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# IRT analyses of the Swedish Dark Triad Dirty Dozen

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## Abstract

**Background:** The Dark Triad (i.e., Machiavellianism, narcissism, and psychopathy) can be captured quickly with 12 items using the Dark Triad Dirty Dozen (Jonason and Webster, 2010). Previous Item Response Theory (IRT) analyses of the original English Dark Triad Dirty Dozen have shown that all three subscales adequately tap into the dark domains of personality. The aim of the present study was to analyze the Swedish version of the Dark Triad Dirty Dozen using IRT.

**Method:** 570 individuals ( $n_{males} = 326$ ,  $n_{females} = 242$ , and 2 unreported), including university students and white-collar workers with an age range between 19 and 65 years, responded to the Swedish version of the Dark Triad Dirty Dozen (Garcia et al., 2017a,b).

**Results:** Contrary to previous research, we found that the narcissism scale provided most information, followed by psychopathy, and finally Machiavellianism. Moreover, the psychopathy scale required a higher level of the latent trait for endorsement of its items than the narcissism and Machiavellianism scales. Overall, all items provided reasonable amounts of information and are thus effective for

discriminating between individuals. The mean item discriminations (alphas) were 1.92 for Machiavellianism, 2.31 for narcissism, and 1.99 for psychopathy.

**Conclusion:** This is the first study to provide IRT analyses of the Swedish version of the Dark Triad Dirty Dozen. Our findings add to a growing literature on the Dark Triad Dirty Dozen scale in different cultures and highlight psychometric characteristics, which can be used for comparative studies. Items tapping into psychopathy showed higher thresholds for endorsement than the other two scales. Importantly, the narcissism scale seems to provide more information about a lack of narcissism, perhaps mirroring cultural conditions.

Keywords: Psychology, Psychiatry, Clinical psychology

## 1. Introduction

The Dark Triad (i.e., Machiavellianism, narcissism, and psychopathy; Paulhus and Williams, 2002) can be captured quickly using the Dark Triad Dirty Dozen, which is a 12-item scale designed to measure malevolent character (Jonason and Webster, 2010; Jonason and Luévano, 2013; Haddad et al., 2016; González et al., 2017). Previous studies have established a reliable three factor structure for the original Dark Triad Dirty Dozen English version (Jonason and Webster, 2010) and, among other versions, also for the Swedish one (Garcia et al., 2017a,b). Moreover, previous Item Response Theory (IRT) analyses of the original English Dark Triad Dirty Dozen have shown that all three subscales adequately tap into these three dark domains of personality (Webster and Jonason, 2013; see also Kajonius et al., 2016). Nevertheless, validation studies of Dark Triad measures have mostly been conducted using Classic Test Theory methods and in very few cases using IRT methods. Indeed, to the best of our knowledge, no one has studied the Swedish version using IRT. Importantly, IRT enables researchers to study the performance of individual scale items against the underlying trait.

In this context, validation studies using IRT methods might shed some light on what the Swedish version of the Dark Triad Dirty Dozen actually measure. Item quality in survey-instruments can be quantified within the framework of IRT, which helps in clarifying how items contribute information across the trait distribution (referred to as theta or  $\theta$ ). In this particular IRT analysis, two parameters are calculated for each item. The first parameter, the slope coefficient or alpha ( $a$ ), shows the extent to which an item relates to the underlying construct, theta ( $\theta$ ). Items with larger alpha values provide more information than items with lower values (normally ranging from 0.5 to 2 in personality research; Morizot et al., 2007). The second parameter is the threshold or difficulty coefficient, called beta ( $b$ ). The beta-parameters indicate the level of the underlying construct ( $\theta$ ) at which the item scale categories have more than 50% probability of being endorsed (e.g.,  $b_1$  denotes the probability of answering option 1 vs. 2, 3, 4, 5, 6, and 7). Beta-parameters are often reported in standard deviation units, but extreme values

(i.e.,  $>3$  and  $<-3$ ), are not uncommon, especially in clinical settings. Given that previous research has shown deviations from unidimensionality (e.g., Garcia et al., 2017a,b; Jonason and Webster, 2010), we chose to separate each subscale into its own IRT model. Our aim was to present the functioning of the Swedish version of the Dark Triad Dirty Dozen at the item-level.

## 2. Method

### 2.1. Ethical statement

After consulting with the University of Gothenburg's Network for Empowerment and Well-Being's Review Board and according to law (2003: 460, section 2) concerning the ethical research involving humans we arrived at the conclusion that the design of the present study (e.g., all participants' data were anonymous and will not be used for commercial or other non-scientific purposes) required only informed verbal consent from participants and that no ethical approval was necessary for the study. Of course, ethical guidelines for universities in Sweden were followed.

