

# FROM MOTIVES THROUGH DESIRES TO INTENTIONS: INVESTIGATING THE REPRODUCTIVE CHOICES OF CHILDLESS MEN AND WOMEN IN POLAND

MONIKA MYNARSKA<sup>1</sup> AND JOLANTA RYTEL

*Institute of Psychology, Cardinal Stefan Wyszyński University in Warsaw, Poland*

**Summary.** This study examined the potential of the theoretical model proposed by Warren Miller (the Traits/Motives–Desires–Intentions–Behaviour or TDIB model) for investigating the involuntary–voluntary childlessness continuum. The first three stages of the theoretical motivational sequence (motives to desires to intentions) were examined using a purposive sample of 314 childless Polish men and women aged 30–39 (at the time of data collection in September 2013). In Poland, this is the age range when the final decision for or against parenthood is taken. To model the motivational sequence, the Structural Equation Modelling (SEM) technique was applied. The results confirmed the hypothesized relations between the constructs for childless individuals in the analysed age group. Their childbearing desires were found to be good predictors of reproductive intentions, while negative and positive childbearing motives (independently) underpinned their desires. Moreover, positive motives appeared to have a stronger effect on desires than negative ones. The study also documented the psychometric properties of the Polish adaptation of the Childbearing Questionnaire, which was originally developed by Miller to measure childbearing motives. The advantages of using this tool for investigating the involuntary–voluntary childlessness continuum are discussed. Overall, the study validated the theoretical model as well as the adaptation of the Childbearing Questionnaire in the new research context: in the new cultural setting and for examining reproductive choices of a specific subpopulation. Directions for future research that could build on the TDIB model and allow for a deeper understanding of permanent childlessness are outlined.

## Introduction

While childlessness is not a new phenomenon, its nature has changed in recent decades. In contemporary developed societies, an increasing number of men and women consciously choose to have no offspring (Rowland, 2007), and childbearing has become

<sup>1</sup> Corresponding author. Email: m.mynarska@uksw.edu.pl

a deliberate choice rather than a natural developmental stage (Miller, 1983; Morgan & King, 2001). The question of whether people want to have children and the topic of voluntary childlessness have thus become highly relevant.

The researchers who initially explored this issue distinguished between involuntary (related to infertility) and voluntary childlessness (Somers, 1993; Kelly, 2009). The distinction referring solely to the biological limits of reproduction has proven to be problematic, however. It is difficult to categorize a couple who did not seek any medical assistance when they had trouble conceiving. Similarly, it is not clear whether a fertile but single woman should be included in the 'childless by choice' category. In response to these problems, other divisions appeared in the literature that did not refer to a biological component. In recent years, a number of scholars have started to differentiate between childless and child-free individuals (Tanturri & Mencarini, 2008; Basten, 2009), and have raised the question of whether a lack of children is congruent or incongruent with individual attitudes (Koropeckyj-Cox, 2002). The focus of this approach is on the values, motives and desires that underlie people's fertility choices and on the way people experience childlessness (Letherby, 2002). Is childlessness a desired state for them, and, if so, to what extent?

In the early 1990s, Warren Miller formulated a theoretical framework for analysing childbearing behaviours in which the desire to reproduce and motives to have children are key components (Miller, 1994). In the model, a reproductive behaviour is conceptualized as an outcome of the motivational sequence that starts with childbearing motives. According to Miller (1994, 2011a, b), motivational traits (motives, motivations) are biologically based dispositions that can be described as a readiness to react favourably or unfavourably to various aspects of childbearing. These dispositions – combined with specific individual characteristics, psychological attributes and life course developments – underpin the desire to have a child. Next, as a person weighs his or her desire and considers the available options and resources, the desire may transform into an intention. Intentions represent what a person actually plans to do, and are thus 'desires constrained by reality' (Miller, 1994, p. 228). Finally, childbearing intentions lead to actual reproductive actions. This sequence is referred to as the Traits–Desires–Intentions–Behaviour (TDIB) sequence.

