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Adults' cTTO valuation EQ-5D-Y-3L health states: exploring the role of child perspectives, psychological distance, adults' parental status, and their sociocultural characteristics

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Key Words: EQ-5D-Y-3L, psychological distance, time trade-off, valuation perspective, conservatism, collectivism, religiosity, attitude toward euthanasia, parental status

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Abstract

Objective: Earlier research shows adults value EQ-5D-Y-3L health states higher for children than themselves using composite time trade-off (cTTO). However, the mechanisms behind this are unclear. This study explores factors potentially influencing this difference, including the valuation perspective used, psychological distance, adults' parental status, and their sociocultural characteristics, i.e., collectivism, conservatism, religiosity, and pro-euthanasia attitudes.

Methods: We recruited a sample of 108 Polish adults. First, their parental status and sociocultural characteristics were measured with a self-administered online survey. Then, the participants were interviewed and completed cTTO tasks for 5 EQ-5D-Y-3L states for a hypothetical child using three perspectives: that of an unknown child, a known but not own child, and an own child. For each perspective, we measured the perceived psychological distance from the child. Additionally, the health states' utilities were elicited from the participants' self-perspective. We used linear regression models to study the impact of perspective and adults' characteristics on the psychological distance, and the impact of perspective, adults' characteristics, and psychological distance on the cTTO-elicited utility.

Results: Psychological distance from a child increased when changing perspective from an own to an unknown child, especially in parents. Psychological distance decreased with collectivism. Although utility was higher for child perspectives (vs. self-perspective), it did not differ between child perspectives, and there was no strong evidence linking utility with psychological distance and child perspectives. Overall, utilities were higher for parents (vs. non-parents) and positively related to conservatism, especially when psychological distance was larger in child health valuation.

Conclusions: In child health valuation studies with adults, the child perspective should be carefully chosen, especially when samples include parents, and adults' conservatism and collectivism should be considered.

Introduction

The past decades have seen an increase in attention to the measurement and valuation of child health for economic evaluations (Kwon et al. 2018). Lacking current guidance from appraisal bodies, many economic evaluations rely on methods for measuring and valuing health developed for adults (Hill et al. 2020). One instrument developed specifically for use in children aged 8 to 15 is EQ-5D-Y-3L, which has been shown to have favorable measurement properties (Golicki & Młyńczak 2022). Many challenges, however, exist when considering how to value EQ-5D-Y-3L (Devlin 2022), with a number of methodological issues existing for which no consensus could be reached among international experts (Powell et al. 2024).

One such issue is the valuation perspective used. The valuation protocol for EQ-5D-Y-3L, used for generating many country-specific value sets (e.g., Kreimeier et al. 2022, Rencz et al. 2022, Roudijk et al. 2022, Yang et al. 2022), recommends that adults value health states from the perspective of a 10-year-old child (Ramos-Goñi et al. 2020). This approach involves a change compared to the perspective used in the valuation of adult versions of EQ-5D instruments (Lipman et al. 2021a), in which adults value their own health. Changing the perspective is not without consequences: previous research on adults' valuation of a child's health revealed that the valuation depends on the valuation perspective (Carroll & Dawns 2009, Lipman et al. 2021b, Lang et al. 2024, Powell et al. 2021), with valuations also depending on adults' characteristics such as their parental status (Kreimeier et al. 2022, Matza et al. 2014). Adults may trade off more years of life for themselves than when they take the perspective of a 10-year-old child in EQ-5D-Y-3L health state valuations using the composite time trade-off (cTTO) method (Lang et al., 2024; Lipman et al., 2021b), although some studies have found no such differences (e.g. Attema et al., 2023).

