Motivation for solitude: A cross-cultural examination of adolescents from collectivist and individualist cultures in South Africa.

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Abstract

Introduction

People differ in the degree to which they want to be alone, and among those who do want to be alone more often, they have different reasons for wanting to do so (Nicol, 2005). Put differently, individual differences exist in the preference and motivation for solitude. An important distinction in motivation for solitude is whether it is self-determined (freely chosen and self-endorsed) or non-self-determined (caused by pressure from internal or external forces) (Chua & Koestner, 2008; Nicol, 2005). Whereas self-determined solitude has been associated with several positive psychological outcomes, non-self-determined solitude relates to negative psychological states. The role of solitude during adolescence has gained particular interest among researchers, because intentional, or self-determined solitude, has been found to play a constructive role during adolescence (Larson & Csikszentmihalyi, 1978, 1980; Long & Averill, 2003). However, the degree to which one's attitude towards solitude is positive or negative may also be influenced by cultural context. This suggests that solitude engagement and its likely impact on adolescent development, may differ among cultures. The aim of this study was to investigate whether such cultural differences do exist with regard to self-determined solitude (SDS) and non-self-determined solitude (NSDS). In particular, we were interested in whether adolescents from individualist and collectivist cultures differ in their motivations for engaging in solitude.

Solitude seems to gain importance during adolescence, as it becomes more voluntary (i.e., self-determined) and meaningful (Galanaki, 2005; Larson, 1999) during this developmental phase. Additionally, adolescents' ability to be alone forms part of healthy development, providing the space needed for selfexploration, individuation, and identity formation (Goossens & Marcoen, 1999; Kroger 1998; Larson 1997). Research suggests that solitude during adolescence can play a role in several positive psychological and real world outcomes, including increased life satisfaction, enhanced emotion regulation, greater academic performance, and improved psychological well-being (e.g., Galanaki, 2015; Goossens, 2014; Larson, 1997, 2000). However, adolescents differ in their attitudes towards being alone, which may have implications for healthy development. Some adolescents may show an affinity for solitude, viewing it as time spent constructively, such as for reflection or emotional renewal. Others may have an aversion towards being alone, experiencing it as a time of unease and unhappiness (Goossens, 2014). Further, for late adolescents, but not midadolescents, affinity for being alone seems to be associated with psychological adjustment rather than having an aversion towards solitude (Teppers, Luyckx, Vanhalst, Klimstra & Goossens, 2014). The interplay between time spent alone and positive outcomes for adolescents thus seems complex.

It is evident that although solitude during adolescence is considered important for healthy development, not all forms of solitude are constructive. Only when solitude is autonomous and voluntary, does it appear to have psychological benefits (Coplan & Bowker, 2014). When solitude is sought as a refuge from social fears and anxieties, or due to marginalization by others, there are likely to be undesirable consequences such as loneliness and other related forms of psychological ill-being (Heinrich & Gullone, 2006). Thus, the degree to which an individual engages in SDS or NSDS, to a large extent determines whether solitude during adolescence will have a positive or negative psychological effect. Similarly, Goossens (2014) argued that understanding the motivation for adolescent solitude might be key to explaining the benefits of engaging in solitude for adolescents.

It is important to make a clear distinction between solitude and loneliness. According to Galanaki (2013), solitude refers to the physical state of being alone, which can be experienced as either positive or negative. In contrast, loneliness is an unpleasant or negative experience stemming from a perceived lack of closeness with others, or from deficient social relationships (Peplau & Perlman, 1982). Moreover, as Majorano, Musetti, Brondino and Corsano (2015) pointed out, being alone does not always lead to feelings of sadness. Whereas solitude is an objective state, loneliness refers to a subjective experience (Maes, Wang, van den Noortgate, & Goossens, 2015). Thus, it is quite possible to be lonely while interacting with others.