In Miller's model, childbearing motives are basic factors that underlie the whole process. These motivational dispositions are assumed to be genetically determined and shaped in the course of individual development (Miller, 1994, 1995, 2011b). They can be seen as cognitive schemas that are non-conscious, although a person might become aware of them through self-observation (Miller, 2011b). Miller conceptualized two independent dimensions of childbearing motives: positive motives are dispositions to react favourably to various aspects of childbearing, while negative motives are dispositions towards unfavourable reactions. For a desire to have a child to be activated, it is necessary for positive motives to prevail. Importantly, Miller also developed the Childbearing Questionnaire (CBQ) to assess the positive and negative motives for childbearing (Miller, 1995). Studies in the US have proved the reliability and validity of the questionnaire (Miller, 1995; Van Egeren, 2003; Jagannathan, 2006) and good psychometric properties have also been shown for adaptations of the questionnaire or scales modelled on it in Italy (Sina *et al.*, 2010), Honduras (Kennedy, 2005) and Iran (Pezeshki *et al.*, 2005).

The works of Warren Miller offer an attractive framework for studying people's reproductive choices and an important tool to do so – the questionnaire. Previous research has found that childbearing motives (both positive and negative) are important predictors of individual's desire to have a child (Miller, 1995; Pezeshki *et al.*, 2005). Their impact on reproductive behaviour has also been documented. Individuals showing more positive motives have been found to be more likely to take actual steps to have a baby (Miller, 1995) and less likely to seek abortion in the case of an unplanned pregnancy (Jagannathan, 2006). The TDIB model has also been useful in investigating infertile couples' choices regarding the use of assisted reproductive technology (Miller *et al.*, 2008).

Miller's theoretical approach has hardly been applied to address the issue of voluntary childlessness explicitly. Interestingly, the early works of Miller – before the model was formulated – touched upon this topic (Miller, 1981). Several previous studies included childless respondents (e.g. Miller & Pasta, 1993; Miller, 1995), but they did not focus on permanent childlessness and its motivation. The model seems particularly appealing in this respect, however. It builds around the motivational component and links positive and negatives childbearing motives to reproductive desires and intentions. It thus invites a more in-depth investigation of how childbearing choices are shaped by psychological dispositions. At the same time, since the genetic basis of these dispositions is emphasized (Miller *et al.*, 2010; Miller, 2011b), the model offers a comprehensive view on human reproduction (and childlessness), encompassing biological, developmental and psychological perspectives. Importantly, the model defines childbearing motivation as a continuum. Consequently, it is possible to assess how strongly childlessness is wanted instead of looking at the issue in a simplistic way, distinguishing only between voluntary and involuntary lack of offspring.

To implement the TDIB framework for studying voluntary childlessness it is necessary to verify whether for childless individuals their reproductive choices are indeed resulting from the postulated motivational sequence. This is where the current study contributes. Its aim was to verify the first three steps of the theoretical sequence – traits (motives), desires and intentions – in a sample of childless Poles aged 30–39. To analyse the complete TDIB sequence and include behavioural outcomes in the model, longitudinal data would be required, collected over a long time span to cover all individuals that never become parents. Unfortunately, such data were not available. Nevertheless, looking into how motives translate into desires and intentions constitutes an important first step towards understanding people's choices to remain childless. This is especially true if analyses focus on the age range when this choice becomes highly relevant, i.e. when the individuals are 'most actively grappling with the parenting decision' (Park, 2005, p. 395), as was the case in this research. The sample in this study was limited to men and women aged 30–39, which is the oldest age group with a relatively high intensity of first birth. The intensity declines sharply for older individuals. In 2014, only 0.7% of all first births occurred to mothers aged 40 or more in Poland (Central Statistical Office, 2015). Consequently, a meaningful share of the respondents in the analysed sample were likely to remain permanently childless.

This study investigated how childbearing motives shape fertility desires and intentions of childless individuals, who have reached the age when the final decision for or against reproduction has to be taken. Its general aim was to document the

potential of the TDIB model for studying childlessness and its voluntary–involuntary character as a continuum. To this end, Structural Equation Modelling (SEM) was used to verify the theoretical sequence (motives–desires–intentions) in a Polish context. As reliable and valid measures are essential to allow for further studies on childlessness within Miller’s framework, the goodness of measurement of the three theoretical concepts was assessed. Consequently, the study aimed to validate the theoretical model as well as the adaptation of the Childbearing Questionnaire in the new research context.

## Methods

### *Measurement of childbearing motives: the Childbearing Questionnaire*

To measure childbearing motives, the Polish version of the Childbearing Questionnaire (CBQ-PL) was employed. The questionnaire, developed originally by Miller (1995), consists of two scales. The first scale measures positive childbearing motives (PCM). For this, a respondent is given a list of potentially desirable consequences of having children and asked to evaluate how desirable they are for him or her. The second scale measures negative childbearing motives (NCM) and similarly, a respondent is given a list of potentially undesirable consequences of having children and asked to evaluate how undesirable they are for him or her. For each consequence, a respondent uses a four-point scale to evaluate how desirable or undesirable the consequence would be (from ‘not at all’ to ‘very’). The questionnaire has versions for men and women and there are 28 potentially positive and 21 potentially negative consequences listed in each of them (for content of all items, see Miller, 1995).