### 2.2. Participants

The study comprised 570 individuals ( $n_{males} = 326$ ,  $n_{females} = 242$ , and 2 unreported). The data were collected in a diverse sample, including university students and white-collar workers with an age range between 19 and 65 years ( $age_{mean} = 27.45 \pm 10.52$ ). The data was collected within two different projects:

1. Dark Character Theory: The Dark Cube and other Person-Centered Methods in the Study of Malevolent Character. In this project we use person-centered methods to investigate malevolent character as a concept and how to measure it.
2. Narcissism(s) and Self-esteem(s) in Cross-cultural Context. This is an international project aimed to examine the strength of relationships between communal-agentic narcissism (both individual-level and collective-level) and self-esteem (individual, relational and collective) in different cultures (individualistic vs collectivistic).

### 2.3. Measures

The Swedish version (see Table 1) of the Dark Triad Dirty Dozen (Garcia et al., 2017a,b) is a 12-item self-report questionnaire of the three Dark Triad traits. Participants are asked to rate how much they agree (1 = *Strongly disagree*; 7 = *Strongly agree*) with statements such as: "I tend to manipulate others to get my way" (Machiavellianism), "I tend to lack remorse" (psychopathy), and "I tend to want others to admire me" (narcissism). Items were averaged to create each dimension. Reliability estimates in the form of coefficient alpha were computed using the R package *psych* version 1.7.5. Alphas were .77 for Machiavellianism, .71 for psychopathy, and .81 for narcissism.

**Table 1.** The Swedish version of the Dark Triad Dirty Dozen.

Trait	Item No.	English	Swedish	Håller inte alls med [Strongly disagree]	Håller inte med [Disagree]	Håller delvis inte med [Slightly disagree]	Varken eller [Neither agree nor disagree]	Håller med delvis [Slightly agree]	Håller med [Agree]	Håller med helt [Strongly agree]
MACHIAVELLIANISM	1	I tend to manipulate others to get my way.	Jag tenderar att manipulera andra för att få det jag vill.	1	2	3	4	5	6	7
	2	I have used deceit or lied to get my way.	Jag har bedragit eller ljugit för att få det jag vill.	1	2	3	4	5	6	7
	3	I have use flattery to get my way.	Jag har använt mig av smicker för att få min vilja igenom.	1	2	3	4	5	6	7
	4	I tend to exploit others towards my own end.	Jag tenderar att utnyttja andra för att nå mina egna mål.	1	2	3	4	5	6	7
PSYCHOPATHY	5	I tend to lack remorse.	Jag tenderar att sakna ånger.	1	2	3	4	5	6	7
	6	I tend to be unconcerned with the morality of my actions.	Jag tenderar att inte bry mig om moralen i mina handlingar.	1	2	3	4	5	6	7
	7	I tend to be callous or insensitive.	Jag tenderar att vara kall eller okänslig.	1	2	3	4	5	6	7
	8	I tend to be cynical.	Jag tenderar att vara cynisk.	1	2	3	4	5	6	7
NARCISSISM	9	I tend to want others to admire me.	Jag tenderar att vilja att andra beundrar mig.	1	2	3	4	5	6	7
	10	I tend to want others to pay attention to me.	Jag tenderar att vilja att andra uppmärksammar mig.	1	2	3	4	5	6	7
	11	I tend to seek prestige or status.	Jag tenderar att söka prestige och status.	1	2	3	4	5	6	7
	12	I tend to expect special favors from others.	Jag tenderar att förvänta mig speciella tjänster av andra.	1	2	3	4	5	6	7

Note. From Garcia, D., Rosenberg, P., MacDonald, S., Räsänen, C., & Rapp Ricciardi, M (2017). Measuring Malevolent Character: Data Using the Swedish Version of Jonason's Dark Triad Dirty Dozen. Data in Brief, 14, 648–652. doi:10.1016/j.dib. 2017.08.020.

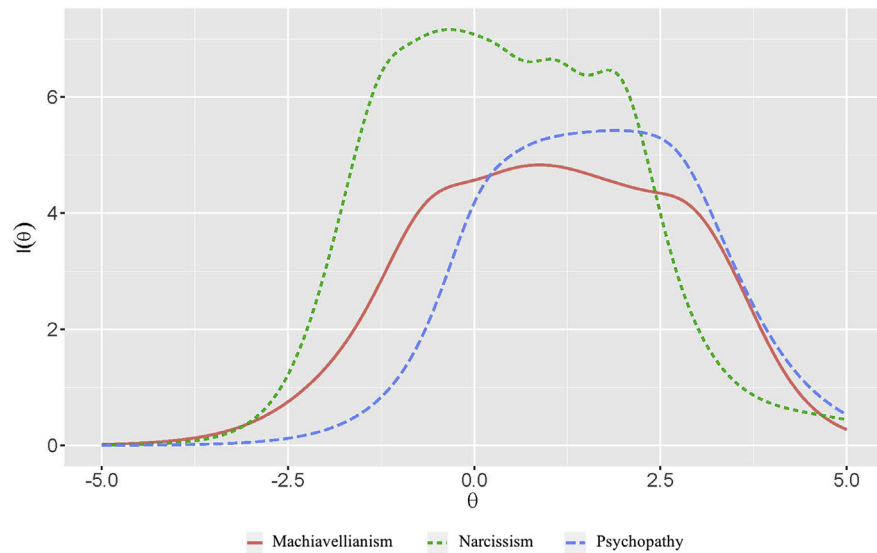
### 3. Results

Descriptive statistics for the items and scales are available in Table 2. Contrary to previous research (Webster and Jonason, 2013), we found that the narcissism scale provided most information, followed by psychopathy, and finally Machiavellianism (see Fig. 1). Additionally, in Fig. 2 we present the item trace lines for each item (based on the three distinct models) and in Fig. 3 an information function for the entire Dark Triad Dirty Dozen (i.e., based on the unidimensional model with all 12 items). However, the respective scales did behave as expected in terms of their locations. The psychopathy scale requires a higher level of the latent trait for endorsement of its items than does narcissism and Machiavellianism, which is consistent with previous Dark Triad Dirty Dozen research (Webster and Jonason, 2013). In Table 3, we show the IRT parameters for three unidimensional IRT models are presented. In Table 4, the same parameters are presented, but for one unidimensional model (i.e., all items were included in the same model). Model fit statistics could not be calculated as there were too few degrees of freedom, but based on both logic (simplicity) and previous empirical findings on the English Dark Triad Dirty Dozen, the three separate models ought to yield more precise parameter estimates than the unidimensional model. Overall, all items provided reasonable amounts of information and are thus effective for discriminating between

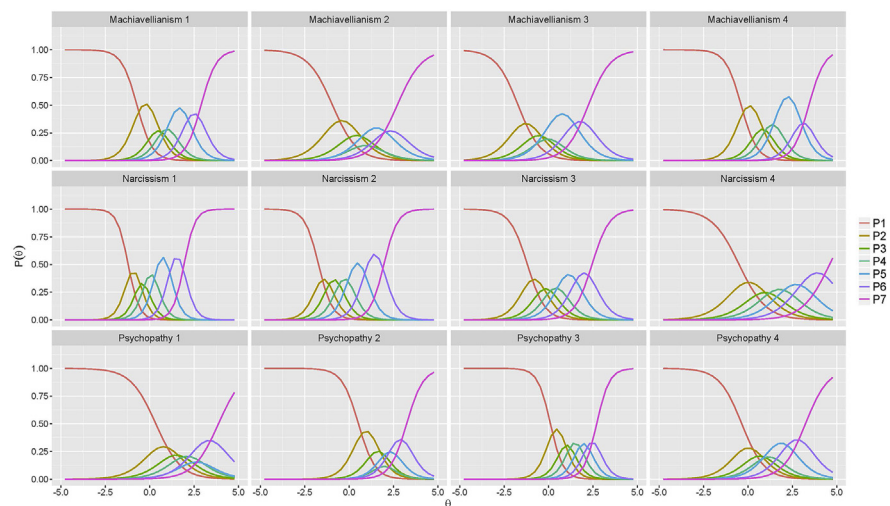
**Table 2.** Descriptive Statistics for each item of the Dark Triad Dirty Dozen and each subscale.