There is increased support for a multidimensional conceptualization of loneliness and aloneness (Maes et al., 2015). This hybrid model, developed by Goossens and colleagues (e.g., Goossens et al., 2009; Maes, Vanhalst, Spithoven, van den Noortgate, & Goossens et al., 2016; Teppers et al., 2013, 2014) assesses relationspecific types of loneliness (related to parents and peers), as well as attitudes towards loneliness (affinity and aversion) from early to late adolescence. For example, Teppers et al. (2014) distinguished three profiles depicting attitudes towards being alone among adolescents. These are: true affinity for aloneness, true aversion for being alone and indifference towards solitude. The last profile refer to youth who neither has a strong affinity for being alone nor a strong aversion towards being alone. According to Teppers and colleagues, these profiles show different associations with psychological adjustment during the various stages of adolescence.

While solitude and loneliness are unique concepts, they have important areas of overlap. Those who want to be alone for non-self-determined reasons, are likely to be lonely (Rubin, 2014). Especially, if they would prefer to be in the company of others, but their social fears, anxieties or other-imposed forms of withdrawal result in isolation (Heinrich & Gullone, 2006). Following Teppers et al.'s (2014) conceptualization, one would expect that adolescents who have an aversion towards loneliness will experience solitude as negative and will not likely choose to be alone. In contrast, those who have an affinity toward loneliness may experience solitude as self-

determined. Loneliness is therefore associated with non-self-determined solitude but not with autonomous, freely chosen solitude (Galanaki 2013; Nicol 2005) Indeed, recent research found loneliness to have a statistically significant and substantial relationship with non-self-determined solitude, but unrelated to self-determined solitude (Dankaert, Guse, & van Zyl, 2017; Thomas & Asmitia, 2014).

From the argument thus far, it is evident that individuals' motivation for being alone may be important to understanding its role in adolescent well-being (Chua & Koestner, 2008; Goossens, 2014; Nicol, 2005). Research conceptually based on Ryan & Deci's (2000) Self-Determination Theory (SDT), suggests that voluntary solitude (i.e., self-determined) is related to well-being, whereas solitude motivated by internal or external pressure (non-self-determined) is not (Beiswenger, 2008; Chua & Koestner, 2008; Corsano, Majorano, Michelini & Musetti, 2011; Nicol, 2005). According to SDT, fulfilment of three basic human needs, namely, autonomy, relatedness and competence enhances intrinsic motivation, self-regulation and well-being (Ryan & Deci, 2000). When individuals are able to choose their actions (such as solitude) it can be seen as autonomously motivated and in accordance with a personal sense of self. On the other hand, non-autonomous actions may be motivated by internal and external pressures (Beiswenger & Grolnick, 2010). It is therefore important to examine the underlying motivation for aloneness to broaden our understanding of the role of solitude in adolescent well-being.

Another important factor to consider is socio-cultural context (Call et al., 2002), since cultures may differ in the way they view time spent alone. Further, cultural meanings of loneliness create certain expectations about relationships and social connectedness within that context (van Staden & Coetzee, 2010). While it may be valued in some cultures, others have a negative take on solitude, considering it an undesirable human quality, and even harmful or pathological (Long & Averill 2003; Marcoen & Goossens 1993). This is not surprising as solitude is often considered to reflect loneliness or an otherwise undesirable form of social isolation, and as a result, adolescents are often discouraged or even prohibited from spending time alone (Buchholz 1997; Nicol 2005). For example, in African cultures, viewed as more collectivist in nature, loneliness is about a lack of social connectedness, or not being understood by one's cultural group (Van Staden & Coetzee, 2010). Thus, cultural context will likely determine how solitude behaviors will influence psychological well-being during adolescence.

While it can be expected that cultures would have differing attitudes towards time spent alone, there is very little empirical evidence informing theory on this matter. In one of few studies to date, Maes et al. (2015) recently distilled existing theoretical notions into two contrasting perspectives. According to the first perspective, solitude should be viewed positively in Western or more individualist cultures, where engaging in solitude would be considered autonomous, self-determined behavior reflecting personal choice (Liu, Chen, Coplan, Ding,

Zarbatany, & Ellis, 2015). This view also holds that in more collectivist countries, spending time alone would be viewed negatively as it would be inconsistent with a group orientation.

According to Maes et al. (2015), the second perspective expects that solitude would be viewed negatively in individualist societies, where it might be common for people to distract themselves with activities like watching television or seeking companionship while alone (Suedfeld, 1982). From this perspective, it's also quite 'normal' to pity people who are alone, with the tacit assumption that they must be sad, lonely or depressed (Maes et al., 2015). However, this perspective considers solitude positively in collectivist cultures like China, where being alone is associated with uniqueness and independence (Averill & Sundararajan, 2014; Maes et al., 2015).

In their research, Maes et al. (2015) were able to provide a preliminary empirical handle on this issue. They found support for the view that solitude seems to be perceived more negatively in individualist cultures, and more positively in collectivist cultures. By comparing attitudes towards solitude across adolescent samples from Belgium (representing individualist cultures) and China (representing collectivist cultures), Maes et al. found that individuals from more individualist societies have an unfavorable attitude towards solitude, which implies that adolescents would likely be discouraged from spending time alone compared to their counterparts in more collectivist cultures. Theoretically, this suggests that adolescents from individualist cultures would engage less in self-determined forms of solitude compared to adolescents from collectivist cultures.

With regard to non-self-determined solitude, Maes and colleagues' (2015) study on loneliness across individualist and collectivist societies did not find any evidence to suggest that culture influences loneliness in any meaningful way. Similarly, Chen et al. (2004) found no differences across samples of Canadian, Southern Italian, Brazilian and Chinese adolescents. Neither were any differences observed between adolescents in the United States and Russia (Stickley, Koyanagi, Koposov, Schwab-Stone, & Ruchkin, 2014), or Canada and China (Liu et al., 2015). Given that loneliness is strongly associated with involuntary, or non-self-determined solitude; and the fact that there appears to be no differences between cultures on loneliness, one would not expect any differences in non-self-determined solitude across collectivist and individualist cultures.

Against this backdrop, the primary objective of the present study was to investigate cultural differences in the motivation for solitude (self-determined and non-self-determined) across adolescent groups from collectivist and individualist cultures in South Africa. From the extant literature, we hypothesized that adolescents from individualist cultures would be more likely to engage in self-determined solitude compared to adolescents

from collectivist cultures. For non-self-determined solitude, we hypothesized that there would be no difference between individualist and collectivist cultures.

Limited measures to determine motivation for solitude exist. These include the Frequency of and Autonomy for Solitary and Interpersonal Behavior Scale (FASIB, Beiswenger, 2008), the Motivation for Solitude Scale (MSS, Nicol, 2005) and the Motivation for Solitude Scale - Short Form (MSS-SF, Thomas & Azmitia, 2014). Given its brevity and accessibility, we implemented the MSS-SF to measure motivation for solitude in our sample. However, to meet these cross-cultural objectives, it was vital to establish that the solitude measure functions equivalently in the groups of interest before mean score comparisons could be made (Vandenberg & Lance, 2000). Toward this end, we performed multigroup invariance analysis along with differential item functioning analysis to establish measurement equivalence. Our decision to investigate equivalence using both invariance and differential item functioning analysis was guided by the view that measurement invariance is an overly restrictive methodology (Muthén & Asparouhov, 2013). With this requirement satisfied, a Bayesian analysis was conducted to compare adolescents from collectivist and individualist cultures on self-determined and non-self-determined solitude. We opted for a Bayesian paradigm since it allows for explicit testing and quantification of evidence, for and against the null and alternative hypotheses (Dienes, 2016; Rouder, Speckman, Sun, Morey, & Iverson, 2009). This is a clear advantage over frequentist methods (Zyphur & Oswald, 2012).

Method

Participants

Participants were 692 adolescents between 14 and 18 years of age (mean = 15.7 years), from private and public schools in South Africa, comprising 58% (*n* = 479) females. The schools were situated in middle to uppermiddle class neighbourhoods in Gauteng, a large metropolitan area.

With regard to ethnicity, 62% (*n* = 426) of the participants were White and 38% (*n* = 266) Black. South Africans are generally viewed as belonging to four broadly defined ethnic groups, indigenous African or Black, Coloured (mixed race), Indian, and White. The majority of the population belongs to the African ethnic group. This group is generally considered to be collectivist in nature, emphasizes traditional values and considers the broader family unit as well as the community as important (Adams, Van de Vijver & De Bruin, 2012; Eaton & Louw; Triandes, 1989). The smaller White ethnic group consists of individuals from European descent and is generally seen as holding western individualist values. This group places stronger emphasis on the nuclear family

unit than on the extended family or larger community (Adams et al., 2012; Eaton & Louw, 2000). In the South African context this distinction between collectivist and individualist ethnic groups is commonly applied in research (i.e., Rhee, Uleman, Lee, & Roman, 1995; Vogt & Laher, 2009).

Procedure

The study was approved by the Faculty of Humanities Research Ethics Committee along with the Department of Basic Education. Permission was obtained from the principles of the relevant schools, and teachers from the schools assisted with data collection. Written consent was obtained from parents and students before participation in the study. The questionnaire took approximately 15 minutes to complete and was administered during school hours.

Measure

Motivation for Solitude Scale–Short Form (MSS-SF; Thomas & Azmitia 2014) contains 14 items, of which 8 items measure self-determined solitude (SDS) and six items measure non-self-determined solitude (NSDS). Participants had to rate the relative importance of each item on a four-point Likert scale, ranging from 'Not at all important' (1) to 'Very important' (4). Higher scores indicate greater motivation for a particular type of solitude. We have previously examined the psychometric properties of the MSS-SF in South Africa, and found satisfactory evidence for reliability, along with good support for the factor structure, convergent and discriminant validity of the measure in this context (Dankaert et al. 2017).

Data analysis

Invariance analysis

To make comparisons across cultures using observed scores, the measure has to function the same in the groups of interest (Davidov, Schmidt, & Billet, 2011; Vandenberg & Lance, 2000). A multigroup confirmatory factor analysis was conducted on the MSS-SF using the lavaan package (Rosseel, 2012) in the R-statistics platform. A robust maximum likelihood (MLR) estimator was used as most decision rules for measurement invariance analysis have been developed using maximum likelihood estimation (Hirschfeld & von Brachel, 2014). Wang and Wang (2012) also recommend using robust estimators as a precautionary measure in general, as data in the social sciences frequently violate the normality assumption. Invariance decisions were made by considering changes in model fit. Deteriorating changes in RMSEA and CFI goodness-of-fit values exceeding .01 were considered to reflect non-invariance (Cheung & Rensvold, 2002; Chen, 2007). These values, rather than the chisquare difference test were used to make invariance decisions, given its sensitivity to sample size (Cheung & Rensvold, 2002).

In addition, uniform Differential Item Functioning (DIF) was investigated using Rasch analysis with the Winsteps software program. In the Rasch model, item location parameters or 'item difficulties' are expected to be equal across groups (Bond & Fox, 2007). Practically however, DIF is typically reflected if the differences in item location parameters are approximately 0.5 logits or larger across the groups of interest (Linacre, 2007). This DIF-contrast value reflects a type of effect size in logits (Linacre, 2015).

Bayesian independent T-test

A Bayesian independent t-test was conducted to compare adolescents from individualist and collectivist cultures on their motivations for solitude. Bayesian analysis was employed because of the advantages it offers over classical, or so-called frequentist statistics (Dienes, 2008; Zyphur & Oswald, 2012). Bayesian analysis allows for explicit testing of both the alternative hypothesis and the null hypothesis (Rouder et al., 2009), in contrast to frequentist methods in which only the alternative hypothesis is examined (Dienes, 2008, 2016). In frequentist statistics, the null hypothesis is not explicitly tested because it is assumed to be true. In addition, Bayesian analysis provides useful information about the relative strength of the evidence for or against a particular hypothesis using Bayes factors (Wagenmakers, Wetsels, Borsboom, & Van Der Maas, 2011). In the present study, the Bayesian analysis was conducted using JASP statistical software, (JASP Team, 2016). Bayes factors computed in JASP have a default Cauchy prior width of .707.

Results

Descriptive statistics for self-determined and non-self-determined solitude are presented in Table 1. The Pearson intercorrelations between the two variables are also reported in the table, separately, for the collectivist and individualist samples.

Table 1

Descriptive statistics and intercorrelations among the variables of the study

Subscale	Cultural group	Mean	SD	1	2
1. Self-determined solitude	a	22.974	5.23	-	.28[b]
	b	20.850	4.75	-	-
2. Non-self-determined solitude	a	9.625	3.25	.34[a]	-
	b	9.690	3.84	-	-

Note. a = Individualist group; b = Collectivist group

Invariance analysis

Multigroup confirmatory factor analysis (MGCFA) was conducted, testing a model with two factors (SDS and NSDS) loading on a single higher order factor (MS; overall motivation for solitude). This was the best-fitting CFA model in previous research (Dankaert et al., 2017). Full scalar invariance is of particular importance for this study as it would allow for defensible comparisons across groups using observed scores (Gregorich, 2006; van de Schoot, Lugtig & Hox, 2012). The results presented in Table 2 show good evidence for configural and metric invariance, but mixed results for scalar invariance with acceptable change in RMSEA values, although the change in CFI was .012, slightly exceeding .01. Partial scalar invariance was achieved as modification indices suggested that fit might improve if item 2 was unconstrained. This is reflected by model 4 (Partial) in the table. Partial invariance however, does not allow for comparisons on observed means (van de Schoot et al., 2012).

Table 2
Measurement invariance analysis on the Motivation for Solitude Scale

Model	χ^2	df	CFI	RMSEA	Model comparison	ΔCFI	ΔRMSEA
Configural	252.062	150	.942	.045			
Metric	269.753	163	.939	.044	2 vs 1	-0.003	-0.001
Scalar	301.699	174	.927	.046	3 vs 2	-0.012	0.002
Partial*	288.746	173	.934	.044	4 vs 2	-0.005	-0.002

Note. * = Partial scalar invariance

Given the marginal violation of invariance and the fact that many researchers have argued that measurement invariance analysis is overly restrictive (Muthén & Asparouhov, 2013; Van de Schoot, Kluytmans, Tummers, Lugtig, Hox & Muthén, 2013), we also examined the SDS and NSDS subscales for uniform DIF using Rasch analysis. Uniform DIF can be considered the Item Response Theory analog to scalar invariance (Lee, Little & Preacher, 2011). The results are presented in Table 3. Inspection of the results for the SDS and NSDS scale shows that none of the items had a DIF contrast > 0.5. In line with expectations, item 2 had a fairly high DIFcontrast value, but is still well within the threshold of 0.5 logits. The results suggest that there is no reason to conclude that any of the items are non-invariant to the degree that mean comparisons across ethnic groups would be inappropriate.

Table 3
Uniform DIF analysis on the SDS and NSDS subscales of the MS scale

Item	Collectivist		Individualist		DIF contrast	Joint S.E.
	DIF measure	DIF S.E.	DIF measure	DIF S.E.		
Self-Deter nined Solitude items						
1	0.37	0.08	0.19	0.06	0.17	0.10
2	-0.09	0.08	-0.52	0.06	0.43	0.10
4	0.39	0.08	0.60	0.06	-0.21	0.10
7	0.01	0.08	0.23	0.06	-0.22	0.10
10	-0.43	0.08	-0.41	0.06	-0.02	0.10
11	-0.66	0.09	-0.69	0.06	0.03	0.11
13	-0.05	0.08	0.14	0.06	-0.20	0.10
14	0.50	0.08	0.45	0.06	0.05	0.10
Non Self-Determined Solitude items						
3	0.13	0.10	0.09	0.08	0.04	0.13
5	0.40	0.11	0.06	0.08	0.33	0.13
6	0.03	0.10	0.03	0.08	0.00	0.12
8	-0.83	0.08	-0.74	0.07	-0.08	0.11
9	0.16	0.10	0.16	0.08	0.00	0.13
12	0.16	0.10	0.37	0.09	-0.21	0.13

Group differences in motivation for solitude

To investigate whether there are differences in the motivations for solitude between adolescents from collectivist and individualist cultures, we conducted Bayesian independent t-tests for both SDS and NSDS. The results are presented graphically in Figures 1 and 2. For Self-Determined Solitude, the Bayes factor presented in Figure 1a suggest that there is very strong evidence in favor of the alternative hypothesis of a difference between the groups (Jarosz & Wiley, 2014). It shows that there is substantial evidence for the hypothesis that adolescents from collectivist cultures engage more in self-determined solitude than adolescents from individualist cultures. The 95% credibility interval displayed in Figure 1b further strengthens this conclusion, and provides strong evidence against the null hypothesis of no difference, as null does not fall anywhere in this interval. In the Bayesian paradigm, this means that we can be 95% sure that the difference in SDS between the groups is not zero (Andraszewicz et al., 2015). Figure 1a also shows that if wide or ultrawide priors were used instead of the default Cauchy prior, the substantive conclusion would remain unchanged.

In contrast, the null hypothesis of no difference in non-self-determined solitude between adolescents

from collectivist and individualist cultures was supported. The Bayes factor in Figure 2a shows that the results are eleven times more likely under the null hypothesis of no difference than the alternative hypothesis. Thus, moderate to strong evidence suggest that adolescents from collectivist cultures are no more likely than those from individualist cultures to engage in unwanted forms of solitude. In fact, Figure 2b shows that null falls almost in the center of the 95% credibility interval, with the median value from the posterior distribution of -0.016. Figure 2a also shows that using wide priors would not have affected the substantive conclusions.
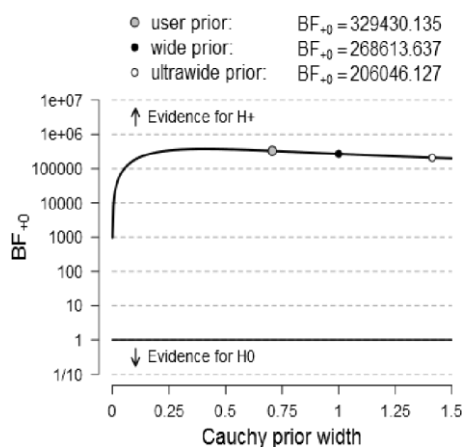
Self-Determined Solitude
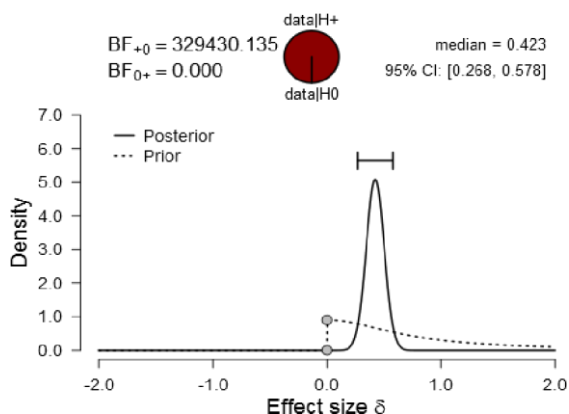

Figure 1a. Bayes factor for SDS

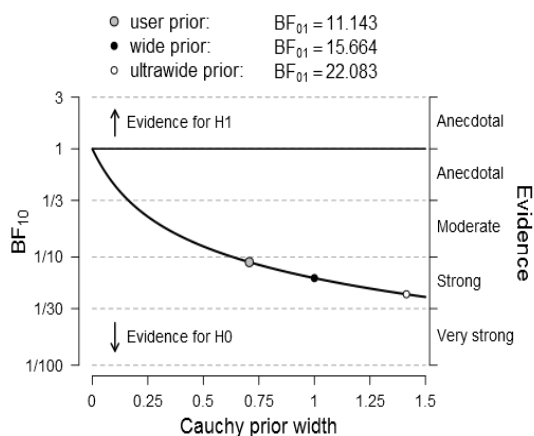*Figure 1b*. The 95% credibility interval for SDS

Non-self-determined solitude
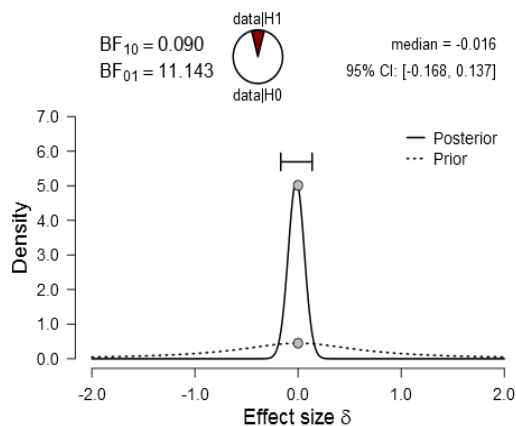

Figure 2a. Bayes factor for NSDS

Figure 2b. The 95% credibility interval for NSDS

Discussion

The purpose of the present study was to investigate if cross-cultural differences exist in the motivation for solitude between adolescents from more collectivist cultures compared to those from more individualist cultures in South Africa. Two distinct motives for solitude in particular, were examined: those that are self-determined, and those that are not self-determined. The difference is important, as they can have diverse psychological influences on adolescent development. Moreover, culture may influence adolescent attitudes, perceptions, and expectations regarding alone time, which, in turn, could differentially impact motivation to engage in solitude in different cultures. This study specifically sought to investigate if cultural background somehow influences these two motivations for solitude during adolescence.

With regard to non-self-determined solitude, the findings from this study suggest that adolescents from more collectivist cultures are no different from their counterparts in more individualist cultures in seeking solitude when the reason for doing so, is involuntary (i.e., motivated by internal or external pressures). Adolescents who engage in solitude because they are shy, or suffer from more intense social anxieties or fears for whatever reason, appear to do so to the same degree in collectivist and individualist cultures. As unwanted solitude is often accompanied by subjective experiences of loneliness, the present findings are consistent with previous research that have found no differences in loneliness across collectivist and individualist cultures (Chen et al., 2004; Liu et al., 2015; Maes et al., 2015; Stickley et al., 2014).

As far as self-determined solitude is concerned, differences between the two groups were evident. The results of this study suggest that adolescents from individualist cultures are less likely to engage in self-determined solitude than those from collectivist cultures. Stated differently, it shows that adolescents from individualist cultures are inclined to spend less time alone by choice, compared to their collectivist counterparts. This result is in line with Maes et al.'s (2015) finding that individualist cultures appear to have a negative attitude toward solitude, whereas collectivist cultures seem to view alone time more positively. The cultural expectation in individualist societies would probably reserve alone time for work or study or other tasks requiring solitude to get things done, with the tacit expectation that if one need not be alone, one should not be alone. Being alone without an obvious reason, would likely trigger in others associations and perceptions of aloofness, sadness, loneliness or depression. Awareness of such associations in one's own culture could facilitate constraint, making it less likely for adolescents to choose to be alone. Our findings therefore seem to suggest that voluntary solitude in individualist cultures might be violating a cultural norm which might be biased toward socialization and human interaction. Although autonomy and personal freedom might be valued and encouraged in individualist cultures,

it is possible that negative perceptions of solitude in general (Maes et al., 2015) could function as a tacit cultural bias against it. This in turn, may inhibit solitude, and might be hindering adolescent development in individualist cultures especially since constructive solitude is associated with positive developmental outcomes (e.g., Goossens & Marcoen., 1999; Larson, 1997).

The notion that individualist cultures are somewhat biased against voluntary solitude, is consistent with cross-cultural research on introversion and extraversion. Zelenski, Sobocko, and Whelan (2014) convincingly demonstrated that introverts in general prefer and engage in solitude more often than extraverted individuals. They further argued that extraverts have higher subjective well-being than introverts if they live in societies that better fit their personalities. This is based on research showing that many extraverted characteristics are more strongly associated with markers of happiness in individualist cultures (Fulmer et al., 2010). By contrast, shyness – associated with introversion and solitude – has been found to better predict happiness in Chinese culture where it is valued as a form of social inhibition (Chen, Wang, & Cao, 2011). Similarly, the finding that individualist cultures appear to value high arousal pleasant affect (preferred by extraverts), while low arousal pleasant affect (preferred by introverts) is preferred in collectivist societies, also highlight the importance of one's personality fit relative to one's culture (Tsai, Knutson, & Fung., 2006; Zelenski et al., 2014). Thus, individuals who value and choose solitude may suppress this behavior in individualist cultures where it is less likely to be understood and appreciated.

The implications for adolescent development in collectivist cultures should be carefully considered. Goossens (2014) noted that one assumption of an affinity for aloneness (a construct conceptually related to selfdetermined solitude) is that adolescents would value alone time for their own positive reasons. This assumption also requires close scrutiny across cultures, since it is plausible that adolescents in collectivist cultures may have more freedom to engage in self-determined solitude, although such alone time might not be equally valuable or important from a developmental perspective in this context. Thus, self-determined solitude and its concomitant benefits for adolescent well-being in individualist cultures might be less relevant to adolescent development in collectivist cultures. However, since relational and attitudinal factors may also play a part in choosing to spend time alone (Majorano et al., 2015) more research is needed to understand the dynamics between culture and motivation for solitude. Taking the perspective of Goossens and colleagues' (Goossens, 2014; Maes et al., 2016; Teppers et al., 2014) multidimensional framework, it would be useful to examine whether the dynamics between peer-related or parent-related loneliness, and concomitant self-determined solitude, may present differently among adolescents from individualist and collectivist cultures.

The findings of our study can be considered counter-intuitive, especially if one's theoretical approach expects solitude to be a form of autonomy and independent personal expression in individualist cultures. So too, the expectation that solitude might be viewed as unacceptable withdrawal in collectivist cultures. This certainly was the case for us. However, the empirical evidence from previous research (Maes et al., 2015) and our own findings appear to be consistent and robust. Future studies might seek a deeper, qualitative understanding of how solitude and its associated behaviors are conceptualized in these cultures, and why adolescents seem to feel more inclined to freely choose spending time by themselves in collectivist than in individualist cultures. While we might understand that Chinese culture could value solitude due to its association with independence and uniqueness (Averill & Sundararajan, 2014), this does not explain how and why self-determined solitude is more evident in collectivist African cultures than in individualist cultures. Future research could follow a more nuanced approach to try and understand the observed cultural differences in self-determined solitude. One way could be to investigate specific types of self-determined solitude, how they occur, and how they are perceived in collectivist and individualist cultures. For example, Wang's framework comprising twenty different reasons for being alone (Wang, 2006) could be useful for this purpose.

Strengths and Limitations

Despite yielding interesting results, the study had limitations. Although African cultures in South Africa are known to be more collectivist, they may not be all be equally collectivist. This is something that could be investigated in future studies. A potential complicating factor is that many adolescents from typically collectivist cultures get exposed to, and influenced by elements of individualist cultures in South Africa. Although we do not believe this to have meaningfully influenced our results, it is plausible, as we did not explicitly control for this possibility in the present study. The participants were also not necessarily representative of adolescents nationally. The study was conducted in middle to upper middle class neighborhoods in a major metropolitan city, and future studies might seek to replicate the results with nationally representative samples. The study also did not consider socio-economic status, which could potentially influence adolescent development.

Nevertheless, this study extends the literature on solitude and loneliness in important ways. First, we provide good evidence for the measurement invariance of the Motivation for Solitude Scale (Short Form) in a diverse cultural context. Indeed, to our knowledge, this is the first cross-cultural study on solitude and the related concept of loneliness in Africa, whereas most research on this topic is largely conducted with samples from the United States, Europe and China. Specifically, our findings indirectly support previous research on loneliness as we found no differences across individualist and collectivist cultures on the theoretically linked concept of non-

self-determined solitude. We further extended the literature by providing strong empirical evidence for a difference in self-determined solitude across individualist and collectivist cultures, which was only implied in previous research (Maes et al., 2015). Finally, an important contribution of this study was the use of Bayesian statistics over traditional frequentist analysis. This allowed for explicit testing of both null and the alternative hypotheses, as opposed to only the alternative hypothesis. Bayesian analysis was used to quantify the available evidence in favor of the null or the alternative hypothesis, and provides credibility intervals from which much stronger inferences can be made, which is not the case with frequentist confidence intervals.

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