The Childbearing Questionnaire was translated into Polish and a back-translation was discussed with Warren Miller to ensure that the original meaning of items had not been distorted. One item (‘Having my child provide me with companionship and support later in life’) was divided into two separate ones in the Polish scale, since qualitative research in Poland showed that ‘old age support’ is mainly understood in practical terms in this context, while companionship has predominantly an emotional meaning (Mynarska, 2009). Moreover, two questionnaire items designed to measure the childbearing motives of respondents who were already parents (i.e. their motives for having an additional child) were excluded from the analyses. Consequently, the scales analysed in this study consisted of 28 positive and 20 negative motives. The psychometric properties of the CBQ-PL were tested in a pilot study on 203 childless individuals aged 20–40, which indicated satisfactory levels of reliability and validity (Mynarska & Rytel, 2014).

### *Measurement of childbearing desires and intentions*

To verify the relationship of childbearing motives with childbearing desires and intentions, measures of the two latter variables were constructed. The format and content of the questions were inspired by Miller’s approach (Miller, 1995) as well as by the previous qualitative work (Mynarska, 2009). The desire to have children was measured using a scale consisting of three items: (1) How much would you like to have a child? (2) How important is it for you to have a child? (3) How happy would you be if

you had a child? The childbearing intention scale consisted of two items: (1) Considering your attitude towards children, but also your life situation and other plans for your future life, are you intending [planning] to have a child within the next three years? (2) In your opinion, how likely is it that you will have a child within the next three years? For each of the above questions, the participants marked their answers on a scale from zero to 10. The reliability and validity of these measures were also verified in the aforementioned pilot study (Mynarska & Rytel, 2014).

### *Participants*

The analytic sample in the current study consisted of 314 childless individuals (159 females and 155 males; 50.6% and 49.4%, respectively). The participants were between the ages of 30 and 39 (mean = 34.1, SD = 2.8). They were recruited by the external research company ARC Rynek i Opinia in three regions of Poland, in September 2013. Since the sample was purposive, aiming at childless individuals in the age range when childbearing choices are highly relevant, the research company used their database of respondents and then a snowball method to recruit participants. The sample was heterogeneous with respect to place of residence (municipality size), educational level and marital status.

Participation in the study was voluntary and anonymous. Each respondent was approached individually. After providing some basic socio-demographic information, he or she completed the questionnaire on the provided laptop. The computerized procedure ensured the respondent's privacy and was beneficial for data quality (e.g. the risk of data entry mistakes was minimized, and the problem of missing data was avoided as the software did not allow the respondents to omit questions).

### *Data analysis*

The main aim of the study was to verify whether in the specific sample of Polish, childless individuals, positive and negative childbearing motives (PCM and NCM) were related to childbearing desires and intentions, as postulated in Miller's theoretical model (Miller, 1994). Structural Equation Modelling (SEM) was used to investigate the structural effects of positive and negative childbearing motives on childbearing intentions, as mediated by childbearing desires. Since the measurement level of the observed variables (items in the CBQ) is ordinal (from 1 to 4), one of the robust diagonally weighted least squares estimators (DWLS) was applied. Polychoric correlations were used as an input and a weighted least squares mean-and-variance-adjusted estimator (WLSMV) was applied to establish the goodness of fit of the tested model. Many simulation studies have shown that the DWLS approach is the most suitable for analysing categorical variables with fewer than five categories (see Finney & DiStefano, 2013, for a review). Following the recommendations of Schweizer (2010), different fit indices were applied: the  $\chi^2/df$  ratio, the comparative-fit-index (CFI), the Tucker-Lewis index (TLI) and the root mean squared error of approximation (RMSEA). A good fit was indicated when  $\chi^2/df < 3.00$ , TLI and CFI  $> 0.90$  and RMSEA  $< 0.08$ .

Rather than a single-phase, all-in-one analysis a two-phase strategy was adopted (Mueller & Hancock, 2008). In the first step, the CFA was used to test the measurement portion of the model (i.e. the part that links each of the indicators to the four designated

latent constructs). In the second step, the SEM analysis was conducted in order to estimate the parameters of the structural portion of the model (i.e. the part that specifies the relations between the four latent constructs).

Convergent and discriminant validity of the constructs was examined by the following indexes: Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV) and Average Shared Squared Variance (ASV). Convergent validity signifies that a set of indicators represent one and the same underlying construct, which can be demonstrated through their unidimensionality. To verify that this was the case, the Average Variance Extracted (AVE) was used as a criterion of convergent validity (Fornell & Larcker, 1981). An AVE value equal to or larger than 0.50 indicates sufficient convergent validity, which means that a latent variable is, on average, able to explain at least a half of the variance of its indicators. To evaluate discriminant validity, the AVE for each construct must be greater than 0.50 and exceed the values of MSV and ASV. Moreover, the composite reliability (CR) should not be lower than 0.60 and standardized factor loadings should be higher than 0.70 (they should not be smaller than 0.40 at least).

The model was run for the whole sample, as the numbers were too small for separate models for men and women to converge. Men and women were compared for all analysed variables in order to verify whether such an approach was justified. The variances of the two samples were compared using Levene's test, while the *t*-test was used to compare the means.

Before the SEM results are presented, some basic psychometric characteristics of the scales are provided. The internal consistency of, and correlations between, scales were assessed to verify the goodness of measurement of the analyses variables before they were entered into the model. The characteristics were computed for men and women separately, as well as for the whole sample.

The R package 'lavaan' (Rosseel, 2012; Beaujean, 2014) was used to perform the SEM. All the remaining statistics were computed using the IBM SPSS package.

## Results

### *Reliability, correlations between scales and gender differences*

To verify whether the four theoretical concepts were measured accurately in the study, the core psychometric properties of the employed scales were assessed. The reliability coefficients were computed for all subjects, as well as for men and women separately. The internal consistencies were excellent. Cronbach's  $\alpha$  coefficients for all scales were equal to or greater than 0.90 (see Table 1).

Next, to confirm the validity of the scales, the relationships between PCM, NCM, childbearing desires and childbearing intentions were calculated using Pearson's correlations. The results are presented in Table 2. The directions and magnitudes of correlations were generally in line with the theoretical model. Desires and intentions correlated positively with positive motives and negatively with negative ones. The correlations were stronger between motives and desires than between motives and intentions. Overall, childbearing desires and intentions correlated to a much smaller degree with negative motives than with positive ones, especially among men. In the male sample, the correlations between NCM and desires and intentions were found to be statistically

**Table 1.** Cronbach's  $\alpha$  coefficients for the analysed scales for Polish men and women aged 30–39, 2013

Scale	All ( $n=314$ )	Men ( $n=155$ )	Women ( $n=159$ )
PCM	0.96	0.97	0.96
NCM	0.93	0.93	0.92
Desires	0.90	0.90	0.90
Intentions	0.91	0.91	0.90

PCM: positive childbearing motives; NCM: negative childbearing motives.

**Table 2.** Correlations<sup>a</sup> between positive and negative childbearing motives, desires and intentions of Polish men and women aged 30–39, 2013

Scale	All ( $n=314$ )	Men ( $n=155$ )	Women ( $n=159$ )
PCM vs NCM	-0.01	0.13	-0.12
PCM vs Desires	0.54**	0.57**	0.52**
PCM vs Intentions	0.39**	0.42**	0.36**
NCM vs Desires	-0.25**	-0.13	-0.38**
NCM vs Intentions	-0.21**	-0.06	-0.37**
Desires vs Intentions	0.71**	0.74**	0.68**

<sup>a</sup>Pearson's  $r$  coefficients.

PCM: positive childbearing motives; NCM: negative childbearing motives.

\* $p < 0.05$ ; \*\* $p < 0.01$ .

insignificant, although in the assumed direction. On the whole, the pattern of correlations was similar to the one that had been revealed in the original works of Miller (1995).

Moreover, in line with the theoretical expectations, the analyses showed that positive and negative childbearing motives are largely independent. The correlation between PCM and NCM turned out to be non-significant. However, it should be noted that the correlation coefficients for men and women, even though both were close to zero and insignificant, had opposite signs: the correlation was positive for men but negative for women. This effect might be random or it might occur due to the sample specificity, but it clearly requires further research. Apart from this difference, the pattern of correlations was similar for men and women.

In the next step, men and women were compared on all analysed dimensions to additionally verify whether it would be justified to model the relations between motives, desires and intentions for both sexes jointly. The results confirmed that the sample could be considered homogenous. For all analysed variables, no significant gender differences were found (see Table 3).

### *Modelling of the Motives–Desires–Intentions sequence*

In the final step, the pattern of the relationship between the theoretical concepts was analysed using Structural Equation Modelling (SEM). In the first step, the CFA was

**Table 3.** Comparisons between Polish men and women aged 30–39 on the four analysed scales

Scale	Men ( <i>n</i> = 155)		Women ( <i>n</i> = 159)		Levene's test			
	Mean	SD	Mean	SD	<i>F</i>	<i>p</i> -value	<i>t</i>	<i>p</i> -value
PCM	87.15	18.41	86.60	17.64	0.27	0.61	0.27	0.79
NCM	50.85	13.00	48.36	12.96	0.46	0.50	1.63	0.10
Desires	20.23	7.23	21.65	6.48	0.40	0.53	-1.84	0.07
Intentions	11.86	5.95	12.55	5.32	0.85	0.36	-1.08	0.28

PCM: positive childbearing motives; NCM: negative childbearing motives.

**Table 4.** Measurement model: composite reliability and validity (convergent and discriminant)

Construct	CR	AVE	MSV	ASV
PCM	0.975	0.586	0.345	0.175
NCM	0.947	0.475	0.093	0.051
Intentions	0.926	0.863	0.607	0.283
Desires	0.930	0.818	0.607	0.348

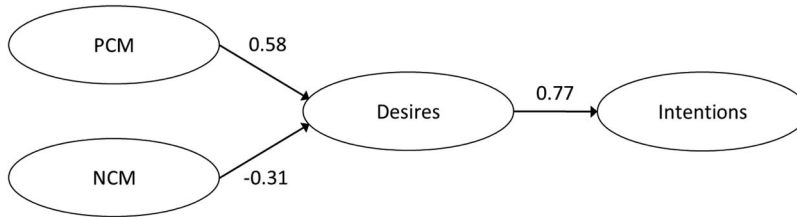
PCM: positive childbearing motives; NCM: negative childbearing motives. CR: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Squared Variance; ASV: Average Shared Squared Variance.

used to assess the measurement portion of the model. The results indicated an adequate fit to the data:  $\chi^2(1319) = 2840.88$ ,  $p < 0.0005$ ; normed  $\chi^2 = 2.15$ ; CFI = 0.91; TLI = 0.91; RMSEA = 0.061; RMSEA 90% CI = [0.058; 0.064].

The measurement portion of the model allowed also for calculating additional reliability and validity coefficients. It additionally documented the psychometric properties of the applied measures of the theoretical concepts (see Table 4). The composite reliability (CR) values were above 0.90 for all of the constructs, indicating high internal consistency across the items in all scales. The highest consistency was related to the PCM items (0.975), and the lowest consistency was related to the items that measured Intentions (0.926). The standardized factor loadings of the CBQ items were over 0.60 in most cases. The factors loadings ranged from 0.615 to 0.893 for the PCM scale, and from 0.423 to 0.822 for the NCM scale. In the NCM scale, the factor loading was relatively low for one item only (0.423) and satisfactory for two others (0.557 and 0.565). The reminding factor loadings were above 0.60. For items related to Intentions and Desires the standardized factor loadings were above 0.80.

As for the convergent validity, the results indicated that AVE values were above the acceptable threshold level (0.50) for most of the constructs, which means that the latent constructs accounted for 50% or more of the variance in the observed variables. Only the value for NCM was slightly below 0.50. However, since AVE is a more conservative measure than CR, it has been argued in the literature that a researcher may rely on the





**Fig. 1.** The standardized path coefficients for the Motives–Desires–Intentions model. PCM: positive childbearing motives; NCM: negative childbearing motives.

CR value alone and consider the convergent validity of the construct to be adequate, even if AVE is below the suggested threshold (Malhotra & Dash, 2011). Regarding discriminant validity, all MSV and ASV values were less than AVE indicating that all constructs were correlated to their own indicators to a higher degree than to other constructs.

Once the goodness of measurement of all concepts was verified, the final verification of the motives to desires to intentions sequence was performed. The hypothesized model tested by SEM (the structural part) achieved a relatively good fit:  $\chi^2(1321) = 2826.84$ ,  $p < 0.0005$ ; normed  $\chi^2 = 2.14$ ; CFI = 0.91; TLI = 0.91; RMSEA = 0.060; RMSEA 90% CI = [0.057; 0.063]. The standardized path coefficients for the model are shown in Fig. 1 (the values of all of the coefficients were significant;  $p < 0.0005$ ).

The results confirm that for childless individuals, in the analysed specific age range, childbearing desires are good predictors of reproductive intentions. The precise fertility plans are declared by those who strongly desire to have offspring. If the desire is low, individuals are more reluctant to formulate such plans. Moreover, fertility desires are shaped by positive and negative motives for childbearing, as postulated in Miller's model (Miller, 1994, 1995, 2011a, b). Notably, the effect of positive motives appears to be stronger than that of negative motives.

## Discussion

If demographic developments of the last century are considered, in Europe as well as in the United States or Australia, the lowest levels of childlessness have been reported for women born in the 1940s, and rising again in younger cohorts (Rowland, 2007; Sobotka, 2017). The increasing share of childless women has generated new research and a heated debate on the causes and consequences of having no offspring (Kreyenfeld & Konietzka, 2017). As Somers (1993, p. 643) noticed, prior to 1968 childlessness was listed only as a cross-reference to 'sterility' in the literature. However, as modern contraceptives became widely available and sexual as well as gender norms started to change, voluntary childlessness was put at the centre of research interests (e.g. Houseknecht, 1978; Veevers, 1980; Callan, 1984; Gillespie, 1999, 2000; McAllister & Clarke, 2000).

Nowadays, researchers continue to distinguish between 'voluntary' and 'involuntary' childlessness, even though they acknowledge that unequivocal definitions of these categories remain problematic (see: Basten, 2009, or Berrington, 2017, for a summary of the various concerns regarding this issue). Consequently, several scholars have suggested

that the two categories should be treated as extremes of a continuum and that researchers should determine *to what extent* childlessness is voluntary instead of *whether* it is voluntary or not (Miller, 1981; Monach, 1993; McAllister & Clarke, 2000; Letherby, 2002). These suggestions have rarely been followed in empirical analyses, however, as it is difficult to operationalize and measure such a continuum. In the best case, the researchers distinguish between three categories, adding the middle one of individuals who are ambivalent (e.g. Carmichael & Whittaker, 2007) or who are not strongly against childbearing but continuously postpone reproduction until it becomes too late (e.g. Berrington, 2004). In this paper, it is argued that the TDIB model of Warren Miller (1994) provides a valuable framework and good tools to study the continuum of voluntary–involuntary childlessness in a truly continuous way.

In the model, childbearing motives, desires and intentions are all considered as continuous variables. But the biologically based positive and negative motives that underpin the whole decision-making process seem particularly appealing for understanding childlessness. First, their measurement allows for capturing the motivational forces at the most basic level, which further influences childbearing desires and intentions. While the motives are shaped in the course of individual development, they are strongly determined by genetic predispositions and family background and thus are expected to be relatively stable in adult life (Miller, 2011b). Consequently, they may turn out to be good predictors of permanent childlessness, even in a long-term perspective. Second, the Childbearing Questionnaire allows for analysing the content of these motives, and not only their strength. Already the distinction between positive and negative motives is appealing. For instance, it could be verified whether low positive or high negative motivation matters more for a decision to remain permanently childless. In fact, the former could be suggested based on the presented analyses, given the magnitude of the structural effects in the model. Moreover, the PCM and NCM scales have several subscales (Miller, 1995), which could provide a far more nuanced perspective on childbearing motives. Such a perspective has been highly advocated based on qualitative findings on voluntary childlessness (Park, 2005).

Unfortunately, no data are yet available to verify the complete TDIB sequence in relation to permanent childlessness. Nevertheless, the current study has shown that childbearing motives indeed matter for the childbearing desires and intentions of childless individuals who are of the age when the final decision for or against parenthood has to be taken. Analyses of the initial three stages of the motivational sequence in such a specific sample confirm the potential of the theoretical model for studying the voluntary–involuntary childlessness continuum. In a broader view, the study provides support for the theoretical framework of Warren Miller, documenting its applicability in the new research context: in the new cultural setting and in a specific subpopulation.

An additional value of the present study is that it has verified the psychometric properties of the Polish version of the Childbearing Questionnaire (CBQ-PL). The results demonstrated that the scales of positive and negative motives for childbearing, as well as scales used to measure desires and intentions, are highly reliable. The findings also provide evidence on the validity of the applied measures. Consequently, the availability of the verified measurement scales makes it possible to further exercise the potential of the TDIB theory postulated above.

The biggest challenge for future research on voluntary–involuntary childlessness will be to collect a proper longitudinal data base to test the actual stability of the

childbearing motives in adulthood and to verify the complete TDIB sequence. In fact, the process of such data collection has already been started in the Polish context. In 2016, over 2000 young childless men and women completed the Childbearing Questionnaire and approximately half of them provided their contact details and gave permission to be contacted again. With the subsequent waves of the study, it will be possible to test at least the stability of childbearing motives in the relatively near future. However, to verify how the motivational sequence influences actual reproductive behaviour, a longer and more extensive study is needed.

### Acknowledgments

This study was financed by the National Science Centre (Poland), grant number 2011/03/D/HS4/05358. The authors would like to express their sincere gratitude to Warren Miller for his invaluable support and advice.

### References

- Basten, S.** (2009) Voluntary childlessness and being childfree. *The Future of Human Reproduction Working Paper* No. 5. URL: [http://www.spi.ox.ac.uk/fileadmin/documents/PDF/Childlessness\\_-\\_Number\\_5.pdf](http://www.spi.ox.ac.uk/fileadmin/documents/PDF/Childlessness_-_Number_5.pdf).
- Beaujean, A. A.** (2014) *Latent Variable Modeling Using R: A Step by Step Guide*. Routledge/Taylor and Francis, New York.
- Berrington, A.** (2004) Perpetual postponers? Women's, men's and couple's fertility intentions and subsequent fertility behaviour. *Population Trends* **117**, 9–19.
- Berrington, A.** (2017) Childlessness in the UK. In Kreyenfeld, M. & Konietzka, D. (eds) *Childlessness in Europe: Contexts, Causes, and Consequences*. Springer International Publishing, Cham, pp. 57–76.
- Callan, V. J.** (1984) Voluntary childlessness: early articulator and postponing couples. *Journal of Biosocial Science* **16**(4), 501–509.
- Carmichael, G. & Whittaker, A.** (2007) Choice and circumstance: qualitative insights into contemporary childlessness in Australia. *European Journal of Population* **23**(2), 111–143.
- Central Statistical Office** (2015) *Demographic Yearbook of Poland*. Central Statistical Office, Warsaw.
- Finney, S. J. & DiStefano, C.** (2013) Nonnormal and categorical data in structural equation modeling. In Hancock, G. R. & Mueller, R. O. (eds) *Structural Equation Modeling: A Second Course* (2nd edition). Information Age Publishing Inc., Charlotte, NC, pp. 439–492.
- Fornell, C. & Larcker, D. F.** (1981) Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* **18**(1), 39–50.
- Gillespie, R.** (1999) Voluntary childlessness in the United Kingdom. *Reproductive Health Matters* **7**(13), 43–53.
- Gillespie, R.** (2000) When no means no: disbelief, disregard and deviance as discourses of voluntary childlessness. *Women's Studies International Forum* **23**(2), 223–234.
- Houseknecht, S. K.** (1978) Voluntary childlessness. *Journal of Family and Economic Issues* **1**(3), 379–402.
- Jagannathan, R.** (2006) Economic crisis and women's childbearing motivations: the induced abortion response of women on public assistance. *Brief Treatment and Crisis Intervention* **6**(1), 52–65.
- Kelly, M.** (2009) Women's voluntary childlessness: a radical rejection of motherhood? *WSQ: Women's Studies Quarterly* **37**(2), 157–172.
- Kennedy, D. P.** (2005) Scale adaptation and ethnography. *Field Methods* **17**(4), 412–431.
- Koropecj-Cox, T.** (2002) Beyond parental status: psychological well-being in middle and old age. *Journal of Marriage and Family* **64**(4), 957–971.

- Kreyenfeld, M. & Konietzka, D.** (2017) Analyzing childlessness. In Kreyenfeld, M. & Konietzka, D. (eds) *Childlessness in Europe: Contexts, Causes, and Consequences*. Springer International Publishing, Cham, pp. 3–15.
- Letherby, G.** (2002) Childless and bereft?: stereotypes and realities in relation to ‘voluntary’ and ‘involuntary’ childlessness and womanhood. *Sociological Inquiry* **72**(1), 7–20.
- McAllister, F. & Clarke, L.** (2000) Voluntary childlessness: trends and implications. In Bentley, G. R. & Mascie-Taylor, C. G. N. (eds) *Infertility in the Modern World: Present and Future Prospects*. Cambridge University Press, Cambridge, pp. 189–237.
- Malhotra, N. K. & Dash, S.** (2011) *Marketing Research: An Applied Orientation*. Pearson Publishing, London.
- Miller, W. B.** (1981) *The Personal Meanings of Voluntary and Involuntary Childlessness*. Report N01-Hd-82853. Center for Population Research, National Institute of Child Health and Human Development.
- Miller, W. B.** (1983) Chance, choice, and the future of reproduction. (1983). *American Psychologist* **38**(11), 1198–1205.
- Miller, W. B.** (1994) Childbearing motivations, desires, and intentions: a theoretical framework. *Genetic, Social, and General Psychology Monographs* **120**(2), 223–258.
- Miller, W. B.** (1995) Childbearing motivation and its measurement. *Journal of Biosocial Science* **27**(4), 473–487.
- Miller, W. B.** (2011a) Comparing the TPB and the T-D-I-B framework. *Vienna Yearbook of Population Research* **9**, 19–29.
- Miller, W. B.** (2011b) Differences between fertility desires and intentions: implications for theory, research and policy. *Vienna Yearbook of Population Research* **9**, 75–98.
- Miller, W. B., Bard, D. E., Pasta, D. J. & Rodgers, J. L.** (2010) Biodemographic modeling of the links between fertility motivation and fertility outcomes in the NLSY79. *Demography* **47**(2), 393–414.
- Miller, W. B., Millstein, S. G. & Pasta, D. J.** (2008) The measurement of childbearing motivation in couples considering the use of assisted reproductive technology. *Biodemography and Social Biology* **54**(1), 8–32.
- Miller, W. B. & Pasta, D. J.** (1993) Motivational and nonmotivational determinants of child-number desires. *Population and Environment* **15**(2), 113–138.
- Monach, J. H.** (1993) *Childless, No Choice: The Experience of Involuntary Childlessness*. Routledge, London, New York.
- Morgan, S. P. & King, R.** (2001) Why have children in the 21st century? Biological predisposition, social coercion, rational choice. *European Journal of Population* **17**(1), 3–20.
- Mueller, R. O. & Hancock, G. R.** (2008) Best practices in structural equation modeling. In Osbourne, J. W. (ed.) *Best Practices in Quantitative Methods*. Sage Publishing, Thousand Oaks, CA. pp. 488–508.
- Mynarska, M.** (2009) *Individual Fertility Choices in Poland*. Cardinal Stefan Wyszyński University Publishing, Warsaw.
- Mynarska, M. & Rytel, J.** (2014) Pomiar motywacji do posiadania dzieci wśród osób bezdzietnych. Polska adaptacja Kwestionariusza Motywów Rodzicielskich. [Measuring childbearing motivation of childless individuals. Polish adaptation of the Childbearing Questionnaire.] *Polskie Forum Psychologiczne* **19**(4), 522–543.
- Park, K.** (2005) Choosing childlessness: Weber’s typology of action and motives of the voluntarily childless. *Sociological Inquiry* **75**(3), 372–402.
- Pezeshki, M. Z., Zeighami, B. & Miller, W. B.** (2005) Measuring the childbearing motivation of couples referred to the Shiraz Health Center for premarital examination. *Journal of Biosocial Science* **37**(1), 37–53.
- Rosseel, Y.** (2012) lavaan: an R package for Structural Equation Modeling. *Journal of Statistical Software* **48**(2), 1–36.

- Rowland, D. T.** (2007) Historical trends in childlessness. *Journal of Family Issues* **28**(10), 1311–1337.
- Schweizer, K.** (2010) Some guidelines concerning the modeling of traits and abilities in test construction. *European Journal of Psychological Assessment* **26**(1), 1–2.
- Sina, M., ter Meulen, R. & Carrasco de Paula, I.** (2010) Human infertility: is medical treatment enough? A cross-sectional study of a sample of Italian couples. *Journal of Psychosomatic Obstetrics & Gynecology* **31**(3), 158–167.
- Sobotka, T.** (2017) Childlessness in Europe: reconstructing long-term trends among women born in 1900–1972. In Kreyenfeld, M. & Konietzka, D. (eds) *Childlessness in Europe: Contexts, Causes, and Consequences*. Springer International Publishing, Cham. pp. 17–53.
- Somers, M. D.** (1993) A comparison of voluntarily childfree adults and parents. *Journal of Marriage and Family* **55**(3), 643–650.
- Tanturri, M. L. & Mencarini, L.** (2008) Childless or childfree? Paths to voluntary childlessness in Italy. *Population and Development Review* **34**(1), 51–77.
- Van Egeren, L. A.** (2003) Prebirth predictors of coparenting experiences in early infancy. *Infant Mental Health Journal* **24**(3), 278–295.
- Veevers, J. E.** (1980) *Childless by Choice*. Butterworth, Toronto.