Why this difference occurs, however, is not clear. Lipman et al. (2021b) referred to the concept of psychological distance, which is an individual's perception of an object (here: a person) as farther from oneself in terms of different dimensions, such as spatial location, social connections, and time or certainty of existence (Trope et al. 2007, Trope & Liberman 2010). It was suggested that using a child perspective (as opposed to adults valuing their own health) causes the person whose health is being valued to become distant, which reduces the readiness to trade off life years in cTTO, see Lipman et al. (2021b). This mechanism would imply that parents, when asked to take a child's perspective, may think of their own child, and as such should perceive the depicted child as closer (compared to how non-parents would perceive the distance). If increased distance explains lower willingness to trade off life years,

this would suggest parents, for whom the distance is smaller, should be more willing to trade off life years, and their elicited cTTO utilities in child perspectives should be lower compared to non-parents. However, other research finds the opposite: parents generally value child health states as higher, which was explained by parents' aversion to considering terminating a child's life (Åström et al. 2022, Kreimeier et al. 2022, Matza et al. 2014). Considering this apparent contradiction in previous work on the valuation of child health, we aimed to explore how parental status and psychological distance (among other adult characteristics such as sociocultural values) influence the valuation of child health in different perspectives.

As such, our work expands on the approaches in previous studies in several important directions. First, our study investigates the role of parental status in more detail. We quota-sampled parents and non-parents and experimentally varied the psychological distance experienced by using different child perspectives. That is, both parents and non-parents valued the health states of children that they were supposed to imagine as an unknown child (the most socially distant perspective), a known but not own child, and their own (imagined) child (the most socially close perspective). Comparing utilities between these groups could help explain why parents' utilities are typically higher. Second, whereas previous work has studied whether adults' utilities for their own health are associated with sociocultural characteristics (Bailey & Kind 2010, Roudijk et al. 2019), to our knowledge, such results do not exist for the valuation of child health. Our work fills this gap, which is relevant as one can expect several potential relationships between sociocultural characteristics and child health valuation. For example, adults who are more conservative (Schwartz et al. 2012) may be less likely to trade off a child's life years (in order to 'conserve' children's lives), which may entail higher utility values of health states measured in the cTTO task. Finally, we expand on previous studies by also measuring the psychological distance in each perspective. This allows us to study whether adults' characteristics (i.e., parental status and sociocultural characteristics) interplay with the psychological distance experienced in different child perspectives, and further elucidate the mechanisms through which utilities differ between perspectives.

Accordingly, our study aimed to investigate the relationships between valuation perspective (i.e., depicting a child as more or less familiar), perceived psychological distance from a child, adults' characteristics (including parental status and sociocultural characteristics), and the adults' TTO valuation of the child's EQ-5D-Y health states. Specifically, the following research questions (RQ) are studied (see Supplementary Materials 1 for a conceptual

diagram): (RQ1) How do different child perspectives and adult parental status interplay to affect the psychological distance from a depicted child as perceived by the adult? (RQ2) How do valuation perspective, adult parental status, and psychological distance interplay to affect EQ-5D-Y health states valuation with cTTO? (RQ3) What is the role of adult sociocultural characteristics (collectivism, conservatism, religiosity, and pro-euthanasia attitude) in these relationships?

Methods

Participants

We recruited a purposive sample of Polish adults. The participants were interviewed from July to October 2024 by a team of four interviewers – trained graduate psychology and management students. We used quotas based on parental status (even split of parents vs. non-parents) and basic demographics: gender (even split of males and females) and age (even split across the age ranges: 18-30, 31-40, 41-55). A person was considered a parent if they had a child who was dependent on them, i.e., if they took care of the child or were responsible for the child in another way. We did not recruit participants over 55 as it was unlikely that adults would still have dependent children, because the average age of a child leaving their parental home in Poland is 27 (data from 2023; Eurostat 2024), and the median Polish woman's age was 26 in the 1990s and 2000s (Szałtys, Cierniak-Piotrowska 2022). As such, the frequency of parents should decrease with parental age above 54, at least for women. Therefore, to be able to maintain comparability between parents and non-parents across the age and gender groups, we limited the age in our sample to 55. The interviewers were responsible for recruiting the participants according to the quota structure. However, the interviewers were not allowed to invite their relatives to avoid any discomfort with sharing potentially sensitive personal opinions. The final sample size was 108 (8 participants per quota; see sample size calculations in Supplementary Materials 2).

Procedure

The participants received shopping vouchers of an approximate value of EUR 15 upon completing all their due activities within the study. Our study was approved by the Ethics Committee of the SGH Warsaw School of Economics, Poland (approval no. 3/2024).

For each participant, data collection comprised two stages: (1) a self-administered online survey measuring sociocultural characteristics and (2) video web interviews (at least two days

after completing the online survey). The rationale for splitting our data collection into two stages was twofold. First, we aimed to avoid the participants' overload that could occur if they had to complete both sections within one interview. Second, given the personal and potentially sensitive nature of sociocultural characteristics, we wanted to increase the participants' comfort by letting them share their self-ratings without interaction with the interviewers.

Self-administered online survey

The self-administered online survey started with an informed consent form. Then, we measured the participants' characteristics in terms of sociocultural constructs, that is, collectivism (COLL), conservatism (CONS), religiosity (RELIG), and pro-euthanasia attitude (PRO-EUTH) with established multi-item measurement scales (Gorsuch & McPherson 1989, Schwartz et al. 2012, Singelis et al. 1995, Wasserman et al. 2005; see details in Supplementary Materials 3). Each measurement used multiple items scored with a seven-point response format, coded from 1 (= definitely no) to 7 (= definitely yes), instead of single items, to increase the measurement reliability and validity given the complexity and subjectivity of the studied constructs (Diamantopoulos et al. 2012). After measuring sociocultural constructs, the participants provided their demographic characteristics, including parental status, gender, and age.

Video web interviews

The study was conducted through individual online video interviews. Using screen sharing, participants were guided through the questions, response formats, and the cTTO task (Janssen et al. 2023), including the measurement of psychological distances for different perspectives and health states. The interviews started with health self-assessment using EQ-5D-5L and standard cTTO warm-up tasks based on the 'wheelchair example', and two mild health states valued from the self-perspective. EQ-5D-Y-3L health states are described by a five-digit code representing levels (1–3) on each dimension (mobility, looking after myself, doing usual activities, having pain or discomfort, feeling worried, sad or unhappy).

The warm-up states were 11112 and 12221. Next, participants were exposed to the main cTTO tasks, and valued a set of of EQ-5D-Y-3L health states for three different child perspectives, A-C, designed to operationalize the social dimension of psychological distance from a hypothetical child (see full descriptions in Supplementary Materials 4): (A) an unknown child (= a relatively distant child), (B) a known (but not own) child (= a

moderately distant child), and (C) an own child. The perspectives A, B, and C were presented in random order, and within each perspective, five health states were presented in random order (this order was constant across perspectives for a given participant). In line with Lipman et al. (2021b, Block 1), we included the following EQ-5D-Y-3L health states: 11121, 22222, 32211, 33323, and 33333. The above set comprises one mild health state (11121), two moderate states (32211 and 22222), and two severe states 33323 and 33333). After completing the valuation tasks within a child perspective (A, B, and C), the psychological distance adults experienced towards the child was measured with four items based on Kogut et al. (2018) and Kaleta & Aasheim (2023) (e.g., “That child seems close to me.”; see details in Supplementary Materials 3). The measurement used a seven-point response format, coded from 1 (= definitely no) to 7 (= definitely yes). Finally, participants valued the same health states from their self-perspective (D), which always appeared last as a reference condition.

Data analysis strategy

After reporting descriptive statistics for the sample and the measures of sociocultural characteristics and cTTO utilities (mostly in the Supplemental Material), we first illustrated overall patterns using violin plots comparing the distributions of psychological distance and cTTO utilities across perspectives between parents and non-parents. For the regression analyses, cTTO utilities were averaged across health states, yielding one mean value per perspective (A–D) for each participant ($108 \times 4 = 432$ observations). All continuous predictors (i.e., sociocultural characteristics and psychological distance) were mean-centered to reduce collinearity and facilitate interpretation of the main effects.

Subsequent analyses were conducted using linear mixed models (lme4 package in R, REML estimation) with random intercepts for participants. To address our research questions, two sets of models were estimated: one with *psychological distance* as the dependent variable (RQ1) and another with *cTTO valuation* as the dependent variable (RQ2). Each set followed a comparable stepwise strategy. In Step 1, we included the main effects of valuation perspective and parental status. In Step 2, we added their interaction (and, for the cTTO models, also examined psychological distance and its interaction with parental status). In Step 3, we incorporated sociocultural characteristics (COLL, CONS, RELIG, and PRO-EUTH) as main effects to address RQ3. For any sociocultural characteristic showing a significant main effect, we subsequently explored its interaction with perspective (and, for the cTTO models, with psychological distance).

Results

Descriptive statistics

The quota sampling strategy was executed as planned (as seen from the sample characteristics presented in Supplementary Materials 5), with the sample splits equal across the desired characteristics (age, parental status, and gender). A reasonable balance on other demographic characteristics was reached, although potentially the sample is slightly skewed towards those with higher education. Cronbach's internal reliability was acceptable to good for sociocultural measurement scales and the psychological distance measurement scale (for each valuation perspective, A, B, and C) (see Supplementary Materials 6). All measurements were pooled into single indices, which were correlated amongst each other as expected (e.g., religion was correlated with attitudes towards euthanasia; see socio-cultural indices' descriptives and intercorrelations in Supplementary Materials 7, and descriptives for the psychological distance index in Supplementary Materials 8). Means and standard deviations for cTTO utilities split by parental status, perspectives, and health states are presented in Supplementary Materials 9.

Determinants of psychological distance in a cTTO task

An overview of psychological distance from a child, as split by child perspectives and parental status, is presented in Figure 1. The figure shows that psychological distance reduces from Perspective A to C, but this effect seems to differ between parents and non-parents. This finding was substantiated with a set of linear mixed models with psychological distance as a dependent variable, reported in Table 1, including only Perspectives A-C (as for perspective D we did not collect data on psychological distance).

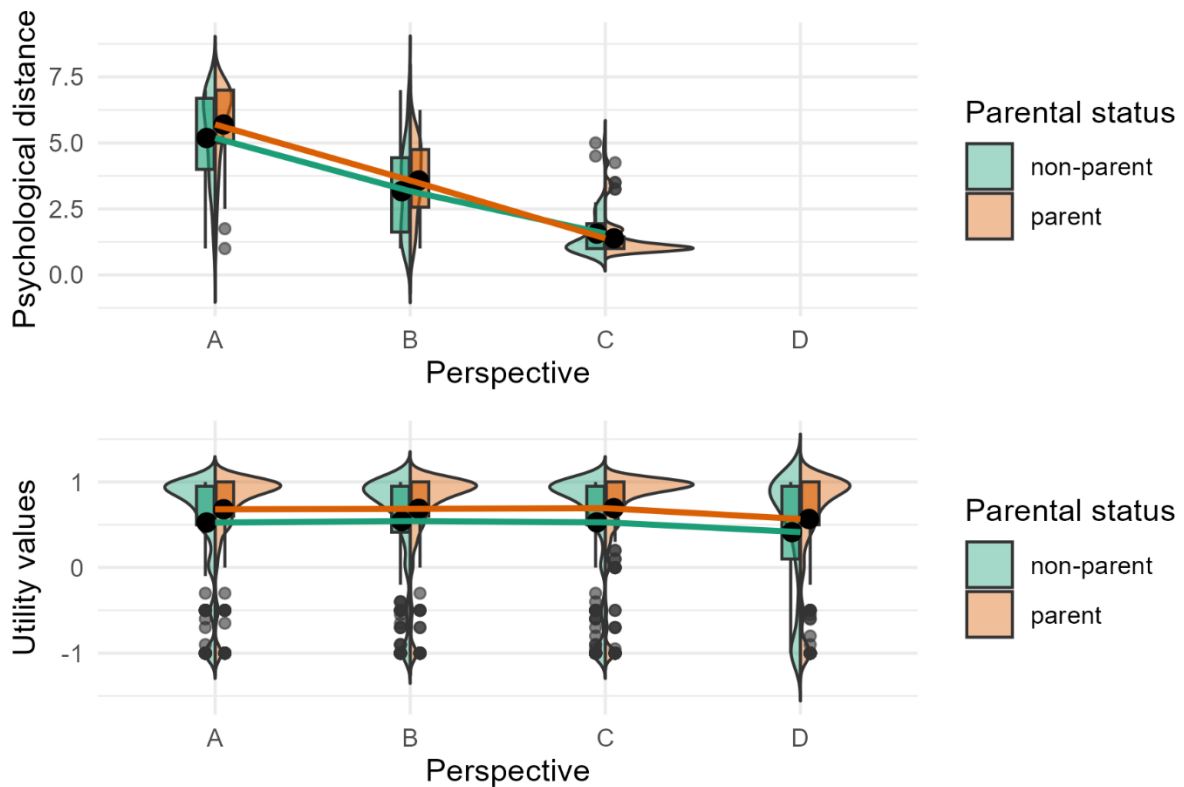


Figure 1. Psychological distance from a child and cTTO utilities – split by the child perspectives and parental status.

In our first modelling step, we found no effects of parental status (Table 1, Model 1). However, Perspectives A (unknown child) and B (known but not own child) showed positive effects (compared to Perspective C), that is, the unknown child and not own child perspectives showed a larger psychological distance than the own child perspective. When we introduced the interaction terms in our second analytical step (Table 1, Model 2), both interaction effects were positive, that is, the effects of Perspective A (unknown child) and Perspective B (known but not own child) on psychological distance were more positive for parents (vs. non-parents). In the model with main effects for sociocultural characteristics (Table 1, Model 3 and 4), only COLL showed a significant (negative) effect, that is, psychological distance from a child decreased with adult collectivism. Our exploratory analyses including the interaction terms between Perspective A/B and COLL indicate that the interaction effects of COLL and perspectives were non-significant.

Table 1. Regression results for psychological distance from a child as a dependent variable, based on child perspectives (A, B, and C)

| | (1) | (2) | (3) | (4) |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Perspective = A (<i>unknown child</i>) | 3.968*** (0.1379) | 3.620*** (0.1925) | 3.968*** (0.1379) | 3.628*** (0.1966) |
| Perspective = B (<i>known but not own child</i>) | 1.901*** (0.1379) | 1.607*** (0.1925) | 1.900*** (0.1379) | 1.548*** (0.1966) |
| Parental status = PARENT | 0.247 (0.2128) | -0.181 (0.2645) | 0.319 (0.2228) | -0.103 (0.2751) |
| (Perspective = A) × (Parental status = PARENT) | | 0.694* (0.2722) | | 0.679* (0.2843) |
| (Perspective = B) × (Parental status = PARENT) | | 0.588* (0.2722) | | 0.705* (0.2843) |
| COLL | | | -0.316* (0.152) | -0.159 (0.1669) |
| CONS | | | 0.251 (0.1571) | |
| PRO-EUTH | | | -0.005 (0.0834) | |
| RELIG | | | 0.146 (0.0974) | |
| (Perspective = A) × COLL | | | | 0.031 (0.1725) |
| (Perspective = B) × COLL | | | | -0.24 (0.1725) |
| <i>Constant</i> | 1.351*** (0.1702) | 1.565*** (0.187) | 1.315*** (0.1721) | 1.526*** (0.1902) |

Note: COLL = collectivism, CONS = conservatism, RELIG = religiosity, PRO_EUTH = pro-euthanasia attitude. All sociocultural characteristics were mean-centered. The dataset consisted of $108 \times 3 = 324$ units. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Determinants of the cTTO health states values

Self-perspective vs. pooled child perspectives

As seen in Figure 1, cTTO utilities differ little between child perspectives A-C, but utilities appear to be lower for Perspective D and for non-parents. We confirmed this effect with a set of regression analyses in which we compared cTTO utilities between all child perspectives (A, B and C) to the valuations in the self-perspective (D). Psychological distance was omitted from the models as it was not measured for perspective D. As seen in Table 2 (Model 1) the effect of Perspective D was significant and negative, that is, adults gave higher utilities when valuing child (vs. their own) health states. The effect of parental status was also significant, but positive, i.e. parents have higher valuations. In line with our stepwise modelling strategy, in Table 2, Model 2, we report a model that included the interaction term of Perspective D and parental status, which was non-significant, suggesting that these effects were similar across both parents and non-parents. Note that the effect of parental status is not exclusive to child perspectives, i.e. it was also positive and significant in a linear regression restricted only to self-perspective cTTO utilities ($B = 0.153$, $t(106) = 2.114$, $p = 0.037$). When we added sociocultural characteristics in our third analytical step (Table 2, Model 3), the effect of Perspective D remained significant, and only the effect of CONS was significant, suggesting that more conservative individuals have higher cTTO utilities. When exploring potential interactions with CONS (Table 2, Model 4), the effect of Perspective D remained negative, the effect of CONS was positive, and other effects were non-significant.

Child perspectives and psychological distance

The final regression models focus on the effect of the interplay between psychological distance and child perspectives on cTTO utilities (see Table 3). In Model 1, we found no evidence for differences between the child perspectives in cTTO utilities. Perspectives A and B showed no significant effects, but the effect of parental status was positive. That is parents (vs. non-parents) gave higher utilities for child health states. This effect was maintained in subsequent models, in which we found no effect of psychological distance on cTTO utilities (Table 3, Model 2) or evidence of interaction effects between the interaction terms of Perspective A/B and parental status (Table 3, Model 3), the effects of parental status remained positive and were the only significant ones. When we supplemented Model 3 with an interaction effect between psychological distance and parental status (Table 3, Model 4, no significant effects occurred. In our final analytical steps, the models were supplemented with sociocultural characteristics. Only CONS showed a positive main effect (Table 3, Model

5) – cTTO utilities increased with adult conservatism, or – put differently – the willingness to trade off a child’s life years decreased with conservatism. When we explored potential evidence for interaction effects for CONS, we found no evidence for interactions between CONS and Perspective A/B (Table 3, Model 6), but found a significant positive interaction effect between psychological distance and CONS (Table 3, Model 7). This indicates that the association between psychological distance and cTTO utilities differs by levels of conservatism: among participants with higher conservative values, greater perceived psychological distance was associated with higher (less negative) cTTO utilities for child health states, whereas this association was weaker or absent among less conservative participants. Interestingly, in this final model, the effect of parental status is not significant, but the effect of psychological distance became significant and positive.

Table 2. Mixed linear results for utility as a dependent variable – adult self-perspective (D) vs. pooled child perspectives (A, B, and C)

| | (1) | (2) | (3) | (4) |
|---|------------------------------|------------------------------|------------------------------|------------------------------|
| Perspective = D (<i>self-perspective</i>) | -0.119*** (0.0191) | -0.119*** (0.0271) | -0.119*** (0.0191) | -0.122*** (0.0276) |
| Parental status = PARENT | 0.154** (0.0586) | 0.155* (0.0594) | 0.112 (0.061) | 0.108 (0.0599) |
| (Perspective = D) × (Parental status = PARENT) | | -0.001 (0.0383) | | 0.005 (0.0398) |
| COLL | | | -0.030 (0.0416) | |
| CONS | | | 0.104* (0.043) | 0.106** (0.0371) |
| PRO-EUTH | | | 0.012 (0.0228) | |
| RELIG | | | -0.019 (0.0266) | |
| (Perspective = D) × CONS | | | | -0.014 (0.0247) |
| Constant | <i>0.533***</i> (0.0417) | <i>0.533***</i> (0.0420) | <i>0.554***</i> (0.042) | <i>0.556***</i> (0.0415) |

Note: COLL = collectivism, CONS = conservatism, RELIG = religiosity, PRO_EUTH = pro-euthanasia attitude. All sociocultural characteristics were mean-centered. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The dataset consisted of $108 \times 4 = 432$ units.

Table 3. Mixed linear results for utility as a dependent variable, based on child perspectives (A, B, and C)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--|------------------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------------------|------------------------------------|------------------------------------|
| Perspective = A (<i>unknown child</i>) | -0.008 (0.0188) | -0.013 (0.0397) | -0.002 (0.0267) | -0.042 (0.0525) | -0.012 (0.0398) | 0.006 (0.027) | -0.042 (0.0528) |
| Perspective = B (<i>known but not own child</i>) | 0.004 (0.0188) | 0.001 (0.0252) | 0.015 (0.0267) | -0.003 (0.0334) | 0.002 (0.0252) | 0.013 (0.027) | -0.012 (0.0337) |
| Psychological distance | | 0.001 (0.0088) | | 0.011 (0.0125) | 0.001 (0.0088) | | 0.161*** (0.0458) |
| Parental status = PARENT | 0.155** (0.0588) | 0.154* (0.0589) | 0.166** (0.0627) | 0.130 (0.0721) | 0.115 (0.0615) | 0.124 (0.0633) | 0.082 (0.0723) |
| (Perspective = A) × (Parental status = PARENT) | | | -0.011 (0.0377) | 0.061 (0.0811) | | -0.028 (0.039) | 0.066 (0.0828) |
| (Perspective = B) × (Parental status = PARENT) | | | -0.023 (0.0377) | 0.011 (0.0513) | | -0.018 (0.039) | 0.027 (0.0523) |
| (Psychological distance) × (Parental status = PARENT) | | | | -0.019 (0.018) | | | -0.021 (0.0179) |
| COLL | | | | | -0.027 (0.042) | | |
| CONS | | | | | 0.113* (0.0434) | 0.097* (0.0392) | 0.161*** (0.0458) |
| PRO-EUTH | | | | | 0.000 (0.0230) | | |
| RELIG | | | | | -0.018 (0.0269) | | |
| (Perspective = A) × CONS | | | | | | 0.038 (0.0242) | -0.088 (0.0511) |
| (Perspective = B) × CONS | | | | | | -0.011 (0.0242) | -0.069* (0.0316) |
| (Psychological distance) × CONS | | | | | | | 0.033** (0.0119) |
| <i>Constant</i> | <i>0.534***</i> <i>(0.0430)</i> | <i>0.537***</i> <i>(0.0468)</i> | <i>0.528***</i> <i>(0.0444)</i> | <i>0.549***</i> <i>(0.0502)</i> | <i>0.556*** (0.0473)</i> | <i>0.550***</i> <i>(0.0439)</i> | <i>0.571***</i> <i>(0.0496)</i> |

Note: COLL = collectivism, CONS = conservatism, RELIG = religiosity, PRO_EUTH = pro-euthanasia attitude. All sociocultural characteristics were mean-centered.. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The dataset consisted of $108 \times 3 = 324$ units.

Discussion

Our study aimed to investigate the relationships between valuation perspective (i.e., depicting a child as more or less familiar), perceived psychological distance from a child, adults' characteristics (including parental status and sociocultural variables), and the adults' cTTO valuation of the child's EQ-5D-Y health states. In our experiment, adults valued EQ-5D-Y-3L health states in child perspectives designed to change psychological distance. Our results suggest that this design worked: psychological distance from a child is affected by valuation perspective (more strongly for parents than non-parents). