (1.21)	2.07 (1.19)	77.53 (< .001)	.032
No or basic education (ref = 15.2%)	535 (20.0%)	153 (10.1%)	18 (4.0%)		
Secondary education (ref = 39.6%)	1108 (41.3%)	558 (36.8%)	175 (38.7%)		
Secondary vocational education (ref = 17.1%)	405 (15.1%)	294 (19.4%)	94 (20.8%)		
Higher professional education (ref = 18.1%)	431 (16.1%)	320 (21.1%)	89 (19.7%)		
Master's level (ref = 10.0%)	202 (7.5%)	190 (12.5%)	76 (16.8%)		
PM work experience (% yes; ref = 64.7%)	51.9%	80.3%	80.4%	257.38 (< .001)	.100
GMA	-0.05 (103)	0.09 (0.97)	-0.02 (0.87)	8.06 (< .001)	.004
Achievement motivation	-0.05 (1.01)	0.06 (0.97)	0.08 (1.01)	7.35 (.001)	.003
Psychological distress	-0.05 (0.95)	0.05 (1.06)	0.15 (1.08)	10.41 (< .001)	.005
Work search intention	0.03 (1.00)^{3}	0.00 (1.01)^{3}	-0.16 (0.96)^{1,2}	7.15 (.001)	.003
Local language proficiency	0.03 (1.02)^{3}	0.02 (0.98)^{3}	-0.26 (0.87)^{1,2}	17.71 (< .001)	.008

Note. PM = pre-migration, GMA = general mental ability. For work search intention and local language proficiency, the numbers in superscript indicate that the subgroup scored differently from (an)other subgroup(s), where the 1, 2, and 3 respectively represent the groups of the 2nd, 3rd, and 4th column from the left.

Table 5. *Descriptive Statistics of and Differences in Study Variables between the Educational Levels*

	No or basic (*n* = 1867)	Secondary (*n* = 844)	Secondary vocational (*n* = 1992)	Master's level (*n* = 719)	Higher professional (*n* = 719)	*F (p)*	η_p^2
Gender (% male; ref = 67.6%)	67.8%	67.1%	70.1%	71.6%	63.8%	2.86 (.022)	.002
Age (ref = 30.50; 9.44)	26.77 (7.57)	29.96 (9.74)	31.60 (9.61)	33.87 (9.88)	31.92 (8.63)	53.73 (< .001)	.044
PM work experience (% yes; ref = 64.7%)	48.7%	57.7%	75.7%	74.8%	77.3%	63.02 (< .001)	.052
GMA	-0.79 (0.91)	-0.07 (0.94)	0.21 (0.93)	0.41 (0.91)	0.33 (0.92)	176.46 (< .001)	.138
Achievement motivation	-0.32 (1.05)	-0.07 (1.01)	0.11 (0.97)	0.25 (0.90)	0.14 (0.95)	32.73 (< .001)	.029
Psychological distress	0.08 (0.98)	0.04 (1.02)	0.01 (1.04)	-0.22 (0.87)	-0.03 (0.98)	7.23 (< .001)	.006
Work search intention	0.14 (1.00)^{2,3,5}	-0.20 (0.97)^{1,3,4,5}	-0.00 (0.98)^{1,2,4,5}	0.33 (1.01)^{1,2,3,4}	0.14 (1.00)^{2,3,5}	40.02 (< .001)	.033
Local language proficiency	-0.37 (0.79)^{2,3,4,5}	-0.15 (0.96)^{1,3,4,5}	0.09 (1.00)^{1,2,4,5}	0.42 (1.07)^{1,2,3}	0.32 (1.02)^{1,2,3}	83.08 (< .001)	.067

Note. PM = pre-migration, GMA = general mental ability. For work search intention and local language proficiency, the numbers in superscript indicate that the subgroup scored differently from (an)other subgroup(s), where the 1, 2, 3, 4, and 5 respectively represent the groups of the 2nd, 3rd, 4th, 5th, and 6th column from the left.

PSYCHOLOGICAL CLUSTERS

The results from the hierarchical cluster analysis with GMA, achievement motivation, and psychological distress indicated four clusters to provide the most robust solution. Next, the *k*-means cluster analysis arrayed the participants into the four clusters, yielding *n* = 1377 in Cluster 1, *n* = 876 in Cluster 2, *n* = 576 in Cluster 3, and *n* = 1357 in Cluster 4 (Table 6). The clusters differed significantly in GMA (F[3, 4182] = 5290.85, p < .001, η_p^2 = .791), achievement motivation (F[3, 4182] = 35.29, p < .001, η_p^2 = .025), and psychological distress (F[3, 4182] = 5290.85, p < .001, η_p^2 = .791), see Figure 1.

In comparison to the other refugee clusters, Cluster 1 is characterized by a very high score on GMA (*M* = 1.04, *SD* = 0.41), a slightly above-average score on achievement motivation (*M* = 0.16, *SD* = 0.90), and a moderately low score on psychological distress (*M* = -0.37, *SD* = 0.55). Cluster 2 is characterized by a very low score on GMA (*M* = -1.41, *SD* = 0.45), a slightly below-average score on achievement motivation (*M* = -0.22, *SD* = 0.90), and an average score on psychological distress (*M* = 0.06, *SD* = 0.87). Cluster 3 is characterized by a slightly above-average score on GMA (*M* = 0.20, *SD* = 0.69), a slightly below-average score on achievement motivation (*M* = -0.18, *SD* = 1.07), and a very high score on psychological distress (*M* = 1.80, *SD* = 0.85). Finally, Cluster 4 is characterized by a slightly below-average score on GMA (*M* = -0.17, *SD* = 0.36), an average score on achievement motivation (*M* = 0.05, *SD* = 0.96), and a moderately low score on psychological distress (*M* = -0.45, *SD* = 0.48). Based on these scores, we labeled Cluster 1 to Cluster 4 respectively as the *bright*, *incapable*, *distressed*, and *undistinctive-ordinary* cluster (RQ1).[4]

The bright cluster includes relatively many refugees from Syria (78.8%) and Iran (10.2%), and relatively few refugees from Eritrea (5.4%). Additionally, this cluster is characterized by a high mean level of pre-migration educational level (*M* = 2.17, *SD* = 1.16). The incapable cluster includes relatively many refugees from Eritrea (51.7%), and relatively few refugees from Syria (38.6%) and Iran (1.7%). Additionally, this cluster is characterized by a low mean level of pre-migration educational level (*M* = 1.15, *SD* = 1.13). The distressed cluster includes relatively many refugees from Iran (10.6%), Iraq (7.8%), and Afghanistan (6.1%), and relatively few refugees from Eritrea (14.6%). Additionally, this cluster includes relatively old refugees (*M* = 32.14, *SD* = 9.86). Finally, the undistinctive-ordinary cluster includes refugees that are distributed in proportion to the whole sample in terms of their demographic characteristics (e.g., a similar share of the nationalities and genders).

The clusters revealed small differences in work search intention F(3, 4182) = 4.24, p = .005, η_p^2 = .003, where the bright and undistinctive-ordinary cluster scored higher

4 These labels depict primarily one of the three psychological traits that characterize the cluster. However, one should recognize that these labels are simplified representations of the clusters, and that the clusters also denote different mean levels of the other psychological traits.

than the distressed cluster (respectively p = .005 and p < .009). However, the incapable cluster did not differ significantly from the other clusters (all p-values > .179). Furthermore, the clusters revealed medium differences in local language proficiency $F(3, 4182) = 123.47$, $p < .001$, $\eta_p^2 = .081$, where the bright and incapable clusters scored respectively higher and lower than the other clusters (all p-values < .001) (RQ2). Overall, the effect sizes revealed that the demographic subgroups of nationality ($\eta_p^2 = .065$), gender ($\eta_p^2 = .019$), and educational level ($\eta_p^2 = .033$) differ more in work search intention than the psychological clusters ($\eta_p^2 = .003$), but the psychological clusters differ more in local language proficiency ($\eta_p^2 = .081$) than the demographic subgroups ($\eta_p^2 = .000$ to $\eta_p^2 = .067$) (RQ3).

Figure 1. *The Psychological Profiles of the Four Refugee Clusters*

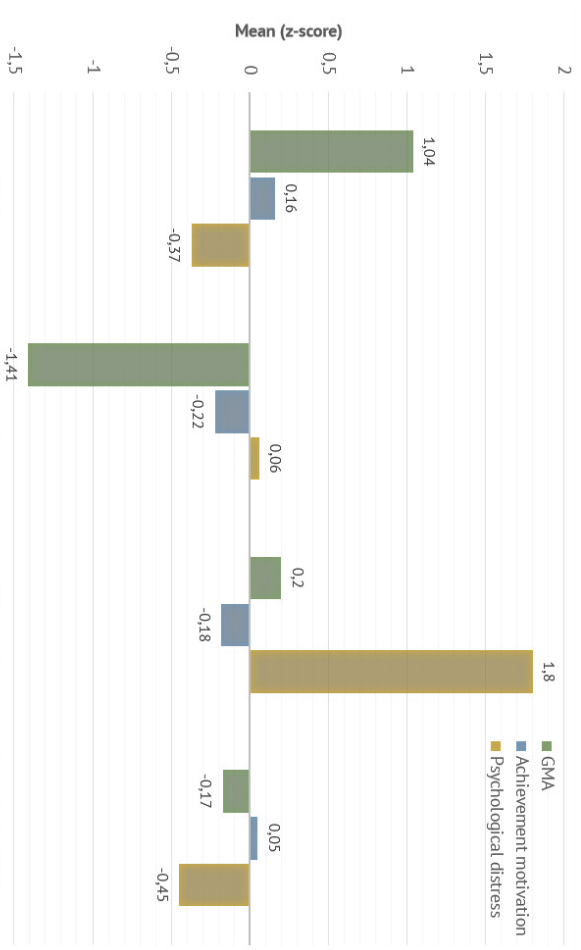

Table 6. *Descriptive Statistics of and Differences in Study Variables between the Clusters*

	Bright (*n* = 1377)	**Incapable (*n* = 876)**	**Distressed (*n* = 576)**	**Undistinctive-ordinary (*n* = 1357)**	***F (p)***	**η_p^2**
Nationality					42.03 (< .001)	.029
Syria (ref = 62.0%)	1085 (78.8%)	338 (38.6%)	351 (60.9%)	852 (62.8%)		
Eritrea (ref = 25.5%)	74 (5.4%)	453 (51.7%)	84 (14.6%)	396 (29.2%)		
Iran (ref = 5.8%)	141 (10.2%)	15 (1.7%)	61 (10.6%)	46 (3.4%)		
Iraq (ref = 4.0%)	47 (3.4%)	41 (4.7%)	45 (7.8%)	37 (2.7%)		
Afghanistan (ref = 2.7%)	30 (2.2%)	29 (3.3%)	35 (6.1%)	26 (1.9%)		
Gender (% male; ref = 67.6%)	69.1%	69.2%	65.1%	67.7%	1.18 (.318)	.001
Age (ref = 30.50; 9.44)	30.26 (8.67)	29.05 (9.10)	32.14 (9.86)	30.83 (10.02)	13.66 (< .001)	.010
PM educational level (0-4; ref = 1.68; 1.22)	2.17 (1.16)	1.15 (1.13)	1.67 (1.13)	1.65 (1.20)	142.91 (< .001)	.093
No or basic education (ref = 15.2%)	46 (3.3%)	289 (33.0%)	74 (12.8%)	189 (13.9%)		
Secondary education (ref = 39.6%)	465 (33.8%)	345 (39.4%)	236 (41.0%)	593 (43.7%)		
Secondary vocational education (ref = 17.1%)	290 (21.1%)	104 (11.9%)	114 (19.8%)	216 (15.9%)		
Higher professional education (ref = 18.1%)	356 (25.9%)	100 (11.4%)	112 (19.4%)	223 (16.4%)		
Master's level (ref = 10.0%)	220 (16.0%)	38 (4.3%)	40 (6.9%)	136 (10.0%)		
PM work experience (% yes; ref = 64.7%)	69.5%	58.3%	68.8%	63.3%	11.55 (< .001)	.008
GMA	1.04 (0.41)	-1.41 (0.45)	0.20 (0.69)	-0.17 (0.36)	5290.85 (< .001)	.791
Achievement motivation	0.16 (0.90)	-0.22 (1.10)	-0.18 (1.07)	0.05 (0.96)	35.29 (< .001)	.025
Psychological distress	-0.37 (0.55)	0.06 (0.87)	1.80 (0.85)	-0.45 (0.48)	1801.71 (< .001)	.564
Work search intention	0.04 (0.97)[3]	-0.01 (1.02)	-0.12 (0.96)[1,4]	0.04 (1.02)[3]	4.24 (.005)	.003
Local language proficiency	0.40 (1.11)[2,3,4]	-0.35 (0.79)[1,3,4]	-0.11 (0.96)[1,2]	-0.07 (0.92)[1,2]	123.47 (< .001)	.081

Note. PM = pre-migration, GMA = general mental ability. For work search intention and local language proficiency, the numbers in superscript indicate that the subgroup scored differently from (an)other subgroup(s), where the 1, 2, 3, and 4 respectively represent the groups of the 2nd, 3rd, 4th, and 5th column from the left. The "ref =" of the categories of nationality and educational level represent their percentages within the whole sample.

DISCUSSION

The present study investigated profiles of recently arrived refugees living in the Netherlands by applying cluster analysis, which is a statistical technique that arrays refugees into clusters: groups of individuals who are similar in terms of the variables entered into the analysis. Based on the ability-motivation-opportunity (AMO) framework (Appelbaum et al., 2000), GMA (ability), achievement motivation (motivation), and psychological distress (opportunity) were assessed to identify psychological clusters among refugees. We studied the integration outcomes work search intention (as a proxy of employment) and local language proficiency. Employment and local language proficiency are considered important aspects of integration (e.g., Ager & Strang, 2008; Esser, 2004), and have been linked to refugees' well-being (Beiser & Hou, 2001; McKee-Ryan et al., 2005; Paul & Moser, 2009). We aimed to identify clusters based on three psychological traits (RQ1), examine to what extent these clusters are related to the studied integration outcomes (RQ2), and compare the magnitude of these effects with those of demographic subgroups based on nationality, gender, age, and educational levels (RQ3).

With respect to RQ1, we found four clusters based on GMA, achievement motivation, and psychological distress, which we labeled the bright, incapable, distressed, and undistinctive-ordinary cluster (Figure 1). In their respective order, these clusters are mainly characterized by a high score on GMA, a low score on GMA, a high score on psychological distress, and a low score on psychological distress, although they also differ in the other psychological traits. The differences in achievement motivation between the clusters were smaller than the differences in GMA and psychological distress. With respect to RQ2 and RQ3, small differences in work search intentions were found between the clusters: the bright and undistinctive-ordinary cluster scored somewhat higher on work search intention than the distressed cluster. However, the difference in work search intention between the refugee subgroups based on nationality, gender, and educational level was larger than those based on the psychological clusters. With regard to local language proficiency, medium-sized differences were found between the clusters, where the bright and incapable clusters scored respectively higher and lower than the other clusters. These cluster-based differences were larger than the differences between the subgroups in nationality, gender, age, or educational level.

CONTRIBUTIONS AND IMPLICATIONS

The present study offers several contributions and theoretical and practical implications to the literature on refugee profiles (Damen et al., 2022). We contributed to this literature by showing that the application of cluster analysis of psychological traits among refugees provides meaningful distinguishable groups (RQ1). This finding signifies that refugees can be investigated and identified by their psychological profiles instead of or in addition to the demographic subgroup they belong to. Currently, differences between refugees are, both in research and in practice, commonly examined based on demographic subgroups, but investigating refugees and their differences based on their psychological profiles provides a novel – and, as we contend, an advantageous – approach. To clarify, given that psychological profiles are not directly visible or identifiable such as demographic characteristics, we anticipate that examining refugees by psychological profiles prevents or restrains issues such as stereotype threat (Appel et al., 2015; Steele & Aronson, 1995) or unjust practices of discrimination, such as those in job applications (Lippens et al., 2022; Thijssen et al., 2022; Zschirnt & Ruedin, 2016). Additionally, in contrast to demographic analyses, psychological profiles inherently reveal the personal strengths and weaknesses of an individual, and hence could help navigate one's self-development opportunities. Thus, practitioners could benefit from identifying refugees based on their psychological profiles by offering more effective support. For example, the incapable cluster can benefit from education and additional language training to compensate for their low levels of GMA, and the distressed cluster can benefit from therapeutic health support to alleviate their high levels of psychological distress.

Furthermore, we contributed to the literature on refugees' integration (Lee et al., 2020) by examining how the psychological clusters differ in work search intention and local language proficiency (RQ2). Previous research on psychological risk factors of poor outcomes using cluster analysis has focused on other (non-refugee) samples, such as students and their chance of dropouts (e.g., Cerda-Navarro et al., 2019) The significance of examining and using psychological clusters is ultimately revealed by their ability to differentiate refugees in terms of their integration outcomes. Indeed, we provided evidence that the psychological clusters differ in work search intention, and more strongly in local language proficiency. This is likely because local language proficiency is relatively strongly related to GMA. The current research findings indicate that counselors need to pay special attention to the incapable and distressed clusters, as refugees of these clusters are more likely to have lower levels of work search intention and/or local language proficiency.

Finally, we contribute to the literature on refugee individual differences and integration success (Huijnk et al., 2015) by comparing psychological clusters with demographic subgroups on the integration outcomes (RQ3). For work search intention, we found that the differences between the demographic subgroups based on nationality, gender, and educational level were larger than those of the psychological clusters. However, for local language proficiency, the differences between the psychological clusters were larger than the differences between the demographic subgroups of nationality, gender, age, or educational level. These findings indicate that one can predict more accurately the mastering of the local language of refugees by examining to which psychological cluster they belong compared to using their demographic subgroup. The practical implication is

that, when designing integration trajectories for language learning, counselors can benefit from assessing the psychological traits to allocate refugees into a cluster. More specifically, the incapable cluster requires intensive language courses, whereas the bright cluster requires less language training.

LIMITATIONS AND FUTURE DIRECTIONS

The present research has several limitations and corresponding future research opportunities. First, this study focused on economic and linguistic integration (through measures of work search intention and local language proficiency). Although these outcomes are important, we did not address other relevant integration dimensions (e.g., the psychological, political, social, and navigational dimensions; Harder et al., 2018). To provide more evidence for the utility of identifying and using psychological clusters, it is essential to show that they differentiate refugees substantially on different sorts of integration outcomes – and preferably do so more than the demographic subgroups.

Second, work search intention formed a proxy for refugees' economic integration (as a substitute for actual employment, because of the relatively short length of stay of the present sample). Yet, the results show that the means on this scale of refugee nationality subgroups do not correspond well to their employment statistics in the Netherlands. Specifically, the employment rates (and between the parentheses the means of work search intention) of the 2016 refugee cohort in the Netherlands after 36 months of receiving a residence permit are 25% for Syrian refugees (M = -0.18), 28% for Eritrean refugees (M = 0.38), 35% for Iranian refugees (M = 0.36), 31% for Iraqi refugees (M = -0.06), and 38% for Afghan refugees (M = 0.10).[5] Thus, the employment rates and the work search intention mean levels are not greatly aligned, and as such, the work search intention scale appears to be a suboptimal proxy of the economic integration (employment) of refugees for cross-national comparisons (CBS, 2022). One possible reason for the unalignment is that the intention–behavior gap (Sheeran & Webb, 2016) differs between cultures, alike to gap differences that have been observed between socioeconomic groups (Conner et al., 2013). Therefore, we suggest that future research investigates the intention–behavior gap in the cross-cultural context to understand the magnitude of and the explanations for this gap between nationalities and cultures. Besides, future research could also study actual employment among refugees with longer residence lengths.

A third suggestion is that future research could focus on a broader spectrum of traits. In this study, we used the ability-motivation-opportunity (AMO) framework (Appelbaum et al., 2000) to use GMA (ability), achievement motivation (motivation), and psychological distress (opportunity) for examining the psychological clusters of refugees. Although this framework allows to cover important and different aspects of the psychological profile of individuals, one can investigate whether more differentiated psychological profiles can be revealed by using different or supplemental traits, such as emotional intelligence (e.g., Joseph & Newman, 2010) or cultural intelligence (e.g., Ward et al., 2009).

5 The correlation between the country-level employment rates and the means of work search intention is r = .35 (p = .559). However, this analysis with N = 5 countries severely lacks statistical power and needs to be interpreted carefully.

CHAPTER 3

Psychological Individual Differences as Predictors of Refugees' Local Language Proficiency

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ABSTRACT

Learning the local language is important for the successful integration of immigrants. Previous research has identified a number of sociodemographic factors that are associated with the effectiveness of local language acquisition among immigrants, but little is known about the influence of psychological differences on immigrants' local language acquisition. In the present research, individual differences in general mental ability (GMA), work search intention, and personality traits Conscientiousness and Openness were studied among recently arrived Syrian (n = 1054) and Eritrean (n = 500) refugees in the Netherlands. The results revealed that in addition to the effects of age of arrival, local length of stay, premigration educational attainment, and psychological distress, GMA and work search intention were positively associated with refugees' local language proficiency. Additionally, work search intention was found to strengthen the effect of GMA on local language proficiency. No positive linear effects were observed for Conscientiousness and Openness. Some evidence was found for curvilinear relationships between psychological predictors and local language proficiency. Implications are discussed.

KEYWORDS

refugees, local language proficiency, GMA, work search intention, Conscientiousness, Openness

PSYCHOLOGICAL INDIVIDUAL DIFFERENCES AS PREDICTORS OF REFUGEES' LOCAL LANGUAGE PROFICIENCY

From 2014 until the end of 2017, about four million refugees entered Europe, and many of them have applied for asylum (UNHCR, 2017). Given the differences between their home culture and the culture of residence, refugees face challenges with adjustment (Berry, 1997; Rudmin, 2003). Earlier research showed that successful integration and adjustment require learning the local language, which is associated with positive outcomes in social well-being, work, and education (e.g., Joly, 1996). Research among earlier waves of immigrants showed that host country language proficiency is positively related to psychological well-being (Beiser & Hou, 2001), employment (Aldashev et al., 2009; Bloch, 2002), and higher earnings (Chiswick & Miller, 2007; Dustmann, 1994; Shields & Price, 2002). In contrast, immigrants with poor local language skills were shown to have a higher chance to be marginalized from the community, are more dependent on social networks, and have less access to the labor market (Bloch, 2002; Schellekens, 2001; Valtonen, 1994).

Several earlier studies have investigated predictors of local language acquisition of immigrants and refugees (see Chiswick & Miller, 2007; Esser, 2006). However, this research suffers from several shortcomings. First, most of these studies have focused on sociodemographic factors as predictors of local language acquisition and have ignored psychological differences. Second, these studies focused predominantly on labor and family immigrants or made no distinction between such voluntary immigrants and refugees (Fennelly & Palasz, 2003). In comparison to voluntary immigrants, refugees are generally more highly educated (Liebau & Salikutluk, 2016), show lower employment rates (Salikutluk et al., 2016), are at higher risk for a variety of psychiatric disorders (Fazel et al., 2005; Hollifield et al., 2002; Schock et al., 2016), and are worse at acquiring the local language (Chiswick & Miller, 2001, 2007; Van Tubergen & Kalmijn, 2005). For these reasons, findings from voluntary immigrant samples cannot be generalized to refugee samples. Lastly, previous research has typically used self-reports (Beenstock et al., 2001; Carliner, 2000; Chiswick & Miller, 2002; Van Tubergen, 2010) or interviews (e.g., Van Tubergen & Kalmijn, 2005; Van Tubergen & Wierenga, 2011) to assess local language proficiency. Although the interview-based measure is arguably a more valid criterion than self-reports, objective measures of local language proficiency, such as standardized tests, would further increase the validity of research findings (Edele et al., 2015).

To address these concerns, the present research draws on the psychological literature on personnel selection and academic performance (e.g., Judge & Zapata, 2015; Roberts et al., 2007; Schmidt & Hunter, 1998; Von Stumm et al., 2011), investigating the predictive validities of individual differences for local language acquisition. Specifically, we test the

impact of general mental ability (GMA), work search intention, and the personality traits Conscientiousness and Openness on local language proficiency among a recent wave of Syrian and Eritrean refugees residing in the Netherlands.

LOCAL LANGUAGE PROFICIENCY

The majority of studies on immigrants' local language proficiency have been conducted in the field of sociology and economics and they typically draw on the standard theoretical model (Chiswick & Miller, 2001, 2007; Esser, 2006; Hwang & Xi, 2008; Mesch, 2003). This model contends that there are three general determinants of immigrants' local language acquisition: (1) exposure, that is, the extent to which immigrants hear and read the local language, (2) incentives, that is, the advantages one can obtain by mastering the local language weighted against the costs of learning the local language, and (3) efficiency, that is, the innate abilities to learn and acquire a new language (Chiswick & Miller, 2007). Based on this model, a number of sociodemographic predictors of local language acquisition have been identified, including gender (e.g., Beiser & Hou, 2000; Kristen et al., 2016; Van der Slik et al., 2015), length of stay in the country of residence (e.g., Carliner, 2000; Van Tubergen & Kalmijn, 2005), age of arrival (e.g., Kristen et al., 2016), and premigration education level (Beiser & Hou, 2000; Hayfron, 2001; Hou & Beiser, 2006; Van Tubergen, 2010). Mental health has also been studied often among immigrants and refugees (e.g., see Fazel et al., 2005; Porter & Haslam, 2005), and good mental health has frequently been associated with better local language acquisition (Beiser & Hou, 2001; Chiswick & Miller, 2001; Van Tubergen & Kalmijn, 2005; for exceptions, see Van Niejenhuis et al., 2015; Van Tubergen, 2010). Although these findings are informative, we argue that this literature fails to recognize that psychological and individual differences – in addition to situational and external factors – could also influence local language acquisition among migrants (Dörnyei, 2005).

Little is known about psychological predictors of local language acquisition among refugees. In the psychological literature on individual differences and personnel selection (e.g., Judge & Zapata, 2015; Roberts et al., 2007; Schmidt & Hunter, 1998), researchers have identified several important psychological predictors of performance in the domains of work and education, such as cognitive ability and personality traits. We expect that these psychological individual differences show similar or stronger relationships with local language acquisition compared to the effects that are observed in studies on academic performance. There is evidence that transition periods in life function as a catalyst for personality differences to be magnified (Caspi & Moffitt, 1993). That is, under conditions of change – such as refugees' forced resettlement into a new country that brings with it an unfamiliar culture – personality traits become accentuated and have a stronger effect on behavior, relative to under ordinary and undisrupted life conditions. This phenomenon might strengthen the effect of individual traits on the local language acquisition of refugees. In the following section, the theoretical and empirical basis of psychological predictors of learning performance is reviewed with a particular focus on local language acquisition.

PSYCHOLOGICAL PREDICTORS

General Mental Ability

GMA (or intelligence) has been defined as "the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought" (Neisser et al., 1996, p. 77). GMA determines an individual's capability to learn and perform well on tasks. GMA is a positive predictor for a number of performance indicators, including academic performance and achievement (Deary et al., 2007; Duckworth & Seligman, 2005; Sternberg et al., 2001), attained occupational level (Schmidt & Hunter, 2004), training success (Salgado et al., 2003), and work performance (Sackett et al., 2022; Schmidt & Hunter, 1998, 2004). GMA is also a predictor of local language proficiency in non-immigrant samples (e.g., Dörnyei, 2005; Pishghadam & Khajavy, 2013; Skehan, 1991). To the authors' best knowledge, only one study on local language proficiency among immigrants (in this study, voluntary immigrants) assessed GMA, and these researchers found a positive effect of GMA on local language proficiency (Edele et al., 2015). In line with these findings, we predict that GMA is positively associated with local language proficiency among refugees (H1).

Work Search Intention

Immigrants' local language proficiency is positively associated with employment and voluntary work (Bloch, 2002; Dustmann & Fabbri, 2003; Potocky-Tripodi, 2004). A possible explanation for this is that refugees who seek a job are more motivated to learn the local language. Correspondingly, recent findings on Syrian refugees in the Netherlands and in Greece showed that job search self-efficacy – the belief that one is competent in searching for and finding employment (Saks & Ashforth, 1999) – is positively correlated with local language proficiency (Pajic et al., 2018). Research has also shown that immigrants' employment history is a predictor of local language proficiency (Beiser & Hou, 2000). Drawing on these findings, we predict that work search intention is positively related to local language proficiency among refugees (H2).

Personality Traits

Two widely accepted personality taxonomies are the five- (the Big Five; Costa & McCrae, 1992) and the six-dimensional model (Ashton et al., 2004). One of the traits in these models is the personality factor that is known as Conscientiousness (Costa & McCrae, 1992). Individuals high in Conscientiousness are organized, responsible, and industrious (Lee & Ashton, 2004). Conscientiousness is one of the strongest non-cognitive predictors of academic achievement (Noftle & Robins, 2007; O'Connor & Paunonen, 2007; Robbins et al., 2004), and it even predicts academic success when it is assessed in childhood (Shiner et al., 2003). Alongside education, local language acquisition also requires discipline to

learn, and it can therefore be anticipated that refugees high in trait Conscientiousness do better in local language acquisition. Although we are not aware of direct evidence for this link, there is one relevant study among Dutch sixth-grade children which showed that Conscientiousness and Openness are positively related to foreign language vocabulary, grammar, and reading test scores (Verhoeven & Vermeer, 2002). Correspondingly, we predict that Conscientiousness is positively associated with local language proficiency among refugees (H3).

Another relevant personality trait is labeled Openness (or Openness to Experience; Costa & McCrae, 1992; Lee & Ashton, 2004). Individuals high in Openness are aesthetically sensitive and intellectual (Lee & Ashton, 2004), and they are hence expected to have a higher proclivity for learning a foreign language. Openness is associated with academic success (but see Busato et al., 2000), SAT scores (Noftle & Robins, 2007), and final grades (Farsides & Woodfield, 2003). In addition to the previously mentioned study by Verhoeven and Vermeer (2002) that showed a positive association between Openness and indices of foreign language skills, another study among students found that HEXACO Openness is correlated with subjective self-reported local language fluency (r = .20; Gargalianou et al., 2015). Lastly, a recent study among international students in the Netherlands found a small positive effect of Openness on local language proficiency (Van Niejenhuis et al., 2018). In line with these findings, we predict that Openness is positively associated with local language proficiency among refugees (H4).

Interaction Effects

Multiplicative models in industrial/organizational (I/O) psychology explicate that performance is a function of ability (typically operationalized as GMA) times motivation, suggesting that the positive effect of GMA on performance is stronger at higher levels of motivation (Klehe & Anderson, 2007; Mitchell & Nebeker, 1973). Although a recent meta-analysis on this issue concluded that the interaction effect between GMA and motivation explains little additional variance in job performance (Van Iddekinge et al., 2018), this meta-analysis only included measures of motivation, but not the general personality trait Conscientiousness. Studies that examined Conscientiousness as a moderator of GMA for predicting job performance reveal inconsistent findings: Some studies found no support for an interaction (Mount et al., 1999; Sackett et al., 1998), whereas other studies revealed support for interaction effects between GMA and achievement motivation related facets of Conscientiousness (Perry et al., 2010), and between GMA and contextualized measures of achievement motivation (Hirschfeld et al., 2004). In educational psychology, the effect of GMA on grade point average was found to be stronger at higher levels of (the facets of) Conscientiousness (Bergold & Steinmayr, 2018; Di Domenico & Fournier, 2015; Ziegler et al., 2009; but see Zhang & Ziegler, 2015). Openness has also been found to moderate the effect of GMA on academic performance, such that the effect of GMA on academic performance is stronger at lower levels of Openness (Bergold & Steinmayr, 2018; Di Domenico & Fournier, 2015; Zhang & Ziegler, 2015). GMA and Openness have a compensatory effect on performance, and hence, the lower one's level of Openness, the larger the relative contribution of GMA on performance (see Ziegler et al., 2012).

Although work search behavior and Conscientiousness are moderately related (r = .30; Kanfer et al., 2001), their shared variance is small enough to predict additive interaction effects of GMA with both work search intention and Conscientiousness. Whereas Conscientiousness covers one's general level of industriousness and orderliness (DeYoung et al., 2007), work search intention can be considered a more specific, contextualized measure of motivation – and contextualized measures show higher validities than non-contextualized measures (e.g., see Shaffer & Postlethwaite, 2012). In line with these findings, we anticipate that GMA interacts with work search intention, Conscientiousness, and Openness for predicting local language proficiency among refugees. Thus, we predict that the effect of GMA on local language proficiency among refugees is stronger at higher levels of work search intention (H5), at higher levels of Conscientiousness (H6), and at lower levels of Openness (H7).

EXPLORATORY CURVILINEAR ANALYSES

In addition to testing the hypotheses, nonlinear relationships between the predictors and local language proficiency are explored. To our knowledge, no previous literature has reported curvilinear effects of predictors of second language learning. Nonetheless, previous studies have revealed inverted U-shaped relationships between Conscientiousness and task and contextual performance (Janssen, 2001; LaHuis et al., 2005; Le et al., 2011; Whetzel et al., 2010; Wihler et al., 2017; but see Robie & Ryan, 1999), training performance (Vasilopoulos et al., 2007), and grade point average (Cucina & Vasilopoulos, 2005). We are only aware of one study that revealed a nonlinear – in this case, a U-shaped – relationship between Openness and grade point average (Cucina & Vasilopoulos, 2005). Regarding GMA, some scholars have theorized that the positive effect of GMA on performance weakens at higher levels of the construct (Jensen, 1998; Robertson et al., 2010; Te Nijenhuis & Hartmann, 2006). Empirical work, however, has failed to find support for this proposition in the context of work (Coward & Sackett, 1990) and education (Coyle, 2015; Lubinski, 2009; Park et al., 2008; Ziegler & Peikert, 2018). To our knowledge, there is no literature on curvilinear relationships between work search intention and performance indicators.

METHOD

PARTICIPANTS

We obtained data of refugees from 81 countries (mostly from the Middle East and Africa), but we only report the findings of refugees from Syria (n = 1054) and refugees from the East-African country Eritrea (n = 500), as they comprise the largest refugee groups in the current data set (M_{age} = 29.14 years, SD = 8.76; 72.5% males). Previous research has shown that refugees from these countries flee from harsh societal conditions and they typically report to have undergone traumatic events and to have suffered from mental health problems (Dagevos et al., 2018; Sterckx et al., 2018). The average age of arrival was M = 27.53 (SD = 8.60). The sample sizes were not a priori determined, as the principal aim of the assessments initially concerned refugee consultation instead of research. Also, the seven hypotheses in this study are presented as confirmatory hypotheses, but for the sake of transparency, we indicate that this study was not pre-registered. From the analyses, we have excluded five participants because of suspicious response patterns (i.e., identical responses on all items, or only extreme responses), and we have excluded two participants because they have reported a length of stay in the Netherlands that is substantially higher than the length of stay reported by the other participants (i.e., 87 and 214 months; 8.48 and 24.33 SD above the mean).

The average local length of stay in the Netherlands was 16.95 months (SD = 8.26), and the Syrian refugee group (M = 16.19, SD = 8.27) had a shorter local length of stay than the Eritrean refugee group (M = 18.61, SD = 8.01), $t(1516) = -5.33$, $p < .001$. The refugee participants resided in one of four large Dutch municipalities, and some refugees conducted the assessment through an invitation from the Foundation for Refugee Students (UAF), which is a foundation that supports refugees by providing education and finding work. Less than half of the participants were married (43.2%), and 47.0% of the participants reported having no family in the Netherlands at the time of assessment. Attained education levels at the country of origin were converted by Nuffic, a Dutch certificated agency, to match the standards of the European Qualifications Framework (EQF). Defined by the EQF standards, 18.0% of the participants attained level 2 (cf. basic education), 22.5% participants attained level 3 (cf. vocational secondary education), 29.5% participants attained level 4 (cf. associate's degree), 27.9% participants attained level 6 (cf. bachelor's degree), and 2.1% of participants attained level 7 (cf. master's degree). The majority of the refugees had worked in their country of origin (62.8%), reporting work experience of less than 1 year (6.6%), 1 to 2 years (15.4%), 2 to 5 years (17.3%), 5 to 10 years (12.6%), 10 to 20 years (6.8%), and more than 20 years (4.1%).

PROCEDURE

A Dutch psychological consultancy agency that focuses on the development of psychological tests and the assessment of individuals for work and educational-related purposes has gathered data among a large group of refugees through assessments for municipalities and NGOs since the year 2016. The inclusion criteria of the consultancy agency for assessing refugees were being at least 18 years old, having a residency permit, and being literate. Through a formal letter, refugees were requested to take part in an online assessment. In this letter, it was emphasized that participation was voluntary and that the assessment could help with finding a job or an education, and therefore stimulate integration into the Dutch society. A large proportion of the invited refugees agreed to participate. Although the exact value is unknown, employees at the municipalities estimated the response rate to be at least 95%. The assessments were typically administered in a distraction-free room of the municipality's town hall. One or more counselors were present to help respondents with questions if necessary, and no communication with others was allowed during the assessments. No compensation was offered in return for participation.

MATERIALS

The measures were developed in Dutch and had subsequently been translated into Modern Standard Arabic (for Arabic refugees, including Syrians) and into Tigrinya (for Eritrean refugees) by a certified translation agency. Thus, all assessment components (i.e., the instructions, the tests, and the questionnaires) were administered in the refugees' mother tongue. The full assessment consists of sociodemographic questions, two GMA subtests, scales for self-reported competencies, personality traits, and work motivation, a posttraumatic stress disorder checklist (the PCL-5; Blevins et al., 2015), a measure of psychological distress (the K10; Kessler et al., 2002), and a Dutch and an English language proficiency test. Here, we only describe the instruments that are relevant to the present study. Readers who are interested in the test environment or who would like to see sample items of the two GMA subtests are referred to the footnote.[6]

Measurement Invariance and Refugee Group Differences

To investigate whether the assessed instruments have similar validities among the two refugee groups, we tested for metric measurement invariance – that is, whether item and factor loadings are equivalent across the Syrian and the Eritrean refugee group. Scholars have recommended considering support for metric invariance when $\Delta CFI \leq 0.01$ (Cheung & Rensvold, 2002). Comparing latent variable models for Syrian and Eritrean refugees, based on the $\Delta CFI \leq 0.01$ cut off, we found support for metric invariance for the measures of work search intention ($\Delta CFI = .002$), Conscientiousness ($\Delta CFI = .006$), Openness ($\Delta CFI = .008$), and local language proficiency ($\Delta CFI = .008$), but not for GMA ($\Delta CFI = .016$) and psychological distress ($\Delta CFI = .013$). Given the small deviations of the latter two instruments and the unequal sample ratio in this research, we considered it unnecessary to remove

6 To see some sample items of the two GMA subscales that were completed by the refugee participants, readers can visit the webpage: https://www.noa-online.net/practicequestions/mct-m

items from the GMA test and the psychological distress scale. We have also conducted Confirmatory Factor Analyses of the instruments in our study, and the fit indices are reported in the Supplementary Material (Table S1).

General Mental Ability

GMA was assessed by two non-verbal subtests of the multicultural capacities test (MCT-M; Van den Berg, 2001). The subtests were developed to measure fluid intelligence (Cattell, 1971), and aimed to reduce or eliminate a potential bias that might be imposed by cultural background when using tests that contain cultural elements such as language or knowledge (Van de Vijver & Tanzer, 1997). One subtest is labeled *Components*, in which candidates have to select two out of the six spatial parts that can make up one displayed figure. The other subtest is labeled *Exclusion*, in which candidates have to select the figure that does not match the other four presented figures. The Components subtest has a time limit of 9 minutes, and the Exclusion subtest has a time limit of 7 minutes. Earlier empirical work showed evidence for the cross-cultural applicability of the MCT-M and its predictive validity in the domains of social functioning and academic achievement among native Dutch candidates and among several Dutch migrant groups (Van den Berg, 2001). In the present study, a total score for GMA was computed by adding up the number of correctly answered items of the two subtests. The correlation between the two subtests was $r = .55$, $p < .001$. Coefficient alpha of the two subtests in the current sample was .92.

To support the aggregation of the two subtests into one total score of GMA, we conducted confirmatory factor analyses using the R package Lavaan (version 0.05-23.1097; Rosseel, 2012). We compared two latent variable models. One model is the hypothesized hierarchical bi-factor model that includes a general factor of cognitive ability in addition to two factors that represent the two subtests. The other model is a correlated-factors model with two latent variables that represent the two subtests. The models were analyzed using the maximum likelihood estimation method, and missing values were dealt with by using full information maximum likelihood (El-Sheikh et al., 2017). The analyses indicated that the hierarchical bi-factor model (χ^2 [1650] = 2747.02, $p < .001$, CFI = .937, TLI = .932, RMSEA = .021, SRMR = .032), has a better fit than the correlated two-factor model (χ^2 [1719] = 3703.18, $p < .001$, CFI = .885, TLI = .881, RMSEA = .027, SRMR = .046), χ^2 (59) = 956.16, $p < .001$, justifying the aggregation of the two subtests of the MCT-M into one total score.

Work Search Intention

We assessed work search intention with a 10-item subscale of a work motivation questionnaire (AWV; NOA, 2005). Research has shown convergent validity for this instrument with other work motivation instruments (Dusseldorp et al., 2018). Example items are “How much time do you spend on searching for vacancies on the internet?”, and “How frequently do you approach employers for job opportunities?”. Participants were instructed to rate on a 5-point Likert scale how much time they spend on such activities, ranging from 1 = *Not at all* to 5 = *Very frequently*. In the current sample, coefficient alpha of this scale was .91.

Conscientiousness and Openness

To assess the personality traits Conscientiousness and Openness, we used the MPT-BS-QS Basic (NOA, 2009; Holtrop et al., 2014), which is a short (60-item) version of a personality inventory that consists of six factors, and that corresponds to the HEXACO model of personality (Lee & Ashton, 2004). In the present article, we focus exclusively on Conscientiousness and Openness, as we consider these traits to be the most relevant for predicting local language acquisition. The correlations between the other four personality dimensions and the study variables are reported in the Supplementary Material (Table S2). Ten items were used to assess each personality dimension. Example items of Conscientiousness are “I do things very precisely”, and “I think carefully before I act”, and example items of Openness are “I often come up with plans to do new things”, and “I have often more than one idea on how to do something”. Coefficient alpha of Conscientiousness and Openness in the current sample were respectively .69 and .83. Participants were instructed to rate on a 5-point Likert scale how much they agree or disagree with each statement, ranging from 1 = *Totally disagree* to 5 = *Totally agree*. The two personality scales correlated quite highly, $r = .66$, $p < .001$, so we conducted a confirmatory factor analysis to verify the underlying two-factor structure. Results showed that the two-factor structure fits the data reasonably well (χ^2 [151] = 859.63, $p < .001$, CFI = .908, TLI = .895, RMSEA = .055, SRMR = .042), and significantly better than a one-factor solution (χ^2 [152] = 983.97, $p < .001$, CFI = .891, TLI = .878, RMSEA = .059, SRMR = .044), $\Delta\chi^2$ (1) = 124.34, $p < .001$.

Local Language Proficiency

Local (Dutch) language proficiency was assessed using an instrument that had been developed by the psychological consultancy agency that gathered the data (NOA, 2006). In this test, participants read two short stories written in Dutch (in total, 198 words), which include sentences with 80 incomplete words. Participants were instructed to complete the word fragments such that they make meaningful words in their context, within a 15-minute time limit. Scores on this test could range from 0 (no word fragment completed correctly) to 80 (all word fragments completed correctly). Previous unpublished research has shown that the scores on this test correlate strongly with scores on a Dutch language test that is used nationwide (NT2; CINOP, Citogroep, Bureau ICE, & BVE Raad, 2002), supporting the construct validity of the test. Specifically, the Dutch language proficiency test that was used in the current study correlated with the NT2 subtests of reading ($r = .65$), writing ($r = .78$), vocal understanding ($r = .48$), and speaking ($r = .50$) (NOA, 2006). In the current sample, coefficient alpha of the Dutch proficiency test was .97.

Control Variables

Demographic Variables. To establish the relative importance of psychological differences in local language acquisition above and beyond the effects of sociodemographic predictors, the variables gender, age of arrival in the Netherlands, length of stay in the Netherlands, and premigration educational attainment were included in the analyses. Previous research has revealed mixed findings regarding the relationship between gender and local language acquisition among immigrants. Some studies reported greater local language proficiency among female immigrants (e.g., Van der Slik et al., 2015), whereas other studies reported greater levels of local language proficiency among male immigrants (e.g, Beiser & Hou, 2001; Dustmann & Fabbri, 2003; Fennelly & Palasz, 2003; Van Tubergen, 2010), or showing no gender differences (e.g., Van Niejenhuis et al., 2015). Previous research has shown that local language proficiency among immigrants is negatively associated with the age of arrival in the country of residence (e.g., Kristen et al., 2016), and positively associated with local length of stay (Carliner, 2000; Van Tubergen & Kalmijn, 2005) and premigration education level (Beiser & Hou, 2000; Hayfron, 2001; Hou & Beiser, 2006; Van Tubergen, 2010).

Psychological Distress. Despite some exceptions (Van Niejenhuis et al., 2015; Van Tubergen, 2010), most previous research findings revealed a negative effect of psychological distress on local language proficiency (Beiser & Hou, 2001; Chiswick & Miller, 2001; Van Tubergen, & Kalmijn, 2005). Psychological distress was measured with the 10-item Kessler Psychological Distress Scale (K10; Kessler et al., 2002). Participants were asked to indicate on a 5-point Likert scale how often they experienced or felt something during the last 30 days. Example items are “About how often did you feel nervous?”, and “About how often did you feel hopeless?”. Previous research has demonstrated that the K10 is a reliable and valid tool to assess anxiety and depressive disorders in clinical and in non-clinical populations (e.g., Cairney et al., 2007; Furukawa et al., 2003; Kessler et al., 2003), and it has shown predictive validity for several psychiatric disorders (Donker et al., 2010). Good psychometric qualities of the K10 were also demonstrated among non-Western samples, supporting the cross-cultural validity of the instrument (Fassaert et al., 2009). In the current sample, coefficient alpha of this scale was .87.

RESULTS

PRELIMINARY ANALYSES

Independent sample *t*-tests were conducted to exploratory investigate differences in test and scale scores between Syrian and Eritrean refugees. The analyses showed that Syrian refugees scored higher on GMA, $t(1058.47) = 21.46$, $p < .001$, Conscientiousness, $t(1541) = 13.57$, $p < .001$, and Openness, $t(1541) = 11.26$, $p < .001$, whereas the Eritrean refugees scored higher on work search intention, $t(1545) = -13.25$, $p < .001$. No refugee group differences were observed for psychological distress, $t(1451) = 1.11$, $p = .27$, and local language proficiency, $t(1147.38) = 1.82$, $p = .07$. Table 1 shows the means, standard deviations, effect sizes, and correlations between study variables of the total sample and of the Syrian and Eritrean refugees separately.

GMA showed the strongest correlation with local language proficiency ($r = .29$, $p < .001$), followed by local length of stay ($r = .26$, $p < .001$) and educational attainment ($r = .26$, $p < .001$), age of arrival ($r = -.15$, $p < .001$), psychological distress ($r = -.13$, $p < .001$), and work search intention ($r = .09$, $p < .001$). No significant correlations were observed between local language proficiency and Conscientiousness ($r = .03$, $p = .24$) or Openness ($r = .02$, $p = .37$). There was also no significant difference between men ($M = 18.92$, $SD = 17.38$) and women ($M = 17.28$, $SD = 18.28$) on local language proficiency, $t(1545) = 1.70$, $p = .09$.

HYPOTHESIS TESTING

In order to investigate the unique predictive validity of the variables of interest on local language proficiency, we conducted a hierarchical regression analysis with three steps (Table 2). The first step (Model 1) included the control variables gender, age of arrival, local length of stay, premigration educational attainment, and psychological distress. In the second step (Model 2), GMA, work search intention, Conscientiousness, and Openness were added, testing H1, H2, H3, and H4, respectively. In the third step (Model 3), the interaction terms of GMA with work search intention (H5), GMA with Conscientiousness (H6), and GMA with Openness (H7) were included. We expected that every predictor and interaction term would explain unique variance in local language proficiency. In Table 2, beta-coefficients and their confidence intervals were reported to present the effects of the predictors of local language proficiency. The R^2 and Cohen’s f^2 statistic in Table 2 respectively indicate the total explained variance of the model and the corresponding effect size, where $f^2 \geq 0.02$ is a small effect, $f^2 \geq 0.15$ is a medium effect, and $f^2 \geq 0.35$ is a large effect (Cohen, 1988).

No differential effects of the predictors of local language proficiency were observed between the two refugee groups. Specifically, refugee group did not moderate the effect of GMA (ß = .06, $t = 1.50$, $p = .13$), work search intention (ß = .05, $t = -1.48$, $p = .14$), Conscientiousness (ß = .05, $t = 0.82$, $p = .41$), Openness (ß = .05, $t = 0.87$, $p = .39$), and the interactions between GMA and work search intention (ß = -.02, $t = -0.18$, $p = .75$), Conscientiousness (ß = .06, $t = 0.89$, $p = .37$), and Openness (ß = -.01, $t = -0.32$, $p = .85$). Therefore, the hierarchical regression analysis was conducted for the entire sample.

Table 1. *Overall and Refugee Group Specific Descriptive Statistics, Effect Sizes, and Bivariate Correlations of Study Variables*

Variable	M_O	SD_O	M_S	SD_S	M_E	SD_E	*d*
1. Gender	0.28	0.45	0.28	0.45	0.27	0.44	0.02
2. Age of arrival	27.53	8.60	29.05	9.78	24.69	5.71	0.54**
3. Local length of stay	16.95	8.26	16.19	8.27	18.61	8.01	0.30**
4. Educational attainment	2.43	1.50	2.32	1.58	2.89	1.00	0.43**
5. Psychological distress	1.74	0.72	1.75	0.74	1.70	0.67	0.06
6. GMA	32.29	10.83	35.75	9.87	24.94	8.93	1.15**
7. Work search intention	2.44	0.93	2.23	0.88	2.87	0.91	0.72**
8. Conscientiousness	3.86	0.45	3.97	0.42	3.65	0.45	0.74**
9. Openness	3.90	0.53	4.00	0.50	3.69	0.53	0.60**
10. Local language proficiency	18.46	17.62	18.98	18.57	17.34	15.37	0.10

	1	2	3	4	5	6	7	8	9	10
1. Gender	-	.09*/ -.07	-.29**/ -.11*	.10**/ .10	-.01/ .07	-.05/ -.08	-.18**/ -.05	-.03/ -.10*	-.16*/ -.13**	.01/ -.18**
2. Age of arrival	.06*	-	-.13**/ -.20**	.11*/ -.07	.03/ .03	-.09*/ .07	.04/ .12**	.08**/ .08	.08**/ .09*	-.18**/ -.12*
3. Local length of stay	-.24**	-.17**	-	-.10**/ -.02	.05/ .02	.04/ .02	.05/ -.11*	-.03/ .02	-.02/ .00	.29**/ .35**
4. Educational attainment	.09**	.06*	-.07*	-	-.10**/ -.03	.21**/ -.12	.11**/ -.11	.12**/ -.07	.13**/ -.10	.28**/ .12
5. Psychological distress	.02	.04	.04	-.10**	(.89/ .84)	-.11**/ -.10*	-.07**/ -.06	-.05/ -.13**	-.02/ -.07	-.15**/ -.07
6. GMA	-.04	.05*	-.03	.10**	-.08**	(.91/ .81)	.11**/ .12**	.07*/ .06	.16**/ .14**	.30**/ .33**
7. Work search intention	-.13**	-.02	.04	.12**	-.07**	-.05*	(.91/ .88)	.16**/ .23**	.27**/ .25**	.15**/ -.01
8. Conscientiousness	-.05	.15**	-.06*	.05	-.07*	.21**	.06**	(.68/ .63)	.63**/ .62**	-.01/ .08
9. Openness	-.14**	.14**	-.05*	.06*	-.03	.26**	.15**	.66**	(.84/ .74)	-.01/ .06
10. Local language proficiency	-.04	-.15**	.26**	.26**	-.13**	.29**	.09**	.03	.02	(.97/ .97)

Note. The subscript $_O$, $_S$, and $_E$ respectively represent the overall sample (N_O = 1547), the Syrian refugee group (n_S = 1053), and the Eritrean refugee group (n_E = 494). *d* = Cohen's *d* effect size, where 0.10 = small, 0.30 = medium, 0.50 = large (Cohen, 1988). Gender, Male = 0, Female = 1. GMA = general mental ability. Correlations for the entire sample are shown below the diagonal. Correlations for respectively Syrian and Eritrean refugees are shown above the diagonal, separated by a slash. Similarly, the values between brackets represent the alpha coefficients for Syrian and Eritrean refugees, respectively. The possible range of scores is 1.00-5.00 for psychological distress, work search intention, Conscientiousness, and Openness, 0-60 for GMA, and 0-80 for local language proficiency. The actual range of scores is 1.00-5.00 for psychological distress and work search intention, 1.70-5.00 for Conscientiousness, 1.60-5.00 for Openness, 1-57 for GMA, and 0-78 for local language proficiency.
* p < .05; ** p < .01 (two-tailed).

Model 1 (Table 2, Model 1) of the hierarchical linear regression analysis showed that local language proficiency is not associated with gender (ß = .01, t = 0.47, p = .64), it is negatively associated with age of arrival (ß = -.12, t = -4.49, p < .001), positively associated with local length of stay (ß = .31, t = 11.03, p < .001) and premigration educational attainment (ß = .28, t = 10.34, p < .001), and negatively associated with psychological distress (ß = -.11, t = -3.91, p < .001). Model 1 explained 19.7% variance in local language proficiency, which corresponds to Cohen's f^2 = .25, indicating a medium effect size.

In Model 2 (Table 2, Model 2), GMA (ß = .29, t = 10.82, p < .001) and work search intention (ß = .06, t = 2.32, p = .02) showed a positive relationship with local language proficiency above and beyond the effects of the control variables, supporting H1 and H2. In contrast to the predictions of H3 and H4, no significant relationships were observed between refugees' local language acquisition and Conscientiousness (ß = .03, t = 0.75, p = .45) or Openness (ß = -.06, t = -1.67, p = .10). Overall, Model 2 explained 7.9% additional variance over and above Model 1 (i.e., in total 27.6% explained variance), F(4, 1116) = 30.42, p < .001, which corresponds to Cohen's f^2 = .39, indicating a large effect size.

Model 3 showed an interaction effect between GMA and work search intention on local language proficiency (ß =.09, t = 3.37, p = .001), such that the effect of GMA on local language proficiency was stronger at higher levels of work search intention, supporting H5 (Figure 1). A simple slope analysis showed that the positive relationship between GMA and local language proficiency was stronger at +1 *SD* of work search intention (ß = .36, t = 10.28, p < .001) compared to -1 *SD* of work search intention (ß = .23, t = 6.78, p < .001). In contrast to the predictions of H6 and H7, no evidence was found for interaction effects between GMA and Conscientiousness (ß = -.04, t = -1.10, p = .27) and between GMA and Openness (ß = -.05, t = -1.39, p = .17) on local language proficiency. Model 3 explained 1.1% additional variance in local language proficiency over and above Model 2, F(3, 1113) = 5.90, p = .001. The total amount of explained variance in local language proficiency of Model 3 is 28.7%, corresponding to Cohen's f^2 = .40, indicating a large effect size.[7]

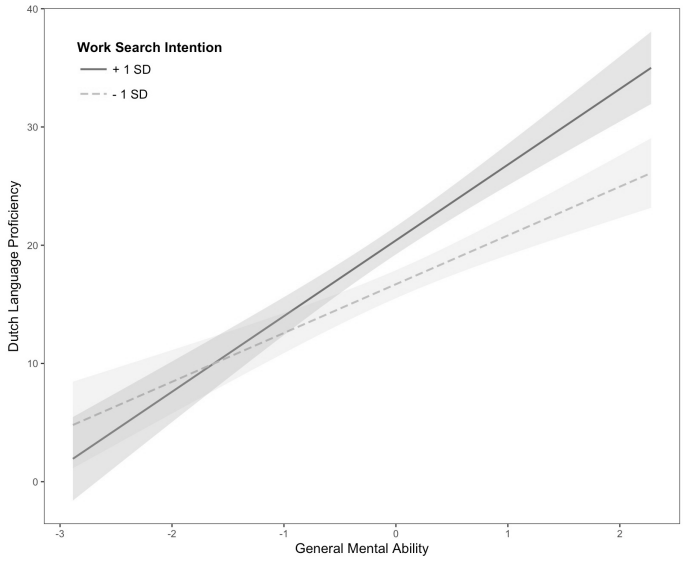
7 The multiple regression analysis was also conducted without the control variables. The results are comparable to the results with the control variables, except for Openness. In the model without control variables, Openness (ß = -.09, p = .003) as well as the interaction term of GMA and Openness (ß = -.07, p = .04) are significantly negatively associated with local language proficiency.

Table 2. *Hierarchical Regression Analysis with Predictors of Local Language Proficiency*

	Local Language Proficiency					
	Model 1		Model 2		Model 3	
Variable	ß	95% CI	ß	95% CI	ß	95% CI
Gender (male = 0, female = 1)	.01	[-.04, .07]	.03	[-.02, .09]	.03	[-.05, .05]
Age of arrival	-.12***	[-.18, -.07]	-.13***	[-.18, -.08]	-.13***	[-.18, -.08]
Local length of stay (months)	.31***	[.25, .36]	.31***	[.26, .37]	.31***	[.26, .37]
Educational attainment	.28***	[.23, .33]	.25***	[.20, .30]	.25***	[.20, .31]
Psychological distress	-.11***	[-.16, -.05]	-.08**	[-.13, -.03]	-.08**	[-.13, -.03]
GMA			.29***	[.24, .34]	.28***	[.23, .34]
Work search intention			.06*	[.01, .12]	.07**	[.02, .12]
Conscientiousness			.03	[-.04, .09]	.02	[-.05, .08]
Openness			-.06	[-.13, .01]	-.07	[-.14, .00]
GMA x Work search intention					.09**	[.04, .14]
GMA x Conscientiousness					-.04	[-.11, .03]
GMA x Openness					-.05	[-.12, .02]
R^2		.20		.28		.29
F		55.04***		47.21***		37.30***
ΔR^2				.08		.01
ΔF				30.23***		5.75*
f^2		.25		.39		.40

Note. GMA = general mental ability; 95% CI = 95% confidence interval. f^2 = Cohen's f^2, where $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes, respectively (Cohen, 1988).
N = 1547.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. *The Relation between General Mental Ability and Refugees' Dutch Language Proficiency at +1 and -1 SD of Work Search Intention*



Note. The values on the x-axis represent z-scores, and the grey area around the lines illustrates the 95% standard error confidence interval.

EXPLORATORY CURVILINEAR ANALYSES

To test for curvilinear relationships of the predictors with local language proficiency, we compared a linear regression model, $y = b_0 + b_1x$, with a quadratic regression model, $y = b_0 + b_1x + b_2x^2$, where y is the dependent variable local language proficiency, and where x represents the total score on one of the four predictors. Unique variance in local language proficiency was explained by the quadratic terms of Conscientiousness (F[1, 1540] = 6.83, p = .001, ΔR^2 = .01), Openness (F[1, 1540] = 3.90, p = .02, ΔR^2 = .01), and GMA (F[1, 1542] = 10.36, p = .001, ΔR^2 = .01), but not work search intention (F[1, 1544] = 0.25, p = .62, $\Delta R^2 < .001$). Conscientiousness and Openness revealed inverted U-shaped relationships with refugees' local language proficiency (see Appendix, Figure A1 and Figure A2), whereas the relationship between GMA and local language proficiency showed an exponential trend (see Appendix, Figure A3).

DISCUSSION

Drawing on the literature on psychological individual differences and personnel selection (e.g., Judge & Zapata, 2015; Roberts et al., 2007; Schmidt & Hunter, 1998), the present study examined the utility of psychological traits to explain differences in local (Dutch) language acquisition among Syrian and Eritrean refugees in the Netherlands, above and beyond factors that have been studied in prior empirical work. Specifically, we examined the incremental validity of GMA, work search intention, and the personality traits Conscientiousness and Openness, above and beyond sociodemographic variables and psychological distress in the prediction of refugees' local language proficiency.

THEORETICAL IMPLICATIONS

This study contributes to the literature on refugees' local language acquisition in several important ways. First, most previous research on local language acquisition investigated voluntary immigrants, and only a few studies have investigated refugees exclusively (Fennelly & Palasz, 2003). We replicated some earlier findings among a sample of Syrian and Eritrean refugees residing in the Netherlands. The findings showed that local language proficiency levels were about similar for men and women, but higher among refugees who were younger, who had a longer length of stay in the Netherlands, who had a higher premigration education level, and who experienced lower levels of psychological distress. The latter finding is especially important, as some earlier studies did not find a negative link between psychological distress and local language acquisition among immigrants (Van Niejenhuis et al., 2015; Van Tubergen, 2010). This could possibly be explained by our use of more reliable and valid instruments of psychological distress and language proficiency.

Second, to our knowledge, we are the first to simultaneously test the effects of individual differences in GMA, work search intention, and personality traits as predictors of immigrants' local language acquisition. The results revealed that, above and beyond the effects of the sociodemographic variables and psychological distress, refugees' level of local language proficiency is most strongly and positively associated with GMA, and to a lesser extent, yet still significantly and positively associated with work search intention. Unexpectedly, no positive relationships were found between Conscientiousness (i.e., being organized and industrious) and Openness (i.e., being aesthetically sensitive and intellectual), and refugees' local language proficiency. Exploratory analyses revealed inverted U-shaped relationships of these latter two personality traits with local language proficiency. That is, higher local language proficiency scores were observed around the mean of the trait continuum, whilst both extreme ends of the continuum tend to display lower scores. Additionally, evidence was found for a curvilinear relationship between GMA and local language proficiency, such that this link is stronger at higher levels of GMA. Altogether, the findings indicate that cognitive ability and work motivation are positively related to refugees' local language proficiency, but that the personality traits Conscientiousness and Openness are not linearly positively associated with local language proficiency among refugees.

We propose two explanations for the lack of support for linear positive relations of Conscientiousness and Openness with refugees' local language proficiency. One possible explanation is that the effect of personality on behavior – as some theorists have argued – is limited in collectivistic cultures, due to individuals' higher responsibility to social roles and relationships (Heine, 2001; Markus & Kitayama, 1998; Shweder, 1991; for a discussion, see Church & Katigbak, 2017). According to this view, refugees' embeddedness in their social role is of more relative importance than their personality traits in predicting behavior. Another possible explanation is self-selection in personality – that is, a phenomenon where individuals with certain personality profiles are more or less inclined to migrate, resulting in a smaller variance of migrants' personality traits (Boneva & Frieze, 2001). Earlier research among non-refugee samples has found that immigration was predicted by low Conscientiousness and high Openness (Ciani & Capiluppi, 2011; Jokela, 2009; Tabor et al., 2015). Self-selection among refugees would manifest itself in a smaller range of test scores, decreasing the statistical power to detect relationships between psychological characteristics and local language acquisition. Unfortunately, it was impossible to test this hypothesis in the current study, as we have no assessment data of a representative sample of Syrian or Eritrean citizens residing in their home country.

The third contribution of this study is the investigation of interaction effects of GMA with work search intention, Conscientiousness, and Openness. Earlier research had shown that the positive effect of GMA on performance is stronger at higher levels of achievement motivation and at lower levels of Openness (e.g., Bergold & Steinmayr, 2018; Di Domenico & Fournier, 2015; Ziegler et al., 2009). This study showed that the effect of GMA on refugees' local language proficiency was stronger at higher levels of work search intention. We found no support that Conscientiousness or Openness moderated the relationship between GMA and refugees' local language proficiency.

STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

The present study has several strengths. First, we studied participants from two samples of refugees that have been underexplored in the literature. Psychological traits and their predictive validity in the domain of work and education have been rarely studied in Middle-Eastern samples (Henrich et al., 2010). We showed that the relationships between the assessed psychological predictors and local language proficiency were comparable for Syrian and Eritrean refugees, who originate from different ecological environments. Another strength of this study is the large sample sizes of the refugee groups, which allow for reliable effect estimates. The use of an objective measure of local language proficiency is also a strength of this study. Previous research has shown that objective measures of language proficiency reveal substantially different findings from self-report measures of language proficiency (Edele et al., 2015). Furthermore, the subtests that were used in this study measure fluid (non-verbal) intelligence, which indicates that there is no contamination with the dependent variable. Lastly, as there were potential incentives associated with assessment results (i.e., opportunities in work and education), we believe that the participants were motivated to respond honestly to the questionnaires and perform well on the ability tests. This supports the validity of the research findings (Duckworth et al., 2011).

Despite the strengths of the current research, there are also some limitations. One limitation is that there has been no substantial empirical validation so far of the cross-cultural personality inventory that was used in the present study. It is therefore somewhat uncertain whether Conscientiousness and Openness were measured adequately, although the operationalizations of these constructs show similarities to the well-validated HEXACO model of personality. Second, given that our study has a cross-sectional design, considerable caution is necessary when deriving conclusions about the causal nature of the findings. Although a causal relationship with local language acquisition is rather indisputable for some predictors (e.g., age of arrival, local length of stay, premigration educational attainment, and GMA), other predictors such as psychological distress, work search intention, and personality traits could as well be influenced by mastering the local language, or these relationships could also be bidirectional.

An important avenue for future research is to replicate our findings among other refugee and non-refugee migrant groups and in other countries. For instance, cross-country differences have been found in local language acquisition (e.g., Fennelly & Palasz, 2003; Van der Slik et al., 2015), and immigrants who originate from countries with a larger linguistic distance (i.e., a

larger dissimilarity between languages) show a slower local language acquisition (Chiswick & Miller, 2001; Kristen et al., 2016). We also advocate for the use of personality inventories that have been validated across cultures, such as the HEXACO personality inventory (Lee & Ashton, 2004) or the International Personality Item Pool (IPIP; Goldberg, 1999). Alternatively, researchers could use emic (i.e., local-specific) personality inventories, such as The South African Personality Inventory (Fetvadjiev et al., 2015) or the Arab Personality Inventory (Zeinoun, et al., 2017). Additionally, researchers could examine the effect of personality traits at the level of their facets. Research has shown that personality facets could display substantially different correlations with a criterion compared to their overarching personality dimensions (e.g., Moon et al., 2008). In the present research, we examined the effects of refugees' individual differences after a relatively short duration in the country of residence – that is, on average about 17 months. Future research could investigate the predictive validity of psychological individual differences in local language proficiency after a longer local length of stay.

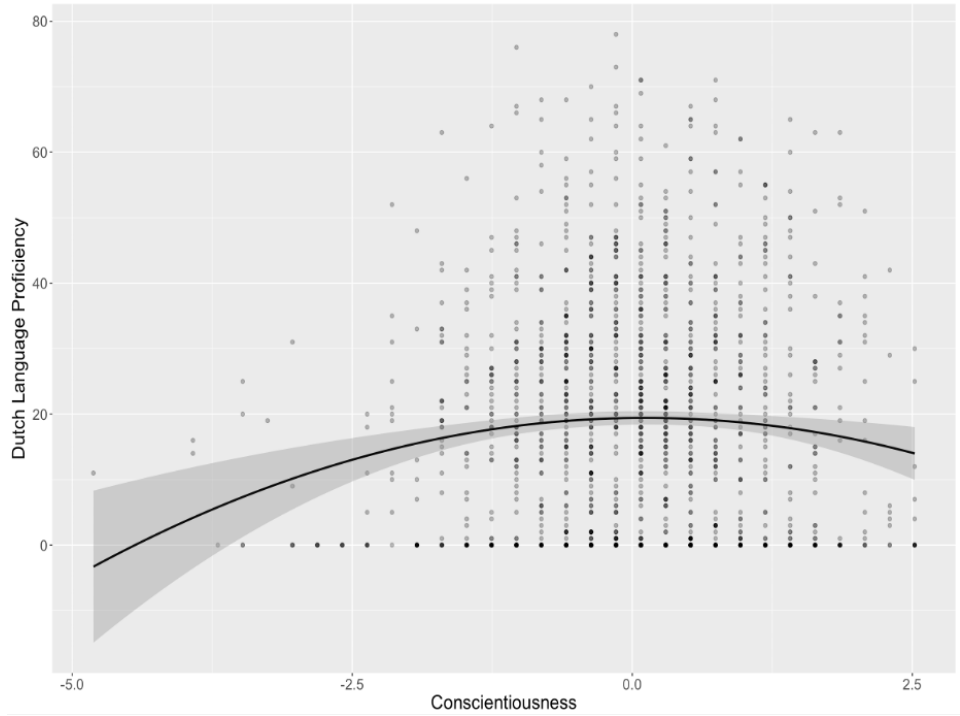
Beyond the future directions considered so far, we advocate for longitudinal research investigating refugees' individual differences in personality and cognitive abilities as predictors of local language acquisition. Such research could also be extended to other relevant outcomes for refugees, such as employment and social adjustment. Another suggestion for future research is to examine psychological differences between refugees and people from the same country who did not migrate under harsh societal circumstances. This would offer insights into the potential psychological precursors of migration. In this respect, research so far has only focused on voluntary migrants and students, mostly from Western countries (Boneva & Frieze, 2001). Finally, research could explore the potential influences of local resettlement policies and practices on local language acquisition (see Koopmans, 2010).

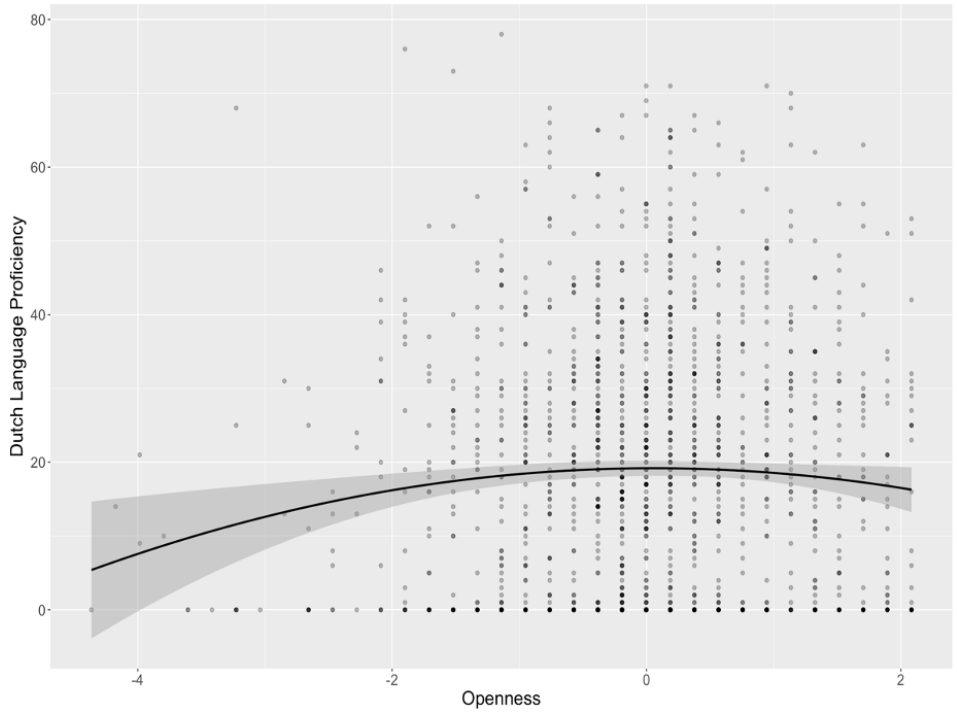
CONCLUSION

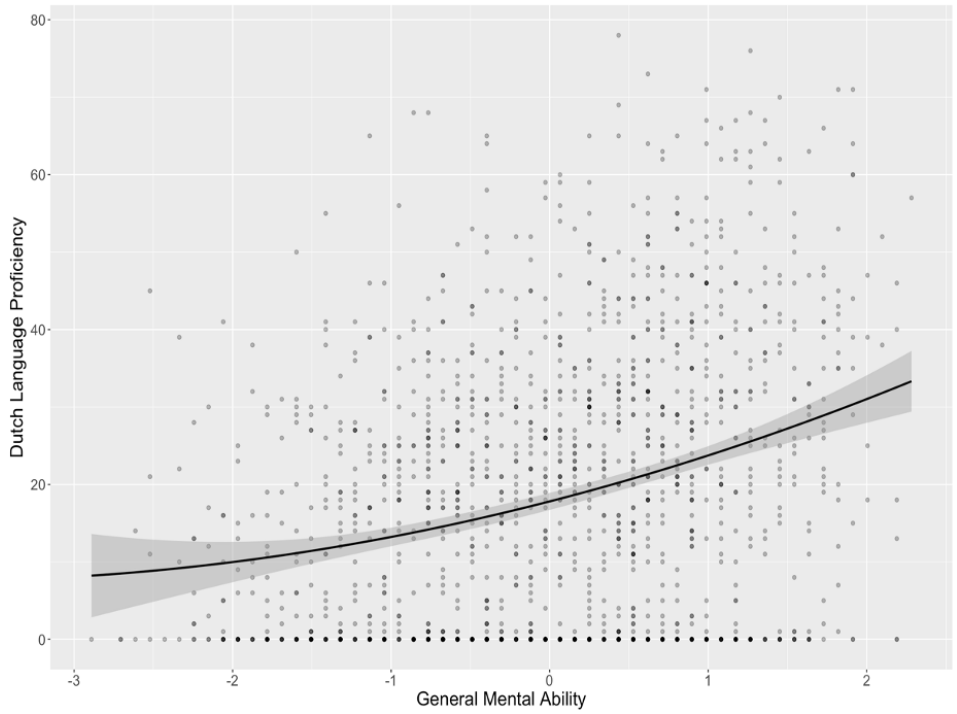
The present study investigated the relationship between refugees' psychological individual differences and local language acquisition. We revealed that in addition to the effects of sociodemographic variables and psychological distress, refugees' local language proficiency is positively associated with GMA and work search intention, and that the effect of GMA on local language proficiency is stronger at higher levels of work search intention. No linear positive relationships were found between personality traits Conscientiousness and Openness and local language proficiency, but some evidence was found for curvilinear relationships between these personality traits and local language proficiency. The findings suggest that among refugees, psychological individual differences in cognitive ability and work motivation are important for learning the local language.

APPENDIX

Figure A1, A2, and A3. *(a) The inverted U-shaped relationship between Conscientiousness (z-scores) and Dutch language proficiency scores. (b) The inverted U-shaped relationship between Openness (z-scores) and Dutch language proficiency scores. (c) The curvilinear relationship between general mental ability (z-scores) and Dutch language proficiency scores*




Dutch Language Proficiency
80
60
40
20
0
-4
-2
0
2
Openness


Dutch Language Proficiency
80
60
40
20
0
-3
-2
-1
0
1
2
General Mental Ability

CHAPTER 4

A Hindering and Facilitating Individual-Difference Factors Framework for Predicting Refugees' Workforce Participation

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ABSTRACT

Finding employment is an important aspect of refugees' integration into their receiving society. Previous research has identified several individual-difference factors that form obstacles towards refugees' quick and successful workforce participation. In the present study, we organize these individual-difference factors into an integrative framework containing a wide range of factors that may either hinder or facilitate refugees' path to finding work. Using time-lagged data of recently arrived Syrian (n = 1867) and Eritrean (n = 844) refugees in the Netherlands, we examined the validity of refugees' individual-difference factors for predicting their workforce participation (i.e., employment and longest employment duration). We also exploratorily examined relations between individual-difference factors and refugees' highest hourly wage. The results showed that several hindering factors (i.e., older age, being a woman, and physical health problems) and several facilitating factors (i.e., pre-migration educational level, pre-migration work experience, local language proficiency, frequency of contact with natives, Extraversion, GMA, and work centrality) contributed to predicting one or more of these employment outcomes. There were some differences in the predictive validity of the individual-difference factors between refugee groups (i.e., based on age, sex, and nationality). These findings offer several important insights into refugees' workforce integration and provide implications for improving refugees' integration trajectories.

KEYWORDS
refugees, individual-difference factors, workforce participation, employment, highest hourly wage

A HINDERING AND FACILITATING INDIVIDUAL-DIFFERENCE FACTORS FRAMEWORK FOR PREDICTING REFUGEES' WORKFORCE PARTICIPATION

According to the United Nations Refugee Agency (UNHCR, 2022a), the number of refugees worldwide has reached the highest level on record. In the first few months of 2022, 26.6 million people fled their home country as a result of armed conflict, violence, persecution, or human rights violations (UNHCR, 2022b). This year's number is expected to exceed the total number of refugees in 2021 (27.1 million) and is more than double the annual number of refugees (10.5 million) the world saw a decade ago (UNHCR, 2022b). In contrast to other migrants, who leave their home countries because of, for example, economic considerations, refugees are those migrants who are forced to leave their home countries due to unforeseen, life-threatening circumstances (Dustmann et al., 2017). Furthermore, despite initially strong return intentions (UNHCR, 2022a), refugees often cannot return to their home countries due to well-founded fears of the prevailing circumstances (Lee et al., 2020). Thus, the massive global increase in refugees, and the enduring instabilities in the countries they have fled, caused an acute and growing need to assist refugees in rebuilding their lives in the countries where they sought protection and security.

Early employment is a key aspect – if not the most important aspect (Bloch, 2002; Colic-Peisker, 2005) – for refugees to rebuild their lives (Feeney, 2000). However, across the globe many refugees face long-term unemployment (Donato & Ferris, 2020; Fasani et al., 2022). For example, in the Netherlands, where the present research was conducted, only 19% of the refugees who received a residence permit in 2014 found a job within three years (CBS, 2021). A low employment rate is associated with several negative consequences. For the receiving country, refugees' unemployment results in high economic costs (Aiyar et al., 2016; Stenberg & Westerlund, 2008), higher levels of anti-immigrant attitudes (Chandler & Tsai, 2001), and less readiness to take up refugees in the future (Seidelsohn et al., 2020). For refugees, unemployment results in stress, poor physical health, bad health-related habits (Bambra & Eikemo, 2009; Cohen et al., 2007; Dettenborn et al., 2010), and poor mental health (McKee-Ryan et al., 2005; Paul & Moser, 2009). To prevent these negative consequences, it is essential to gain insights into the factors that influence refugees' quick and successful workforce participation.

In the present research, we concentrate on refugees' individual-difference factors because the personnel psychology literature has shown that these factors play a crucial role in workforce participation (e.g., Van Hooft et al., 2021). Furthermore, insights into how such factors influence workforce participation will allow receiving countries to identify specific assistance needs, develop customized and evidence-based integration trajectories, and

identify opportunities for refugees to cultivate and train relevant traits and skills to promote their workforce participation. Although individual-difference factors are relatively stable attributes that individuals bring to the job (Sackett et al., 2017), we emphasize that these factors are not unchangeable; one's educational level and (language) skills are examples of individual-difference factors that are relatively stable but can alter by investing considerable time and effort.

The personnel psychology literature has offered various theoretical frameworks and meta-analyses of individual-difference factors (e.g., demographics, human and social capital variables, personality traits, and attitudinal factors) that successfully predict native-born job seekers' or economic migrants' workforce participation (e.g., Kanfer et al., 2001; Van Hooft et al., 2021), employability (Harari et al., 2021), and underemployment (Guerrero & Rothstein, 2012). However, these frameworks are unlikely to generalize to refugee populations for two reasons. First, refugees are forced to leave their home countries and they often do not have a choice in determining their receiving countries (Koser, 2007). Therefore, compared to native-born job seekers or economic migrants, the educational level, work experience, and (language) skills of refugees are less likely to match the needs of the job market (Lee et al., 2020). Second, refugees face a number of unique barriers compared to native-born job seekers or economic migrants, including health- and family-related challenges (e.g., Agbényiga et al., 2012). For example, due to dire circumstances in their home countries and perilous journeys to their receiving countries, refugees have a relatively high prevalence of post-traumatic stress disorder (PTSD) symptoms (Blackmore et al., 2020) and have often been forced to leave family members behind (e.g., Keita & Schewe, 2021). Although PTSD symptoms (Sienkiewicz et al., 2020) and family-related challenges (Beddoes & Pawley, 2014) are known to affect employment-related outcomes, such characteristics are not included in current frameworks within the personnel psychology literature.

To the best of our knowledge, there have been only two prior attempts at developing a theoretical framework of individual-difference factors for understanding workforce participation of refugees specifically (Boss et al., 2021; Lee et al., 2020; both will be explained in the theory section). However, the predictive value of these frameworks is unknown as neither of them has been quantitatively evaluated. More importantly, both frameworks comprise different individual-difference factors, suggesting that both lack important predictors of workforce participation. For example, the framework of Boss et al. (2021) does not include demographics (e.g., age, sex) and the framework of Lee et al. (2020) does not include any factors related to refugees' acquired human capital in their home countries (e.g., work experience, education), while prior research indicates that these factors play a significant role in refugees' workforce participation (De Vroome & Van Tubergen, 2010; Hunkler et al., 2021; Khawaja & Hebbani, 2018). Furthermore, although both frameworks identify PTSD symptoms, neither framework includes family-related challenges or psychological characteristics such as personality and general mental ability (GMA). The omission of psychological characteristics is especially surprising, as these characteristics are important predictors of workforce participation among native-born job seekers (Hogan et al., 2013; Kanfer et al., 2001), and of refugees' broader integration in their host societies (Echterhoff et al., 2020). Hence, there is a clear need for the development and actual testing of an integrated and more comprehensive theoretical framework.

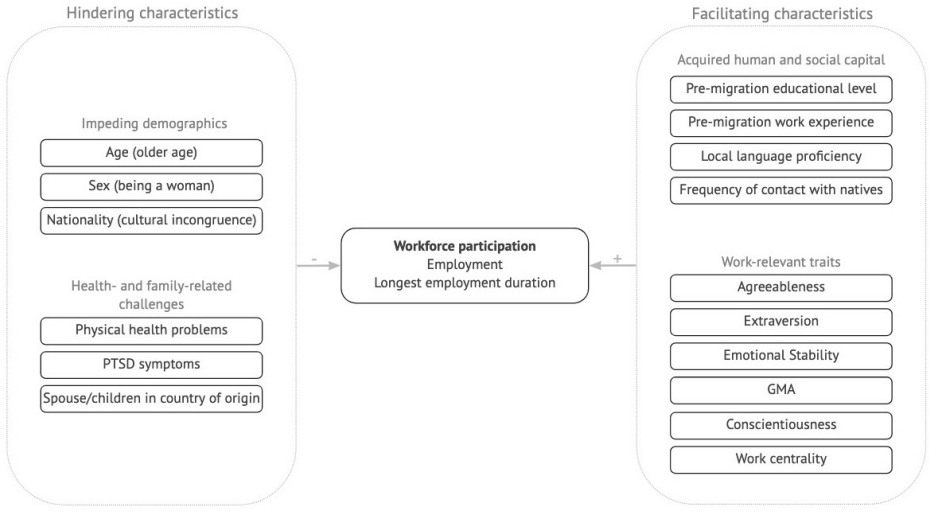
In this study, we aim to advance our understanding of refugees' workforce participation by developing an integrative theoretical framework of individual-difference factors to predict workforce participation (see Figure 1). Importantly, we test the predictive validity of (the individual-difference factors within) our framework among a large group of recently arrived refugees living in the Netherlands. To this end, we relate these factors to two criteria: (1) employment (i.e., the actual occurrence and speed of finding a job), and (2) longest employment duration (i.e., the longest consecutive employment duration). These criteria are in concert with the definition of employability – that is "the ability to gain and the ability to maintain a job" (Fugate et al., 2004; Hogan et al., 2013). Furthermore, research has shown that many refugees have temporary jobs in the early years after resettlement (CBS, 2021), which makes longest employment duration a crucial indicator of refugees' workforce participation.

We aim to make three contributions. First, we add to the literature on refugees' workforce participation by integrating the sociology and economics literature on refugees' workforce participation with the psychology (i.e., personnel psychology) literature on job search and employability. Current refugee research is fragmented; different individual-difference factors are examined within different disciplines (Lee et al., 2020), and these disciplines have rigid boundaries in terms of which characteristics are included or excluded. While the discipline of sociology has focused on socio-demographics (e.g., Bakker et al., 2017; Khawaja & Hebbani, 2018), the discipline of economics has focused on factors related to acquired human and social capital (e.g., Chiswick & Miller, 2009; Friedberg, 2000). Complementary to these disciplines, the psychology literature indicates the importance of studying psychological characteristics in relation to workforce participation. As this latter discipline has exclusively focused on predicting employment of new labor market entrants, job-to-job seekers, and job losers (for meta-analyses, see Kanfer et al., 2001; Van Hooft et al., 2021), established frameworks within this discipline lack important individual-difference factors that are specifically relevant for refugees (e.g., language, health- and family-related challenges). Our study will break these disciplinary boundaries by integrating insights from sociology, economics, and psychology into one comprehensive theoretical framework containing a wide range of individual-difference factors that may either hinder or facilitate refugees' path to finding work. This framework will allow scholars to adequately build on existing knowledge and to propose more effective interventions to increase refugees' workforce participation.

Second, we contribute to the literature on refugees' workforce participation by actually testing our integrative theoretical framework among a large group of recently arrived Syrian and Eritrean refugees living in the Netherlands. The Syrian refugees had mostly fled their country because of the civil war, and the Eritrean refugees had mostly fled their country because of the obligatory military service, oppression, violence, and poverty (for more information about the sociodemographic and cultural differences between Syria and Eritrea and the background of these refugee groups, we refer readers to the Appendix, and to Dagevos et al. [2018] and Sterckx et al. [2018]). Given the current tight labor market, speeding up the workforce participation of these two relatively large (UNHCR, 2021) yet understudied refugee groups is not only important for the wellbeing of individuals, but also for organizations and societies at large.

Finally, our study offers an important methodological contribution. Many studies on refugees' workforce participation have adopted cross-sectional research designs with self-reported employment data (e.g., De Vroome & Van Tubergen, 2010), which limits causal inferences. The present study addresses this issue by adopting a time-lagged research design over a five-year time span with employment data from the Central Bureau of Statistics (CBS), which are objective, rich (recorded monthly), and unbiased (i.e., there is no selective participant dropout in this study that could bias the results; see Akl et al., 2012; Asendorpf et al., 2014).

Figure 1. *An Integrative Framework of Hindering and Facilitating Individual-Difference Factors for Refugees' Workforce Participation*



A HINDERING AND FACILITATING INDIVIDUAL-DIFFERENCE FACTORS FRAMEWORK

In the domain of refugee employment and workforce integration, two earlier frameworks have been developed, namely by Lee et al. (2020) and by Boss et al. (2021). Both frameworks aim to include all conceivably relevant factors potentially affecting refugees' workforce participation. Lee et al.'s framework is based on a literature review of earlier publications in this domain and groups relevant factors into three categories: 1) institutional factors, focusing on country-level issues such as cross-country differences in immigrant regulations, asylum policies, socio-political climate, and public sentiment towards immigrants, 2) organizational factors, pertaining to problems of exclusion and isolation in the workplace, discrimination, but also whether an organization offers volunteering opportunities to refugees with the aim of providing them with local workplace experiences, and 3) individual-level factors, encompassing refugee motivation to integrate, their local language competency, age and sex, their social networks, and psychological responses (e.g., PTSD symptoms and anxiety).

Whereas Lee et al.'s framework is extensive, ranging from country-wide to individual-difference factors, Boss et al. (2021) proposed a framework that specifically focuses on refugees' job search process. They distinguish about 50 factors related to this process, including diversity cues and available job openings within organizations, local language proficiency, mental health and financial needs of refugees, person-organization and person-job fit, self-promotion behaviors and quality of answers during job interviews, but also perceptions of discrimination by the job seekers, and employer exploitation. From a small qualitative study in Canada among seven Syrian refugees and six service providers preparing Syrian refugees for the workforce, Boss et al. derived that local language proficiency, credential recognition, having work experience in the receiving country (a "catch 22"), cultural incongruencies in the job application process, employer exploitation in unethical work situations, and mental health were regarded as relevant for successful employment.

Both frameworks include a vast number of factors, of which PTSD symptoms (or mental health) form a distinctive issue for refugees. Neither framework includes refugee-specific family-related challenges such as having left behind family members in one's country of origin. Furthermore, an important group of variables from the perspective of personnel psychology has been neglected in both frameworks, namely psychological characteristics such as personality and GMA, which are related to workforce participation (Van Hooft et al., 2021; Vélez-Coto et al., 2021) and success in the job (Sackett et al., 2022). Finally, Lee et al.'s framework does not include any factors related to refugees' acquired human capital in their home countries (e.g., work experience, education), which play an important role in refugees' workforce participation (e.g., Chiswick & Miller, 2009; Friedberg, 2000), whereas

the framework of Boss et al. (2021) does not include refugee demographics (e.g., age, sex). As both frameworks are tremendously elaborate, it is extremely difficult to empirically put them to the test.

Given the importance of individual-difference factors within personnel psychology (e.g., Van Hooft et al., 2021), the present study's aim is to develop and test an integrative framework of individual-difference factors to predict refugees' workforce participation. Within the category of individual-level factors, Lee et al.'s (2020) framework distinguishes between demographics (age, sex), local language proficiency, social networks, psychological responses (PTSD symptoms), and motivation to find work and integrate. Both Lee et al.'s (2020) and Boss et al.'s (2021) frameworks focus on obstacles and challenges faced by refugees, with Lee et al. seeing a systemic barrier to refugee workforce integration ('the canvas ceiling') and Boss et al. perceiving broad barriers to employment. However, from the domain of positive psychology (cf. Seligman & Csikszentmihalyi, 2000; Titova et al., 2018), it is valuable to not only recognize hindering factors, but to also consider resources that refugees may have and employ towards thriving and reaching success.

To structure and extend Lee et al.'s (2020) and Boss et al.'s (2021) thinking on relevant individual-difference factors, we explicitly distinguish between a group of potentially hindering and a group of potentially facilitating factors. One's impeding demographics and health- and family-related challenges belong to the group of hindering characteristics. The group of facilitating characteristics comprises an individual's acquired human and social capital and work-relevant traits. Both groups of factors are elaborated upon in the following.

HINDERING INDIVIDUAL-DIFFERENCE FACTORS

Impeding Demographics

Demographic variables have mostly been studied in the sociology literature (Bakker et al., 2017; Khawaja & Hebbani, 2018), and are associated with particular challenges due to discrimination and stereotyping, which can affect one's employment prospects (e.g., Colic-Peisker & Tilbury, 2006; Kofman, 2014). One relevant impeding demographic variable is age. Reemployment after job loss is particularly difficult for older workers (Klehe et al., 2012). Some challenges for older people include the lack of modern job skills (Fossum et al., 1986), low familiarity with modern job-search methods (Gibson et al., 1993; Westaby & Braithwaite, 2003), and employer hiring preferences for younger workers (Ahmed et al., 2012; Derous & Decoster, 2017). A recent meta-analysis indeed has shown that age is negatively related to reemployment success and positively related to unemployment duration (Wanberg et al., 2016). Furthermore, a UK study found that refugees' age is positively related to the number of barriers they face when searching for employment (Shiferaw & Hagos, 2002). Similarly, a Swedish study showed a positive correlation between refugees' age and their unemployment duration (Lundborg, 2013). Altogether, there is robust evidence that age is negatively related to (re)employment success. Therefore, we propose the following hypothesis:

> *Hypothesis 1a (H1a)*: Age is negatively related to refugees' workforce participation.[8]

The next relevant hindering demographic variable is being a woman. Cross-national statistics show a gender gap in refugees' workforce participation, with men showing higher rates of employment than women (Bisello & Mascherini, 2017; Eurostat, 2021b). For example, in the Netherlands, the gender employment gap was 15.1% in 2020 among non-EU-born migrants, compared to 7.8% among native citizens (Eurostat, 2021b). Research has shown that this gender gap is still present 15 years after migration (Bakker & Dagevos, 2017; Maliepaard et al., 2017). Several factors have been offered as explanations for refugees' gender gap in workforce participation, including traditional gender roles according to which men are the income providers (Baranik, 2020; Razenberg et al., 2018), as well as women having lower education levels (Barslund et al., 2017), less work experience, and a confined social network (Razenberg et al., 2018; for a review of the barriers, see Howes et al., 2018). In line with these empirical findings, we propose the following hypothesis:

> *Hypothesis 1b (H1b)*: Workforce participation is lower among female refugees than male refugees.

The third demographic variable which may cause challenges for refugees is the cultural incongruence between one's home country and the receiving country. A lack of familiarity with many aspects of the new culture may hinder the chances of getting employment. As expressed in the per capita GDP ranking which ranges from 1 to 192, the living standard in Eritrea (rank 179) is considerably lower than in Syria (rank 137) and thus more incongruent than Syria with the prosperous country of the Netherlands (rank 13). The legatum prosperity index (Lind, 2014) reflects these country differences in the 2021-indicators such as living conditions, economy, health, and education. Having a nationality that reflects a more different cultural background may further slow down one's labor participation, leading us to the expectation that:

> *Hypothesis 1c (H1c)*: Workforce participation is lower among Eritrean refugees than Syrian refugees.

8 In the hypotheses, we use the generic term *workforce participation* to refer to two dependent variables (DVs): employment and the longest employment duration. Since empirical work on the latter criterion is scarce, we have not made any a priori distinctions in our hypotheses.

Health- and Family-Related Challenges

Distinctive for the refugee context are two demanding themes, namely health-related challenges (physical health problems and PTSD symptoms) and family-related challenges. There is ample evidence that refugees tend to have worse physical and mental health than other migrants and natives of a country (Donato & Ferris, 2020; Ruiz & Vargas-Silva, 2018). Using a dataset from the UK, Ruiz and Vargas-Silva (2018) for instance describe that refugees are more likely than both other groups to report that the type of work they can do and the amount of work they can engage in are reduced by health problems, which may contain physical health problems such as diabetes, rheumatism and heart problems, but also mental health problems. Related to mental health, several reviews and meta-analyses on the prevalence and risk factors of mental wellbeing among refugees reveal that PTSD is more common among refugees than among native populations (Blackmore et al., 2020; Charlson et al., 2019). PTSD symptoms such as intrusive memories and heightened arousal levels are relevant to investigate in the context of employment, as these might make someone less able to work. PTSD symptoms among refugees have been linked to substance abuse (Harris et al., 2019; Horyniak et al., 2016) and violent crime (Couttenier et al., 2019), and some authors have argued that trauma can affect refugees' workforce participation (e.g., Brell et al., 2020). In fact, the average duration of PTSD has been found to exceed seven years in US samples (Kessler, 2000), and has therefore the potential to impede the socio-economic integration of refugees in the early years after resettlement. Donato and Ferris (2020) state that most data sources about refugees do not include measures relating physical and mental health with employment. Nonetheless, to our knowledge, to date three studies have empirically examined the link between PTSD symptoms and refugees' workforce participation. One study reported a weak negative effect (Cheng et al., 2021b), while two other studies revealed no direct effect. Yet, these latter studies have several methodological limitations which could question their findings, such as a cross-sectional research design, a small sample size, and a short residence duration (Hunkler & Khourshed, 2020; Wright et al., 2016). Given the high prevalence of physical health problems and PTSD symptoms among refugees and some evidence of a negative effect of PTSD symptoms on refugees' workforce participation, we propose the following hypothesis:

> *Hypothesis 2a (H2a):* Physical health problems are negatively related to refugees' workforce participation.
>
> *Hypothesis 2b (H2b)*: PTSD symptoms are negatively related to refugees' workforce participation.

A highly important issue for refugees is family-related challenges. Refugees have frequently been compelled to leave family members behind (e.g., Keita & Schewe, 2021). In contrast to refugees who live with their nuclear family in the receiving country (Gambaro et al., 2018), refugees with family members still in the home country from which they had fled, will ruminate and worry about their loved ones. They may be wondering whether their family still is alive, what their whereabouts are, and what they are doing. As such family-related challenges are understood to affect employment-related outcomes (Beddoes & Pawley, 2014), we anticipate that:

> *Hypothesis 2c (H2c)*: Workforce participation is lower among refugees who have versus those who have not left a spouse or children in their country of origin.

FACILITATING INDIVIDUAL-DIFFERENCE FACTORS

Acquired Human and Social Capital

Generally, human and social capital constitute differences in individuals' investment decisions (i.e., choices that provide resources for the labor market), and these differences are the main predictors of employment outcomes (Becker, 1964). Human capital refers to individuals' educational, personal, and professional experiences that can enhance career attainment (Becker, 1964), and social capital refers to social relationships that provide access to various types of resources (Caspi et al., 1998; Portes, 2000).[9] Individual differences in human and social capital determine one's occupational success (e.g., Borjas & Chiswick, 2019; Lancee, 2012). In line with earlier empirical work (e.g., De Vroome & Van Tubergen, 2010), we next describe the human and social capital variables that are relevant to refugees' workforce participation.

Educational attainment has been considered an important form of human capital (e.g., McArdle et al., 2007; Tharmaseelan et al., 2010), also for refugees (Chiswick & Miller, 2001; Hunkler et al., 2021). However, refugees' pre-migration education is often not easily transferable across national contexts (Chiswick & Miller, 2008; Friedberg, 2000). For instance, refugees who were highly educated in their country-of-origin face challenges with quickly finding employment that corresponds to their educational level (Cheng et al., 2021a). Nevertheless, refugees' pre-migration educational attainment level has been found to positively influence workforce participation (e.g., Hartog & Zorlu, 2009; Hunkler et al., 2021), although the effects are stronger for post-migration compared to pre-migration educational attainment (De Vroome & Van Tubergen, 2010; Kanas & Van Tubergen, 2009). Given the relatively short local length of stay of the refugees in our sample, we only focus on pre-migration educational attainment. We therefore propose the following hypothesis:

9 Some authors have argued that human capital includes psychological traits (e.g., Caspi et al., 1998; Fugate et al., 2004), whereas other authors place psychological traits in a separate category (e.g., Judge et al., 1995; Ng et al., 2005). In line with the principles of the human capital theory (Becker, 1964), we argue that human capital constitutes investment decision characteristics, and hence, psychological traits (including GMA) are not included in the capital perspective.

Hypothesis 3a (H3a): Pre-migration educational attainment is positively related to refugees' workforce participation.

Another important form of human capital is work experience. Skills acquired in the workplace can positively affect future employment, as work experience is valued by employers (Chiswick & Miller, 2009). Although work experience in the country of origin could be less compatible with the host society's labor market (e.g., Friedberg, 2000), we argue that pre-migration work experience still is valuable. Indeed, there is evidence that pre-migration work experience positively predicts refugees' workforce participation (e.g., Cheng et al., 2021a, 2021b). One study reported a negative effect, but this was probably found because the authors did not control for age (Chiswick & Wang, 2016). Altogether, we propose the following hypothesis:

Hypothesis 3b (H3b): Workforce participation is higher among refugees with versus without pre-migration work experience.

The last form of human capital that is highly relevant to refugees is local language proficiency. Local language proficiency is an essential resource for fostering refugees' incorporation into society (Portes & Rumbaut, 2006). Language skills are essential in most professions (Chiswick & Miller, 2001), and employers therefore are more likely to hire employees with proper language skills (Bertone, 2004). Moreover, better local language skills increase refugees' range of jobs in the labor market for which they are qualified (Chiswick & Miller, 2001). Correspondingly, refugees with better local language proficiency have higher levels of job-search self-efficacy (Pajic et al., 2018). Given these findings, it is unsurprising that local language proficiency has been positively associated with migrants' and refugees' employment success in several countries, such as the US (e.g., Chiswick & Wenz, 2006), Canada (e.g., Frank, 2013), Australia (e.g., Cheng et al., 2021b; Guven & Islam, 2015; Waxman, 2001), the UK (Bloch, 2002; Dustmann & Fabbri, 2003), and also in non-English speaking countries such as Israel (Chiswick & Repetto, 2001; Chiswick et al., 2020), Germany (Aldashev et al., 2009), and the Netherlands (Chiswick & Wang, 2016; Zorlu & Hartog, 2018). Given the well-documented importance of local language proficiency for refugees' socioeconomic integration, we propose the following hypothesis:

Hypothesis 3c (H3c): Local language proficiency is positively related to refugees' workforce participation.

Next, we argue that refugees' social capital – or bridging social capital, referring to the amount of refugees' contact with native individuals (see Eisnecker & Schacht, 2016; Kanas et al., 2012) – positively affects their workforce participation (Portes, 2000). This notion is referred to by Lee et al. (2020) as one's social network. Refugees' social contact with natives is likely to be beneficial in terms of employment prospects, as natives have more knowledge about the local labor market (Gericke et al., 2018) and as they more often are employed and have prestigious jobs (Kanas & Van Tubergen, 2009). Indeed, a Dutch study has shown that the odds of employment are higher among refugees who maintain more relationships with Dutch natives (De Vroome & Van Tubergen, 2010), which effect has been replicated in several countries (e.g., Drever & Hoffmeister, 2008). In line with the theory and findings described, we propose the following hypothesis:

Hypothesis 3d (H3d): Frequency of contact with natives is positively related to refugees' workforce participation.

Work-Relevant Traits

Finally, we investigate a group of facilitating factors that have not received much attention until now in refugee-related research, namely one's work-relevant traits. Work-relevant traits enabling finding and keeping a job can be perceived through the lens of the rewarding-able-willing (RAW) model (Hogan et al., 2013). This perspective explicates that being *rewarding* to work with, being *able* to work, and being *willing* to work constitute three (interpersonal, cognitive, and intrapersonal) individual core attributes for finding and keeping a job, as these attributes are valued by employers and promote employees' desirable work behaviors (Hogan & Chamorro-Premuzic, 2015; Hogan et al., 2013). Based on the premise that the predictor space of occupational performance should contain measures of personality, cognitive ability, and values (Ackerman & Heggestad, 1997; Hogan & Chamorro-Premuzic, 2015), we describe seven psychological traits that fit under the umbrella of the three core attributes and that have shown positive effects in organizational contexts. As only a few studies have examined the predictive validity of psychological traits for the employment outcomes of refugees, most studies reviewed below have been conducted on native and Western samples.

Rewarding. In most jobs, individuals work with others or as part of a team (Levy & Cannon, 2016). Therefore, being rewarding to work with and getting along and working well with others is regarded as an important attribute in the workplace (also, see Sackett & Walmsley, 2014). In fact, when making employment decisions, employers often focus more on applicants' interpersonal skills than on their academic credentials (Taylor, 2006). The strongest personality correlates of the rewarding attribute are Agreeableness, Extraversion, and Emotional Stability (Boudreaux et al., 2022).

Agreeableness reflects individuals' selflessness, cooperativeness, helpfulness, and flexibility (Digman, 1990; McCrae & Costa, 2008). Agreeableness is one of two interpersonal traits (next to Extraversion; Trapnell & Wiggins, 1990) and can lead to positive interpersonal affect (Niven et al., 2012). Correspondingly, several studies have shown that Agreeableness relates positively to the likeability ratings of peers (De Vries et al., 2020; Wortman &

Wood, 2011). Agreeableness has also been found to be important in team settings where collaboration is required (Hogan & Holland, 2003; Witt et al., 2002). These research findings demonstrate Agreeableness' significance to getting along and working well with others, and thus fit the rewarding attribute. There is also some empirical evidence that Agreeableness is positively related to preparatory job-search behavior (i.e., the gathering of job-search information) and job-search intensity (Baay et al., 2014; Van Hooft et al., 2021). Altogether, in line with the RAW model, Agreeableness is anticipated to be important for refugees' workforce participation:

> *Hypothesis 4a (H4a)*: Agreeableness is positively related to refugees' workforce participation.

Extraversion refers to being sociable, open to others, assertive, active, and to like excitement (Costa & McCrae, 1992). One study found that, of the Big Five personality traits, Extraversion is the strongest predictor of social skills (Ferris et al., 2001). Correspondingly, Extraversion is the best personality predictor of interpersonal and organizational citizenship behavior (Pletzer et al., 2021). Moreover, Extraversion is positively related to organizational commitment (Wilmot et al., 2019) and job performance – particularly in jobs that require interpersonal skills (Barrick & Mount, 1991). These research findings indicate that extraverted people are rewarding to deal with. Furthermore, a meta-analysis showed that Extraversion is related to employment status (Van Hooft et al., 2021). Altogether, in line with the RAW model, we anticipate that Extraversion has a positive effect on refugees' workforce participation:

> *Hypothesis 4b (H4b)*: Extraversion is positively related to refugees' workforce participation.

The last trait relevant to the rewarding attribute is Emotional Stability (or its opposite: Neuroticism), which reflects the tendency to be confident, secure, and steady (Judge & Bono, 2001). Individuals high in Emotional Stability are more cooperative and have high-quality interactions with others in the work setting (LePine & Van Dyne, 2001). Emotional stability is a predictor of job satisfaction (Judge & Bono, 2001), job performance (Connelly & Ones, 2010; Hogan & Holland, 2003), task performance and contextual performance (Judge et al., 2013), and overall career success (Judge et al., 1999). Based on these research findings, Emotional Stability is likely to fit the rewarding attribute. Furthermore, a meta-analysis showed that Emotional Stability is positively related to employment status and the number of job offers (Kanfer et al., 2001). In line with the RAW model, we thus anticipate that Emotional Stability has a positive effect on refugees' workforce participation:

> *Hypothesis 4c (H4c)*: Emotional Stability is positively related to refugees' workforce participation.

Able. The second attribute of the RAW model is being able to do the job. This attribute is related to one's GMA (Boudreaux et al., 2022), which is defined as "the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought" (Neisser et al., 1996, p. 77), and determines an individual's capability to learn and perform well on tasks (Schmidt & Hunter, 1998, 2004). In fact, GMA is a positive predictor of several occupational success indicators, including attained occupational level (Schmidt & Hunter, 2004), training success (Salgado et al., 2003), and work performance (Schmidt & Hunter, 1998, 2004). Additionally, several prospective studies in the US (Caspi et al., 1998; Fergusson et al., 2005; Herrnstein & Murray, 1994), Sweden (Lindqvist & Vestman, 2011), and the UK (Egan et al., 2017) have found that GMA, as assessed in childhood or adolescence, is a positive predictor of the probability and duration of employment in adulthood. A recent meta-analysis has also shown a positive link between GMA and employment (Vélez-Coto et al., 2021). Furthermore, in a German sample, GMA was found to positively predict reemployment success (Gnambs, 2017). Altogether, GMA is a relevant trait for being able to do the job. Hence, in line with the RAW model, we anticipate that GMA has a positive effect on refugees' workforce participation:

> *Hypothesis 4d (H4d)*: GMA is positively related to refugees' workforce participation.

Willing. The last attribute of the RAW model is being willing (i.e., motivated) to work, and refers to one's proclivity to work hard and to produce high-quality results in a timely fashion (Boudreaux et al., 2022). Conscientiousness and work centrality map onto the willing attribute (Boudreaux et al., 2022). Conscientiousness pertains to being organized, responsible, and industrious (Lee & Ashton, 2004), and is related to different forms of performance motivation (Judge & Ilies, 2002). Furthermore, Conscientiousness is the personality trait with the highest predictive validity for occupational success (Roberts et al., 2007). For example, conscientious employees perform better at work (Barrick & Mount, 1991), engage more frequently in organizational citizenship behaviors (Lee et al., 2019; Pletzer et al., 2021), and are less likely to show counterproductive behaviors (Lee et al., 2019; Pletzer et al., 2020). In one study in the UK, adolescent Conscientiousness was a predictor of lower lifetime unemployment (Egan et al., 2017). Hence, in line with the RAW model, we anticipate that Conscientiousness has a positive effect on refugees' workforce participation:

> *Hypothesis 4e (H4e)*: Conscientiousness is positively related to refugees' workforce participation.

Work centrality is considered to be a universal predictor of occupational success (Smith, 1994). It refers to the general importance that work has in an individual's life at any given time (MOW, 1987). High work centrality has been associated with better job performance

(Diefendorff et al., 2002; Sharabi & Harpaz, 2010), more job involvement (Diefendorff et al., 2002), more commitment to the organization (Kalleberg & Mastekaasa, 2001), less absenteeism and turnover (Kostek, 2012), and longer working hours (Sharabi & Harpaz, 2007; Snir & Harpaz, 2002). Furthermore, unemployment causes distress to people who have high levels of work centrality (Paul & Moser, 2009). Correspondingly, meta-analytic work has also shown that work centrality is a robust positive predictor of job-search behaviors and employment (Kanfer et al., 2001; Van Hooft et al., 2021). Taken together, work centrality is relevant to the willing attribute. Hence, in line with the RAW model, we anticipate that work centrality has a positive effect on refugees' workforce participation:

> *Hypothesis 4f (H4f)*: Work centrality is positively related to refugees' workforce participation.

MODEL INTEGRATION

Each of the four above groups of individual-difference factors (i.e., impeding demographics, health- and family-related challenges, acquired human and social capital, and work-relevant traits) contains a separate set of predictors. Although each perspective draws on different underlying mechanisms, the predictors will share some mutual variance. For instance, psychological traits might affect one's personal investment decisions (e.g., GMA could influence local language learning and Extraversion could influence the frequency of contact with natives) or human capital might be related to demographics (e.g., work experience is positively associated with age). Therefore, to test the hypotheses presented above, we not only analyze each group of predictors in independent statistical models, but also include the variables of each group in one model to reveal those individual-difference factors that explain the most unique variance in refugees' workforce participation. Given that this kind of research has not previously been conducted with psychological traits, we test this model exploratorily:

> *Research Question 1 (RQ1)*: Which individual-difference factors are the strongest predictors of refugees' workforce participation?

Highest Hourly Wage

Finally, wages have frequently been studied as an employment outcome among migrants and refugees (e.g., Chiswick & Wang, 2016) as they are important for establishing one's financial independence (Avrić et al., 2019) and provide an objective indicator of employment quality (Vinokur & Schul, 2002). Hence, we will also examine the predictive validity of the individual-difference factors for the highest hourly wage. However, in the early years of resettlement, employed refugees usually have low-quality jobs with low wages (e.g., Kosny et al., 2020). Given that the current study is conducted over a relatively short time span, we expected that there is relatively little variance in the wages of the refugees in our data. Hence, we formulated a research question rather than hypotheses about the predictive validity of individual-difference factors for highest hourly wage.

> *Research Question 2 (RQ2)*: Which individual-difference factors are the strongest predictors of refugees' highest hourly wage?

METHOD

PARTICIPANTS AND PROCEDURE

Within a few months to a few years after arriving in the Netherlands, refugees were invited by municipalities to complete an online psychological assessment that is aimed to support their integration into the Dutch society. The assessment consists of sociodemographic questions and several psychological and aptitude measures.[10] The criteria for participation in the assessment were being at least 18 years old, having a residence permit, and being literate. The assessment is offered by a consultancy agency that focuses on the development and the assessment of psychological instruments for work- and educational-related purposes. The consultancy agency trained the counselors of the municipalities on how to interpret the assessment results and on how to use these results to support refugees in their socioeconomic integration. Participation in the assessment was voluntary, and although exact numbers about the response rate are unavailable, assessment administrators estimated it to be at least 95%. The assessments were usually administered in distraction-free rooms in the municipality's town hall and took about two hours to complete. During the assessments, one or more staff members were present, and no communication with other candidates was allowed. Participating in the assessment was not monetarily compensated. This research was approved by the university's ethics committee.

The assessments started in June 2016 and were still being carried out by the time of this research. However, in October 2019, all available assessment data were retrieved. In February 2021, the variables zip code (at the time of the assessment), date of birth, and sex were used to match the assessment data to the data from the CBS. The CBS data were available from January 2014 to July 2020 and were registered monthly. From the CBS dataset, we used the data on employment, education, physical health problems (general practitioner consultation costs), urbanization of the municipality (place of residence), and the dates of arrival in the Netherlands and receiving a residence permit.

10 The assessment consists of sociodemographic questions, two GMA subtests, scales for self-reported competencies and personality traits, a scale of work motivation and attitudes, a measure of psychological distress, a post-traumatic stress disorder checklist, and a Dutch and an English language proficiency test. In the present research, we only used the measures that are relevant for the research purpose. The complete instruments of the consultancy agency are not available for proprietary reasons.

We only used the data of refugees from Syria and Eritrea, as these groups comprise most subjects in the dataset (respectively 62.6% and 17.4%). Additionally, we excluded participants from the analyses who (a) passed away, (b) left the Netherlands, (c) did not receive a residence permit, (d) completed a different version of the assessment, or (e) who received their residence permit after July 2017 (since their employment data are not available far enough into the future for conducting the analyses). For details about the data exclusion, see Supplementary Material. After excluding these participants, the final dataset consisted of 2711 refugees (n_{Syria} = 1867, $n_{Eritrea}$ = 844). The majority of the refugees was male (1992; 73.5%). Detailed descriptive statistics of the study variables for the whole sample and the two nationalities and sexes separately are presented in Table 1. A visual representation of the study events in time is presented in Figure 2.

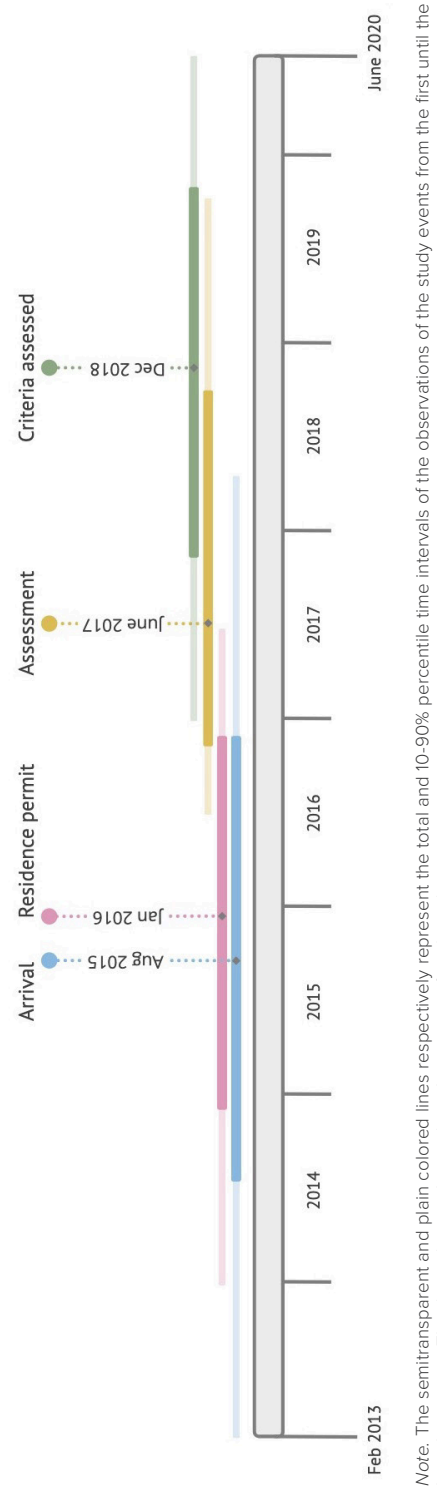


Figure 2. *A Timeline of the Study Events*

Note. The semitransparent and plain colored lines respectively represent the total and 10-90% percentile time intervals of the observations of the study events from the first until the last observation. The dates denote the median observation of each study event.

Table 1. *Overall and Refugee Group Specific Descriptive Statistics of Study Variables*

	Total (*N* = 2711)	Syrians (*n* = 1867)	Eritreans (*n* = 844)	Men (*n* = 1992)	Women (*n* = 719)	*d* or φ Nationality	*d* or φ Sex
Covariates							
Year RP (*Mdn*)	2015	2016	2015	2015	2016	-.29*	.12*
2014	359 (13.2%)	180 (9.6%)	179 (21.2%)	289 (14.5%)	70 (9.7%)		
2015	1024 (37.8%)	596 (31.9%)	428 (50.7%)	778 (39.1%)	246 (34.2%)		
2016	1104 (40.7%)	907 (48.6%)	197 (23.3%)	795 (39.9%)	309 (43.0%)		
2017	224 (8.3%)	184 (9.9%)	40 (4.7%)	130 (6.5%)	94 (13.1%)		
Duration betw arrival and RP (months)	2.83 (3.27)	2.80 (3.63)	2.91 (2.30)	3.23 (2.86)	1.71 (3.99)	0.04	-0.44*
Duration betw RP and assessment (months)	19.13 (11.50)	18.53 (11.79)	20.44 (10.73)	19.60 (11.30)	17.81 (11.95)	0.17*	-0.15*
Urbanization	4.15 (1.20)	4.09 (1.21)	4.30 (1.15)	4.16 (1.20)	4.15 (1.18)	0.18*	-0.01
1	113 (4.2%)	84 (4.5%)	29 (3.4%)	83 (4.2%)	30 (4.2%)		
2	283 (10.4%)	203 (10.9%)	80 (9.5%)	210 (10.5%)	73 (10.2%)		
3	238 (8.8%)	186 (10.0%)	52 (6.2%)	182 (9.1%)	56 (7.8%)		
4	517 (19.1%)	382 (20.5%)	135 (16.0%)	356 (17.9%)	161 (22.4%)		
5	1560 (57.5%)	1012 (54.2%)	548 (64.9%)	1161 (58.3%)	399 (55.5%)		
Followed education (yes)	494 (18.2%)	300 (16.1%)	194 (23.0%)	383 (19.2%)	111 (15.4%)	.08*	-.04*
Having social support (yes)	1766 (65.2%)	1375 (73.7%)	391 (46.4%)	1317 (66.2%)	449 (62.6%)	-.27*	-.03
Impeding Demographics[a]							
Age at receiving a RP	29.27 (9.18)	31.04 (9.77)	25.36 (6.14)	29.40 (9.18)	28.92 (9.19)	-0.70*	-0.05
Health- and Family-Related Challenges							
Physical health problems[b]	34.53 (43.6)	37.87 (48.15)	27.14 (29.83)	28.15 (38.83)	52.20 (50.58)	-0.27*	0.53*
PTSD symptoms (0-80)	14.89 (13.67)	16.40 (14.42)	11.55 (11.17)	15.06 (13.99)	14.41 (12.75)	-0.38*	-0.05
Spouse/children in country of origin (yes)	818 (30.9%)	503 (27.7%)	315 (37.8%)	611 (31.4%)	207 (29.5%)	.10*	-.02
Acquired Human and Social Capital							
Pre-migration educational level (0-4)	1.66 (1.21)	1.90 (1.11)	1.13 (1.24)	1.71 (1.22)	1.53 (1.17)	-0.65*	-0.15*
No or basic education	406 (15.0%)	61 (3.3%)	345 (40.9%)	275 (13.8%)	131 (18.2%)		
High school	1102 (40.6%)	849 (45.5%)	253 (30.0%)	799 (40.1%)	303 (42.1%)		
Associate's	475 (17.5%)	386 (20.7%)	89 (10.5%)	366 (18.4%)	109 (15.2%)		
Bachelor's	456 (16.8%)	350 (18.7%)	106 (12.6%)	329 (16.5%)	127 (17.7%)		
Master's	272 (10.0%)	221 (11.8%)	51 (6.0%)	223 (11.2%)	49 (6.8%)		
Pre-migration work experience (yes)	1792 (66.1%)	1341 (71.8%)	451 (53.4%)	1506 (75.6%)	286 (39.8%)	-.18*	-.33*
Local language proficiency (0-80)	24.31 (18.24)	25.27 (19.47)	22.37 (15.30)	24.39 (17.86)	24.05 (19.39)	-0.17*	-0.02
Frequency of contact with natives (0-4)	2.22 (1.58)	2.30 (1.56)	2.04 (1.62)	2.31 (1.58)	1.97 (1.57)	-0.16*	-0.22*
No contact	657 (24.8%)	394 (21.7%)	263 (31.5%)	453 (23.3%)	204 (29.1%)		
Once per month	302 (11.4%)	236 (13.0%)	66 (7.9%)	204 (10.5%)	98 (14.0%)		
Once per two weeks	311 (11.7%)	203 (11.2%)	108 (12.9%)	229 (11.8%)	82 (11.7%)		
Once per week	555 (21.0%)	386 (21.3%)	169 (20.3%)	403 (20.7%)	152 (21.7)		
Two or more times per week	823 (31.1%)	595 (32.8%)	228 (27.3%)	658 (33.8%)	165 (23.5%)		
Work-relevant traits							
Agreeableness (1-5)	3.98 (0.51)	4.07 (0.45)	3.78 (0.59)	4.00 (0.50)	3.92 (0.53)	-0.55*	-0.16*
Extraversion (1-5)	3.57 (0.42)	3.60 (0.43)	3.48 (0.40)	3.59 (0.42)	3.51 (0.43)	-0.29*	-0.19*
Emotional Stability (1-5)	3.44 (0.60)	3.35 (0.61)	3.66 (0.53)	3.50 (0.60)	3.29 (0.59)	0.54*	-0.35*
GMA (0-60)	32.28 (10.99)	35.53 (10.23)	25.07 (9.00)	32.75 (10.90)	30.97 (11.13)	-1.09*	-0.16*
Conscientiousness (1-5)	3.95 (0.53)	4.05 (0.47)	3.71 (0.57)	3.97 (0.52)	3.89 (0.55)	-0.65*	-0.15*
Work centrality (1-5)	3.89 (0.70)	3.83 (0.67)	4.02 (0.76)	3.97 (0.66)	3.68 (0.78)	0.27*	-0.40*
Employment							
Employment (yes)[c]	928 (34.2%)	660 (35.4%)	268 (31.8%)	824 (41.4%)	104 (14.5%)	-.04	-.25*
Longest employment duration (months)[d]	7.45 (6.27)	7.67 (6.40)	6.91 (5.90)	7.68 (6.35)	5.65 (5.29)	-0.12	-0.35*
Total employment duration (months)[d]	8.07 (6.47)	8.33 (6.60)	7.41 (6.10)	8.31 (6.55)	6.15 (5.48)	-0.14*	-0.36*
Duration until work (months)[d]	24.57 (8.82)	24.05 (8.82)	25.85 (8.70)	24.38 (8.83)	26.07 (8.64)	0.21*	0.19*
Highest hourly wage (EUR)[d]	12.88 (3.55)	12.93 (3.54)	12.77 (3.59)	12.97 (3.48)	12.20 (4.06)	-0.04	-0.20*

Note. RP = Residence permit, GMA = General mental ability. The values within brackets represent standard deviations or percentages. The differences between the nationalities (Syria and Eritrea) and sexes are presented in the last two columns with the Cohen's *d* (for continuous variables; identifiable by a 0 before the dot) or φ values (for categorical variables; identifiable by no 0 before the dot). Values of *d* = 0.20 and φ = .10 are small, *d* = 0.50 and φ = .30 are medium, and *d* = 0.80 and φ = .50 are large (Cohen, 1988). For urbanization, values ranged from 1 = weak urbanization to 5 = strong urbanization.

* $p < .05$.

[a] Sex and Nationality were omitted from the table as these statistics are reported in the title row.

[b] Operationalized as the average yearly general practitioner consultation costs (in the euro currency) over the three years after receiving a residence permit.

[c] Having been employed for at least one month in the three years after receiving a residence permit.

[d] These statistics have been retrieved by only analyzing the refugees who have been employed.

MEASURES

All measures were developed in the Dutch language and had also been translated into different languages, including English, Modern Standard Arabic (for Arabic refugees, including Syrians), and Tigrinya (for Eritrean refugees) by a certified Dutch translation agency. The refugees completed the assessment in their native language (93.8%), in English (5.8%), or in Dutch (0.5%), according to their own preference.

Age

Age was assessed as the age (in years) of the refugee at the time of receiving a residence permit.

Sex (Being a Woman)

Sex was assessed by asking refugees whether they are a man (= 0) or a woman (= 1).

Nationality (Cultural Incongruence)

Participants were asked to select their country of birth from a list of all the countries in the world. In this research, we only examined refugees from Syria (= 0) and Eritrea (= 1).

Physical Health Problems

The average yearly general practitioner consultation costs over the three years after receiving a residence permit were used as a proxy for physical health problems and varied between 0 EUR and 519.48 EUR.

PTSD Symptoms

Post-traumatic stress disorder (PTSD) symptoms were measured with the PTSD Checklist for the DSM-5 (PCL-5) (Blevins et al., 2015). The PCL-5 contains 20 items to which participants must indicate how frequently they have been bothered by a problem in the past month, using a five-point Likert scale ranging from 0 = *Not at all* to 4 = *Extremely*. An example item is "Repeated, disturbing dreams of the stressful experience". The scale has shown good psychometric properties in diverse samples, including Middle Eastern samples (Blevins et al., 2015; Ibrahim et al., 2018; Wortmann et al., 2016). In the current sample, the alpha coefficient of this scale equaled .93.

Having Left a Spouse or Children in the Country of Origin

To assess if refugees left a spouse or children in their country of origin, we asked two questions: "Is your wife/husband in your country of origin or in the Netherlands?" (0 = *in the Netherlands* and 1 = *in the country of origin*), and "Do you have minor children (below 18 years) in your country of origin?" (0 = *no* and 1 = *yes*). If either or both the spouse and children were in the country of origin, this factor was coded as 1 (yes), and otherwise 0 (no).

Pre-migration Educational Level

A Dutch certification agency, Nuffic, converted the refugees' educational attainment in their home country to match the Dutch educational system (Nuffic, 2022). Translated to the US educational system, these educational levels represent 0 = *no or basic education*, 1 = *high school degree*, 2 = *associate's degree*, 3 = *bachelor's degree*, and 4 = *master's degree*.

Pre-Migration Work Experience

To assess pre-migration work experience, we asked refugees whether or not they had a paid job in their country of origin (0 = *no* and 1 = *yes*).

Local Language Proficiency

Local (Dutch) language proficiency was assessed using a test developed by the psychological consultancy agency that gathered the data (NOA, 2006). The Dutch language proficiency test contains two short stories written in Dutch with 80 incomplete words, which candidates were instructed to complete such that they make meaningful words within the context. Scores on this test could range from 0 (no word fragment completed correctly) to 80 (all word fragments completed correctly). Unpublished research had shown that the scores on this test correlate strongly with scores on a Dutch language proficiency test that is used nationwide (NT2; CINOP et al., 2002), supporting its construct validity. Specifically, the Dutch language proficiency test used in the current study correlated with test scores of reading (r = .65), writing (r = .78), vocal understanding (r = .48), and speaking (r = .50) (NOA, 2006). In the current sample, the alpha coefficient of the Dutch language proficiency test equaled .97. Furthermore, a random sample of 119 refugees of all refugee groups who conducted the assessment, completed the Dutch language proficiency test twice with an average time interval between the assessments of 12 weeks and revealed a test-retest reliability of the test of r = .84 (NOA, 2021).

Frequency of Contact with Natives

The reported frequency of contact with natives pertained to informal contact, and not formal contact with personnel of municipalities, organizations, or shops, and had five response options: 1 = *no contact*, 2 = *once per month*, 3 = *once per two weeks*, 4 = *once per week*, and 5 = *two or more times per week*.

Personality

In the domain of work-relevant traits, we assessed the personality traits Agreeableness, Extraversion, Emotional Stability, and Conscientiousness with the MPT-BS-QS Basic (Holtrop, 2016; NOA, 2009), which is a short (60-item) version of a personality inventory that consists of six factors, corresponding to the Big Five model of personality and the HEXACO Honesty-Humility dimension (Lee & Ashton, 2004). The full personality inventory has been investigated among diverse cultural samples and has shown good psychometric

properties among Dutch native and non-Western migrant samples (NOA, 2009). To provide evidence for the validity of the MPT-BS-QS Basic, we conducted an international pilot study in Prolific (N = 238) to examine the relationship between the MPT-BS-QS Basic dimensions and the Big Five dimensions using the IPIP-100 (Goldberg et al., 2006). After excluding a few dysfunctional items from the scales, the results revealed overall proper convergent validities (correlations with the corresponding Big Five dimensions) and discriminant validities (correlations with the average of the non-targeted Big Five dimensions). The convergent and discriminant validities were respectively r = .55 (p < .001) and r = .26 (p < .001) for Agreeableness, r = .71 (p < .001) and r = .29 (p < .001) for Extraversion, r = .81 (p < .001) and r = .25 (p < .001) for Emotional Stability, and r = .73 (p < .001) and r = .22 (p < .001) for Conscientiousness. The size of these convergences is in line with other personality validation studies (Muck et al., 2007; Pace & Brannick, 2010; Rammstedt & John, 2007). Details about the pilot study and the item exclusions are available in the Supplementary Material.

In the MPT-BS-QS Basic, participants were instructed to rate how much they agree or disagree with each statement on a 5-point Likert scale, ranging from 1 = *Totally disagree* to 5 = *Totally agree*. Seven items were used to measure Agreeableness. An example item is "I try not to offend other people". Thirteen items were used to measure Extraversion. An example item is "I like to talk to people who I don't know". Eight items were used to measure Emotional Stability. An example item is "I get nervous quickly". Finally, eight items were used to measure Conscientiousness. An example item is "I set high standards for myself". The alpha coefficients equaled .72 for Agreeableness, .66 for Extraversion, .73 for Emotional Stability, and .77 for Conscientiousness.

General Mental Ability

We assessed GMA by two non-verbal subtests of the multicultural capacities test - intermediate level (MCT-M; Van Breemen et al., 2018; Van den Berg, 2001).[11] The subtests were developed to measure fluid intelligence and to minimize any potential bias that might be imposed by cultural background (e.g., due to language or knowledge domain differences). The subtest *Components* consists of 30 items with a time limit of 9 minutes, in which candidates must select two out of six spatial parts that can make up one displayed figure. The subtest *Exclusion* consists of 30 items with a time limit of 7 minutes, in which candidates must select the figure that does not match the other four presented figures. Earlier empirical work showed evidence for the cross-cultural validity and applicability of the MCT-M (Asfar et al., 2019) and its predictive validity in the domains of social functioning and academic achievement among native Dutch candidates and several Dutch migrant groups (Van den Berg, 2001). The correlation between the two MCT-M subtests was r = .56, p < .001. Earlier research revealed support for the aggregation of the two subtests into one total score of GMA (Asfar et al., 2019). Correspondingly, GMA was computed as the average of the standardized scores on both subtests. The alpha coefficient of the two subtests in the current sample equaled .93. However, we are aware that the alpha coefficient could be an overestimation for tests that have a speed character (Evers et al., 2015).[12]

Work Centrality

We assessed work centrality with a subscale of the work motivation and work search questionnaire (in Dutch: arbeidsmotivatie- en werkzoekvragenlijst [AWV]) (NOA, 2005). Research has shown convergent validity for this instrument with other work motivation instruments (Dusseldorp et al., 2018). The AWV has shown comparable reliabilities and validities among native and non-Western migrant samples (NOA, 2005). An example item of work centrality is "I consider not having paid work ...", with response alternatives ranging from 1 = *Very unpleasant* to 5 = *Very pleasant*. The scale consists of seven items, but we excluded one item due to a low item-rest correlation (see Supplementary Material). In the current sample, the alpha coefficient of the scale equaled .72.

Employment Outcomes

To assess workforce participation, we used two criteria: (1) employment (i.e., the actual occurrence and speed of finding a job), and (2) longest employment duration (i.e., the longest consecutive employment duration). The highest hourly wage (RQ2) is presented in the euro (€; EUR) currency. All dependent variables were assessed monthly from the moment a refugee receives a residence permit until three years later. This time interval had been adopted for three reasons. First, according to Dutch governmental regulations, refugees need to finish their integration obligations within three years after receiving their residence permit, making three years a legitimate time interval. Second, the base rate (the percentage of refugees who are employed, three years after receiving a residence permit) is likely high enough to conduct analyses that are not severely restrained by statistical power to detect effects.[13] With a shorter time interval, the base rate will be lower, and therefore the ability to detect significant predictive validities decreases. Third, with the three-year time span, a relatively large proportion of the sample remains available for the analyses. A longer time span decreases the number of participants that can be used in the analyses, and as such, making the results less robust.

11 To see the test environment and some sample items of the two GMA subscales, readers can visit the webpage https://www.noa-online.net/practicequestions/mct-m. After entering one's email address, the login instructions will be sent.

12 To provide more insights into the reliability of the MCT-M subtests, a sample of 35 refugees completed Components twice and 29 refugees completed Exclusion twice with average time intervals between the assessments of respectively 6.5 and 6.2 months. These data revealed test-retest reliabilities of r = .88 for Components and r = .93 for Exclusion.

13 Dutch statistics have shown that 19% of the recently arrived refugees in the Netherlands have a paid job within three years after receiving a residence permit (CBS, 2021). We expected that the percentage in our research sample is similar or higher, as these refugees have completed an assessment that promotes the workforce participation. Indeed, the results showed that three years after receiving a residence permit, 34.2% of the refugees in our sample have been employed.

Covariates

We followed the guidelines by Bernerth and Aguinis (2016) to consider and select the covariates in our analyses. Based on the literature, we identified six variables that are relevant to include as covariates in the analyses as they might contaminate the measurement of or cause spurious relations between our focal variables. As such, we included the following variables as covariates in the analyses: (1) the year of receiving a residence permit (e.g., CBS, 2021), (2) the duration between arrival in the Netherlands and receiving a residence permit (e.g., Bakker et al., 2017), (3) the duration between receiving a residence permit and completing the assessment (e.g., Due et al., 2021), (4) the level of urbanization of the municipality where the refugee was resettled (e.g., Bakker & Dagevos, 2017), (5) whether a refugee followed education in the Netherlands during the three years after receiving a residence permit (e.g., De Vroome & Van Tubergen, 2010), and (6) social support (e.g., Newman et al., 2022). The degree of urbanization of the municipality (1 = *weak urbanization* to 5 = *strong urbanization*) was determined by where the participant lived for the largest part during the three years after receiving a residence permit. Whether or not a refugee followed education in the Netherlands was retrieved from the CBS data. Social support was assessed by one question, namely "Do you have any friends or family nearby that you can turn to for help?" (0 = *no* and 1 = *yes*). The analyses were conducted in SPSS (version 25) and in R with the package *survival* (Therneau, 2021) and *survminer* (Kassambara et al., 2017).

STATISTICAL ANALYSIS

We conducted the analyses on the combined sample of Syrian and Eritrean refugees. The employment outcomes (i.e., employment, longest employment duration, and highest hourly wage) were predicted with the individual-difference factors that were organized into four variable groups: impeding demographics and health- and family-related challenges – which form *hindering individual-difference factors* – and acquired human and social capital, and work-relevant traits – forming *facilitating individual-difference factors*. To assess employment (probability), we used Cox regression analyses (also called survival or event history analysis; see Tierens et al., 2021). The results from these analyses are reported in hazard ratios (HRs), which indicate the increase (if HR > 1) or decrease (if HR < 1) in the probability that one becomes employed in a particular month, given that it has not occurred prior to that month, for every one-unit increase in the independent variable. The Schoenfeld residual plots of the predictors of employment revealed no time-variant pattern, maintaining the proportional hazards assumption of the Cox model. In line with the suggestions by Azuero (2016) for binary variables, we considered HR < 1.60 (or > 0.63) as a small effect, 1.60 (0.63) ≤ HR ≤ 2.35 (0.43) as a medium effect, and HR > 2.35 (or < 0.43) as a large effect. For continuous variables, we considered HR < 1.30 (or > 0.77) as a small effect, 1.30 (0.77) ≤ HR ≤ 1.68 (0.60) as a medium effect, and HR > 1.68 (or < 0.60) as a large effect (cf. Burns et al., 2019). The HR within each parenthesis is the negative equivalent of the HR left to each parenthesis. Given that model fit indices such as the explained variance in Cox regression are sensitive to the proportion of censored observations (i.e., the employment base rate), we used Nagelkerke R^2 in logistic regression analysis with 'having been being employed (yes/no) in the three years after receiving a residence permit' as the dependent variable to determine the (incremental) explained variance.[14]

Longest employment duration and highest hourly wage were examined as dependent variables in multiple regression analyses.[15] The collinearity statistics showed VIF values below 10 and tolerance statistics above 0.1, indicating that there is no threat of multicollinearity to the multiple regression models in our research (Bowerman & O'Connell, 1990). In line with the suggestion by Acock (2014) to adopt the conventional correlation coefficient effect sizes for standardized beta coefficients (ß), we considered ß < .20 as a small effect, .20 ≤ ß ≤ .40 as a medium effect, and ß > .40 as a large effect (Cohen, 1988). Analyses with these two dependent variables were conducted for refugees who became employed during the three years after receiving a residence permit. For all models in the present research, we used Cohen's f^2 statistic to indicate the effect size of the predictive ability of a model, considering $f^2 < .09$ as a small effect, $.09 \leq f^2 \leq .25$ as a medium effect, and $f^2 > .25$ as a large effect (Cohen, 1988).

RESULTS

Table 2 presents the correlations between all study variables for the whole sample and the Syrian and Eritrean refugees separately.

HYPOTHESIS TESTING

Below we describe the results of the hindering and facilitating individual-difference factors per variable group (Table 3). Results of the covariate tests are not included in the description of our findings and can be found in Table 3.

14 The results from the logistic regression analyses highly correspond to the results from the Cox regression analyses.

15 Employment durations with one month of unemployment in between were summed up, as job transitions can take a couple of weeks. Furthermore, we excluded 16 participants from the analyses with highest hourly wage because these participants had hourly wages below the minimum wage at the criterion year (e.g., 4.43 EUR in 2019).

Table 2. *Overall and Refugee Group Specific Bivariate Correlations among the Study Variables*

	1	2	3	4	5	6	7	8	9	10	11
1. Year RP	-	**.21**/ .02	**-.55**/ **-.51**	**.06**/ -.06	**.06**/ **.16**	-.01/ **-.11**	.02/ **.18**	**.13**/ **.11**	-	**.06**/ .00	**-.09**/ -.04
2. Duration arrival – RP	**.15**	-	**-.09**/ .06	**.06**/ -.04	.04/ .04	.02/ **-.08**	**-.08**/ -.01	**-.27**/ -.02	-	**-.07**/ -.06	.02/ -.03
3. Duration RP – assessment	**-.54**	**-.06**	-	**-.35**/ **-.45**	**-.11**/ **-.25**	.03/ **.17**	**.09**/ .01	**-.09**/ -.02	-	**-.06**/ .03	**.14**/ .03
4. Urbanization	-.00	**.04**	**-.37**	-	**.05**/ **.12**	-.01/ **-.10**	-.03/ **-.16**	-.02/ .02	-	-.03/ -.01	.01/ .03
5. Followed education (yes)	**.07**	**.04**	**-.15**	**.08**	-	**.06**/ -.01	**-.43**/ **-.32**	-.04/ -.06	-	**-.10**/ **-.12**	**-.08**/ **-.08**
6. Having social support	.03	-.01	**.05**	**-.06**	.01	-	**-.07**/ **.07**	.01/ **-.10**	-	-.05/ -.06	**-.13**/ -.01
7. Older age	**.12**	**-.07**	**.05**	**-.08**	**-.39**	**.05**	-	.02/ **-.13**	-	**.17**/ .06	**.11**/ **.09**
8. Being a woman	**.11**	**-.21**	**-.07**	-.00	**-.04**	-.03	-.02	-	-	**.24**/ **.32**	-.03/ .01
9. Nationality (Eritrea)	**-.27**	.02	**.08**	**.08**	**.08**	**-.27**	**-.29**	.02	-	-	-
10. Physical health problems	**.07**	**-.07**	**-.05**	-.03	**-.11**	-.02	**.18**	**.24**	**-.11**	-	**.13**/ **.11**
11. PTSD symptoms	-.03	.01	**.10**	.00	**-.09**	**-.05**	**.14**	-.02	**-.16**	**.14**	(.94/ .90)
12. Spouse/children in country of origin (yes)	-.01	-.03	.00	-.03	**-.14**	**-.09**	**.20**	-.02	**.10**	.01	.03
13. Pre-migration educational level	**.04**	-.01	**-.04**	.02	-.00	**.17**	**.16**	**-.07**	**-.30**	.04	.02
14. Pre-migration work experience (yes)	-.03	.03	.02	-.01	**-.16**	**.05**	**.31**	**-.33**	**-.18**	-.02	**.09**
15. Local language proficiency (0-80)	**-.13**	-.02	**.22**	**-.11**	**.18**	**.14**	**-.12**	-.01	**-.08**	**-.07**	**-.06**
16. Frequency of contact with natives	**-.07**	.03	**.17**	**-.18**	**.05**	**.18**	.01	**-.10**	**-.08**	-.02	**-.07**
17. Agreeableness	**.09**	-.02	.02	**-.06**	-.03	**.14**	**.20**	**-.07**	**-.26**	**.04**	.03
18. Extraversion	**.07**	.02	**-.07**	.00	-.00	**.13**	**.06**	**-.08**	**-.13**	.03	**-.11**
19. Emotional Stability	**-.09**	.02	**-.04**	**.05**	.02	-.01	-.00	**-.16**	**.24**	**-.14**	**-.43**
20. GMA	**.10**	-.02	**-.09**	.02	**.06**	**.17**	**.05**	**-.07**	**-.44**	-.01	.03
21. Conscientiousness	**.10**	-.01	-.04	-.03	-.02	**.14**	**.11**	**-.06**	**-.30**	**.08**	-.02
22. Work centrality	-.03	**.06**	**.07**	**-.08**	-.00	**.04**	**.07**	**-.18**	**.12**	**-.07**	**-.08**
23. Employment (yes)[b]	**.15**	**.14**	**-.18**	**.07**	**.23**	**.04**	**-.19**	**-.25**	-.04	**-.13**	-.04
24. Longest employment duration	**.16**	.06	**-.22**	**.08**	.00	.02	-.01	**-.10**	-.06	.01	-.05
25. Highest hourly wage	**.17**	-.04	**-.13**	.00	**-.08**	-.01	**.19**	**-.07**	-.02	-.00	-.02

Table 2. *Continued.*

	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Year RP	.03/ -.02	**-.05**/ -.04	**-.08**/ **-.08**	**-.18**/ **-.11**	**-.12**/ -.04	.03/ .01	.03/ .03	-.02/ -.05	-.04/ .03	.03/ -.01	-.02/ .06	**.08**/ **.29**	**.12**/ **.24**	**.14**/ **.23**
2. Duration arrival – RP	-.04/ -.03	-.01/ -.00	**.06**/ -.05	-.02/ -.02	**.05**/ -.02	-.04/ .02	.02/ .01	.03/ .00	-.01/ -.05	-.00/ .01	**.06**/ .03	**.17**/ .05	.07/ .03	-.06/ -.01
3. Duration RP – assessment	-.00/ -.02	-.03/ .00	.02/ .05	**.25**/ **.19**	**.15**/ **.26**	.05/ .04	**-.06**/ -.05	**-.05**/ **-.08**	**-.05**/ **-.11**	-.03/ .02	**.08**/ .03	**-.14**/ **-.26**	**-.21**/ **-.25**	**-.15**/ -.09
4. Urbanization	**-.05**/ -.00	**.07**/ -.01	.04/ **-.07**	**-.10**/ **-.12**	**-.13**/ **-.27**	-.01/ **-.11**	.03/ -.03	.02/ .06	**.05**/ **.08**	.02/ -.06	**-.08**/ **-.13**	**.07**/ **.09**	**.09**/ .08	.01/ -.00
5. Followed education (yes)	**-.18**/ **-.10**	-.00/ .07	**-.19**/ **-.08**	**.21**/ **.13**	**.10**/ -.02	-.04/ .04	.02/ -.01	.00/ -.02	**.10**/ **.13**	.02/ -.02	-.03/ .02	**.18**/ **.34**	.01/ .01	**-.11**/ .00
6. Having social support	**-.10**/ -.01	**.08**/ **.14**	-.02/ .05	**.11**/ **.15**	**.16**/ **.18**	**.05**/ **.11**	**.09**/ **.10**	**.07**/ .05	**.07**/ .04	**.07**/ .06	**.06**/ **.11**	**.05**/ -.00	.00/ .00	-.05/ .04
7. Older age	**.29**/ **.12**	**.07**/ **.16**	**.31**/ **.21**	**-.16**/ -.07	**-.06**/ **.14**	**.13**/ **.16**	.01/ .05	**.07**/ .08	**-.11**/ .00	.01/ **.10**	**.10**/ **.16**	**-.26**/ -.03	-.06/ .11	**.21**/ .11
8. Being a woman	.04/ **-.13**	-.03/ **-.13**	**-.34**/ **-.32**	.05/ **-.14**	**-.09**/ **-.10**	-.03/ **-.13**	**-.07**/ **-.10**	**-.16**/ **-.18**	**-.05**/ **-.11**	**-.05**/ **-.08**	**-.24**/ **-.07**	**-.26**/ **-.23**	**-.09**/ -.12	-.05/ -.10
9. Nationality (Eritrea)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10. Physical health problems	.04/ -.04	-.02/ .06	-.04/ -.04	**-.08**/ -.06	-.03/ -.01	.04/ -.05	.03/ -.03	**-.12**/ **-.11**	**-.08**/ -.04	**.06**/ -.01	**-.07**/ -.03	**-.12**/ **-.19**	-.01/ .07	-.01/ -/01
11. PTSD symptoms	.04/ .05	-.04/ .01	**.07**/ .03	**-.08**/ -.02	**-.11**/ -.02	-.01/ -.03	**-.12**/ **-.19**	**-.42**/ **-.35**	**-.06**/ .01	**-.08**/ -.06	**-.09**/ .00	-.04/ -.04	**-.10**/ .10	-.05/ .04
12. Spouse/children in country of origin (yes)	-	**-.09**/ -.02	**.09**/ **.08**	**-.12**/ -.04	-.05/ -.03	**.05**/ .02	-.01/ -.01	-.01/ -.01	**-.07**/ -.07	-.01/ .04	**.05**/ .03	**-.10**/ .04	-.04/ .04	.05/ -.03
13. Pre-migration educational level	**-.09**	-	**.10**/ **.20**	**.27**/ **.26**	**.14**/ **.16**	.03/ **.21**	**.11**/ **.18**	**.12**/ **.10**	**.26**/ **.22**	**.14**/ **.16**	**.15**/ **.16**	.03/ **.14**	**.09**/ .03	**.25**/ -.03
14. Pre-migration work experience (yes)	**.07**	**.18**	-	-.04/ **.10**	**.06**/ **.16**	**.10**/ **.12**	**.11**/ **.14**	**.12**/ **.10**	.04/ **.09**	**.06**/ **.10**	**.25**/ **.13**	**.08**/ .06	.02/ .01	**.15**/ .11
15. Local language proficiency (0-80)	**-.10**	**.28**	.02	(.98/ .96)	**.28**/ **.19**	-.04/ **.15**	.04/ **.09**	**.07**/ .05	**.34**/ **.36**	**.06**/ .05	**.11**/ **.09**	**.09**/ **.13**	.06/ -.04	**.11**/ -.03
16. Frequency of contact with natives	**-.05**	**.17**	**.11**	**.26**	-	**.14**/ **.15**	**.18**/ **.18**	**.13**/ **.07**	**.13**/ .04	**.12**/ **.14**	**.19**/ **.11**	**.12**/ .06	.05/ .03	.07/ **.15**
17. Agreeableness	.01	**.17**	**.15**	.04	**.16**	(.69/ .73)	**.42**/ **.46**	**.14**/ .06	**.04**/ **.16**	**.54**/ **.70**	**.29**/ **.36**	.00/ .05	.00/ -.03	**.08**/ -.05
18. Extraversion	-.02	**.16**	**.14**	**.07**	**.18**	**.44**	(.70/ .53)	**.18**/ **.30**	**.05**/ **.12**	**.52**/ **.54**	**.24**/ **.23**	**.08**/ **.10**	.04/ .05	.07/ -.08
19. Emotional Stability	.01	.04	**.07**	.04	**.09**	**.04**	**.17**	(.75/ .62)	**.11**/ .07	**.14**/ **.13**	**.23**/ -.02	**.06**/ **.08**	**.09**/ -.11	**.09**/ -.04
20. GMA	**-.11**	**.34**	**.13**	**.34**	**.13**	**.18**	**.12**	-.02	(.92/ .89)	**.10**/ **.09**	**.11**/ **.11**	**.08**/ **.15**	.05/ -.00	**.12**/ .00
21. Conscientiousness	-.02	**.22**	**.12**	**.08**	**.14**	**.64**	**.53**	**.05**	**.21**	(.75/ .76)	**.26**/ **.32**	.03/ .03	.06/ -.06	**.11**/ -.03
22. Work centrality	**.05**	**.11**	**.18**	**.09**	**.15**	**.27**	**.22**	**.18**	**.04**	**.23**	(.72/ .72)	**.13**/ .03	-.03/ .09	**.16**/ .00
23. Employment (yes)[b]	**-.06**	**.07**	**.08**	**.11**	**.11**	.03	**.09**	**.06**	**.11**	.04	**.09**	-	-	-
24. Longest employment duration	-.03	**.08**	.03	.04	.05	.01	.05	.03	.05	.04	.01	-	-	**.19**/ **.14**
25. Highest hourly wage	.02	**.16**	**.14**	**.08**	**.10**	.04	.03	.05	**.09**	.06	**.10**	-	**.18**	-

Note. Correlations for the whole sample are shown below the diagonal. Correlations for respectively Syrian and Eritrean refugees are shown above the diagonal, separated by a slash. The bolded values are significant ($p < .05$, two-tailed). RP = Residence permit, GMA = General mental ability. The values between the parentheses on the diagonal represent the alpha coefficients among respectively the Syrian and Eritrean refugees. For urbanization, values ranged from 1 = weak urbanization to 5 = strong urbanization.

[b] Having been employed for at least one month in the three years after receiving a residence permit.

Table 3. *Cox and Multiple Regression Models on Employment (Emp), Longest Employment Duration (LED), and Highest Hourly Wage (HHW)*

	Impeding Demographics			Health- and Family-Related Challenges		
	Emp	LED	HHW	Emp	LED	HHW
	HR [95%CI]	ß [95%CI]	ß [95%CI]	HR [95%CI]	ß [95%CI]	ß [95%CI]
Covariates						
Year RP	1.23*** [1.12, 1.34]	.04 [-.05, .12]	.14** [.06, .21]	1.09* [1.00, 1.19]	.01 [-.07, .09]	.15*** [.07, .22]
Duration arrival – RP	1.07* [1.01, 1.14]	0.01 [-.06, .08]	-.08* [-.14, -.01]	1.17*** [1.10, 1.23]	.04 [-.02, .11]	-.09* [-.15, -.02]
Duration RP – assessment	0.78*** [0.71, 0.85]	-.21*** [-.29, .14]	-.09* [-.16, -.01]	0.76*** [0.69, 0.83]	-.21*** [-.29, -.14]	-.09* [-.16, -.01]
Urbanization	0.85*** [0.80, 0.91]	-.13*** [-.20, .07]	-.03 [-.09, .04]	0.88*** [0.82, 0.94]	-.14*** [-.20, -.07]	-.02 [-.09, .05]
Followed education (yes)	1.37*** [1.17, 1.61]	-.06 [-.13, .01]	-.01 [-.08, .06]	1.90*** [1.64, 2.20]	-.04 [-.11, .02]	-.10** [-.17, -.03]
Having social support (yes)	1.06 [0.92, 1.23]	.02 [-.05, .08]	.01 [-.06, .07]	1.11 [0.96, 1.27]	.02 [-.05, .08]	-.01 [-.07, .06]
Impeding demographics						
Higher age	0.70*** [0.64, 0.76]	-.04 [-.11, .03]	.18*** [.11, .25]			
Being a woman	0.27*** [0.22, 0.33]	-.12*** [-.18, -.05]	-.08* [-.14, -.01]			
Nationality (Eritrea)	0.93 [0.79, 1.09]	-.00 [-.07, .07]	.03 [-.04, .10]			
Health- and family-related challenges						
Physical health problems[E+]				0.78*** [0.71, 0.85]	.02 [-.05, .08]	-.02 [-.08, .05]
PTSD symptoms[y]				1.02 [0.95, 1.09]	-.04 [-.10, .03]	-.01 [-.08, .06]
Spouse/children in country of origin (yes)[S]				0.89 [0.77, 1.04]	-.02 [-.08, .05]	.01 [-.06, .08]
Acquired human and social capital						
Pre-migration educational level[E,f]						
Pre-migration work experience (yes)						
Local language proficiency[f+,o+]						
Frequency of contact with natives[f+]						
Work-relevant traits						
Agreeableness						
Extraversion						
Emotional Stability[o]						
GMA[f+]						
Conscientiousness						
Work centrality[S]						
R^2 (f^2) model	.240 (.32)	.082 (.09)	.078 (.08)	.147 (.17)	.070 (.08)	.048 (.05)
Change in R^2 (f^2)	.112*** (.13)	.014** (.01)	.030*** (.03)	.018*** (.02)	.002 (.00)	.000 (.00)

Table 3. *Continued.*

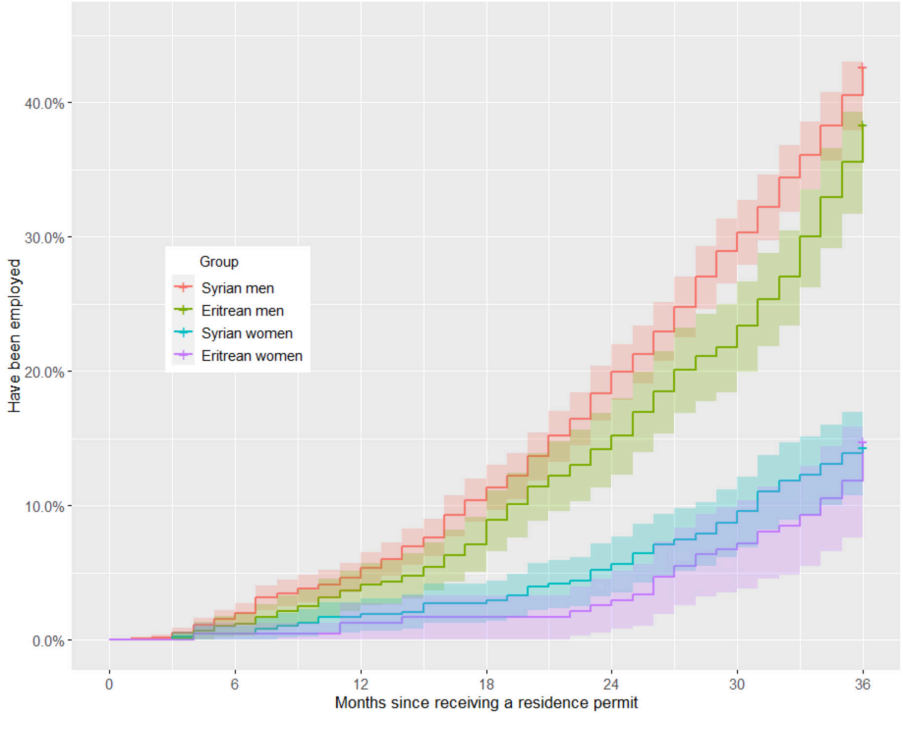
	Acquired Human and Social Capital			Work-Relevant Traits			Full Model		
	Emp	LED	HHW	Emp	LED	HHW	Emp	LED	HHW
	HR [95%CI]	ß [95%CI]	ß [95%CI]	HR [95%CI]	ß [95%CI]	ß [95%CI]	HR [95%CI]	ß [95%CI]	ß [95%CI]
Covariates									
Year RP	1.13** [1.03, 1.24]	.01 [-.07, .09]	.17*** [.09, .25]	1.08 [0.99, 1.18]	.01 [-.07, .09]	.15*** [.07, .23]	1.25*** [1.13, 1.38]	.04 [-.05, .13]	.17*** [.08, .26]
Duration arrival – RP	1.15*** [1.08, 1.22]	.04 [-.03, .11]	-.08* [-.15, -.01]	1.18*** [1.11, 1.25]	.04 [-.03, .10]	-.08* [-.14, -.01]	1.07 [0.99, 1.15]	.01 [-.06, .08]	-.07 [-.14, .00]
Duration RP – assessment	0.66*** [0.59, 0.73]	-.25*** [-.33, -.16]	-.09* [-.18, -.01]	0.76*** [0.70, 0.84]	-.21*** [-.29, -.13]	-.07 [-.15, .01]	0.65*** [0.58, 0.73]	-.24*** [-.33, -.16]	-.10* [-.19, -.01]
Urbanization	0.92* [0.85, 0.99]	-.13*** [-.20, -.06]	-.01 [-.08, .06]	0.87*** [0.82, 0.93]	-.13*** [-.20, -.07]	-.03 [-.09, .04]	0.92* [0.85, 0.99]	-.13*** [-.20, -.06]	-.01 [-.08, .06]
Followed education (yes)	1.70*** [1.44, 2.00]	-.06 [-.13, .01]	-.08* [-.15, -.01]	1.99*** [1.72, 2.30]	-.04 [-.10, .03]	-.10** [-.17, -.03]	1.17 [0.97, 1.39]	-.08* [-.16, -.01]	-.03 [-.12, .05]
Having social support (yes)	0.93 [0.80, 1.09]	-.00 [-.07, .07]	-.05 [-.12, .02]	1.08 [0.93, 1.24]	.02 [-.05, .08]	-.02 [-.08, .05]	0.90 [0.76, 1.06]	-.00 [-.07, .07]	-.02 [-.10, .05]
Impeding demographics									
Higher age							0.72*** [0.64, 0.80]	-.04 [-.12, .05]	.15** [.06, .23]
Being a woman							0.37*** [0.29, 0.47]	-.14*** [-.22, -.06]	-.08* [-.15, -.00]
Nationality (Eritrea)							0.91 [0.74, 1.11]	.02 [-.07, .11]	.07 [-.02, .16]
Health- and family-related challenges									
Physical health problems[E+]							0.93 [0.84, 1.02]	.05 [-.02, .12]	-.02 [-.10, .05]
PTSD symptoms[y]							1.08 [0.99, 1.17]	-.03 [-.11, .05]	.00 [-.08, .08]
Spouse/children in country of origin (yes)[S]							0.89 [0.74, 1.06]	-.01 [-.08, .06]	-.02 [-.10, .05]
Acquired human and social capital									
Pre-migration educational level[E,f]	0.97 [0.90, 1.04]	.02 [-.05, .10]	.11** [.03, .18]				0.99 [0.91, 1.07]	.04 [-.04, .11]	.09* [.01, .17]
Pre-migration work experience (yes)	1.38*** [1.17, 1.62]	.01 [-.06, .08]	.12** [.05, .19]				1.23* [1.03, 1.47]	-.02 [-.10, .06]	.09* [.01, .17]
Local language proficiency[f+,o+]	1.22*** [1.13, 1.32]	.08* [.01, .16]	.10** [.03, .18]				1.19*** [1.09, 1.29]	.10* [.02, .18]	.11** [.03, .19]
Frequency of contact with natives[f+]	1.15*** [1.07, 1.24]	.06 [-.01, .13]	.07* [.00, .15]				1.13** [1.05, 1.23]	.05 [-.02, .12]	.07* [.00, .15]
Work-relevant traits									
Agreeableness				0.97 [0.88, 1.06]	-.04 [-.12, .05]	-.03 [-.11, .06]	0.99 [0.90, 1.09]	-.03 [-.12, .07]	-.05 [-.14, .04]
Extraversion				1.13** [1.05, 1.23]	.03 [-.05, .11]	-.03 [-.11, .05]	1.06 [0.97, 1.16]	.01 [-.07, .10]	-.04 [-.13, .04]
Emotional Stability[o]				1.04 [0.97, 1.11]	.03 [-.04, .09]	.03 [-.03, .10]	1.02 [0.94, 1.11]	.00 [-.08, .08]	-.01 [-.09, .07]
GMA[f+]				1.13** [1.05, 1.21]	.00 [-.06, .07]	.07* [.01, .14]	1.03 [0.95, 1.12]	-.05 [-.12, .03]	.03 [-.05, .10]
Conscientiousness				0.95 [0.87, 1.05]	.02 [-.07, .11]	.05 [-.04, .14]	0.95 [0.86, 1.06]	.01 [-.09, .10]	.05 [-.05, .15]
Work centrality[S]				1.17*** [1.08, 1.26]	.02 [-.05, .08]	.08* [.01, .15]	1.08 [0.99, 1.18]	-.01 [-.08, .07]	.03 [-.05, .11]
R^2 (f^2) model	.175 (.21)	.082 (.09)	.098 (.11)	.153 (.18)	.071 (.08)	.063 (.07)	.267 (.36)	.101 (.11)	.125 (.14)
Change in R^2 (f^2)	.038*** (.04)	.013* (.01)	.050*** (.05)	.025*** (.03)	.003 (.00)	.016* (.02)	.127 (.15)	.032 (.03)	.077*** (.08)

Note. RP = Residence permit, GMA = General mental ability, HR = Hazard ratio. The HRs indicate the increase (if HR > 1) or decrease (if HR < 1) in the probability that one becomes employed in a particular month, given that it has not occurred prior to that month, for every one-unit increase in the independent variable. The superscripts indicate that the effect on employment probability is stronger for Syrian ([S+]), Eritrean ([E+]), male ([m+]), female ([f+]), young ([y+]), or old ([o+]) refugees, or is only found among Syrian ([S]), Eritrean ([E]), male ([m]), female ([f]), young ([y]), or old ([o]) refugees.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Hindering Individual-Difference Factors

Impeding Demographics. We predicted that age (H1a) and being a woman (H1b) are negatively associated with refugees' workforce participation, and that workforce participation is higher among Syrian compared to Eritrean refugees (H1c). Our results revealed a significant negative effect of age on employment (HR = 0.70, $p < .001$), indicating that refugees' odds of becoming employed decreased by 30% for every standard deviation increase in age. However, there was no significant effect of age on longest employment duration (ß = -.04, $p = .240$). Thus, H1a was only supported for employment. Furthermore, there was a significant negative effect of being a woman on employment (HR = 0.27, $p < .001$), indicating that the odds for female refugees to become employed are 73% lower compared to the odds for male refugees to become employed. Additionally, there was a significant negative effect of being a woman on longest employment duration (ß = -.12, $p < .001$). Thus, H1b was fully supported. Finally, in contrast to H1c, we found no significant effect of nationality on employment (HR = 0.93, $p = .351$) or longest employment duration (ß = -.00, $p = .975$). Figure 3 presents the monthly employment rates during the three years after receiving a residence permit, for the Syrian and Eritrean male and female refugees.

Figure 3. *Refugee Subgroup Employment Statistics During the Three Years After Receiving a Residence Permit*



Note. The semitransparent areas around the lines represent the 95% confidence intervals.

Health- and Family-Related Challenges. We predicted that workforce participation is lower among refugees with higher levels of physical health problems (H2a) and PTSD symptoms (H2b), and among those who left a spouse or children in their country of origin (H2c). The results showed a significant negative effect of physical health problems on employment (HR = 0.78, $p < .001$), indicating that refugees' odds of becoming employed decreased by 22% for every standard deviation increase in physical health problems. However, we found no significant effect of physical health problems on longest employment duration (ß = .02, $p = .610$). Thus, H2a was only supported for employment. Furthermore, in contrast to H2b, there was no significant effect of PTSD symptoms on employment (HR = 1.02, $p = .680$) or longest employment duration (ß = -.04, $p = .578$). Finally, in contrast to H2c, there was no significant effect of having left a spouse or children in the country of origin on employment (HR = 0.89, $p = .134$) or longest employment duration (ß = -.02, $p = .578$).

Facilitating Individual-Difference Factors

Acquired Human and Social Capital. We predicted workforce participation to be higher for refugees with a higher pre-migration educational level (H3a), more pre-migration work experience (H3b), a higher level of local language proficiency (H3c), and a higher frequency of contact with natives (H3d). The results showed, contrary to H3a, no significant effect of pre-migration educational attainment on employment (HR = 0.97, $p = .388$) or longest employment duration (ß = .02, $p = .531$). With respect to H3b, we found a significant positive effect of pre-migration work experience on employment (HR = 1.38, $p < .001$), indicating that the probability of becoming employed is 38% higher for refugees with (versus without) pre-migration work experience. However, there was no significant effect of pre-migration work experience on longest employment duration (ß = .01, $p = .870$). Thus, H3b was only supported for employment. Furthermore, there was a significant positive effect of local language proficiency on employment (HR = 1.22, $p < .001$), indicating that the odds for refugees to become employed are 22% higher for every standard deviation increase in their local language proficiency. Additionally, we found a significant positive effect of local language proficiency on longest employment duration (ß = .08, $p = .033$). Thus, H3c was fully supported. Finally, we found a significant positive effect of frequency of contact with natives on employment (HR = 1.15, $p < .001$), indicating that the probability for refugees to become employed is 15% higher for every standard deviation increase in the frequency of contact with natives. However, there was no significant effect of frequency of contact with natives on longest employment duration (ß = .06, $p = .108$). Thus, H3d was only supported for employment.

Work-Relevant Traits. We predicted workforce participation to be higher for refugees with higher levels of Agreeableness (H4a), Extraversion (H4b), Emotional Stability (H4c), GMA (H4d), Conscientiousness (H4e), and work centrality (H4f). The results revealed, contrary to H4a, no significant effect of Agreeableness on employment (HR = 0.97, $p = .458$) or longest employment duration (ß = -.04, $p = .404$). With respect to H4b, there was a significant

positive effect of Extraversion on employment (HR = 1.13, p = .002), indicating that the odds to become employed are 13% higher for every standard deviation increase in refugees' level of Extraversion. However, there was no significant effect of Extraversion on longest employment duration (ß =.03, p = .476). Thus, H4b was only supported for employment. Furthermore, in contrast to H4c, we found no significant effect of Emotional Stability on employment (HR = 1.04, p = .300) or longest employment duration (ß = .03, p = .411). With respect to H4d, we found a significant positive effect of GMA on employment (HR = 1.13, p = .001), indicating that the odds for refugees to become employed are 13% higher for every standard deviation increase in their level of GMA. However, there was no significant effect of GMA on longest employment duration (ß = .00, p = .931). Therefore, H4d was only supported for employment. Furthermore, H4e could not be supported, as we found no significant effect of Conscientiousness on employment (HR = 0.95, p = .311) or longest employment duration (ß = .02, p = .647). Finally, we found a significant positive effect of work centrality on employment (HR = 1.17, p < .001), indicating that the odds for refugees to become employed are 17% higher for every standard deviation increase in their level of work centrality. However, we found no significant effect of work centrality on longest employment duration (ß = .02, p = .638). Thus, H4f was only supported for employment.

RESEARCH QUESTIONS

Our first research question (RQ1) focused on which individual-difference factors are the strongest predictors of refugees' workforce participation. We examined this RQ by testing a regression model that included all study variables (Table 3). The strongest negative predictors of employment were older age (HR = 0.72, p < .001) and being a woman (HR = 0.37, p < .001), and the strongest positive predictors of employment were pre-migration work experience (HR = 1.23, p = .020), local language proficiency (HR = 1.19, p < .001), and frequency of contact with natives (HR = 1.13, p = .002). For longest employment duration, the significant predictors were being a woman (ß = -.14, p < .001) and local language proficiency (ß = .10, p = .014).

Our second research question (RQ2) referred to which individual-difference factors are the strongest predictors of refugees' highest hourly wage. For the impeding demographics, we found a significant positive effect of age (ß = .18, p < .001) and a significant negative effect of being a woman (ß = -.08, p = .021) on highest hourly wage. This model explained 3.0% (ΔF[3, 886] = 9.69, p < .001; f^2 = .03) unique variance above and beyond the covariates. None of the health- and family-related challenges predicted highest hourly wage. This model explained 0.0% (ΔF[3, 873] = 0.13, p = .945; f^2 = .00) unique variance above and beyond the covariates. For the acquired human and social capital factors, we found significant positive effects of pre-migration educational level (ß = .11, p = .005), pre-migration work experience (ß = .12, p = .001), local language proficiency (ß = .10, p = .008), and frequency of contact with natives (ß = .07, p = .046). This model explained 5.0% (ΔF[4, 738] = 10.33, p < .001; f^2 = .05) unique variance above and beyond the covariates. Finally, for the work-relevant traits, we found a significant effect of GMA (ß = .07, p = .034) and work centrality (ß = .08, p = .025). This model explained 1.6% (ΔF[6, 862] = 2.39, p = .027; f^2 = .02) unique variance above and beyond the covariates.

EXPLORATORY ANALYSES

We also examined the potential moderating effects of nationality, sex, and age on the relation between the hypothesized predictors and employment.[16] These analyses show the extent to which the relationships vary between Syrian and Eritrean refugees, male and female refugees, and refugees of different ages, which may help to identify the barriers that certain subgroups face in finding employment. The results showed that nationality (Syria = 0, Eritrea = 1) significantly moderated the effect of physical health problems on employment (ß = -.15, p = .012), such that this effect was stronger among Eritrean refugees. Furthermore, having left a spouse or children in the country of origin (ß = .11, p = .001) only significantly negatively influenced employment of Syrian refugees. Additionally, pre-migration educational level (ß = .07, p = .028) only showed a significant positive effect on employment among Eritrean refugees. Finally, work centrality (ß = -.09, p = .011) only significantly positively predicted employment of Syrian refugees.

With respect to sex (male = 0, female = 1), we found that pre-migration educational level (ß = .12, p = .010) only significantly positively influenced employment among female refugees. Furthermore, the effect of local language proficiency on employment (ß = .17, p < .001) was stronger among female refugees. Additionally, the effect of frequency of contact with natives on employment (ß = .10, p = .031) was stronger among female refugees. Finally, the effect of GMA on employment (ß = .13, p = .008) was stronger among female refugees.

With respect to age, we found only a negative effect of PTSD symptoms on employment (ß = -.15, p < .001) among young refugees. Furthermore, the effect of local language proficiency on employment (ß = .08, p = .044) was stronger among old refugees. Finally, Emotional Stability only showed a significant positive effect on employment among old refugees (ß = .09, p = .015).

16 We only focused on employment as the effects on longest employment duration were mostly nonsignificant or weak.

DISCUSSION

The goal of the present study was to advance our understanding of refugees' workforce participation by developing a framework of hindering and facilitating individual-difference factors for predicting their participation in the workforce and to test the predictive validity of the individual-difference factors within our framework among recently arrived Syrian and Eritrean refugees in the Netherlands. We related the individual-difference factors to two criteria: employment and longest employment duration. Overall, the present study showed that several hindering factors (i.e., older age, being a woman, and physical health problems) and facilitating factors (i.e., pre-migration work experience, local language proficiency, frequency of contact with natives, Extraversion, GMA, and work centrality) predicted refugees' employment. In contrast, only one hindering factor (i.e., being a woman) and one facilitating factor (i.e., local language proficiency) predicted refugees' longest employment duration. We also exploratorily examined whether these same hindering and facilitating factors would be able to predict refugees' highest hourly wage. We found that two hindering factors (i.e., older age and being a woman) and several facilitating factors (i.e., pre-migration educational level, pre-migration work experience, local language proficiency, frequency of contact with natives, GMA, and work centrality) predicted this indicator of employment quality. Below, we describe our theoretical contributions, practical implications, limitations, and suggestions for future research.

THEORETICAL CONTRIBUTIONS

The present study offers several theoretical contributions. First, we add to the literature on refugees' workforce participation by integrating multidisciplinary insights into one integrative theoretical framework containing a wide range of individual-difference factors that may either hinder or facilitate refugees' path to finding work. Although the personnel psychology literature already offered various theoretical frameworks and meta-analyses of individual-difference factors that successfully predict native-born job seekers' workforce participation (e.g., Kanfer et al., 2001; Van Hooft et al., 2021) and employability (Harari et al., 2021), we show that these frameworks lack important individual-difference factors that are relevant for migrants in general, and refugees in particular. Indeed, we found several migrant-specific individual-difference factors (i.e., local language proficiency and frequency of contact with natives) and a refugee-specific factor (i.e., physical health problems) to predict one or more of our outcome variables. In fact, local language proficiency was among the strongest predictors of all three workforce participation outcomes, and frequency of contact with natives was among the strongest predictors of employment and highest hourly wage. Importantly, unlike GMA, Extraversion, and work centrality, other established individual-difference predictors of workforce participation among native-born job seekers, such as Agreeableness (Baay et al., 2014; Van Hooft et al., 2021), Emotional Stability (Kanfer et al., 2001), and Conscientiousness (Egan et al., 2017) showed no relation with refugees' workforce participation. Furthermore, although we did find significant effects for GMA in predicting refugees' employment and highest hourly wage, the effect of GMA seems to be less strong for refugees than reported for native-born job seekers (Vélez-Coto et al., 2021). Together, these findings show that established individual-difference factors predicting workforce participation do not necessarily generalize to refugees, who face unique barriers compared to native-born job seekers or economic migrants (e.g., Agbényiga et al., 2012), and whose (language) skills are less likely to match the needs of the job market (Lee et al., 2020).

Second, the present study contributes to the literature on refugees' workforce participation by actually testing our integrative framework among a large group of recently arrived refugees living in the Netherlands. To the best of our knowledge, there have been only two prior attempts at developing a theoretical framework of individual-difference factors for understanding refugees' workforce participation (Boss et al., 2021; Lee et al., 2020). However, neither framework has been quantitatively examined. Furthermore, both frameworks lack important predictors of workforce participation: The framework of Boss et al. (2021) does not include refugee demographics (e.g., age, sex) and the framework of Lee et al. (2020) does not include any factors related to refugees' acquired human capital in their home country. Importantly, both frameworks focus on hindering factors only, and do not include refugee-specific family-related challenges or psychological characteristics such as personality and GMA. Our framework is thus distinctive in that it includes refugees' demographics and acquired human capital in their home country, family-related challenges, and psychological characteristics, and focuses on both hindering and facilitating factors. Many of these factors predicted refugees' employment and highest hourly wage (note that, of these specific factors, only being a woman was [negatively] related to longest employment duration). Furthermore, while these previous frameworks already highlighted the importance of certain hindering factors for understanding refugees' workforce participation, we theorized and empirically demonstrated that facilitating factors (i.e., acquired human and social capital and work-relevant traits) matter as well. In fact, the facilitating factors explained more variance in highest hourly wage (2-5%) than the hindering factors (0-3%).

Third, this study contributes to the literature on refugees' socioeconomic integration by demonstrating differential predictive validities for Syrian and Eritrean refugees, two groups that have been seldomly empirically studied (but see Hunkler & Khourshed, 2020), but also for male and female refugees and for older and younger refugees. While previous studies do not differentiate between refugee groups or focus on only one refugee group (e.g., Hahn et al., 2019; Renner & Senft, 2013), our study indicates that certain hypothesized individual-difference factors are only related to employment of specific refugee groups. For example, although the refugee-specific individual-difference factors of PTSD symptoms or having left a spouse or children in their country of origin did not show a relation with

employment for our overall refugee group, PTSD symptoms did predict employment among younger refugees while having left a spouse or children in their country of origin did predict employment among Syrian refugees. These findings provide further evidence for the importance of including refugee-specific individual-difference factors when predicting refugees' workforce participation. They also indicate that, when studying refugees (or citizens), it is essential to not only investigate the main effect but also the moderating role of nationality, sex, and age.

Fourth, we contribute to the literature on refugees' socioeconomic integration (Lee et al., 2020), by studying three workforce participation outcomes – employment, longest employment duration, and exploratively highest hourly wage – and showing that in the early years of resettlement, refugees' individual-difference factors are stronger predictors of employment and highest hourly wage than of longest employment duration. One potential explanation for the weak predictive validities for longest employment duration pertains to refugees' actual jobs in the early years of resettlement. These are usually jobs with temporary contracts (CBS, 2021), typically characterized by low wages, poor working conditions, and limited upward mobility opportunities (e.g., Kosny et al., 2020), and are therefore challenging to maintain. Another explanation for these results may be that employment duration may be more dependent on organizational rather than individual-difference factors. Examples are job characteristics such as job security and rewards (Rubenstein et al., 2018). Future research is needed to investigate such relationships.

PRACTICAL IMPLICATIONS

The present study also has a number of important practical implications. First, most research on refugees' socioeconomic integration stems from sociology and economics, and has typically focused on demographics and acquired human and social capital (e.g., Kofman, 2014; Lancee, 2012). However, as it is difficult to administer tests and inventories among refugees and to relate their scores to time-lagged, objective employment data, there is little knowledge on the influence of work-relevant traits on refugees' workforce participation. Through the integrative framework introduced in this study, counselors can yield a comprehensive picture of a refugee's ability to gain and maintain (higher-quality) employment through the assessment of fairly observable and easy-to-capture individual-difference factors (i.e., age, being a woman, pre-migration educational level and work experience, local language proficiency, and frequency of contact with natives), but also more hidden work-relevant traits (i.e., Extraversion, GMA, and work centrality). Furthermore, earlier studies provide robust evidence that person-environment fit – the match between the traits of a person and the characteristics of a job, team, or organization – is a predictor of several important work outcomes (for a review, see Van Vianen, 2018). As psychological individual-difference factors are relatively stable and difficult to change (e.g., see Roberts et al., 2017), it is therefore important to select integration trajectories, trainings, and jobs that fit these specific factors.

Second, taking into consideration the diversity in refugees' individual-difference factors is important in practice. In fact, it is considered to be "one of the most important challenges for host societies … in order to release the full potential of those seeking integration" (Hahn et al., 2019, p. 11). As such, we recommend counselors to focus on the significant individual-difference factors that are highly malleable and trainable (i.e., local language proficiency and frequency of contact with natives), by stressing refugees' local language training, and helping them with increasing their network and contacts with natives. Additionally, we recommend counselors to provide individualized support and special attention to refugees with risk factors of low employment that are fixed or stable (i.e., [older] age, sex [woman], and [no] pre-migration work experience), or relatively stable (i.e., [low] Extraversion, GMA, and work centrality). It is also paramount to focus on those individual-difference factors that have predictive validities for the group the specific refugee group belongs to. So far, for instance, Dutch policymakers tend to adopt a one-size-fits-all approach to integration programs as they regard refugees as a homogenous group with similar background characteristics and aspirations (Miltenburg & Dagevos, 2021).

Third, whilst the covariates were not the primary focus of this study, findings concerning these variables have some important practical implications. For example, we found that a short time interval between receiving a residence permit and completing the assessment is positively associated with the odds of finding a job. This effect might be explained by the active support and counseling of the refugee that corresponds to the completion of the assessment, although strong data to justify the following claim is not available. For instance, many Eritrean refugees rely on the agency of the government and the municipalities to construct their integration trajectories, as it is the government that primarily determines citizens' educational trajectories and job industry in their home country (e.g., Sterckx et al., 2018). Thus, active counseling may help these refugees deal with the perceived barriers and difficulties to enter the labor market. As counselors are more familiar with effective job-search procedures, their support can increase the odds that a refugee quickly finds a job (Gericke et al., 2018). Altogether, it seems important to quickly start by assisting refugees in designing their integration trajectories. An individual assessment could be a useful tool in this regard, as it portrays the refugee's strengths and potential barriers to enter the labor market.

STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

The present study has several strengths: we adopted a time-lagged research design, examined multiple employment outcomes, used high-quality employment data, and measured local language proficiency through an objective test. However, despite these methodological strengths, the present study also has some limitations. We describe these

limitations below and suggest future research ideas beyond the ones already mentioned, related to the role of refugees' individual-differences factors in their workforce participation.

First, one important limitation of the present research pertains to the context of the assessment and subsequent counseling. The assessment can be considered an intervention, and the counselors of the refugees in this study were trained to use the results of the assessment to provide customized support for the refugee to sustain a prosperous integration. As such, when supporting refugees in their socioeconomic integration, counselors may have paid special attention to refugees with disadvantaged profiles and higher levels of undesirable traits, compared to refugees with more favorable characteristics. For example, a refugee with a low (high) score on Conscientiousness and more (fewer) PTSD symptoms is more (less) likely to be supported in his or her route to employment. As such, actual effects of individual-difference factors on workforce participation might have been partly masked in this research. Therefore, we suspect that the actual effects of these factors are stronger and that some null findings might be type II errors. Future research should investigate the predictive validity of refugees' individual-difference factors for employment outcomes in a research context where tests are only assessed for scientific purposes, and not as tools for assisting refugees in their socioeconomic integration.

Second, the personality inventory in this research has not been validated among refugee samples, and some scales showed relatively low internal consistencies (e.g., alpha coefficients of respectively .53 and .62 for Extraversion and Emotional Stability among Eritrean refugees). Nonetheless, relatively little research has been conducted on personality scales among citizens or refugees from Middle Eastern and African countries (for some exceptions, see Ion et al., 2017; Zeinoun et al., 2017). Future research could advance the literature on personality assessments of people from the Middle East and Africa by investigating the reliability and validity of inventories among such populations.

Third, in the present study, no data were available on job-search behaviors, the number of job interviews, and job offers. Hence, it was impossible to identify whether a refugee's unemployment is due to a lack of job search and initiative-taking or due to rejections by employers. A recent meta-analysis has shown that job-search intensity is a positive predictor of the number of interviews, job offers, and actual (re)employment (Van Hooft et al., 2021). Future research could therefore investigate whether job-search behavior and job-search quality mediate the effect of individual differences on refugees' workforce participation. Such research provides insights into the extent to which refugees' unemployment can be attributed to their own initiatives and to the employers' rigor in accepting job candidates. Additionally, researchers could also concentrate on the effectiveness of different types of job-search behaviors, such as formal job search (e.g., through employment agencies and online vacancies) and informal job search (e.g., through friends or relatives).

Fourth, although the employment outcomes that are examined in the present research – employment, longest employment duration, and (exploratively) highest hourly wage – are important, employment success is also reflected by outcomes such as the job's extrinsic rewards (e.g., pension plan, insurances, benefits, favorable working hours), intrinsic rewards (e.g., need satisfaction, safety, security), and the person-job demands fit (e.g., the match between a person's skills and the requirements) (Saks, 2005; Wanberg et al., 2016). In fact, most recent refugees in the Netherlands who have a job work part-time (73%) and have a temporary contract (84%) (CBS, 2021). Furthermore, underemployment (i.e., overqualification) is a widely documented issue for highly skilled refugees (Campion, 2018; Ortlieb & Weiss, 2020). Approximately 60% of the employed refugees in European countries with tertiary education are overqualified for their jobs, whereas such overqualification occurs in 30% of the other non-EU-born migrants and in 21% of the natives (OECD, 2016). One recent study has found that refugees' career planning predicted their future quality of employment (Zikic & Klehe, 2021). As there is limited other empirical work that has examined refugees' individual-difference factors as predictors of quality of employment, underemployment, or other important job characteristics, further study of this issue would be of interest.

CONCLUSION

The present research has examined Syrian and Eritrean refugees' workforce participation (i.e., employment and longest employment duration) and highest hourly wage through an integrative framework that organizes various individual-difference factors in hindering and facilitating factors. The results showed that both hindering factors (i.e., age, being a woman, and physical health problems) and facilitating factors (i.e., pre-migration educational level and work experience, local language proficiency, frequency of contact with natives, Extraversion, GMA, and work centrality) contributed to predicting these employment outcomes. However, some effects were only found for specific refugee groups or for a particular workforce participation outcome. The findings provide important implications for improving refugees' integration trajectories.

APPENDIX

The table below provides information and statistics on the geography and population, sociodemographic characteristics, labor and economic characteristics, basic needs and health, and cultural dimensions of Syria, Eritrea, and the Netherlands. Most data reported this table were retrieved from the CIA World Factbook in April 2022 (CIA, 2022), and the cultural dimensions were retrieved from Hofstede (2001). For more information about the cultural dimensions, we refer readers to Hofstede (2011).

Country Variable Information and Statistics of Syria, Eritrea, and the Netherlands

Comparison	Syria	Eritrea	the Netherlands
Geography and population			
Location	The Middle East, bordering the Mediterranean Sea, between Lebanon and Turkey.	Eastern Africa, bordering the Red Sea, between Djibouti and Sudan.	Western Europe, bordering the North Sea, between Belgium and Germany.
Population size (July 2021)	20,384,316	6,147,398	17,337,403
Population distribution	Large population density along the Mediterranean coast. The highest concentration of citizens is found in Damascus, Aleppo, and Hims (Homs). More than half of the population lives in the coastal plain, the province of Halab, and the Euphrates River valley.[a]	The population density is highest in the center of the country and around the cities of Asmara and Keren, and smaller settlements are found in the north and south of the country.	An area known as the Randstad, anchored by the cities of Amsterdam, Rotterdam, the Hague, and Utrecht, is the most densely populated region in the Netherlands. The north tends to be less dense, although sizeable communities are found throughout the whole country.
Urbanized population (% of the total population in 2021)	56.1%	42.0%	92.6%
Ethnic groups	Arab ~50%, Alawite ~15%, Kurd ~10%, Levantine ~10%, other ~15% (includes Druze, Ismaili, Imami, Nusairi, Assyrian, Turkoman, Armenian) (year N.A.)	Tigrinya 55%, Tigre 30%, Saho 4%, Kunama 2%, Rashaida 2%, Bilen 2%, other (Afar, Beni Amir, Nera) 5% (2010)	Dutch 76.9%, EU 6.4%, Turkish 2.4%, Moroccan 2.3%, Indonesian 2.1%, German 2.1%, Surinamese 2%, Polish 1%, other 4.8% (2018)

Continued.

Comparison	Syria	Eritrea	the Netherlands
Sociodemographic characteristics			
Median age (2020)	Total: 23.5 years Male: 23 years Female: 24 years	Total: 20.3 years Male: 19.7 years Female: 20.8 years	Total: 42.8 years Male: 41.6 years Female: 44 years
Languages	Arabic (official), Kurdish, Armenian, Aramaic, Circassian, French, English	Tigrinya (official), Arabic (official), English (official), Tigre, Kunama, Afar, other Cushitic languages	Dutch (official), Frisian (official in the Fryslan province)
Literacy (% of age 15 and older who can read and write)	Total population: 86.4% Male: 91.7% Female: 81.0% (2015)	Total population: 76.6% Male: 84.4% Female: 68.9% (2018)	Total population: 99% Male: 99% Female: 99% (2003)
Religions	Islam 87%, Christianity 10%, Druze 3%[b]	Christianity 62.9%, Islam 36.6%, Others or None 0.5%	Roman Catholic 23.6%, Protestant 14.9%, Islam 5.1%, other 5.6% (includes Hindu, Buddhist, Jewish), none 50.7% (2017)
Labor and economic characteristics			
GDP - per capita (PPP)	$2,900 (2015)	$1,600 (2019)	$55,200 (2020)
Population below the poverty line	82.5% (2014)	50.0% (2004)	13.6% (2019)
Unemployment rate	50.0% (2017)	5.8% (2017)	3.4% (2019)
Workforce participation by occupation	Agriculture: 17% Industry: 16% Services: 67% (2008)	Agriculture: 80% Industry: 20% (2004)	Agriculture: 1.2% Industry: 17.2% Services: 81.6% (2015)
Basic needs and health			
Drinking water source (% of the total population)	Urban: 99% Rural: 99.3% Total: 99.4%	Urban: 73.2% Rural: 53.3% Total: 57.8%	Urban: 100% Rural: 100% Total: 100%
Sanitation facility access (% of the total population)	Urban: 99.6% Rural: 98.6% Total: 99.1%	Urban: 44.5% Rural: 7.3% Total: 15.7%	Urban: 100% Rural: 100% Total: 100%
Physician density (physicians/1000 citizens)	1.29 (2016)	0.06 (2016)	3.61 (2017)
Hospital bed density (beds/1000 citizens)	1.4 (2017)	0.7 (2011)	3.3 (2017)
Legatum prosperity index (rank in 2021)	158	162	6
Cultural dimensions[c]			
Power distance	80	70	38
Individualism	35	20	80
Masculinity	52	65	14
Uncertainty avoidance	60	55	53
Long-term orientation	30	N.A.	67
Indulgence	N.A.	46	68

Note. The values between parentheses denote the years in which the information has been retrieved.
[a] The ongoing civil war has altered the population distribution.
[b] The Christian population might be considerably smaller as many Christians have fled the country during the recent civil war.
[c] The scores on the cultural dimensions range from 1 (lowest) to 100 (highest). The scores of Ethiopia are used in the column of Eritrea, as no data on Eritrea is available, and Ethiopia and Eritrea have similar cultures.

CHAPTER 5

The Normative Judgment Test of Honesty-Humility: An Implicit Instrument for the Organizational Context

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ABSTRACT

Implicit instruments to measure attitudes and personality have received increased attention from organizational scholars in recent years. One understudied implicit paradigm is the partially structured attitude measure, which assesses individuals' attributes through their judgments of hypothetical persons described in vignettes. Based on this paradigm, we developed the Normative Judgment Test to assess the personality trait of Honesty-Humility (the NJT-H). In two studies among employees (N = 230 and N = 124), we examined the NJT-H's construct- and criterion-related validity. In both studies, the NJT-H was significantly and positively related to Honesty-Humility, and not meaningfully related to the other five HEXACO traits. Furthermore, the NJT-H was negatively related to counterproductive work behavior and positively related to organizational citizenship behavior and task performance, as measured through self-ratings (Study 1) and supervisor ratings (Study 2). The NJT-H also explained unique variance in these outcomes above and beyond Honesty-Humility and the other five HEXACO traits. Altogether, these findings provide initial evidence of the practical value of the NJT-H in organizational contexts.

KEYWORDS

NJT-H, Honesty-Humility, personality measure, implicit, validity, work outcomes

THE NORMATIVE JUDGMENT TEST OF HONESTY-HUMILITY: AN IMPLICIT INSTRUMENT FOR THE ORGANIZATIONAL CONTEXT

There is a growing understanding of the notion that the greatest asset of any organization is its employees. Indeed, employee behaviors – specifically, behaviors that are aligned with organizational interests such as low counterproductive work behavior (CWB) and high organizational citizenship behavior (OCB) – have emerged as a key factor contributing to organizational performance (Bolino et al., 2012; Camara & Schneider, 1994; Vardi & Weitz, 2004). Personality traits are important predictors of these specific employee behaviors (e.g., Barrick & Mount, 1991; Ones et al., 1993; Tett et al., 1991). Hence, to select employees whose behaviors are aligned with organizational interests, that is, who act ethically and cooperatively, numerous organizations worldwide have included personality measures in their selection programs (Rothstein & Goffin, 2006). In recent years, there is growing evidence in the personality literature that the trait Honesty-Humility (H-H) within the HEXACO personality model is one of the strongest and most consistent trait predictors of CWB and OCB (Lee et al., 2019; Pletzer et al., 2019, 2020, 2021). Assessing trait H-H in selection and promotion contexts could therefore be beneficial for organizations.

Whilst personality traits are most typically assessed with self-report measures, scholars have called for more research on "innovative techniques that go beyond, without replacing, self-report measures…" (Funder, 2002, p. 639; see also Sackett et al., 2017). One of these innovative techniques are implicit instruments, which assess traits, motives, and attitudes that people might not be willing to disclose or are unaware of (Moors et al., 2010). Implicit instruments have been found to predict relevant work outcomes and explain variance in these outcomes above and beyond the variance explained by self-report measures of the same construct (see Uhlmann et al., 2012). The goal of the present research is to develop an implicit instrument of H-H that can be used in organizational contexts. This instrument, which we label the Normative Judgment Test of Honesty-Humility (the NJT-H), is based on the understudied partially structured attitude measure (PSAM; Vargas et al., 2004). The PSAM assesses individuals' trait levels through their judgments of ambiguous behaviors of hypothetical persons described in vignettes. Uhlmann et al. (2012) suggested that this paradigm is "… useful for predicting who is likely to engage in high levels of organizational citizenship or volunteering … or for discerning an individual's standards for ethical behavior or corporate social responsibility" (p. 579). To address this suggestion, we conduct two studies to investigate the NJT-H's construct- and criterion-related validity for predicting CWB and OCB. In Study 2, we exploratorily examine the relationship between the NJT-H and task performance. We demonstrate that the NJT-H is a promising complement or alternative to self-report measures for predicting CWB, OCB, and task performance.

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PREDICTORS OF CWB AND OCB

CWB and OCB are two important and commonly studied employee behavior (Dalal, 2005; Rotundo & Sackett, 2002; Sackett & DeVore, 2001). CWB has been defined as "voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both" (Robinson & Bennett, 1995, p. 556). CWBs have been linked to high profit loss (Camara & Schneider, 1994; Vardi & Weitz, 2004), poor team performance (Dunlop & Lee, 2004), and high levels of employee burnout (Mackey et al., 2019). Furthermore, OCB has been defined as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (Organ, 1988, p. 4). OCBs have been linked to several organizational performance indices, such as turnover and customer satisfaction (Nielsen et al., 2009; Organ et al., 2006; Podsakoff et al., 2009) and individual-level outcomes, such as managerial performance evaluations (e.g., Podsakoff et al., 2000), reward allocations (Podsakoff et al., 2009), and lower employee turnover (Mossholder et al., 2005; for a meta-analytic review of the consequences of OCB, see Podsakoff et al., 2009).

To be able to prevent harmful and promote desirable workplace behaviors, much research has been dedicated to the predictors of CWBs and OCBs (Berry et al., 2007; Harari & Viswesvaran, 2018). Several organizational characteristics have been associated with employees' levels of CWBs and OCBs, including organizational justice, leadership style, and team empowerment (Colquitt et al., 2013; Kirkman & Shapiro, 2001; Mitchell & Ambrose, 2007). Furthermore, individual differences as predictors of CWBs and OCBs – particularly those in personality – have received increased attention in recent years (Lee et al., 2019; Pletzer et al., 2020; Pletzer et al., 2021). Personality is most commonly described in terms of the Big Five (or FFM) dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism/Emotional Stability. However, in the last two decades, an increasing number of studies in the personality psychology literature have indicated that personality might be more optimally described in terms of six instead of five dimensions (Ashton et al., 2004; De Raad et al., 2014; Saucier, 2009). The HEXACO is the dominant six-dimensional personality framework, which consists of the dimensions Honesty-Humility (H-H), Emotionality (E), eXtraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O) (Ashton & Lee, 2007; Ashton et al., 2014). Whilst the HEXACO and the Big-Five model differ somewhat in the conceptualizations of the dimensions – particularly the dimensions of Agreeableness and Emotional Stability/Emotionality – the main difference between the personality models is the addition of the Honesty-Humility (H-H) dimension in the HEXACO (e.g., see Ashton & Lee, 2020).

H-H is defined as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156). This trait captures an individual's tendency to refrain from manipulation, fraud, and exploitation (Ashton & Lee, 2007; Lee & Ashton, 2004). In line with H-H's description, this trait correlates positively with overt and personality-based integrity measures, with typical correlations of above r = .50 (e.g., Lee et al., 2005; Lee et al., 2019; Marcus et al., 2007). The propensity of individuals low in H-H to deceive and exploit others makes them also "more likely to behave in their own interest at the expense of the best interest of their employer" (Oh et al., 2011, p. 500). Indeed, recent meta-analytic work has shown that H-H is a good predictor of CWB (r = -.35 to -.39) and explains unique variance in CWB, above and beyond the variance explained by the other five HEXACO traits (Lee et al., 2019; Marcus et al., 2007; Pletzer et al., 2019, 2020). Furthermore, H-H is positively related to ethical leadership (De Vries, 2012), and negatively to delinquent work behaviors (De Vries & Van Gelder, 2015; Lee et al., 2005) and unethical business decisions (Ashton & Lee, 2008; De Vries et al., 2017).

Individuals who score high on H-H also tend to feel responsible for behaving prosocially toward others (Hilbig & Zettler, 2009; Oh et al., 2014). At work, high H-H employees have a proclivity to behave cooperatively toward colleagues and to adhere to the organizational rules (Ashton & Lee, 2007; Bourdage et al., 2012), because they believe that it is their moral responsibility to behave as such (Marcus et al., 2007). Correspondingly, meta-analyses have revealed that H-H is also a positive predictor of OCB (r = .10 to .18; Lee et al., 2019; Pletzer et al., 2021).

IMPLICIT INSTRUMENTS

A considerable amount of empirical work has shown that people process information about themselves and their environment not only explicitly (i.e., controlled or conscious), but also implicitly (i.e., automatic or unconscious; Bargh & Chartrand, 1999; Dijksterhuis & Nordgren, 2006; Epstein, 1994; Fazio, 1990; Greenwald & Banaji, 1995). To assess such unconscious psychological attributes, several implicit instruments have been developed and empirically investigated (for an overview, see Uhlmann et al., 2012). Common implicit instruments are the picture story exercise (PSE; Schultheiss et al., 2008; similar to the thematic apperception test [TAT]; Morgan & Murray, 1935), the implicit association test (IAT; Greenwald et al., 1998), and the conditional reasoning test (CRT; James, 1998). There is substantial empirical evidence that these instruments predict employee behaviors and explain unique variance in these behaviors above and beyond the variance explained by self-report measures (Apers et al., 2019; Dietl & Meurs, 2019; Galić et al., 2014; Lang et al., 2012; Leavitt et al., 2011). Furthermore, due to their indirect nature, these implicit instruments have shown to be resistant to faking under specific conditions (e.g., LeBreton et al., 2007; Steffens, 2004; Vecchione et al., 2014; Wiita et al., 2020).

Despite the positive findings regarding the predictive validity and fakability of these commonly studied implicit instruments, they also have some important limitations. The PSE

(or TAT) is time-consuming to administer and score, requires extensive training to score the subjective interpretation of participants' responses, lacks face validity, leading to defensive responses by applicants, and its reliability and validity remain debated (Lilienfeld et al., 2000). The IAT has a poor test-retest reliability (Cunningham et al., 2001; Egloff et al., 2005; LeBel & Paunonen, 2011), and participants have trouble seeing its job relevance and feel like they have little opportunity to perform (Wright & Meade, 2011). Additionally, in one recent study, an IAT of H-H showed no evidence for the criterion-related validity (Van Rensburg et al., 2022). Finally, the CRT-A (the most frequently studied CRT, which assesses aggression) has a highly skewed distribution of test scores with a mean of 3.89 on a scale of 0 (no aggression) to 22 (extremely aggressive) (James & LeBreton, 2012), which makes it difficult to discriminate amongst individuals with low levels of aggression (DeSimone & James, 2015). The issues with these commonly studied implicit instruments encouraged us to address the call for the development of novel implicit psychological instruments (Funder, 2002; Sackett et al., 2017). As we will explain and show in the remainder of this manuscript, the implicit instrument that we introduce deals with most of the issues described above: The NJT-H is relatively easy to administer and quick to assess, is automatically scored and standardized, has a good reliability and validity, and has no skewed distribution of test scores.

THE PARTIALLY-STRUCTURED ATTITUDE MEASURE

In 2004, Vargas et al. introduced a new paradigm of implicit testing: The partially-structured attitude measure (PSAM). In the PSAM paradigm, individuals judge trait levels of hypothetical persons who are described in vignettes. This paradigm is based on the phenomenon that the self serves as an anchor in social judgment (cf. Sherif & Hovland, 1961; for an overview, see Dunning, 2012). Hence, one's judgments are an indication of the trait level of the individual. Research has shown that people judge others in ways that promote their self-esteem (Beauregard & Dunning, 1998), such that people who are high (low) on a desirable attribute are more (less) judgmental of people who are low (high) on the desirable attribute (Beauregard & Dunning, 1998; Dunning & Cohen, 1992; Dunning & Hayes, 1996; Eidelman & Biernat, 2007; Protzko & Schooler, 2019). For example, Dunning and Cohen (1992) measured students' athleticism (hours per week on physical activity), math ability (SAT score), punctuality (number of times too late to class), studiousness (hours of studying), and how well-read they are (number of books read per month), and asked them to judge the levels of several hypothetical persons on these characteristics. The authors found that students with higher levels of (or scores on) these characteristics judged the hypothetical persons lower on the corresponding characteristics (except for punctuality). Correspondingly, the series of studies by Vargas et al. (2004) demonstrated that trait level estimations of hypothetical persons in vignettes that pertain to honesty, religiosity, and political orientation were inversely associated with participants' self-reported and actual behaviors relevant to these domains. For example, participants who perceived hypothetical persons who engaged in ambiguous dishonest behavior as very dishonest, were themselves less likely to cheat on anagrams. Importantly, these judgments explained unique variance in the corresponding outcomes above and beyond explicit measures of the same constructs.

In the present research, our goal was to develop an implicit instrument of H-H, the NJT-H, that is based on the PSAM paradigm (Vargas et al., 2004). The NJT-H is different from Vargas et al.'s (2004) PSAM of honesty, as the NJT-H assesses H-H, which is a broader construct than honesty, and as it contains 17 items (versus six items in Vargas et al. [2004]), increasing the reliability of the measure. The NJT-H is thought to predict CWB and OCB and explain unique variance in these employee behaviors, above and beyond the variance explained by personality self-reports (Uhlmann et al., 2012). We believe that H-H is a construct that can be adequately measured with the PSAM paradigm because it is closely related to the PSAM honesty measure in Vargas et al. (2004), who showed that this measure was negatively related to cheating on anagrams.

THE PRESENT RESEARCH

In the current research, we investigated the construct- and criterion-related validity of the NJT-H. The NJT-H's construct-related validity was established by examining its relationship with the HEXACO traits (Lee & Ashton, 2004). Implicit instruments generally show modest positive correlations with explicit measures of the same construct (e.g., Bosson et al., 2000; Hofmann et al., 2005; James et al., 2005; Vargas et al., 2004). Several explanations provided for the modest correlations between implicit and explicit instruments are the motivational bias in the report of consciously accessible representations (Fazio & Olson, 2003), a lack of introspective access to implicitly assessed representations (Greenwald & Banaji, 1995), and method-related characteristics of the two instruments (e.g., type of responses; see Payne et al., 2008). Based on the weak correlations found until now between implicit and explicit instruments, we posit the following hypothesis for the convergent validity of the NJT-H:

> *Hypothesis 1 (H1)*: The NJT-H is modestly and positively correlated with HEXACO H-H.[17]

The NJT-H was developed to exclusively measure the trait H-H and no other personality traits. Thus, we posit the following hypothesis regarding the discriminant validity of the NJT-H:

> *Hypothesis 2 (H2)*: The NJT-H is not significantly correlated with any of the five other HEXACO traits.

17 Following Cohen (1988), we regard r = .10, r = .30, and r = .50 respectively as small, moderate, and large correlations.

People who score high on H-H tend to be honest, sincere, and greed avoidant. These are integrity-related traits and should be associated with the avoidance of undesirable and harmful behaviors. Indeed, H-H has been shown to be a strong negative predictor of CWB (Lee et al., 2019; Marcus et al., 2007; Pletzer et al., 2019, 2020). We are not aware of studies that have examined the relationship between an implicit assessment of H-H and employee behaviors. Therefore, the present study provides the first test of the criterion-related validity of an implicit H-H assessment for predicting CWB. Altogether, for the criterion-related validity, we posit the following hypothesis:

Hypothesis 3 (H3): The NJT-H is negatively correlated with CWB.

People who score high on H-H also tend to feel responsible for behaving prosocially toward others (Hilbig & Zettler, 2009; Oh et al., 2014). Correspondingly, meta-analyses have shown that H-H is a positive predictor of OCB (Lee et al., 2019; Pletzer et al., 2021). As described above, no implicit instrument of H-H has been studied in relation to OCB. The present study provides the first test of the criterion-related validity of an implicit H-H assessment for predicting OCB. Altogether, for the criterion-related validity, we posit the following hypothesis:

Hypothesis 4 (H4): The NJT-H is positively correlated with OCB.

As explained earlier, implicit instruments capture unique variance in attributes to explicit self-report measures of the same construct (e.g., Hofmann et al., 2005). Hence, implicit instruments can explain variance in work outcomes above and beyond the variance explained by traditional self-report measures (for an overview, see Uhlmann et al., 2012). In line with these findings, we propose the following two hypotheses:

Hypothesis 5 (H5): The NJT-H explains unique variance in CWB above the variance explained by HEXACO H-H.

Hypothesis 6 (H6): The NJT-H explains unique variance in OCB above the variance explained by HEXACO H-H.

STUDY 1

The goal of Study 1 was to examine the construct-related, criterion-related, and incremental validity of the NJT-H by examining its relationship with the HEXACO traits, CWB, and OCB.

METHOD STUDY 1

PARTICIPANTS AND PROCEDURE

The survey was distributed in the year 2019 within the personal networks of three international master's students at a Dutch university (mostly family members, friends, and colleagues, who all had a paid job), via an online link and through paper-and-pencil administration. Participants in the current sample typically had white-collar jobs. Participants signed an informed consent that included information about their rights, the data protection procedures, and the researcher's contact information. The inclusion criteria for the study were being at least eighteen years old, having a paid job for at least one year with two working days a week, and having sufficient English language proficiency (measured through self-evaluations). At the end of the survey, participants were debriefed about the purpose of the study and were thanked for their contribution. Participants received a small gadget in return for their participation.

A total of 246 participants completed the survey. Sixteen participants were excluded from the analyses because they did not meet the job contract inclusion criterion or because they had finished the survey in an unrealistically short time (i.e., less than 500 seconds; median survey response time = 19.15 minutes). The remaining 230 participants provided 99.7% power to detect a medium-sized effect for the relationships in this study (r = .30; Cohen, 1992), with α = .05. The sample (M_{age} = 34.99 years, SD = 13.30; 57.8% men) consisted of 152 employees and 78 students who had a part-time job. Most participants had obtained a bachelor's degree (n = 104; 45.2%), a master's degree (n = 48; 20.9%), or a high school degree (n = 35; 15.2%). The majority of the participants was born in the Netherlands (n = 169, 73.5%), and the other participants were born in other European countries (n = 27; 11.7%), Asia (n = 27; 11.7%), or another continent (n = 10; 4.3%). The participants had 1 to 45 years of work experience (M = 14.81, SD = 11.75), and worked 8 to 60 hours per week (M = 32.75, SD = 10.93). The participants who completed the online survey (n = 152) and the paper-and-pencil survey (n = 78) differed significantly in age (respectively M = 36.72, SD = 14.53 and M = 31.63, SD = 9.74; t[212.17] = 3.15, p = .002, d = 0.41) and working hours (respectively M = 30.28, SD = 11.71 and M = 37.50, SD = 7.20; t[219.66] = -5.75, p < .001, d = 0.74). However, controlling for these group differences in age and working hours did not affect the significance of any of the effects.

MATERIALS

Normative Judgment Test of Honesty-Humility (NJT-H)

The development of the NJT-H and the construction of its items was an iterative process. We followed test development recommendations by Lane et al. (2016), and developed 23 NJT-H-items based on the method of Vargas et al. (2004) to measure trait H-H. The items have the form of vignettes, followed by a question about the hypothetical person described in the vignette (for an example item, see Table 1). As Dunning and Cohen (1992) demonstrated that participants varied mostly in their evaluation of hypothetical persons who score low rather than high on an attribute, all vignettes described a hypothetical person who engaged in ambiguous behavior that can be considered low on H-H.

In the item development process, we first focused on the content-related validity (Colquitt et al., 2019). First, the authors of this manuscript, together with three master's students, designed 23 items in total. The items pertain to situations at work (11 items), but also other life domains (6 items). To capture all H-H aspects, each item relates to one of the four facets of H-H (Sincerity, Fairness, Modesty, and Greed avoidance). However, as our goal was to develop a relatively short instrument, we intended to measure H-H as a whole rather than its four underlying facets separately. Second, the authors and students had a group discussion about the clarity, face validity, and potential risk of bias of each item. This resulted in relatively small adjustment of most of the items. Third, the item pool was reviewed on these same aspects by fourteen I/O psychologists who work in a consultancy that develops and assesses psychological instruments. The I/O psychologists had 2 to 23 years (M = 9.0, SD = 7.73) of total work experience in psychological tests and assessments. Specifically, through a survey, we asked the reviewers to indicate for each item (a) whether it was clearly formulated and easy to understand in terms of word usage, complexity, and ambiguity (and if not, why this might be the case), (b) to what extent – using a 5-point Likert scale – it measures each of the six HEXACO personality dimensions, (c) if it might function differently for certain groups, such as men and women or different ethnic groups (and if so, why this might be the case), and (d) whether the reviewers had suggestions to improve the item. The review highlighted several issues in the items, and we adjusted these items accordingly. The formulations of fourteen items were adjusted to make them clearer. Formulations of thirteen items were adjusted because they could potentially measure other personality traits. Finally, five items were revised because these items might have been biased against particular social groups or might have been differently interpreted by different groups. In the Supplementary Material, an illustration is provided of how an item has been revised.

Next, we focused on the adjectives that we could use in the question that followed each of the vignettes (e.g., How [*adjective*, e.g., dishonest] do you consider Jane to be?). We favored custom adjectives for each item to default adjectives, as the hypothetical person could be more adequately judged when the adjective matches the vignette. To adopt the most applicable adjectives, we first reviewed Lee and Ashton's (2008) list of adjectives that load on H-H, and then selected nine adjectives that are clear and easy to comprehend and that are applicable (e.g., dishonest, selfish).[18] To determine which H-H-related adjective is the most applicable to each item, we presented 31 Amazon Mechanical Turk (MTurk) workers with the NJT-H items together with the nine adjectives. We asked them to indicate which adjective, according to them, is the most applicable to the hypothetical person in the vignette. For each item, we used the adjective that was selected the most often.

In the NJT-H, participants were asked to judge the hypothetical person's level of Honesty/Humility described in the vignette using a 5-point Likert scale. The item response options varied from 1 = *not at all [adjective]* to *5 = extremely [adjective]*. The adjectives were phrased negatively (e.g., dishonest, immodest). Higher scores were therefore anticipated to indicate higher levels of trait H-H. Due to practical constraints, only 12 of the 23 developed items were used in Study 1. However, Study 2 revealed that the complete NJT-H correlates highly with the 12-item NJT-H (r = .86, p < .001). We selected four items per H-H facet. We conducted an exploratory factor analysis with the 12 NJT-H-items using the principal axis factoring extraction method (e.g., Chuah et al., 2006). The Kaiser–Meyer–Olkin measure (Kaiser, 1970) verified the sampling adequacy for the analysis, KMO = .736 (see Hutcheson & Sofroniou, 1999). Bartlett's test of sphericity (χ^2[66] = 330.62, p < .001) indicated that the correlations between items were sufficiently large for the principal axis factoring method. The scree plot showed an inflexion that would justify retaining one factor, which explained 23.5% variance. The alpha coefficient of the NJT-H in the current study was .69.

Table 1. *Example Item of the Normative Judgment Test of Honesty-Humility (NJT-H)*

Jane works in a lunchroom. In front of the lunchroom, there are usually two product promoters, distributing products like chocolate and drinks. Jane gives them a free lunch, and in return, they give her many of the products that they are supposed to distribute to the people outside. Jane takes these products home with her. How dishonest do you consider Jane to be? 1 = not at all dishonest 2 = a little dishonest 3 = moderately dishonest 4 = very dishonest 5 = completely dishonest

HEXACO

The HEXACO is a personality model that consists of six broad traits: Honesty-Humility (H-H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). We used 32 items of the 100-item HEXACO-PI-R (Lee & Ashton, 2004)

18 The list of adjectives consisted of Dishonest, Insincere, Greedy, Arrogant, Self-centered, Selfish, Immodest, Egoistical, and Untruthful. The former four adjectives were most frequently selected and used in the items.

to assess Honesty-Humility (α = .81) and Conscientiousness (α = .82), because these are integrity-related traits (Marcus et al., 2007) that are usually negatively related to desirable and undesirable employee behaviors (e.g., De Vries et al., 2017; Lee et al., 2005; Lee et al., 2019). The other four personality dimensions (E, X, A, and O) were measured with the Brief HEXACO Inventory (BHI; De Vries, 2013). This inventory includes four items per dimension, where each item belongs to a unique facet of the dimension. The alpha coefficient in the current sample was .49 for E, .60 for X, .34 for A, and .38 for O. Despite these low alpha coefficients, research demonstrated a high temporal consistency of the BHI dimensions and little loss in construct validity compared to the full 200-item Dutch HEXACO-PI-R (De Vries, 2013). In Study 2, we have assessed a longer version of the HEXACO inventory. Example items are "I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed" (H), "I have to cry during sad or romantic movies" (E), "I easily approach strangers" (X), "Even when I'm treated badly, I remain calm" (A), "I plan ahead and organize things, to avoid scrambling at the last minute" (C), "I like people with strange ideas" (O). In both the 100-item HEXACO-PI-R and the BHI, items were rated on a five-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Counterproductive Work Behavior (CWB)

We used the short 10-item version of the Counterproductive Work Behavior Checklist (CWB-C; Spector et al., 2010) to measure CWB. Example items are "Made fun of someone's personal life" and "Started an argument with someone at work". Participants indicated on a 5-point Likert scale how frequently they engaged in each behavior, ranging from 1 = *never* to 5 = *every day*. Coefficient alpha was .78.

Organizational Citizenship Behavior (OCB)

We measured OCB with nine items from Smith et al. (1983), see Kelloway et al. (2002). Example items are "Helping other employees with their work when they have been absent" and "Volunteering to do things not formally required by the job". Participants indicated the extent to which each statement characterizes them, using a 5-point Likert scale that ranges from 1 = *not at all* to 5 = *extremely*. Coefficient alpha was .82.

RESULTS STUDY 1

We first compared the correlations of the NJT-H and HEXACO H-H with age, gender, and nationality. The correlation between HEXACO H-H and age (r = .42, p < .001) was significantly stronger (z = 3.73, p < .001) than the correlation between the NJT-H and age (r = .14, p = .032). Women (M = 3.62, SD = 0.52) scored higher than men (M = 3.32, SD = 0.57) on HEXACO H-H (t[228] = -4.06, p < .001, d = 0.55), while the difference between women (M = 3.09, SD = 0.55) and men (M = 2.95, SD = 0.53) on the NJT-H did not reach below the significance threshold (t[228]= -1.97, p = .050, d = 0.26). Dutch participants (M = 3.60, SD = 0.47) scored higher on HEXACO H-H than non-Dutch participants (M = 3.02, SD = 0.60; t[87.68] = 6.83, p < .001, d = 1.02). However, Dutch participants (M = 2.96, SD = 0.54) scored lower on the NJT-H than non-Dutch participants (M = 3.14, SD = 0.53; t[228] = -2.32, p = .021, d = -0.33). The correlation between the NJT-H and CWB was not significantly different (z = -0.07, p = .471) between Dutch (r = -.34, p < .001) and non-Dutch (r = -.33, p = .005) participants. Similarly, the correlation between the NJT-H and OCB was not significantly different (z = -0.33, p = .370) between Dutch (r = .21, p = .007) and non-Dutch (r = .26, p = .047) participants.

HYPOTHESIS TESTING

Means, standard deviations, and bivariate intercorrelations of the sociodemographic variables, the NJT-H, the HEXACO traits, CWB, and OCB are presented in Table 2. We hypothesized that the NJT-H correlates modestly and positively with HEXACO H-H (H1), but not with the other five HEXACO traits (H2). The results revealed a significant modest and positive correlation between the NJT-H and HEXACO H-H (r = .26, p < .001), supporting H1. No significant correlations were found between the NJT-H and any other HEXACO traits, supporting H2 (Table 2). Furthermore, we predicted that the NJT-H is negatively correlated with CWB (H3) and positively correlated with OCB (H4). Indeed, the results revealed a negative correlation between the NJT-H and CWB (r = -.32, p < .001), and a positive correlation between the NJT-H and OCB (r = .21, p = .002), supporting H3 and H4.

We also formulated two hypotheses regarding the incremental validity of the NJT-H. We predicted that the NJT-H explains unique variance in CWB and OCB, above and beyond the variance explained by HEXACO H-H (H5 and H6, respectively). To test these hypotheses, hierarchical regression analyses were conducted with CWB and OCB as the dependent variables (Table 3). HEXACO H-H was included in the first step (Model 1), and the NJT-H was added in the second step (Model 2). In predicting CWB, H-H showed a significant negative beta weight in the first step (ß = -.41, t = -6.84, p < .001), and the NJT-H additionally showed a significant negative beta weight in the second step (ß = -.23, t = -3.78, p < .001), supporting H5. Model 2 explained 21.9% of the variance in CWB (F[2, 229] = 31.90, p < .001), that is, 4.9% more variance explained than the variance explained in Model 1. Furthermore, in predicting OCB, there was a nonsignificant beta weight of H-H in the first step (ß = .09, t = 1.30, p = .195), and the NJT-H showed a significant positive beta weight in the second step (ß = .20, t = 2.91, p = .004), supporting H6. Model 2 explained 4.3% of the variance in OCB (F[2, 227] = 5.10, p = .007), that is, 3.6% more variance explained than the variance explained in Model 1.

We conducted additional analyses to test whether the NJT-H explains unique variance in CWB and OCB, above and beyond the variance explained by all the six HEXACO traits. The table with the results is included in the Supplementary Material (Table S2). In the hierarchical

regression analyses, the six HEXACO traits were included in the first step (Model 1), and the NJT-H was added in the second step (Model 2). In predicting CWB, H-H (β = -.34, t = -5.33, p < .001) and Conscientiousness (β = -.21, t = -3.17, p = .002) showed significant negative beta weights in the first step. This model explained 21.8% of the variance in CWB (Ft[6, 229] = 10.34, p < .001). Model 2 showed that the NJT-H is significantly negatively related to CWB (β = -.23, t = -3.82, p < .001), and explained 4.8% unique variance in CWB, above and beyond the variance explained by the six HEXACO traits (ΔFt[1, 222] = 14.55, p < .001). Furthermore, in a hierarchical regression analysis with OCB as the dependent variable, Extraversion (β = .26, t = 3.99, p < .001) and Conscientiousness (β = .33, t = 5.06, p < .001) were significantly positively related to OCB. This model explained 22.3% of the variance in OCB (Ft[6, 227] = 10.57, p < .001). Model 2 showed that the NJT-H is significantly positively related to OCB (β = .22, t = 3.59, p < .001), and explained 4.3% unique variance in OCB, above and beyond the variance explained by the six HEXACO traits (ΔFt[1, 220] = 12.87, p < .001).

Table 2. *Means, Standard Deviations, and Bivariate Intercorrelations of Variables in Study 1*

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Gender	0.42	0.50	(-)											
2. Age	34.99	13.30	.08	(-)										
3. WH	32.75	10.93	-.29**	.26**	(-)									
4. NJT-H	3.00	0.54	.13	.14*	.09	(.69)								
5. H	3.45	0.57	.26**	.42*	-.01	.26**	(.81)							
6. E	2.89	0.68	.43**	-.03	-.20**	.12	-.03	(.49)						
7. X	3.80	0.65	.21**	.12	-.02	.03	.25**	-.09	(.60)					
8. A	2.97	0.57	-.04	-.05	-.04	.10	.07	-.08	-.07	(.34)				
9. C	3.56	0.51	.21**	-.02	.02	.09	.34**	-.03	.37**	-.02	(.82)			
10. O	3.55	0.58	-.03	.08	.04	-.07	.12	-.05	.24**	-.08	.18**	(.38)		
11. OCB	3.39	0.67	.03	-.09	.06	.21**	.09	-.12	.35**	.02	.40**	.08	(.82)	
12. CWB	1.70	0.49	-.16*	-.22**	.01	-.32**	-.41**	.06	-.13	-.13	-.31**	-.06	-.06	(.78)

Note. Gender: male = 0, female = 1, WH = Working hours, NJT-H = Normative Judgment Test of Honesty-Humility, H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, OCB = Organizational citizenship behavior, CWB = Counterproductive work behavior. The possible range of scores for the scales is 1.00-5.00.
N = 230.
* p < .05; ** p < .01 (two-tailed).

Table 3. *Hierarchical Regression Analyses with HEXACO H-H and the NJT-H as Predictors of CWB and OCB in Study 1*

	CWB				OCB			
	Model 1		Model 2		Model 1		Model 2	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI
H	-.41***	[-.53; -.29]	-.35***	[-.47; -.23]	.09	[-.04; .22]	.04	[-.10; .17]
NJT-H			-.23***	[-.35; -.11]			.20**	[.06; .33]
R^2	.170		.219		.007		.043	
F	46.81***		31.90***		1.69		5.10**	
ΔR^2			.049				.036	
ΔF			14.26***				8.45**	

Note. H = Honesty-Humility, OCB = Organizational citizenship behavior, NJT-H = Normative Judgment Test of Honesty-Humility, CWB = Counterproductive work behavior.
N = 230.
* p < .05; ** p < .01; *** p < .001 (two-tailed).

DISCUSSION STUDY 1

The goal of Study 1 was to examine the construct-related, criterion-related, and incremental validity of the NJT-H. In line with the hypotheses, the results showed that the NJT-H (a) is modestly and positively associated with HEXACO H-H and not significantly associated with the other five HEXACO traits, (b) is negatively associated with CWB and positively associated with OCB, and (c) explains unique variance in CWB and OCB, above and beyond the variance explained by HEXACO H-H. Furthermore, the additional analyses showed that the NJT-H explained unique variance in CWB and OCB, above and beyond the variance explained by the six HEXACO traits. We also found that, with respect to age, gender, and nationality, score differences were significantly smaller on the NJT-H than on the HEXACO H-H scale. Altogether, these findings provide initial support for the validity of the NJT-H.

However, the findings of Study 1 are subject to at least three limitations. First, the employee behaviors were measured using self-reports, which may have inflated the relationship between the predictors and the criteria due to common source bias (Meier & O'Toole, 2013; Podsakoff et al., 2003). However, as research shows that other-reports add little to the assessment of CWB to self-reports (Berry et al., 2012), this limitation pertains primarily to the measurement of OCB. Nonetheless, it is important to also examine the NJT-H's criterion-related validity using other-reports of work outcomes (e.g., Jaramillo et al., 2005). Second, only a selection of NJT-H items was used in this study, which may have reduced the reliability and, hence, the validity of the test. Therefore, we expect to find a higher validity with more NJT-H items. Third, four of the HEXACO traits were measured with the BHI. Although the validity of the BHI has been demonstrated (De Vries, 2013), it is important to test the convergent and discriminant validity and the incremental validity of the NJT-H with a longer version of the HEXACO inventory.

STUDY 2

In Study 1, we focused on CWB and OCB. Another important employee behavior is task performance, which has been defined as "activities that contribute to the organization's technical core either directly by implementing a part of its technological process, or indirectly by providing it with needed materials or services" (Borman & Motowidlo, 1997, p. 99). Whereas a conceptual and empirical link could be made between H-H and CWB and OCB, there is no such evident link between H-H and task performance. So far, only a few studies have examined H-H as a predictor of task performance. In a recent meta-analysis with seven studies, a weak positive relationship was found between H-H and task performance (Lee et al., 2019). However, some studies revealed no effect (e.g., Oh et al., 2014). Furthermore, there is no consistent evidence that dark triad traits – traits that are associated with callous, selfish, and malevolent interpersonal behaviors (Paulhus & Williams, 2002), and that have high conceptual similarities with the opposite end of H-H (e.g., Hodson et al., 2018) – are related to task performance (O'Boyle et al., 2012). Altogether, there is currently only indirect and inconsistent support for a relationship between H-H and task performance. Therefore, we propose two research questions for the relationship between the NJT-H and task performance:

Research Question 1 (RQ1): To what extent is the NJT-H correlated with task performance?

Research Question 2 (RQ2): To what extent does the NJT-H explain unique variance task performance, above and beyond the variance explained by HEXACO H-H?

In addition to exploratorily examining the relationship between the NJT-H and task performance, another goal of Study 2 was to provide another test of our hypotheses based on self-ratings of CWB and supervisor ratings of CWB and OCB. In the analyses with supervisor ratings, we controlled for the supervisor-subordinate interaction frequency, because this could influence the supervisor ratings (Kacmar et al., 2003). Furthermore, we administered the 23 NJT-H items and the HEXACO-60 inventory (Ashton & Lee, 2009). Finally, we used longer and more common scales of CWB and OCB.

METHOD STUDY 2

PARTICIPANTS

The participants in the present study are employees and their supervisors. Employees had to meet four criteria to participate in this study: Being between the age of 18 and 65 years

old, being born in the Netherlands, having worked for the current company for at least six months with a minimum of 16 hours per week, and having sufficient English proficiency to understand the survey. Supervisors also had to meet four criteria to participate in this study: Being between the age of 18 and 65 years old, having supervised the employee for a minimum of three months, having interacted with the employee at least once a week, and having sufficient English proficiency to understand the survey (measured through self-evaluations). Participants in the current sample typically had white-collar jobs.

The final dataset consisted of 123 employees (78 male; 63.4%) and 93 employee-supervisor dyads (59 male employees and 55 male supervisors). The power analysis indicated that we obtained 93.3% power with 123 participants and 85.1% power with 93 participants to detect a medium-sized effect for the relationships in this study (r = .30; Cohen, 1992), with α = .05. On average, the employees were 32.89 years old (SD = 10.49). Most employees had obtained a bachelor's degree (n = 72; 58.5%), a master's degree (n = 22; 17.9%), or an associate degree (n = 21; 17.1%). Most of the employees (100; 81.3%) had a permanent contract. The employees had 2 to 45 years of work experience (M = 13.90, SD = 10.81), and had an average organizational tenure of 3.80 years (SD = 5.28) with working hours ranging from 16 to 60 hours per week (M = 38.11, SD = 8.16). The supervisors were on average 38.52 years old (SD = 8.62). Most supervisors had obtained a bachelor's degree (n = 45; 48.4%) or a master's degree (n = 37; 39.8%). The average supervisors' organizational tenure was 6.84 years (SD = 6.99), and their average managerial experience was 7.55 years (SD = 6.92). The supervisors worked 43.26 hours per week on average (SD = 9.44), varying from 24 to 70 hours. The employee-supervisor dyads worked together for 1.88 years on average (SD = 2.35).

PROCEDURE

The data were collected in the Netherlands in the year 2020. The employee-supervisor dyads were recruited by three master's students who worked collaboratively on a research project. Participants were recruited through the students' internship providers and through a few other organizations located in the Netherlands. First, the students contacted potential supervisors, explained the aim of the research, and asked them to participate in this study. If supervisors were willing to participate in this study, they were asked to provide the names of their subordinates who met the participation criteria. Second, the students contacted these employees, explained the aim of the research, and asked them to participate in this study. The employees were asked to complete the survey that includes the NJT-H, the HEXACO, and a scale for CWB. At the end of the survey, the employees had to enter a random 6-digit code. The employees were asked to share this code with their supervisor, together with the supervisor's survey link that was provided at the end of their survey. Subsequently, at the beginning of the supervisor's survey, the supervisors entered the 6-digit code. This survey includes a scale for CWB, OCB, and task performance. This procedure enabled us to match the surveys of the employees and the supervisors while maintaining participants' anonymity and the confidentiality of their responses. In the consent form, participants were informed about their rights and the anonymous data processing and the confidential treatment of their data for scientific research. In the debriefing of the surveys, the goal of the study was explained, and the participants were thanked for their participation. The employee survey took about 15-20 minutes to complete, and the supervisor survey took about 10-15 minutes to complete. The present research has been approved by the faculty's ethics committee.

MATERIALS

Normative Judgment Test of Honesty-Humility (NJT-H)

All 23 NJT-H items were administered. However, based on the psychometric properties of the items, we selected 17 items to form the final version of the NJT-H. However, we also conducted the analyses with the 23 NJT-H items (see Supplementary Material). Overall, the 17-item NJT-H showed comparable or slightly stronger effects than the 23-item NJT-H. The alpha coefficient of the NJT-H in the current sample was .77. In Study 1, we conducted an exploratory factor analysis, and found a single factor explaining most of the variance in test scores. To confirm the unidimensional factor structure of the NJT-H, we conducted a confirmatory factor analysis where we compared a single-factor model with a four-factor model (representing the four H-H facets). The models were analyzed using the maximum likelihood estimation method, and missing values were dealt with using full information maximum likelihood (El-Sheikh et al., 2017). The analyses indicated that the single-factor model (χ^2 [119] = 206.77, p < .001, CFI = .703, TLI = .660, RMSEA = .077, SRMR = .086) showed a comparable fit to the four-factor model (χ^2 [113] = 194.25, p < .001, CFI = .725, TLI = .669, RMSEA = .076, SRMR = .082), χ^2 (6) = 12.51, p = .052. Given these results, we treat the NJT-H as a unidimensional construct. The item-level factor loadings and the zero-order correlations between the NJT-H items and the HEXACO dimensions are reported in Table S1 (see Supplementary Material).

To provide more evidence for the reliability of the NJT-H, we conducted a small online study in Prolific among 140 participants who completed the 17 NJT-H items. Two and a half weeks later, we asked the participants to complete the 17 NJT-H items again. In total, 104 participants (53.8% female; M_{age} = 35.35, SD = 12.88) completed the NJT-H twice (i.e., a retention rate of 74.3%). The average time interval between the two test administrations was 15.71 days (SD = 1.00, min = 15 days, max = 19 days). The test-retest reliability of the NJT-H was r = .71. This test-retest reliability is comparable to the test-retest reliability of the CRT-A (James & LeBreton, 2012), and higher than several other implicit instruments such as the IAT (Cunningham et al., 2001; Egloff et al., 2005; LeBel & Paunonen, 2011) and the TAT (Lilienfeld et al., 2000).

HEXACO

We used the HEXACO-60 (Ashton & Lee, 2009; De Vries et al., 2009) to measure the six

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HEXACO traits among employees. Items were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). Example items are provided in Study 1. The alpha coefficients in the current study were .71 for H-H, .69 for E, .80 for X, .67 for A, .79 for C, and .73 for O.

Counterproductive Work Behavior (CWB)

The 19-item CWB scale by Bennett and Robinson (2000) was administered to both the employees and their supervisors. Example items are "Made fun of someone at work" and "Taken property without permission". Items were rated on a 5-point Likert scale, ranging from 1 = *never* to 5 = *every day*. Coefficient alpha was .83 for both the employee self-reports and the supervisory ratings.

Organizational Citizenship Behavior (OCB)

We measured supervisor ratings of OCB with the 16-item OCB scale by Lee and Allen (2002). Supervisors were asked to indicate how often their subordinate(s) engaged in certain behaviors, ranging from 1 = *never* to 5 = *always*. Example items are "Defend the organization when other employees criticize it" and "Willingly give their time to help others who have work-related problems". Coefficient alpha was .89.

Task Performance

To measure supervisory ratings of task performance, we used nine items from Goodman and Svyantek (1999). Example items are "Achieves the objective of the job" and "Demonstrates expertise in all job-related tasks". Items were rated on a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Coefficient alpha was .86.

Interaction Frequency

Supervisor ratings are affected by the frequency of interaction between the supervisor and their subordinate (Kacmar et al., 2003). To take into consideration this potential confound, supervisors completed a 4-item scale by McAllister (1995) that measures the employee-supervisor interaction frequency. An example item of this scale is "How frequently do you interact with this person at work informally or socially?". Response alternatives ranged from 1 = *once or twice in the last 6 months* to 7 = *many times daily*. Higher scores on this scale indicate perceptions of a higher communication frequency. Coefficient alpha was .87.

RESULTS STUDY 2

In the current study, there were no significant differences between men and women on the NJT-H (respectively M = 3.64, SD = 0.46 and M = 3.59, SD = 0.45; t[119] = 0.63, p = .530, d = 0.11), HEXACO H-H (respectively M = 3.51, SD = 0.58 and M = 3.59, SD = 0.56; t[118] = -0.67, p = .506, d = 0.14), or any other personality trait. There were only significant differences between men (M = 40.39, SD = 7.07) and women (M = 34.00, SD = 8.64) on their working hours per week, t(73.26) = 4.14, p < .001, d = 0.81. Furthermore, employees' age was positively correlated with the NJT-H (r = .32, p < .001) and HEXACO H-H (r = .36, p < .001), and these correlations did not differ significantly from each other (z = 0.39, p = .349). Age was negatively correlated with supervisory ratings of CWB (r = -.24, p = .024) and positively correlated with their ratings of OCB (r = .30, p = .004). Age was not significantly correlated with self-ratings of CWB (r = -.17, p = .067), and not significantly correlated with supervisory ratings of task performance (r = -.06, p = .593). Finally, interaction frequency was negatively correlated with Conscientiousness (r = -.21, p = .041), and positively correlated with supervisory ratings of CWB (r = .25, p = .015).

HYPOTHESIS TESTING

Means, standard deviations, and bivariate intercorrelations of sociodemographic variables, the NJT-H, the HEXACO traits, and the employee behaviors are presented in Table 4. The results revealed a significant modest positive correlation between the NJT-H and HEXACO H-H (r = .43, p < .001), supporting H1. Furthermore, the NJT-H showed no significant correlations with the other HEXACO traits, except a weak correlation with Conscientiousness (r = .19, p = .041), largely supporting H2. Furthermore, we predicted that the NJT-H is negatively correlated with CWB (H3). We found a correlation of r = -.31 (p = .001) between the NJT-H and self-ratings of CWB, and a correlation of r = -.46 (p < .001) between the NJT-H and supervisory ratings of CWB, supporting H3. We also predicted that the NJT-H is positively correlated with OCB (H4). Indeed, there was a positive correlation between the NJT-H and supervisory ratings of OCB (r = .48, p < .001), supporting H4.

We expected that the NJT-H explains unique variance in CWB (H5) and OCB (H6), above and beyond the variance explained by HEXACO H-H. To test these hypotheses, hierarchical regression analyses were conducted with self-reported CWB and supervisory ratings of CWB and OCB as the dependent variables (Table 5). For self-ratings of CWB, HEXACO H-H was included in the first step (Model 1), and the NJT-H was added in the second step (Model 2). For supervisory ratings of CWB and OCB, interaction frequency was included as a control variable in the first step (Model 1), the HEXACO H-H scale was included in the second step (Model 2), and the NJT-H was added in the third step (Model 3). In the Supplementary Material, we have included the results of the hierarchical regression without the control variable interaction frequency (Table S5). The results without interaction frequency are comparable to the results of the analyses that are reported in the main text.

Table 4. *Means, Standard Deviations, and Bivariate Intercorrelations of Variables in Study 2*

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1. Gender	0.36	0.48	-														
2. Age	32.89	10.49	-.02	-													
3. WH	38.11	8.16	-.37**	-.11	-												
4. IF	5.21	1.10	-.05	-.16	.16	(.88)											
5. NJT-H	3.45	0.43	-.06	.32**	.15	-.01	(.77)										
6. H	3.55	0.57	.06	.36**	.08	-.11	.43**	(.71)									
7. E	2.96	0.52	.50**	-.02	-.10	.03	.01	.01	(.69)								
8. X	3.61	0.56	-.09	-.05	.19*	.19	.18	.07	-.11	(.80)							
9. A	3.13	0.49	-.04	.06	.04	.01	.14	.33**	-.02	.01	(.67)						
10. C	3.63	0.54	.13	.03	-.00	-.22*	.19*	.35**	.09	.09	.05	(.79)					
11. O	3.41	0.57	-.07	-.08	.11	-.18	-.03	-.02	-.09	.24*	.19*	-.03	(.73)				
12. OCB	3.53	0.57	-.06	.30**	.25*	.11	.48**	.37**	.09	.24*	.15	.17*	-.01	(.89)			
13. CWB-E	1.51	0.36	-.07	-.17	.08	.13	-.31**	-.41**	.00	-.15	-.20*	-.28**	.12	-.12	(.83)		
14. CWB-S	1.28	0.29	.04	-.24*	.03	.25*	-.46**	-.45**	.05	-.21*	-.11	-.30**	.12	-.24*	.46**	(.83)	
15. TP	3.87	0.50	.11	-.06	.07	-.03	.23*	.04	.10	.10	.05	.18	.09	.43**	.03	-.33**	(.86)

Note. Gender: male = 0, female = 1, WH = Working hours, IF = Interaction Frequency, NJT-H = Normative Judgment Test of Honesty-Humility, H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, OCB = Organizational citizenship behavior, CWB-E = Counterproductive work behavior employee self-reports, CWB-S = Counterproductive work behavior supervisory rating, TP = Task performance. The possible range of scores for the scales is 1.00-5.00, except for IF, which has a possible range of 1.00-7.00.
N = 93 to N = 123.
* p < .05; ** p < .01 (two-tailed).

In the hierarchical regression analysis with self-ratings of CWB as the dependent variable, H-H showed a negative beta weight in Model 1 (ß = -.41, t = -4.91, p < .001), explaining 16.8% of the variance in CWB self-ratings (F[1, 121] = 24,15, p < .001). Model 2 showed that the NJT-H (ß = -.16, t = -1.80, p = .075) did not significantly explain unique variance in self-ratings of CWB above and beyond the variance explained by HEXACO H-H (F[2, 121] = 13.92, p < .001). In the hierarchical regression analysis with supervisory ratings of CWB as the dependent variable, interaction frequency (ß = .25, t = 2.47, p = .015) explained 6.3% variance (F[1, 92] = 6.11, p = .015). In Model 2, H-H (ß = -.43, t = -4.60, p < .001) showed a significant negative beta weight, explaining 24.1% of the variance in supervisory ratings of CWB (F[2, 92] = 14.30, p < .001). Model 3 showed that the NJT-H is significantly negatively related to supervisory ratings of CWB (ß = -.34, t = -3.49, p = .001), and explained 33.2% variance in supervisory ratings of CWB (F[3, 92] = 14.77, p < .001), that is, 9.1% unique variance above and beyond the variance explained in Model 2. The hierarchical regression analysis without the control variable interaction frequency showed that H-H (ß = -.45, t = -4.77, p < .001) and the NJT-H (ß = -.32, t = -3.28, p = .001) maintained significant negative beta weights. Altogether, these results provide partial support for H5.

In the hierarchical regression analysis with supervisory ratings of OCB as the dependent variable, interaction frequency (ß = .11, t = 1.06, p = .290) showed no significant beta weight. In Model 2, H-H (ß = .39, t = 3.99, p < .001) showed a significant and positive beta weight, explaining 16.0% of the variance in supervisory ratings of OCB (F[2, 92] = 8.60, p < .001). Model 3 showed that the NJT-H is significantly and positively related to supervisory ratings of OCB (ß = .39, t = 3.89, p < .001), and explained 28.6% variance in supervisory ratings of OCB (F[3, 92] = 11.60, p < .001), that is, 12.1% additional variance explained above and beyond the variance explained in Model 2. The hierarchical regression analysis without the control variable interaction frequency showed that H-H (ß = .20, t = 2.02, p = .047) and the NJT-H (ß =.39, t = 3.91, p < .001) maintained significant negative beta-weights. Altogether, these results provide support for H6.

We conducted additional analyses to test whether the NJT-H explains unique variance in CWB and OCB, above and beyond the variance explained by all the six HEXACO traits. The table of the results is included in the Supplementary Material (Table S6). In the hierarchical regression analyses, interaction frequency was included in the first step (Model 1), the six HEXACO traits were included in the second step (Model 2), and the NJT-H was added in the third step (Model 3). Step 1 was not applied in the analyses with CWB self-reports. The results showed that in predicting CWB self-reports, the NJT-H did not explain unique variance in CWB self-reports above and beyond the variance explained by the six HEXACO traits (ß = -.07, t = -0.74, p = .461). However, in predicting supervisory ratings of CWB, the NJT-H (ß = -.31, t = -3.27, p = .002) explained 7.4% unique variance above and beyond the variance explained by the six HEXACO traits (ΔF[1, 84] = 10.71, p = .002). Finally, in

predicting supervisory ratings of OCB, the NJT-H (ß = .36, *t* = 3.51, *p* = .001) explained 10.1% unique variance in supervisory ratings of OCB (Δ*F*[1, 84] = 11.67, *p* = .001). These additional analyses showed that the NJT-H also explained unique variance in work outcomes above and beyond the complete HEXACO.

Table 5. *Hierarchical Regression Analyses with Predictors of CWB and OCB in Study 2*

	Model 1		Model 2	
	β	95% CI	β	95% CI
CWB-E	R^2 = .168		R^2 = .226 (ΔR^2 = .022)	
H	-.41***	[-.57; -.24]	-.34***	[-.52; -.16]
NJT-H			-.16	[-.35; .02]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
CWB-S	R^2 = .063		R^2 = .241 (ΔR^2 = .178)		R^2 = .332 (ΔR^2= .091)	
IF	.25*	[.05; .45]	.21*	[.02; .39]	.22*	[.05; .39]
H			-.43***	[-.61; -.24]	-.28**	[-.47; -.09]
NJT-H					-.34**	[-.53; -.14]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
OCB	R^2 = .012		R^2 = .160 (ΔR^2 = .148)		R^2 = .281 (ΔR^2 = .121)	
IF	.11	[-.10; .32]	.15	[-.04; .35]	.10	[-.09; .30]
H			.39***	[.19; .58]	.22*	[.02; .42]
NJT-H					.39***	[.19; .58]

Note. IF = Interaction Frequency, H = Honesty-Humility, NJT-H = Normative Judgment Test of Honesty-Humility, CWB-E = Counterproductive work behavior employee self-reports, CWB-S = Counterproductive work behavior supervisory rating, OCB = Organizational citizenship behavior.
N = 123 and *N* = 93.
* *p* < .05; ** *p* < .01; *** *p* < .001 (two-tailed).

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EXPLORATORY RESEARCH QUESTIONS

We posited two exploratory research questions for the relations between the NJT-H and task performance. In RQ1, we proposed examining to what extent the NJT-H is correlated with task performance. The results showed that the NJT-H is significantly and positively correlated with task performance, *r* = .23 (*p* = .025). In RQ2, we proposed examining to what extent the NJT-H explains unique variance in task performance, above and beyond the variance explained by HEXACO H-H (Table 6). After controlling for interaction frequency (ß = -.03, *t* = -0.25, *p* = .805), H-H showed no significant beta weight for supervisory ratings of task performance (ß = .04, *t* = 0.35, *p* = .724). Furthermore, the NJT-H (ß =.27, *t* = 2.33, *p* = .022) showed a significant and positive beta weight in predicting supervisory ratings of task performance, explaining 5.7% additional variance above and beyond HEXACO H-H (Δ*F*[1, 89] = 5.42, *p* = .022). Additionally, the NJT-H (ß =.25, *t* = 2.13, *p* = .036) also explained 5.6% unique variance in task performance above and beyond the variance explained by the six HEXACO traits (Δ*F*[1, 84] = 5.31, *p* = .024; see Supplementary Material, Table S7).

Altogether, these exploratory research analyses showed that the NJT-H is positively related to task performance, and explains unique variance in task performance, above and beyond the variance explained by HEXACO H-H and the complete HEXACO.

Table 6. *Hierarchical Regression Analyses with Predictors of Task Performance in Study 2*

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
TP	R^2 = .001		R^2 = .002 (ΔR^2 = .001)		R^2 = .059 (ΔR^2 = .057)	
IF	-.03	[-.23; .18]	-.02	[-.23; .19]	-.03	[-.24; .17]
H			.04	[-.17; .25]	-.08	[-.31; .15]
NJT-H					.27*	[.04; .49]

Note. IF = Interaction Frequency, H = Honesty-Humility, NJT-H = Normative Judgment Test of Honesty-Humility, TP = Task performance.
N = 93.
* *p* < .05; ** *p* < .01; *** *p* < .001 (two-tailed).

DISCUSSION STUDY 2

Overall, Study 2 provides additional support for the construct- and criterion-related validity of the NJT-H (for an overview of the results of Study 1 and Study 2, see Table 7).

In line with our expectations, the NJT-H is modestly and positively associated with HEXACO H-H. Furthermore, of the other five HEXACO traits, the NJT-H only shows a weak positive correlation with Conscientiousness. The NJT-H is negatively associated with self-ratings and supervisory ratings of CWB and is positively associated with supervisory ratings of OCB, and explains unique variance in the supervisory ratings of CWB and OCB, above and beyond the variance explained by HEXACO H-H. Additional analyses showed that the NJT-H also explains unique variance in supervisory ratings of CWB and OCB, above and beyond the variance explained by the six HEXACO traits. Lastly, the exploratory research analyses showed that the NJT-H is positively associated with task performance, and explains unique variance in task performance, above and beyond the variance explained by HEXACO H-H and even the six HEXACO traits.

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Table 7. *An Overview of the Hypotheses, Research Questions, and their Empirical Support*

#	Hypothesis or research question	Support
H1	The NJT-H is modestly and positively correlated with HEXACO H-H.	Yes
H2	The NJT-H is not significantly correlated with any of the five other HEXACO traits.	Partial support (weak correlation with Conscientiousness)
H3	The NJT-H is negatively correlated with CWB.	Yes
H4	The NJT-H is negatively correlated with OCB.	Yes
H5	The NJT-H explains unique variance in CWB above the variance explained by HEXACO H-H	Yes
H6	The NJT-H explains unique variance in OCB above the variance explained by HEXACO H-H.	Yes
RQ1	To what extent is the NJT-H correlated with task performance?	r = .25
RQ2	To what extent does the NJT-H explain unique variance task performance, above and beyond the variance explained by HEXACO H-H?	5.7% unique variance explained

GENERAL DISCUSSION

The present research addresses recent calls from scholars to examine and advance alternative personality assessment methods, such as implicit instruments, for organizational contexts (Funder, 2002; Sackett et al., 2017). Here, we have developed the NJT-H, an implicit instrument of H-H that is based on the PSAM paradigm by Vargas et al. (2004). The NJT-H was subject to validation in this research. In two studies, we assessed the NJT-H, the HEXACO traits, and self-reported and supervisory ratings of the employees' CWB, OCB, and task performance. The findings provide initial support for the construct- and criterion-related validity and the incremental validity of the NJT-H.

THEORETICAL IMPLICATIONS

The present study contributes to the literature on implicit instruments of personality (Back et al., 2009; Bosson et al., 2000; Hofmann et al., 2005; James et al., 2005) by validating an implicit instrument of H-H based on the PSAM paradigm. Whilst Vargas et al. (2004) provided a proof of concept of the PSAM, our research with the NJT-H demonstrates that this paradigm is useful for assessing trait H-H in the organizational context. Specifically, we find support for the construct-related validity of the NJT-H in both studies. The current research reveals a modest and positive relationship between the NJT-H and HEXACO H-H, and the NJT-H showed no significant correlations with the other HEXACO traits (apart from a weak significant correlation with Conscientiousness in Study 2). In line with previous studies on implicit instruments (e.g., Back et al., 2009; James et al., 2005), we treated a modest positive correlation between scores on the implicit and explicit instrument of the same trait as evidence for the convergent validity of the instrument. In line with this interpretation, we argue that it is important to develop test validation guidelines for implicit instruments that acknowledge modest correlations with explicit instruments of the same construct as evidence for the convergent validity.

Moreover, the current research contributes to the literature on employee work behavior by revealing that the NJT-H predicts CWB, OCB, and task performance, and also explains unique variance in these employee behaviors above and beyond the variance explained by HEXACO H-H and the six HEXACO traits. Thus, the NJT-H assesses unique variance in one's personality to a personality self-report measure, and adding the NJT-H to a personality self-report measure makes it possible to more accurately predict employees' CWBs, OCBs, and task performance. This is an important and a promising finding, as previous research has shown that only trait Conscientiousness is a consistent predictor of these three employee behaviors (Connelly & Ones, 2010; Lee et al., 2019). This also raises the anticipation that an NJT of Conscientiousness might likewise provide additional predictive power up and above self-rated Conscientiousness.

Finally, although it was not the primary goal of our research, the NJT-H may address the problem that more valid selection instruments show larger (in particular ethnic) subgroup score differences and increase the potential for adverse impact (Ployhart & Holtz, 2008). Furthermore, reducing gender and age subgroup score differences is also an important concern to organizations because of their potential influence on workforce diversity (e.g., Sackett et al., 2001). Importantly, Integrity scores, which are highly related to H-H (e.g., Lee et al., 2005; Lee et al., 2019; Marcus et al., 2007), are generally lower among individuals from collectivist cultures (Fine, 2010). Furthermore, in the HEXACO model, H-H is one of the six traits that shows the largest gender differences after Emotionality (Lee & Ashton, 2020), and H-H scores substantially increase with age (Ashton & Lee, 2016). In the present research, we showed that with respect to gender, age, and nationality, the score differences on the NJT-H between demographic groups are small or nonexistent, and we have some evidence that there are smaller score differences on the NJT-H than on the HEXACO H-H scale. Although the robustness of our findings needs to be validated in future research with larger samples, the present findings are nonetheless promising.

PRACTICAL IMPLICATIONS

The NJT-H is an instrument that is easy to administer and cost-efficient compared to other implicit instruments that require specialized test administration expertise, one-on-one administration, and complex scoring procedures (Bing et al., 2007; Lilienfeld et al., 2000). A reliable and valid "low tech" implicit instrument (Vargas et al., 2007) such as the NJT-H could therefore be a feasible alternative or complement to self-report measures in the organizational context. Personnel selection could be one useful application of the NJT-H.

The NJT-H might also be a useful instrument for coaches and employees' development goals. The use of personality assessments in employees' development has increased significantly in the last two decades (McDowall & Redman, 2017; Passmore, 2012). The goal of such development programs is to increase self-awareness (Cseh et al., 2013), which

positively influences employees' well-being (e.g., Harrington & Loffredo, 2011). Importantly, people's self-knowledge is the lowest for evaluative traits (e.g., Vazire & Carlson, 2010), and in particular trait H-H (Thielmann et al., 2021). The present research provides some evidence that the HEXACO H-H scale should be supplemented by the NJT-H to obtain a more detailed picture of someone's level of H-H. Together, these test scores could be used to set goals for self-development.

LIMITATIONS AND FUTURE DIRECTIONS

The first limitation of this research is the investigation of the NJT-H in a low-stakes context. In a high-stakes context, job applicants may be inclined to substantially elevate their scores on personality self-report scales (e.g., Goffin & Christiansen, 2003; Griffith et al., 2007), and they do so mainly for socially desirable traits such as H-H (Anglim et al., 2018). Some studies have empirically investigated the fakability of implicit instruments, and these studies usually show that these instruments are resistant to faking as long as the participant has not been informed about the construct that is being measured (LeBreton et al., 2007 for the CRT; Steffens, 2004 for the IAT). Thus, one important avenue for future research is to investigate the fakability of the NJT-H and compare it to the fakability of personality self-report measures and other implicit instruments.

Future research could also further examine the construct-related validity of the NJT-H. One opportunity is to study the nomological network of the NJT-H. A particularly relevant trait to study in this context is emotional intelligence. In the PSAM paradigm, participants need to judge others, and they do so by comparing the other to themselves (Dunning & Hayes, 1996). This comparison requires self-reflection, which is a crucial aspect of emotional intelligence (e.g., Boyatzis et al., 2000). Another way to study the construct-related validity of the NJT-H is to investigate whether this instrument partly measures response styles. Some research has examined anchoring vignettes (comparable to the NJT-H items) as a tool to assess response styles, aiming to improve the cross-cultural validity of instruments by controlling for the vignette scores (King & Wand, 2007; King et al., 2004). There is some evidence that controlling for anchoring vignette scores style results in improvements in the validity of the test scores, although the effects are usually weak (e.g., He et al., 2017; Primi et al., 2016). Moreover, in Study 2, we showed that the NJT-H is associated with supervisory ratings, which provides support that the instrument assesses personality and not – at least not merely – response styles. Nonetheless, we encourage future research to examine the extent to which the NJT-H assesses H-H versus response styles. One methodology for this is to develop an NJT for a construct that is unrelated to H-H (e.g., Extraversion; Thielmann et al., 2021), and investigate its relationship with the NJT-H.

Another opportunity for future research is to investigate applicant reactions (e.g., perceived fairness, liking; Ryan & Ployhart, 2000) to the NJT-H. Applicant reactions to selection instruments are essential to study, as these reactions affect applicants' test performance, perceptions of organizational attractiveness, and intentions to accept a job offer (McCarthy et al., 2017). The available empirical work on applicant reactions to implicit instruments in the selection context has raised critical issues. For example, an IAT that was developed to predict training skills and that could be used to hire or promote individuals was perceived by participants to lack procedural justice due to low job-relatedness and too little opportunity to perform (i.e., applicants' feeling that the selection procedure allows them to show their abilities) as judged by the participants (Wright & Meade, 2011). For TAT-like instruments, concerns have been raised about their lack of face validity (Van Rensburg et al., 2019), which could lead to defensive test-takers responses (Ridgeway, 2017). To our knowledge, applicant reactions to CRTs have not been empirically investigated so far (Connelly et al., 2018). Future research needs to examine applicant reactions to the NJT-H, and compare them to the applicant reactions to personality self-reports and other implicit instruments.

Finally, future research could also investigate the cross-cultural validity of the NJT-H. One research suggestion is to test this instrument in collectivistic cultures, where people have a more interdependent (versus independent) self-concept (Markus & Kitayama, 1991). Scholars have argued that an interdependent self-concept might contribute to lower validities of personality self-reports among people from collectivistic cultures, although evidence for this argument is inconsistent (Church & Katigbak, 2017). Arguably, the NJT-H might have a higher criterion-related validity than H-H self-reports in collectivistic cultures, because self-reflection is crucial in personality self-reports, but not likely for the NJT-H. However, this is a prediction that needs to be tested in future research.

CONCLUSION

The present research provides initial evidence for the construct-related validity of the NJT-H, and shows that this instrument is a predictor of CWB, OCB, and task performance. The NJT-H also explains unique variance in these employee behaviors, above the variance explained by HEXACO H-H and also the other five HEXACO traits. While research is necessary to provide more insights into the practical value of the NJT-H (determined by, for instance, its fakability and applicant reactions), the present research by means of the NJT-H suggests that implicit personality measures could form a useful alternative or complement to personality self-reports in the organizational context.

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CHAPTER 6

General Discussion

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GENERAL DISCUSSION

As a consequence of the forced replacement of large groups of refugees due to war and persecution in several MENA (Middle East and North Africa) and neighboring countries, almost 200,000 asylum seekers requested humanitarian protection in the Netherlands between 2014 and 2021 (Eurostat, 2021a). The influx of these recently arrived refugees has underscored the importance of how our society can effectively help refugees successfully integrate into their new receiving country. This dissertation addresses this question using an individual-level psychological approach, by focusing on work-related integration as examined by economic (e.g., employment outcomes and income) and linguistic (local language proficiency) integration dimensions (Harder et al., 2018). Whilst most of the research into individual-level predictors of refugees' linguistic and economic integration outcomes examined sociodemographic and human capital variables such as age, gender, educational attainment, and work experience (Lee et al., 2020), the present dissertation contributes to this literature by concentrating on the influence and incremental validity of refugees' psychological traits. Additionally, several issues related to traditional measurement of psychological traits (which pertain to matters of response styles, self-presentation, and reference groups; see Chapter 1) pose a threat to the validity of cross-cultural personality assessments. This dissertation intended to provide an answer to these issues by advancing the psychological assessment of refugees through the development and validation of a so-called implicit instrument. This implicit instrument assesses the integrity-related personality trait of Honesty-Humility, which has been shown to be an important trait for employment outcomes (e.g., Lee et al., 2019).

SUMMARY OF FINDINGS

Chapter 2 focused on whether it is useful to examine refugees as consisting of separate subgroups based on their psychological profiles. This was done by clustering groups of individual refugees who share similar profiles through means of cluster analysis. The study was conducted among recently arrived refugees in the Netherlands, who mostly came from Syria (n = 2881) and Eritrea (n = 1183), but also from Iran (n = 270), Iraq (n = 188), and Afghanistan (n = 126).[19] Drawing upon the ability-motivation-opportunity (AMO-)framework (Appelbaum et al., 2000), refugees' general mental ability (GMA), achievement motivation, and psychological distress were assessed to identify and investigate psychological clusters. The cluster analysis revealed four clusters: respectively a bright (n = 1377), an incapable (n = 876), a distressed (n = 576), and an undistinctive-ordinary (n = 1357) cluster. In their respective order, these clusters were mainly characterized by a high score on GMA, a low score on GMA, a high score on psychological distress, and a low score on psychological distress, although they also differed in the other psychological traits. These clusters as well as the refugee demographic subgroups based on nationality, gender, age, and educational level were related to the refugees' level of work search intention and local language proficiency. The results showed that the psychological clusters differed particularly in local language proficiency, and did so more than the demographic subgroups. Specifically, the bright and the incapable clusters, which were the most distinguishable clusters, showed respectively high and low local language proficiency test scores. However, the psychological clusters were substantially less differentiated in their level of work search intention, though the bright and undistinctive-ordinary cluster scored somewhat higher on work search intention than the distressed cluster. The refugee subgroups based on nationality, gender, and educational level showed larger differences in work search intention compared to the psychological clusters, with highest scores among Eritrean and Iranian refugees, male refugees, and highly educated (master's level) refugees.

Chapter 3 focused on the relationship between psychological traits and refugees' local language proficiency, and the potential incremental validity of psychological traits in predicting local language proficiency. Using cross-sectional assessment data of a large group of Syrian (n = 1054) and Eritrean (n = 500) refugees living in the Netherlands, the results showed negative effects of age at the time of arrival and psychological distress, and positive effects of local length of stay and pre-migration educational attainment on Syrian and Eritrean refugees' local language proficiency. Additionally, above and beyond the effects of refugees' demographic variables and psychological distress, GMA and work search intention showed positive relationships with local language proficiency. Moreover, one's work search intention was found to strengthen the effect of GMA on local language proficiency. Contrary to the predictions, no positive linear effects on local language proficiency for Conscientiousness and Openness (or: Openness to Experience) were observed, although some evidence was found for curvilinear (U-shaped and exponential) relationships between these traits and the outcome.

Chapter 4 introduced and tested a novel framework of individual-difference factors as predictors of refugees' workforce participation, studied as employment (the actual occurrence and speed of finding a job) and longest employment duration (i.e., the longest consecutive employment duration). Additionally, the employment outcome (dependent variable) highest hourly wage was exploratorily examined. This framework organizes individual-difference factors into two hindering and two facilitating variable groups: Impeding demographics and health- and family-related challenges (hindering), and acquired human and social capital and work-relevant traits (facilitating). The framework was examined using time-lagged data with a five-year span among Syrian (n = 1867) and Eritrean (n = 844) refugees living in the Netherlands. The findings revealed that several hindering factors (i.e., older age, being a woman, and physical health problems) and several facilitating factors (i.e., pre-migration educational level, pre-migration work experience, local language proficiency, frequency

19 The samples of Chapters 2, 3, and 4 are a little overlapping.

of contact with natives, Extraversion, GMA, and work centrality) contributed to predicting one or more of the studied employment outcomes. There were some differences in the predictive validity of the individual-difference factors between refugee groups (i.e., based on age, sex, and nationality). For example, PTSD symptoms predicted employment among younger refugees but not among older refugees, and having left a spouse or children in the country of origin predicted employment among Syrian refugees but not among Eritrean refugees.

Chapter 5 concerned the development and validation of an integrity-related implicit instrument for the organizational context. Whilst Chapter 2, 3, and 4 showed that traditional personality self-report measures have predictive validity for several work-related integration outcomes of refugees, there are also some issues with the cross-cultural validity of traditional personality inventories (cf. Gurven et al., 2013; Laajaj et al., 2019; Smaldino et al., 2019; for a description, see Chapter 1). Implicit instruments offer a viable solution to the cross-cultural validity issues of self-report measures (Uhlmann et al., 2012). Such instruments assess individual attributes that people might not be willing to disclose or are unaware of (Moors et al., 2010), and thus might be less prone to biases of self-report measures (e.g., Vianello et al., 2013). One novel implicit paradigm is the partially structured attitude measure (Vargas et al., 2004), which assesses individuals' attributes through their judgments of the actions of hypothetical persons described in vignettes. Based on this paradigm, the Normative Judgment Test of Honesty-Humility (the NJT-H) was developed. Honesty-Humility is an important trait as it is an important predictor of several employee behaviors and work outcomes (e.g., see Lee et al., 2019) and has been shown to be associated with the cultural adaptation among sojourners (Geeraert et al., 2019). Honesty-Humility has been defined as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156). In two studies among (N = 230 and N = 124) non-refugee local Dutch employees, the NJT-H's construct- and criterion-related validity were examined. In both studies, the NJT-H was significantly and positively related to Honesty-Humility, and not meaningfully related to the other five HEXACO traits. Furthermore, the NJT-H was negatively related to self-ratings and supervisor ratings of counterproductive work behavior and positively related to supervisor ratings of organizational citizenship behavior and task performance. The NJT-H also explained unique variance in these outcomes above and beyond measures of Honesty-Humility and the other five HEXACO traits. The NJT-H is intended to be examined among refugee and migrant samples as described below in the section on future directions.

THEORETICAL CONTRIBUTIONS AND IMPLICATIONS

This dissertation offers several theoretical contributions and corresponding implications to diverse literatures. One contribution pertains to the literature on refugee profiles (Damen et al., 2022). Cluster analysis among refugee samples has been applied to topics such as the identification of rehousing trajectories (De Hoon et al., 2021), socio-cultural starting positions (i.e., a typology of refugees based on their co-ethnic and inter-ethnic social contacts, emotional ties, and cultural value orientation; Damen et al., 2022), and participation profiles (i.e., refugees' course of participation in activities that are economic [paid employment and internships], educational [enrolled in an educational program or a Dutch language course], or societal [voluntary work] in nature; Miltenburg & Dagevos, 2021). This dissertation applied cluster analysis using refugees' psychological individual-differences factors, namely GMA, achievement motivation, and psychological distress. By means of this analysis, the dissertation contributed to this literature by showing that (a) the application of cluster analysis of psychological traits among refugees provides meaningfully distinguishable clusters, (b) the psychological clusters among each other show differences in work search intention and local language proficiency, and (c) the differences in local language proficiency are larger between the psychological clusters than between the demographic subgroups of nationality, gender, age, or educational level. These findings imply that it is useful to study refugee subgroups based on the psychological clusters to which they belong, instead of or in addition to their demographic identities (e.g., gender or age group).

Furthermore, the dissertation contributed to the literature on the predictors of refugees' integration (Lee et al., 2020) by providing evidence for the importance of psychological traits for work-related integration outcomes. So far, this literature has been dominated by the disciplines of sociology and economics, which tend to focus on individual demographics and human and social capital variables. For example, with respect to migrants' local language proficiency, individual-difference factors have been studied widely through the lens of the standard theoretical model of Chiswick and Miller (2007), which contends that there are three general determinants of immigrants' local language acquisition, namely (a) exposure, that is, the extent to which immigrants hear and read the local language, (b) incentives, that is, the advantages one can obtain by mastering the local language weighted against the costs of learning the local language, and (c) efficiency, that is, the innate abilities to learn and acquire a new language. Similarly, migrants' economic integration has mostly been influenced by research from economics that focuses on human and social capital (e.g., educational attainment and ties with native citizens; Chiswick & Miller, 2009). Although such frameworks have been shown to be useful in identifying several predictors of migrants' linguistic and economic integration, they do not encompass psychological individual-difference factors from the personnel psychology literature (e.g., Judge & Zapata, 2015; Roberts et al., 2007; Schmidt & Hunter, 1998). In fact, psychological traits have shown to be important predictors of diverse work outcomes, such as job performance (e.g., Sackett et al., 2022) and actual employment (e.g., Van Hooft et al., 2021). Correspondingly, Chapters 3 and 4 have shown that refugees' individual-difference factors such as GMA, work attitudes (work search intention and work centrality), and personality traits (Extraversion) influence the linguistic and economic integration of refugees, and Chapter 3 additionally revealed

evidence for the incremental validity of psychological traits above and beyond frequently studied demographics. These findings imply that the literature on the predictors of refugees' integration outcomes can be advanced by incorporating psychological traits.

Building upon the previous point, another contribution of this dissertation to the literature on refugees' work-related integration was the development and examination of a novel integrative framework containing a wide range of hindering and facilitating individual-difference factors for refugees' path to finding work. Whilst various frameworks exist of the individual-difference predictors of workforce participation (e.g., Kanfer et al., 2001; Van Hooft et al., 2021), these frameworks are mostly applicable to native-born job seekers' and hence lack factors that are relevant for migrants in general (e.g., local language proficiency and frequency of contact with natives), and refugees in particular (e.g., physical health problems). There have been only two prior attempts at developing a theoretical framework of individual-difference factors for understanding refugees' workforce participation (Boss et al., 2021; Lee et al., 2020), but both frameworks (1) have not been quantitatively examined, (2) lack important predictors of workforce participation (e.g., demographics and factors related to acquired human capital in refugees' home country), (3) focus predominantly on hindering factors, (4) do not include refugee-specific family-related challenges, and (5) lack psychological characteristics such as GMA and personality traits. The framework developed in this dissertation addressed the issues described above, and the empirical examination of this framework showed that most of the unique factors in the present framework predict refugees' employment outcomes, including local language proficiency, frequency of contact with natives, physical health problems, GMA, Extraversion, and work centrality. Furthermore, unlike the latter three traits, other established individual-difference predictors of workforce participation among native-born job seekers, such as Agreeableness (Baay et al., 2014; Van Hooft et al., 2021), Emotional Stability (Kanfer et al., 2001), and Conscientiousness (Egan et al., 2017) showed no relation – or a weaker relation in the case of GMA (Vélez-Coto et al., 2021) – with refugees' workforce participation. Together, these findings demonstrate that established individual-difference factors predicting workforce participation do not necessarily generalize to refugees, who face unique barriers compared to native-born job seekers or economic migrants (e.g., Agbényiga et al., 2012), and whose skills are less likely to match the needs of the job market (Lee et al., 2020).

Finally, this dissertation contributed to the literature on personality, personnel psychology, and implicit cognition (Back et al., 2009; Sackett et al., 2022; Uhlmann et al., 2012) by providing evidence for the validity of an integrity-related implicit instrument that is based on an understudied paradigm, namely the partially structured attitude measure (Vargas et al., 2004). While Vargas et al. (2004) provided a proof of concept of the implicit paradigm, this dissertation demonstrated that this paradigm is useful for assessing the trait Honesty-Humility in the organizational context. The NJT-H has shown incremental validity over the Honesty-Humility scale and the other personality traits in the prediction of employees' work behaviors.

As such, incorporating the NJT-H (or other NJT's measuring other relevant constructs) in the personnel selection literature could assist in explaining more variance in employees' work behaviors and performance. Although the NJT-H was not examined among refugees in this dissertation, the implicit nature of this instrument has potential benefits with reference to the cross-cultural validity of refugee assessments. For example, traditional self-report measures are problematic in the cross-cultural personality assessments context due to the reference-group effect (RGE; Heine et al., 2002). This effect refers to "the tendency for people to respond to subjective self-report items by comparing themselves with implicit standards from their culture" (Heine et al., 2008, p. 309). Several studies have shown that using different references based on age, gender, relative, and nationality affects mean-level personality trait test scores (Credé et al., 2010; De Vries et al., 2014; Wood et al., 2012). For example, De Vries et al. (2014) have shown that Turkish-Dutch participants reveal different personality trait scores when they completed the inventory by taking the Turkish-Dutch or Dutch majority group as their reference. Presumably, the RGE is no issue with the NJT-H, as in this instrument, the vignettes are the "reference group", and this reference group is identical for all participants, irrespective of their cultural background.

PRACTICAL IMPLICATIONS

This dissertation offers several practical implications. To support the work-related integration of refugees, courses, interventions, and integration programs must be tailored to refugees' psychological profiles or individual-difference factors (cf. Kosyakova & Laible, 2021). One approach was based on the findings of the cluster analysis of Chapter 2, where the results demonstrate that refugees can be arranged into one of four clusters, and where each cluster shows different levels of work search intention and local language proficiency. Practitioners can identify to which clusters refugees belong to indicate whether they are at "risk" of experiencing a suboptimal integration, and as such, they could offer tailored support in an early stage to prevent negative outcomes.

Another approach to effectively assist refugees in their integration is to focus on specific individual-difference factors. To provide such guidelines, the individual-difference factors are addressed as follows, according to the variable groups to which they are arranged in the framework introduced in Chapter 4. First, the (impeding) demographics consist of the stable (unmalleable) individual-difference factors nationality, sex, and age. Such stable characteristics do not have a direct causal effect on outcomes, but are associated with outcomes through other relevant factors (Lilienfeld et al., 2015). For example, in Chapters 2, 3, and 4, age was negatively associated with economic and linguistic integration outcomes. Among non-refugee samples, some hindering mediating factors that have been identified for older people are their lack of modern job skills (Fossum et al., 1986), low familiarity with modern job-search methods (Gibson et al., 1993; Westaby & Braithwaite, 2003), and employer hiring preferences for younger workers (Ahmed et al., 2012; Derous & Decoster,

2017). Thus, in practice, such mediating factors need to be recognized and dealt with to support refugees in their work-related integration.

With respect to the variable group of health- and family-related challenges, physical health problems, PTSD symptoms, and having a spouse or children in the country of origin can be distinguished. Refugees face higher risks of physical health issues compared to native-born citizens and non-refugee migrants (for a review of this issue and explanations for this gap, see Kumar et al., 2021). Additionally, Chapter 4 suggests that physical health is a predictor of workforce participation. Therefore, it is essential to assess a refugee's physical health to determine the feasible pace of work-related integration and the kind of jobs that are suitable based on the refugee's health situation. To do so, practitioners can consider the etiology (e.g., distress, natural autoimmune response), severity (e.g., minor, or major complications), and type (e.g., acute, chronic) of the physical health problem(s), as these factors can influence the ease and opportunities of refugees' work-related integration (Lai et al., 2022). Moreover, with respect to PTSD symptoms, therapeutic interventions have shown to be effective in reducing refugees' trauma-related symptoms, although, like regular client populations, refugees vary considerably in their response to such interventions (Sijbrandij et al., 2016). Hence, it is essential to provide therapeutic support to refugees in need, and closely monitor their mental health improvement to determine a sustainable work-related integration. Altogether, practitioners must tailor their support to refugees' unique physical and mental needs and constraints.

Another variable group, acquired human and social capital, includes integration-facilitating factors (pre-migration educational level, having pre-migration work experience, local language proficiency, and frequency of contact with natives) that refugees can actively influence to a certain degree. Whilst pre-migration educational level and pre-migration work experience are difficult to change, Chapter 4 revealed that refugees who were following an education in the Netherlands had higher odds of being simultaneously employed than refugees who did not follow an education. This finding indicates that, compared to (unmalleable) pre-migration factors, (malleable) post-migration factors can and ideally should be harvested to promote refugees' work-related integration (cf. De Vroome & Van Tubergen, 2010; Van Tubergen, 2010). Furthermore, although refugees' local language learning ability depends on other individual-difference factors (Asfar et al., 2019) and has a substantial heritability component, as was shown by Rimfeld et al. (2015), the willingness to learn another language also influences refugees' local language learning (Dörnyei, 2005). Finally, the frequency of contact with natives can be regarded as a habit that is relatively easy to change (Van Dijk et al., 2022). Altogether, many human and social capital variables are under the individual's voluntary control and can be obtained by time and energy investment, and hence, the harvesting of refugees' human and social capital needs to be stimulated by practitioners.

Finally, the findings from the studies in this dissertation have shown that work-relevant (i.e., psychological) traits are important for refugees' work-related integration (see Chapters 2, 3, and 4). The studied traits were Agreeableness, Extraversion, Emotional Stability, GMA, Conscientiousness, and work centrality. Such traits can be considered malleable to a certain degree. For example, the heritability of most personality traits of adults appears to be between 30 and 60% (Kandler, 2012). However, psychological traits are modifiable by environmental experiences (Merzenich, 2013). Indeed, research indicates that volitional personality trait change is possible, although limited in magnitude (for a systematic review, see Roberts et al., 2017). Nonetheless, instead of focusing on generic personality change, it is easier and more pragmatic to focus on cultivating trait-related micro-level skills and behaviors such as if-then plans (or 'implementation intentions'; Toli et al., 2016) to improve work-related integration outcomes. For example, refugees with lower levels of Extraversion can develop specific implementation intentions and train communicative and social interaction skills to increase their employment odds; Hudson & Fraley, 2015; Liu et al., 2014; Petruzziello et al., 2021; Turban et al., 2009). Such interventions need to be provided and encouraged by practitioners.

The final important practical implication pertains to the administration of the NJT-H. This instrument is easy to administer and cost-efficient compared to other implicit instruments that require specialized test administration expertise, one-on-one administration, and complex scoring procedures (Bing et al., 2007; Lilienfeld et al., 2000; Vargas et al., 2007). Based on the evidence of the incremental validity of the NJT-H among a local Dutch population, the instrument could be a feasible complement to self-report measures. One potential application of the NJT-H is personnel selection. Another potential application of the NJT-H is in employees' development programs to increase self-awareness about one's Honesty-Humility level (Cseh et al., 2013). Self-awareness is particularly challenging for evaluative traits (e.g., Vazire & Carlson, 2010), including Honesty-Humility (Thielmann et al., 2021). As such, a self-reported Honesty-Humility scale can be supplemented by the NJT-H to obtain a more detailed picture of someone's level of Honesty-Humility.

STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

The studies in this dissertation have several strengths. First, the studies described in Chapters 2, 3, and 4 contain the assessment of thousandths of refugees, whilst refugees are a "hard-to-reach" population (e.g., Jones & Newburn, 2001). Second, these three chapters included the assessment of psychological traits (e.g., GMA, personality traits, and work attitudes), which have been rarely studied among refugees (for exceptions, see Hahn et al., 2019; Kosyakova & Laible, 2021; Thum, 2014). Third, these three chapters contain objective integration outcomes of local language proficiency and workforce participation. Finally, with respect to Chapter 5, the criterion-related validity of the NJT-H has been studied using supervisory ratings of employees' performance and behavior. Informant ratings are an antidote to the common source bias, that

is, the possibility that self-report response tendencies explain the relationship between the predictor and the criterion (Podsakoff et al., 2012).

However, despite these strengths, the studies in this dissertation also have some limitations – and corresponding future research opportunities. First, the data used in Chapters 2, 3, and 4 have been collected in an assessment context. Although this context is optimal when one is interested in testing the validity of hypothesized predictors for (integration) outcomes in a real and presumably high-stakes assessment context (such as in personnel selection research; Sackett et al., 2022), this context is suboptimal in terms of finding actual validity estimates for the real-world relationships between individual-difference factors and (integration) outcomes (e.g., personality research; Roberts et al., 2007; Soto, 2019). When the real-world relationship is the prominent question, a potential issue is that refugees might have considered the assessment a high-stakes context as their assessment results influence their education- and work-related opportunities, and hence, this might have provoked socially desirable responses (e.g., Birkeland et al., 2006). Another issue of these data, which only concerns Chapter 4 (on the individual-difference predictors of workforce participation), is that the assessment results might have influenced the counselors' consultation of the refugees. The counselors were trained to use the assessment results to provide customized support for refugees in their integration trajectories, and as such, they were ought to pay special attention to refugees with worrisome profiles (e.g., more PTSD symptoms and low work centrality), compared to refugees with more favorable characteristics. As such, actual effects of individual-difference factors in workforce participation might have been partly masked in this research and thus may have been underestimated. Future research is encouraged to investigate the predictive validity of individual psychological traits of refugees for integration outcomes in research context.

Second, this dissertation focused primarily on refugees from Syria and Eritrea – and to a lesser extent on refugees from Iran, Iraq, and Afghanistan (Chapter 2) – and paid less attention to the theorizing of and explaining differences in outcomes and differential predictive validities among refugee groups themselves. With the available data, it was difficult to examine other refugee groups since the majority of refugees in the data originate from the above-mentioned nationalities, and the data on other refugee groups were too small for robust analyses. Nonetheless, understanding the differences in outcomes and predictive validities of refugee groups is important given that refugees originate from numerous countries. In the last decade, the largest refugee groups that seek protection in the Netherlands were those from Syria, Eritrea, Iraq, Afghanistan, and Iran. Previous publications (e.g., CBS, 2022) and the results reported in Chapters 2, 3, and 4 have shown that these groups differ substantially in integration outcomes. Similarly, three decades ago, most refugees who entered the Netherlands originated from Afghanistan, Iran, Iraq, Somalia, and former Yugoslavia, and were also found to differ in their integration outcomes (e.g., Engbersen et al., 2015; Huijnk et al., 2015; Maliepaard et al., 2017). The recent influx of primarily Ukrainian and Russian refugees has underscored the importance of identifying the factors that underlie the differences in outcomes and differential predictive validities of refugees from different nationalities. Thus, future research to investigate this issue further should be encouraged.

Third, the theory sections of this dissertation explained why refugees' individual-difference factors may be related to the integration outcomes, but the mediating mechanisms of these relationships were not examined. As an example, Chapter 4 explained why refugees who score high on Extraversion are expected to show a higher workforce participation, but did not examine any mediating effects of this relationship. Some potential explanations for the positive effect of Extraversion on workforce participation include a higher self-confidence and self-efficacy in job search which can result in more job applications and success in job applications (Petruzziello et al., 2021), more positive emotions that offer personal resources relevant to the job search, thereby improving hiring success (Fredrickson, 2001; Turban et al., 2009), and being a more desirable candidate to employers (Huffcutt et al., 2001). The investigation of mediating mechanisms of individual-difference factors is important, as it can provide relevant practical implications.

Fourth, with reference to Chapter 5, the NJT-H could only be validated among local Dutch samples, but not among migrants or refugees. As described above, psychological instruments might not possess equivalent psychometric properties among people from different cultures and nationalities (e.g., Boer et al., 2018). Unpublished findings among a small sample (see Chapter 5), showed that the differences between Dutch respondents without a migration background (n = 177) and Dutch respondents with a migration background (n = 69) were high on the HEXACO Honesty-Humility scale (former group higher average score; d = 1.02, p < .001), but small and in the opposite direction on the NJT-H (latter group higher; d = -0.33, p = .038). Although these findings rest on a small and heterogeneous sample with a migration background and are therefore unstable, they seem to point to the presence of clear cultural differences in test scores in the HEXACO Honesty-Humility scale, but a much smaller cultural difference in NJT-H scores. This finding is promising in the context of the diversity-validity dilemma in personnel selection, that is, using instruments in selection that have high predictive validity and show small ethnic subgroup score differences (De Soete et al., 2012). Following the empirical investigation of cultural differences in other popular implicit instruments such as the thematic apperception test (TAT; Hofer & Chasiotis, 2022), the implicit association test (IAT; Falk et al., 2015), and the conditional reasoning test (CRT; Galić et al., 2014; LeBreton et al., 2022), future research needs to further investigate the cross-cultural validity of the NJT-H.

In addition to these limitations, future research could advance the studies in this dissertation in three additional ways. First, future research could investigate a broader variety of psychological

attributes and measures in the refugee integration context. Some relevant examples of traits include emotional intelligence and social skills (Sackett et al., 2022). There is accumulating evidence that these traits predict important behaviors and performance in the domains of work and education (e.g., Joseph & Newman, 2010; MacCann et al., 2020; Morgeson et al., 2005). In the context of integration success, such traits can compensate for lower levels of GMA (Agnoli et al., 2012). Additionally, future research is encouraged to investigate implicit instruments among refugees, since such instruments could partly address several issues with explicit self-reports in cross-cultural personality assessments (see Chapter 1). One suggestion is the application of the NJT-H among refugee or migrant samples.

Second, this dissertation primarily focused on linguistic (local language proficiency) and economic (workforce participation) integration outcomes, but future research could examine a wider range of integration outcomes. Chapter 4 suggested some additional relevant employment outcomes for refugees, such as underemployment (i.e., overqualification; Campion, 2018; Ortlieb & Weiss, 2020). However, beyond employment-related outcomes and local language proficiency, several integration dimensions have been identified in the literature. Chapter 1 referred to the framework by Harder et al. (2018), which outlines six integration dimensions: The psychological dimension (one's sense of belonging in the host society), the economic dimension (employment outcomes and income), the political dimension (political and civic participation), the social dimension (social ties with natives), the linguistic dimension (the ability to use the local language), and the navigational dimension (managing basic needs in the host country). Likewise, several other frameworks of integration dimensions have recently been proposed in the literature, popular ones being those by Fajth and Lessard-Phillips (2022), Ndofor-Tah et al. (2019), OECD/EU (2019), Puma et al. (2018), Lessard-Phillips (2017), and Spencer and Charsley (2016). Despite some differences, these frameworks display many similarities and much overlap in the integration dimensions, which vary from four to seven dimensions (e.g., dimensions related to health and well-being, social identification and identity, and civic and political participation). Future research is encouraged to investigate psychological individual characteristics as predictors of such dimensions.

Third, a final research idea is to study the influence of geographical and local (e.g., city or neighborhood) characteristics in the receiving country and their interaction with individual characteristics in predicting refugees' integration outcomes (cf. Van Riemsdijk & Axelsson, 2021). Several recent research examples have examined geographical and local characteristics in this context, such as the local levels of unemployment, neighborhood deprivation, the proportion of local co-ethnic migrants, and municipality size (Andersson et al., 2019; Azlor et al., 2020; De Lange et al., 2021; Stips & Kis-Katos, 2020; Vogiazides et al., 2021; Wimark et al., 2019). For example, Vogiazides et al. (2021) studied the occupational (mis)match – the match between the refugees' qualifications and their actual employment – and found that in the early years of resettlement, more occupational matches were observed in urban (versus rural) regions in Sweden. In another recent Swedish study, initial settlement in a neighborhood with a high share of co-ethnic members had a negative effect on workforce participation for refugee women, but not for men (Andersson et al., 2019). Although empirical evidence to explain these effects is lacking, the authors of this Swedish study speculate that traditional patriarchal norms and values might create an environment in more concentrated co-ethnic enclaves that discourage employment of women. However, more empirical work on neighborhood effects is essential to investigate this issue in the Dutch context, as most of the available studies have been conducted in Scandinavian countries. Future research could advance our understanding of the influence of geographical and local characteristics by investigating how they interact with individual-difference factors in predicting refugees' integration outcomes. For example, conscientious refugees might thrive better in geographical areas with more employment opportunities (cf. Boyce et al., 2010). Such research could have important implications for dispersal policies.

CONCLUDING REMARKS

Armed conflict and persecution among other areas in the MENA (Middle East and North Africa) region, coerced millions of people in the last decade to leave their homes and countries to seek protection. The studies in this dissertation emerged from the need to investigate the integration of these refugees in the Netherlands, and to improve the psychological assessment of this group in order to better provide customized and effective integration trajectories for refugees. This research focused on individual characteristics (such as sociodemographic variables) and psychological traits (such as GMA and personality) as predictors of refugees' integration outcomes, and described the development of a novel implicit instrument to assess the important personality trait of Honesty-Humility with the ultimate aim to be utilized for refugee assessments. The findings underscore the importance of the assessment of refugees' individual-difference factors, among which their psychological traits, to provide evidence-based interventions and integration programs for refugees.

6

APPENDICES

&

Summary
Dankwoord
References
Supplementary Material

SUMMARY

Through four empirical chapters, this dissertation intended to advance insights into the psychological assessment of refugees in relation to work-related integration. Chapters 2, 3, and 4 concentrated on individual-level predictors of refugees' linguistic and economic integration outcomes. These predictors included sociodemographic and human capital variables such as age, gender, educational attainment, and work experience, but also psychological traits, which have rarely been examined among refugees in the work-related integration context. Furthermore, to advance the psychological assessment of refugees, Chapter 5 focused on the development and validation of a so-called implicit instrument. This implicit instrument assesses the integrity-related personality trait of Honesty-Humility, which has been shown to be an important trait for employment outcomes (e.g., Lee et al., 2019).

Chapter 2 focused on whether it is useful to examine refugees as consisting of separate subgroups based on their psychological profiles. This was done by clustering groups of individual refugees who share similar profiles through means of cluster analysis. The study was conducted among recently arrived refugees in the Netherlands, who mostly came from Syria and Eritrea, but also from Iran, Iraq, and Afghanistan. Drawing upon the ability-motivation-opportunity (AMO-)framework (Appelbaum et al., 2000), refugees' general mental ability (GMA), achievement motivation, and psychological distress were assessed to identify and investigate psychological clusters. The cluster analysis revealed four clusters: respectively a bright, an incapable, a distressed, and an undistinctive-ordinary cluster. In their respective order, these clusters were mainly characterized by a high score on GMA, a low score on GMA, a high score on psychological distress, and a low score on psychological distress, although they also differed in the other psychological traits. These clusters as well as the refugee demographic subgroups based on nationality, gender, age, and educational level were related to the refugees' level of work search intention and local language proficiency. The results showed that the psychological clusters differed particularly in local language proficiency, and did so more than the demographic subgroups. Specifically, the bright and the incapable clusters, which were the most distinguishable clusters, showed respectively high and low local language proficiency test scores. However, the psychological clusters were substantially less differentiated in their level of work search intention, though the bright and undistinctive-ordinary cluster scored somewhat higher on work search intention than the distressed cluster. The refugee subgroups based on nationality, gender, and educational level showed larger differences in work search intention compared to the psychological clusters, with highest scores among Eritrean and Iranian refugees, male refugees, and highly educated (master's level) refugees.

Chapter 3 focused on the relationship between psychological traits and refugees' local language proficiency, and the potential incremental validity of psychological traits in predicting local language proficiency. Using cross-sectional assessment data of a large group of Syrian and Eritrean refugees living in the Netherlands, the results showed negative

effects of age at the time of arrival and psychological distress, and positive effects of local length of stay and pre-migration educational attainment on Syrian and Eritrean refugees' local language proficiency. Additionally, above and beyond the effects of refugees' demographic variables and psychological distress, GMA and work search intention showed positive relationships with local language proficiency. Moreover, one's work search intention was found to strengthen the effect of GMA on local language proficiency. Contrary to the predictions, no positive linear effects on local language proficiency for Conscientiousness and Openness (or: Openness to Experience) were observed, although some evidence was found for curvilinear (U-shaped and exponential) relationships between these traits and the outcome.

Chapter 4 introduced and tested a novel framework of individual-difference factors as predictors of refugees' workforce participation, studied as employment (the actual occurrence and speed of finding a job) and longest employment duration (i.e., the longest consecutive employment duration). Additionally, the employment outcome (dependent variable) highest hourly wage was exploratorily examined. This framework organizes individual-difference factors into two hindering and two facilitating variable groups: Impeding demographics and health- and family-related challenges (hindering), and acquired human and social capital and work-relevant traits (facilitating). The framework was examined using time-lagged data with a five-year span among Syrian and Eritrean refugees living in the Netherlands. The findings revealed that several hindering factors (i.e., older age, being a woman, and physical health problems) and several facilitating factors (i.e., pre-migration educational level, pre-migration work experience, local language proficiency, frequency of contact with natives, Extraversion, GMA, and work centrality) contributed to predicting one or more of the studied employment outcomes. There were some differences in the predictive validity of the individual-difference factors between refugee groups (i.e., based on age, sex, and nationality). For example, PTSD symptoms predicted employment among younger refugees but not among older refugees, and having left a spouse or children in the country of origin predicted employment among Syrian refugees but not among Eritrean refugees.

Chapter 5 concerned the development and validation of an integrity-related implicit instrument for the organizational context. Whilst Chapter 2, 3, and 4 showed that traditional personality self-report measures have predictive validity for several work-related integration outcomes of refugees, there are also some issues with the cross-cultural validity of traditional personality inventories (cf. Gurven et al., 2013; Laajaj et al., 2019; Smaldino et al., 2019; for a description, see Chapter 1). Implicit instruments offer a viable solution to the cross-cultural validity issues of self-report measures (Uhlmann et al., 2012). Such instruments assess individual attributes that people might not be willing to disclose or are unaware of (Moors et al., 2010), and thus might be less prone to biases of self-report measures (e.g., Vianello et al., 2013). One novel implicit paradigm is the partially structured attitude measure (Vargas et al., 2004), which assesses individuals' attributes through their judgments of the actions of hypothetical persons described in vignettes. Based on this paradigm, the Normative Judgment Test of Honesty-Humility (the NJT-H) was developed. Honesty-Humility is an important trait as it is an important predictor of several employee behaviors and work outcomes (e.g., see Lee et al., 2019) and has been shown to be associated with the cultural adaptation among sojourners (Geeraert et al., 2019). Honesty-Humility has been defined as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156). In two studies among non-refugee local Dutch employees, the NJT-H's construct- and criterion-related validity were examined. In both studies, the NJT-H was significantly and positively related to Honesty-Humility, and not meaningfully related to the other five HEXACO traits. Furthermore, the NJT-H was negatively related to self-ratings and supervisor ratings of counterproductive work behavior and positively related to supervisor ratings of organizational citizenship behavior and task performance. The NJT-H also explained unique variance in these outcomes above and beyond measures of Honesty-Humility and the other five HEXACO traits. The NJT-H is intended to be examined among refugee and migrant samples as described below in the section on future directions.

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SUPPLEMENTARY MATERIAL

CHAPTER 3

Table S1. *Model Fit Indices of Measured Constructs for the Refugee Groups Separately*

Construct	Refugee group	χ^2	*Df*	CFI	TLI	RMSEA	SRMR
Psychological distress	Syrians	205.752	35	.959	.947	.071	.033
	Eritreans	113.394	35	.951	.937	.069	.042
GMA	Syrians	2528.260	1650	.920	.914	.020	.037
	Eritreans	2082.800	1650	.894	.886	.023	.057
Work search intention	Syrians	1360.831	35	.790	.730	.190	.094
	Eritreans	565.982	35	.770	.704	.175	.090
Conscientiousness	Syrians	305.073	35	.848	.804	.086	.059
	Eritreans	71.481	35	.929	.909	.046	.043
Openness	Syrians	173.365	35	.952	.938	.061	.037
	Eritreans	111.656	35	.909	.882	.067	.048

Note. The refugee group differences in CFI values in this table differ somewhat from the delta CFI values that are reported in the manuscript. This is because the values in the manuscript represent metric measurement invariance exclusively, whereas the values in this table represent the overall CFA findings.

Table S2. *Descriptive Statistics and Bivariate Correlations of Personality Dimensions with Other Study Variables*

Variable	α	M_O	SD_O	M_S	SD_S	M_E	SD_E	*d*	*Gender*	*Age*	*LLoS*	*EA*	*PD*	*GMA*	*WSI*	*LLP*
Emotional stability	.64	3.39	0.50	3.33	0.51	3.53	0.44	0.43**	-.21**	.02	.06*	.11*	-.36**	-.01	.19**	.06*
Conscientiousness	.69	3.86	0.45	3.97	0.42	3.65	0.45	0.74**	-.05	.14**	-.06*	.05	-.07*	.21**	.06*	.03
Extraversion	.57	3.46	0.45	3.51	0.45	3.34	0.43	0.39**	-.11**	.07**	-.04	.06*	-.09**	.16**	.09**	.03
Agreeableness	.77	3.93	0.47	4.00	0.44	3.77	0.50	0.49**	-.09**	.19**	-.09**	.07*	-.02	.23**	.11**	.04
Openness	.83	3.90	0.53	4.00	0.50	3.69	0.53	0.60**	-.14**	.14**	-.05*	.06*	-.03	.26**	.15**	.02
Integrity	.55	2.84	0.47	2.87	0.47	2.77	0.48	0.21**	.09**	.18**	.02	.00	-.07**	.04	-.10**	.04

Note. α = alpha coefficient. The subscript $_{O}$, $_{S}$, and $_{E}$ respectively represent the overall sample (N_O = 1547), the Syrian refugee group (n_S = 1053), and the Eritrean refugee group (n_E = 494). Gender, Male = 0, Female = 1. LLoS = local length of stay; EA = educational attainment; PD = psychological distress; GMA = general mental ability; WSI = work search intention; LLP = local language proficiency. *d* = Cohen's *d* effect size for the differences between Syrian and Eritrean refugees, where 0.10 = small, 0.30 = medium, 0.50 = large (Cohen, 1988). Correlations are computed for the total sample. The possible range of scores is 1.00-5.00 for each personality dimension.
* $p < .05$; ** $p < .01$ (two-tailed).

CHAPTER 4

The Application of the Exclusion Criteria

In October 2019, all the available assessment data were retrieved. This resulted in a dataset of 9459 refugees. The assessment data and the register data of CBS were linked by zip code (at the time of the assessment), date of birth, and sex. In total, data of 8332 refugees were successfully matched (i.e., 88.1% of the refugees in the original dataset). However, we only used the data of refugees from Syria and Eritrea (*n* = 6667), as these groups compromise most subjects in the dataset (respectively 62.6% and 17.4%). Additionally, we excluded participants from the analyses who (a) passed away (minus seven participants), (b) left the Netherlands (minus 1376 participants), (c) did not receive a residence permit (minus 169 participants), (d) completed a different version of the assessment (minus 1921 participants), or (e) who received their residence permit after July 2017, since their employment data are not available far enough into the future for conducting the analyses (minus 483 participants). After excluding these refugees, the final dataset consisted of 2711 refugees (n_{Syria} = 1867, $n_{Eritrea}$ = 844).

MPT-BS-QS Basic Pilot Study Results

The pilot study with the English version of the MPT-BS-QS Basic was conducted among an international sample in Prolific (*N* = 175). The nationalities of the five largest groups in the present dataset were South Africa (*n* = 72; 41.1%), Portugal (*n* = 23; 13.1%), Poland (*n* = 19; 10.9%), Italy (*n* = 15; 8.6%), and Spain (*n* = 11; 6.3%). Most participants were female (111; 63.4%), and the sample was on average 28.82 years old (*SD* = 8.27). Participants completed the MPT-BS-QS Basic and the IPIP-100 Big Five measure (Goldberg et al., 2006). Table S1 presents the item-level correlations of the MPT-BS-QS Basic with the IPIP dimensions. Table S2 presents the correlations between the MPT-BS-QS Basic scales and the IPIP dimensions.

Table S1. *MPT-BS-QS Basic Item-Level Correlations with the IPIP Dimensions*

	O	C	E	A	N
A001	.267**	.214**	.329**	.342**	.057
A002	.152*	.318**	.664**	.228**	-.374**
A003	.252**	.129	.594**	.303**	-.187*
A004	.243**	.111	.117	.290**	-.069
A005	.299**	.131	.298**	.293**	.106
A006	.255**	.143	.365**	.437**	-.085
A007	.393**	.074	.271**	.442**	-.027
A008	.157*	.117	.515**	.273**	-.170*
A009	.098	.192*	.266**	.394**	-.199**
A010	.205**	.189*	.266**	.410**	.024
X001	.316**	.245**	.507**	-.058	-.129
X002	.312**	.314**	.316**	.004	-.164*
X003	.198**	.155*	.646**	.141	-.230**
X004	.296**	.246**	.456**	.053	-.158*
X005	.150*	.323**	.425**	.049	-.252**
X006	.290**	.347**	.631**	.071	-.211**
X007	.165*	.276**	.473**	.263**	-.395**
X008	.114	.248**	.322**	-.127	-.078
X009	.101	.251**	.237**	-.130	-.166*
X010	.142	.264**	.249**	.014	-.206**
ES001	-.008	.289**	.299**	.122	-.554**
ES002	.133	.241**	.195**	.364**	-.438**
ES003	.002	.027	-.013	.057	-.151*
ES004	.151*	.394**	.419**	.223**	-.548**
ES005	.110	.392**	.382**	.107	-.588**
ES006	.017	.154*	.237**	.092	-.443**
ES007	.107	.234**	.132	.342**	-.414**
ES008	.036	.132	.269**	-.047	-.484**
ES009	.026	.281**	.140	.271**	-.403**
ES010	.062	.343**	.128	.302**	-.577**
C001	.070	.694**	.168*	.204**	-.249**
C002	.036	.430**	.075	.065	-.199**
C003	.362**	.289**	.226**	.061	-.034
C004	.011	.326**	.060	.194*	-.261**
C005	.180*	.487**	.326**	.070	-.288**
C006	.101	.542**	.239**	.247**	-.344**
C007	.125	.440**	.092	.158*	-.334**
C008	-.155*	-.076	-.336**	-.087	.196**
C009	-.006	.453**	.033	.120	-.174*
C010	.054	.358**	.000	.036	-.083

Note. O = Openness to Experience, C = Conscientiousness, E/X = Extraversion, A = Agreeableness, N = Neuroticism, ES = Emotional Stability.

Table S2. *Correlations Between the Study's MPT-BS-QS Basic Scales and the IPIP Dimensions*

	O	C	E	A	N
Agreeableness	.356**	.230**	.403**	**.551****	-.056
Extraversion	.291**	.401**	**.712****	.136	-.321**
Emotional Stability	.123	.462**	.396**	.332**	**-.807****
Conscientiousness	.168*	**.726****	.197**	.185*	-.324**

Scale Item Exclusion

Below, we describe the items that have been excluded from the MPT-BS-QS Basic scales and the work centrality scale of the AWV in the analyses based on the results of the Prolific pilot study and the reliability analyses in the refugee dataset.

Agreeableness

The pilot showed that item A002 ("Other people say that I make contact easily"), item A003 ("I like to be with other people"), and item A008 ("I like to have people around me") correlate highly with Extraversion and therefore need to be excluded from the scale. The alpha coefficient of the remaining 7-item scale equaled .69 for Syrian refugees and .73 for Eritrean refugees.

Extraversion

The alpha coefficient of the 10-item scale is equal to .62 for Syrian refugees and .43 for Eritrean refugees. Excluding items from the scale does not significantly improve the internal consistency of the scale for both refugee groups. However, adding items A002, A003, and A008 (Agreeableness, see above) improves the alpha coefficient to .70 for Syrian refugees and .53 for Eritrean refugees.

Emotional Stability

Item ES003 ("I can hide my feelings well") and item ES006 ("I'm not easily scared") have negative or low item-rest correlations among both Syrian refugees (r = -.04 and r = .21 respectively) and Eritrean refugees (r = -.27 and r = .20 respectively). The alpha coefficient of the 10-item scale is .70 for Syrian refugees and .49 for Eritrean refugees. The alpha coefficient of the scale without item ES003 and item ES006 is .75 for Syrian refugees and .62 for Eritrean refugees.

Conscientiousness

Item C006 ("I'm sloppy") and item C008 ("I like it when things in my life go in the same way") have low item-rest correlations among both Syrian refugees (r = .29 and r = .03, respectively) and Eritrean refugees (r = .06 and r = .16, respectively). The alpha coefficient of the 10-item scale is .70 for Syrian refugees and .71 for Eritrean refugees. The alpha coefficient for the 8-item scale without item C006 and item C008 is .75 for Syrian refugees and .76 for Eritrean refugees.

Work Centrality

Item 3 ("The most I want to travel (one way) for paid work is") has a low item-rest correlation among both Syrian (r = .28) and Eritrean (r = .06) refugees. The alpha coefficient of the 7-item scale is .71 for Syrian refugees and .66 for Eritrean refugees. The alpha coefficient for the 6-item scale without item 3 is .72 for Syrian refugees and .72 for Eritrean refugees.

CHAPTER 5

NJT-H item revision

Old item

Jane works at a lunchroom in the city centre. On Thursday, there are always two individuals at the city square who work for a marketing company, promoting products like chocolate and drinks. Jane and the two marketing employees help each other: Jane gives them free lunch, and they give her many of the products that they are supposed to distribute to the centre visitors.

How dishonest do you consider Jane to be?

New item

Jane works in a lunchroom. In front of the lunchroom, there are usually two product promotors, distributing products like chocolate and drinks. Jane gives them a free lunch, and in return, they give her many of the products that they are supposed to distribute to the people outside. Jane takes these products home with her.

How dishonest do you consider Jane to be?

Item statistics

Table S1. *NJT-H Item-Level Factor Loadings and Correlations with the HEXACO Dimensions*

	F1	H	E	X	A	C	O
1	0.236	.204*	.104	.013	.107	.054	-.007
2	0.404	.299**	-.060	.042	.043	.061	.147
3	0.458	.312**	.020	-.109	.100	.142	.083
4	0.363	.189*	.057	.115	.043	.075	-.038
5	0.440	.217*	.040	.173	.014	.170	-.039
6	0.338	.139	.011	.042	.134	.058	.121
7	0.439	.168	-.030	.112	.059	.049	-.033
8	0.513	.240**	-.131	.121	.117	.047	-.008
9	0.515	.175	-.047	.047	.220*	-.028	.130
10	0.583	.301**	-.010	.169	.047	.216*	-.128
11	0.612	.227*	-.097	.305**	.036	.187*	.043
12	0.319	.274**	-.096	.012	.128	-.042	-.015
13	0.295	.038	-.069	.123	-.060	.071	.047
14	0.244	.206*	.054	.075	.123	-.024	-.115
15	0.391	.053	.050	-.067	-.036	.099	-.131
16	0.388	.239**	.207*	-.036	-.009	.224*	-.181*
17	0.397	.182*	.079	.284**	.055	.148	-.050

* $p < .05$; ** $p < .01$ (two-tailed).

STUDY 1

Table S2. *Hierarchical Regression Analyses with the HEXACO traits and the NJT-H as Predictors of CWB and OCB in Study 1*

	CWB				OCB			
	Model 1		Model 2		Model 1		Model 2	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI
H	-.34**	[-.47; -.22]	-.28**	[-.41; -.16]	-.10	[-.22; .03]	-.15*	[-.28; -.03]
E	.04	[-.08; .16]	.07	[-.04; .19]	-.08	[-.20; .04]	-.11	[-.22; .01]
X	.03	[-.10; .16]	.03	[-.10; .15]	.25***	[.12; .38]	.26***	[.13; .38]
A	-.10	[-.22; .02]	-.08	[-.20; -.04]	.05	[-.07; .17]	.03	[-.08; .15]
C	-.21**	[-.34; -.08]	-.20**	[-.33; -.08]	.34***	[.21; .47]	.33***	[.20; .46]
O	.01	[-.11; .13]	-.01	[-.13; .11]	-.03	[-.15; .09]	-.01	[-.12; .11]
NJT-H			-.23**	[-.35; -.11]			.22***	[.10; .34]
R^2	.218		.266		.223		.266	
F	10.34***		11.48***		10.57***		11.39***	
ΔR^2			.048				.043	
ΔF			14.55***				12.87***	

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, OCB = Organizational citizenship behavior, NJT-H = Normative Judgment Test of Honesty-Humility, CWB = Counterproductive work behavior.
N = 230.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

STUDY 2

Results of the analyses with 23 NJT-H items

Alpha coefficient

The alpha coefficient of the NJT-H with 23 items is .79.

Confirmatory factor analysis

The single-factor model: χ^2 (230) = 429.07, $p < .001$, CFI = .575, TLI = .533, RMSEA = .084 (90% CI = .071; .096), SRMR = .093.

Results

In the current, there were no significant differences between men and women on the NJT-H (respectively $M = 3.45$, $SD = 0.42$ and $M = 3.46$, $SD = 0.42$; $t[119] = -0.15$, $p = .882$, $d = 0.02$). Furthermore, employees' age was positively correlated with HEXACO H-H ($r = .36$, $p < .001$) and the NJT-H ($r = .28$, $p = .002$), and these correlations did not differ significantly from each other ($z = 0.80$, $p = .212$).

The results revealed a significant modest positive correlation between the NJT-H and

HEXACO H-H (r = .38, p < .001) and no significant correlation between the NJT-H and the other five HEXACO traits. Furthermore, we predicted that the NJT-H is negatively related to self-ratings and supervisor ratings of CWB. In line with these hypotheses, we found a correlation of r = -.24 (p = .008) between the NJT-H and self-ratings of CWB, and a correlation of r = -.34 (p < .001) between the NJT-H and supervisory ratings of CWB. Furthermore, the NJT-H was positively correlated with supervisory ratings of OCB (r = .47, p < .001) and task performance (r = .25, p = .016).

We predicted that the NJT-H explains unique variance in CWB and OCB, above and beyond the variance explained by HEXACO H-H. To test these hypotheses, hierarchical regression analyses were conducted with self-reported CWB and supervisory ratings of CWB and OCB as the dependent variables. For self-ratings of CWB, HEXACO H-H was included in the first step (Model 1), and the NJT-H was added in the second step (Model 2). For supervisory ratings of CWB, interaction frequency was included as a control variable in the first step (Model 1), HEXACO H-H was included in the second step (Model 2), and the NJT-H was added in the third step (Model 3). In the hierarchical regression analysis with self-ratings of CWB as the dependent variable, H-H showed a negative beta-weight in Model 1 (ß = -.31, t = -3.32, p = .001), and Model 2 showed that the NJT-H does not explain unique variance in self-ratings of CWB above and beyond the HEXACO traits (ß = -.07, t = -0.74, p = .164).

In the hierarchical regression analysis with supervisory ratings of CWB as the dependent variable, interaction frequency (ß = .25, t = 2.47, p = .015) explained 6.3% variance (Model 1; F[1, 92] = 6.11, p = .015), and the model with H-H (ß = -.40, t = -4.01, p < .001) explained 34.4% of the variance in supervisory ratings of CWB (Model 2; F[7, 92] = 6.35, p < .001). Model 3 showed that the NJT-H is significantly negatively related to supervisory ratings of CWB (ß = -.20, t = -2.12, p = .037), and explained 3.3% additional variance in supervisory ratings of CWB above and beyond the variance explained in Model 2 (ΔF[1, 84] = 4.49, p = .037). The analyses of OCB showed that, after controlling for interaction frequency (ß = .11, t = 1.06, p = .290), H-H (ß = .35, t = 3.14, p = .002) is significant positive relationship with OCB. Model 2 explained 21.1% of the variance in OCB (F[7, 92] = 3.24, p = .004). In Model 3, the NJT-H was significantly positively related to OCB (ß = .34, t = 3.42, p = .001). Model 3 explained 9.6% additional variance in OCB above and beyond the variance explained in Model 2 (ΔF[1, 84] = 11.67, p = .001). Finally, the analyses of task performance showed that, after controlling for interaction frequency (ß = -.03, t = -0.25, p = .805), HEXACO H-H showed no significant relationship with task performance (F[7, 92] = 0.75, p = .634), but Model 3 showed that the NJT-H remained significantly positively related to task performance (ß = .26, t = 2.30, p = .024), and explained 5.6% unique variance in task performance above and beyond Model 2 (ΔF[1, 84] = 5.31, p = .024).

Table S3. *Correlation Between the 23 NJT-H and Variables in Study 2*

Variable	*r*
1. Gender (male = 0, female = 1)	.01
2. Age	.28**
3. Working hours	.16
4. Interaction frequency	.04
5. 17-item NJT-H	.95**
6. H	.38**
7. E	.06
8. X	.16
9. A	.12
10. C	.18
11. O	-.08
12. OCB	.47**
13. CWB-E	-.24**
14. CWB-S	-.34**
15. Task performance	.25*

* p < .05; ** p < .01 (two-tailed).

Table S4. *Hierarchical Regression Analyses of CWB and OCB with the 23-item version of the NJT-H in Study 2*

	Model 1		Model 2	
	β	95% CI	β	95% CI
CWB-E	R^2 = .168		R^2 = .176 (ΔR^2 = .008)	
H	-.41***	[-.57; -.24]	-.37***	[-.55; -.20]
NJT-H			-.10	[-.28; .08]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
CWB-S	R^2 = .063		R^2 = .241 (ΔR^2 = .178)		R^2 = .281 (ΔR^2= .039)	
IF	.25*	[.05; .45]	.21*	[.02; .39]	.22*	[.04; .40]
H			-.43***	[-.61; -.24]	-.34**	[-.54; -.15]
NJT-H					-.21*	[-.41; -.02]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
OCB	R^2 = .012		R^2 = .160 (ΔR^2 = .148)		R^2 = .276 (ΔR^2 = .115)	
IF	.11	[-.10; .32]	.15	[-.04; .35]	.12	[-.06; .30]
H			.39***	[.19; .58]	.25*	[.05; .44]
NJT-H					.37***	[.19; .58]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
TP	R^2 = .001		R^2 = .102 (ΔR^2 = .001)		R^2 = .068 (ΔR^2 = .066)	
IF	-.03	[-.23; .18]	-.02	[-.23; .19]	-.04	[-.25; .16]
H			.04	[-.17; .25]	-.07	[-.29; .15]
NJT-H					.28*	[.06; .50]

Note. IF = Interaction Frequency, H = Honesty-Humility, NJT-H = Normative Judgment Test of Honesty-Humility, CWB-E = Counterproductive work behavior employee self-reports, CWB-S = Counterproductive work behavior supervisory rating, OCB = Organizational citizenship behavior, TP = Task performance.
N = 123 and N = 93.
* p < .05; ** p < .01; *** p < .001 (two-tailed).

Analyses Without the Control Variable Interaction Frequency

Table S5. *Hierarchical Regression Analyses with Predictors of CWB, OCB, and Task Performance in Study 2, Without the Control Variable Interaction Frequency*

	CWB-S				OCB				TP			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI	β	95% CI	β	95% CI
H	-.45***	[-.63; -.26]	-.31**	[-.50; -.11]	.37***	[.17; .56]	.20*	[.00; .43]	.04	[-.16; .25]	-.07	[-.30; .15]
NJT-H			-.32**	[-.52; .13]			.39***	[.19; .59]			.26*	[.04; .49]
R^2	.200		.285		.137		.263		.002		.058	
F	22.71***		17.95***		14.50***		16.04***		0.15		2.78	
ΔR^2			.085				.125				.057	
ΔF			10.75**				15.31***				5.41*	

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, NJT-H = Normative Judgment Test of Honesty-Humility, CWB-S = Counterproductive work behavior supervisory rating, OCB = Organizational citizenship behavior, TP = Task performance.
N = 93.
* p < .05; ** p < .01; *** p < .001 (two-tailed).

Table S6. *Hierarchical Regression Analyses with the HEXACO Traits and the NJT-H as Predictors of CWB and OCB in Study 2*

	Model 1		Model 2	
	β	95% CI	β	95% CI
CWB-E	R^2 = .223		R^2 = .226 (ΔR^2 = .004)	
H	-.31**	[-.50; -.13]	-.29**	[-.48; -.09]
E	.02	[-.15; .18]	.02	[-.15; .19]
X	-.11	[-.28; .05]	-.10	[-.27; .06]
A	-.11	[-.29; .07]	-.11	[-.29; .07]
C	-.15	[-.33; .02]	-.15	[-.33; .03]
O	.13	[-.03; .30]	.13	[-.04; .30]
NJT-H			-.07	[-.25; .11]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
CWB-S	R^2 = .063		R^2 = .344 (ΔR^2 = .281)		R^2 = .418 (ΔR^2= .074)	
IF	.25*	[.05; .45]	.18	[-.01; .37]	.18*	[.00; .36]
H			-.40**	[-.60; -.20]	-.28**	[-.48; -.07]
E			.03	[-.15; .20]	.03	[-.14; .20]
X			-.19*	[-.37; .01]	-.15	[-.32; .03]
A			.07	[-.13; .26]	.07	[-.11; .25]
C			-.12	[-.31; .08]	-.11	[-.29; .08]
O			-.22*	[-.40; -.03]	-.22*	[-.40; -.05]
NJT-H					-.31**	[-.49; -.12]

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
OCB	R^2 = .012		R^2 = .211 (ΔR^2 = .198)		R^2 = .312 (ΔR^2 = .101)	
IF	.11	[-.10; .32]	.12	[-.09; .33]	.11	[-.08; .31]
H			.35**	[.13; .56]	.20	[-.02; .42]
E			.10	[-.09; .30]	.10	[-.09; .28]
X			.20*	[.00; .40]	.15	[-.04; .34]
A			.03	[-.18; .24]	.02	[-.17; .22]
C			.05	[-.17; .26]	.04	[-.16; .24]
O			.01	[-.19; .21]	.02	[-.17; .21]
NJT-H					.36**	[.16; .56]

Note. IF = Interaction Frequency, H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, NJT-H = Normative Judgment Test of Honesty-Humility, CWB-E = Counterproductive work behavior employee self-reports, CWB-S = Counterproductive work behavior supervisory rating, OCB = Organizational citizenship behavior.
N = 123 and N = 93.
* p < .05; ** p < .01; *** p < .001 (two-tailed).

Table S7. *Hierarchical Regression Analyses the HEXACO Traits and the NJT-H as Predictors of Task Performance in Study 2*

	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
TP	R^2 = .00		R^2 = .058 (ΔR^2 = .057)		R^2 = .106 (ΔR^2 = .048)	
IF	-.03	[-.23; .18]	.00	[-.22; .23]	-.00	[-.22; .22]
H			-.04	[-.27; .20]	-.14	[-.39; .11]
E			.10	[-.11; .32]	.10	[-.11; .31]
X			.09	[-.13; .31]	.06	[-.16; .27]
A			.04	[-.19; .27]	.04	[-.18; .26]
C			.17	[-.06; .40]	.16	[-.06; .39]
O			.09	[-.13; .31]	.09	[-.12; .31]
NJT-H					.25*	[.02; .48]

Note. IF = Interaction Frequency, H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, NJT-H = Normative Judgment Test of Honesty-Humility, TP = Task performance.
N = 93.
* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).