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Machiavellianism 1: Manipulate	2.65	1.54	0.72	-0.49
Machiavellianism 2: Deceit	2.91	1.78	0.69	-0.65
Machiavellianism 3: Flattery	3.89	1.79	-0.11	-1.08
Machiavellianism 4: Exploit	2.25	1.34	0.97	0.05
Narcissism 1: Admire	3.74	1.72	-0.07	-0.99
Narcissism 2: Attend	4.23	1.59	-0.39	-0.58
Narcissism 3: Prestige	3.34	1.69	0.25	-0.91
Narcissism 4: Favors	2.30	1.38	0.99	0.27
Psychopathy 1: Remorse	1.88	1.36	1.77	2.64
Psychopathy 2: Unconcerned	1.63	1.18	2.40	5.83
Psychopathy 3: Callous	1.98	1.38	1.52	1.74
Psychopathy 4: Cynical	2.56	1.68	0.81	-0.48
Subscales				
Machiavellianism	11.70	4.98	0.36	-0.65
Narcissism	13.61	5.11	0.07	-0.44
Psychopathy	8.04	4.13	1.32	1.92

*Note.* Means are reported for all items and sum scores are reported for composite subscales (final three rows).



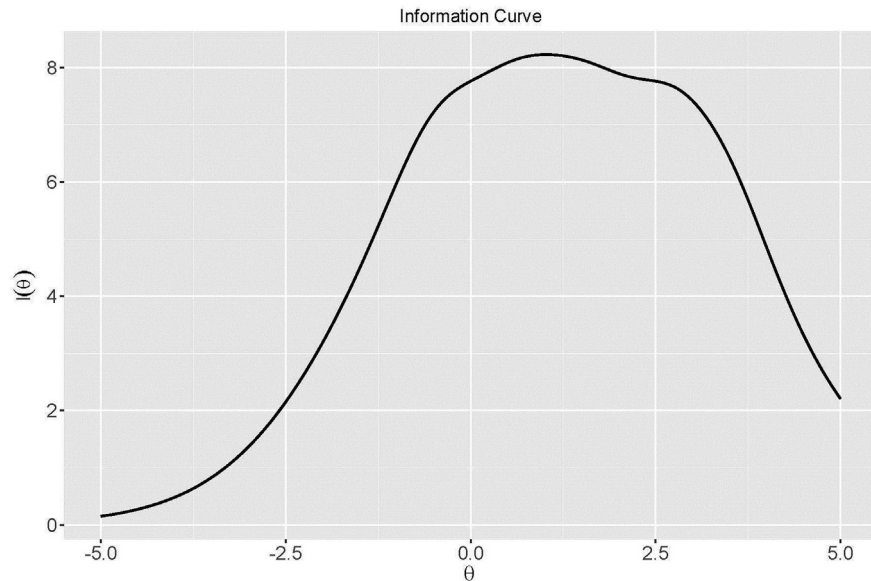
**Fig. 1.** Scale Information Curves for each of the subscales of the Swedish version of the Dark Triad Dirty Dozen.



**Fig. 2.** Item Trace Lines for each item in the Swedish version of the Dark Triad Dirty Dozen.

individuals. The mean item discriminations (alphas) were 1.92 for Machiavellianism, 2.31 for narcissism, and 1.99 psychopathy. An important observation was that the Narcissism item 1 (“Admire”) had a particularly large alpha of 3.23.

Items assessing Machiavellianism and in particular psychopathy, followed a pattern whereby high level of thetas were required for item endorsement. This means that most of the scales’ information was only efficiently retrieved at the higher end of the underlying trait distribution (i.e.,  $\theta$ ). For instance, for all four psychopathy items, the  $b_2$  coefficients are positive, which means that an above average level of the latent



**Fig. 3.** Scale Information Curve for the unidimensional model of the Swedish version of the Dark Triad Dirty Dozen.

trait is required for endorsement of Likert scale categories 3–7. A similar pattern, although to a lesser extent, is true for Machiavellianism. This means that the Machiavellianism and psychopathy scales are appropriate for assessing only average to high levels of those traits. The narcissism items deviated from this pattern (with the exception of narcissism 4, which behaved much like the psychopathy items)

**Table 3.** Item Response Analysis of the Swedish version of the Dark Triad Dirty Dozen.

Item	$a$	$b_1$	$b_2$	$b_3$	$b_4$	$b_5$	$b_6$
Machiavellianism 1: Manipulate	2.33	-0.72	0.25	0.72	1.23	2.11	2.89
Machiavellianism 2: Deceit	1.46	-0.93	0.11	0.74	1.12	1.95	2.71
Machiavellianism 3: Flattery	1.61	-1.71	-0.85	-0.28	0.21	1.33	2.24
Machiavellianism 4: Exploit	2.29	-0.38	0.57	1.08	1.67	2.82	3.43
Narcissism 1: Admire	3.23	-1.21	-0.63	-0.21	0.34	1.13	1.93
Narcissism 2: Attend	2.62	-1.72	-1.13	-0.55	0.05	0.91	1.96
Narcissism 3: Prestige	2.05	-1.19	-0.44	0.13	0.71	1.56	2.45
Narcissism 4: Favors	1.32	-0.50	0.58	1.35	2.21	3.22	4.60
Psychopathy 1: Remorse	1.42	0.34	1.19	1.81	2.40	2.84	3.87
Psychopathy 2: Unconcerned	2.16	0.53	1.39	1.86	2.08	2.54	3.24
Psychopathy 3: Callous	2.81	0.11	0.80	1.25	1.74	2.21	2.71
Psychopathy 4: Cynical	1.58	-0.35	0.39	0.92	1.44	2.29	3.24

Note.  $b_1$  to  $b_6$  reports the item locations, reflecting the threshold level of the latent trait necessary to have at least a 50% probability of endorsing the next scale-step.

**Table 4.** Further Item Response Analysis for the whole Swedish version of the Dark Triad Dirty Dozen.

Item	<i>a</i>	<i>b</i> <sub>1</sub>	<i>b</i> <sub>2</sub>	<i>b</i> <sub>3</sub>	<i>b</i> <sub>4</sub>	<i>b</i> <sub>5</sub>	<i>b</i> <sub>6</sub>
Machiavellianism 1: Manipulate	2,00	-0,72	0,29	0,76	1,28	2,24	3,12
Machiavellianism 2: Deceit	1,14	-1,06	0,13	0,86	1,30	2,28	3,17
Machiavellianism 3: Flattery	1,30	-1,92	-0,92	-0,30	0,23	1,48	2,52
Machiavellianism 4: Exploit	2,33	-0,34	0,58	1,07	1,63	2,79	3,53
Narcissism 1: Admire	1,55	-1,62	-0,81	-0,23	0,48	1,50	2,53
Narcissism 2: Attend	1,22	-2,50	-1,67	-0,81	0,06	1,30	2,81
Narcissism 3: Prestige	1,61	-1,34	-0,49	0,16	0,81	1,74	2,71
Narcissism 4: Favors	1,57	-0,43	0,54	1,23	1,98	2,86	4,10
Psychopathy 1: Remorse	0,87	0,48	1,67	2,57	3,44	4,08	5,66
Psychopathy 2: Unconcerned	1,31	0,67	1,77	2,39	2,67	3,32	4,37
Psychopathy 3: Callous	1,10	0,14	1,17	1,89	2,70	3,60	4,63
Psychopathy 4: Cynical	1,08	-0,45	0,44	1,10	1,77	2,91	4,21

Note. *b*<sub>1</sub> to *b*<sub>6</sub> reports the item locations, reflecting the threshold level of the latent trait necessary to have at least a 50% probability of endorsing the next scale-step.

insofar as they reliably assessed the latent trait between approximately -2SD and +2SD (see Fig. 2). These findings have implications for interpretation of test scores, where the narcissism scale may provide more information about a lack of narcissism, which is unlikely to be the same for the psychopathy and Machiavellianism scales.

#### 4. Discussion

The purpose of the present study was to present the functioning of the Swedish version of the Dark Triad Dirty Dozen at the item-level. Given that previous research has shown deviations from unidimensionality (e.g., Garcia et al., 2017a,b; Jonason and Webster, 2010), we chose to separate each subscale into its own IRT model. The results showed that the items in the Swedish version of the Dark Triad Dirty Dozen inventory performed adequately. Many items were “difficult”, in the sense that they required a high level of the latent trait for endorsement of even the middle categories. Based on previous research, this was expected (Webster and Jonason, 2013), as the Dark Triad Dirty Dozen inventory is known to be inefficient in discriminating between lower levels of the underlying dark personality construct (Carter et al., 2015; Kajonius et al., 2016; Lee et al., 2013; Miller and Lynam, 2012; Paulhus and Jones, 2014). The items performed similarly to a recent French-Canadian translation of the Dark Triad Dirty Dozen (Savard et al., 2017). All of the 12 items contributed with substantial information. Items tapping into psychopathy showed higher thresholds for endorsement than items from Machiavellianism, and in particular the narcissism scale. The present study was able to show adequate psychometric properties and thus support the future use of this Swedish version of the Dirty Dozen.



This is the first study to provide IRT analyses of the Swedish version of the Dark Triad Dirty Dozen. Our findings add to a growing literature on the Dark Triad in different cultures and highlight the psychometric characteristics of the Dark Triad Dirty Dozen, which can be used for comparative studies (for contrasting studies pointing to similarities, rather than differences, between Classic Test Theory and IRT see: [Fan, 1998](#); [MacDonald and Paunonen, 2002](#)). That being said, one limitation of the present study was that we have no record of whether Swedish was the participants' first language. Moreover, future studies should test the Swedish versions of other measures of the Dark Triad, such as, the Short Dark Triad ([Jones and Paulhus, 2014](#); [Persson et al., 2017a,b](#)) and also single measures of each malevolent character trait, such as, the Mach-IV and the Narcissistic Personality Inventory (see [Garcia and Sikström, 2014](#)). Additionally, for the Swedish version of the Dark Triad Dirty Dozen we opted to use a 7-point Likert scale, as in [Jonason and Luévano's study \(2013\)](#), but other studies have used a 5-point Likert scale (e.g., [Jonason et al., 2012, 2013](#)), yet others a 9-point Likert scale (e.g., [Jonason and Webster, 2010](#)). Hence, we recommend that future research on the Swedish version of the Dark Triad Dirty Dozen scrutinizes the most accurate number of points to use for the scale. This in order to avoid the incongruences found when researchers use the original English version. For instance, as shown here, for all four psychopathy items, an above average level of the latent trait is required for endorsement of Likert scale categories 3–7. In this context, it would be interesting to see how these parameters differ between a version with 4 or 5 points from the 7-points version used here. Another venue of research is the use of, besides Classic Test Theory and IRT, Quantitative Semantic Test Theory, which uses computerized methods to addresses how concepts are represented in natural language (see [Garcia and Sikström, 2013a,b, 2014](#); [Garcia et al., 2015a, 2016](#); [Rosenberg et al., 2013](#)), and person-oriented methods, which often are data-driven or bottom-up methods that focus on differences between individuals by taking into consideration the existence of sub-populations and the properties of complex adaptive systems, such as in this case, malevolent character ([Lundh, 2015](#); [Garcia et al., 2015b](#); [Garcia, 2018a,b](#); [Garcia and Rosenberg, 2016](#); [Garcia and González, 2017](#); [Garcia et al., 2018](#)).

Finally, we found that the narcissism scale may provide more information about a lack of narcissism, which is unlikely to be the same for the psychopathy and Machiavellianism scales. This specific finding for the narcissism scale stands in contrast to research on the original English version. Despite the fact that Sweden is an individualistic culture ([Kjell et al., 2013](#)), it is widely known for “Jantelagen” (Law of Jante). Jantelagen was first made popular by Aksel [Sandemose \(1933\)](#) as 10 rules that all are variations of one single social rule, that is, “*You are not to think you're anyone special or that you're better than us.*”. Jantelagen, is used generally in colloquial speech in the Nordic countries as a sociological term to describe a condescending attitude towards individuality and success, the term refers to a mentality that de-

emphasizes individual effort and places all emphasis on the collective, while simultaneously denigrating those who try to stand out as individual achievers (Fayolle et al., 2005). In other words, suggesting that Swedes have a tendency to not show off by presenting themselves as better than someone else (Fayolle et al., 2005), thus, probably enhancing cultural differences found in the narcissism scale of the Swedish version of the Dark Triad Dirty Dozen.

1. *You're not to think you are anything special.*
2. *You're not to think you are as good as we are.*
3. *You're not to think you are smarter than we are.*
4. *You're not to imagine yourself better than we are.*
5. *You're not to think you know more than we do.*
6. *You're not to think you are more important than we are.*
7. *You're not to think you are good at anything.*
8. *You're not to laugh at us.*
9. *You're not to think anyone cares about you.*
10. *You're not to think you can teach us anything.*

*From En flyktning krysser sitt spor [A Fugitive Crosses His Tracks] by Aksel Sandemose from 1933.*

## Declarations

### Author contribution statement

Danilo Garcia, Björn Persson: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed materials, analysis tools and data; Wrote the paper.

Ali Al Nima: Analyzed and interpreted the data; Contributed data; Wrote the paper.

Joel Gruneau Brulin, Max Rapp-Ricciardi, Petri Kajonius: Contributed data; Wrote the paper.

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### Competing interest statement

The authors declare no conflict of interest.

## Additional information

The raw data is available upon request to the Network for Empowerment and Well-Being, lead researcher Danilo Garcia: <http://ltblekinge.se/Forskning-och-utveckling/Blekinge-kompetenscentrum/Summary-in-English/>.

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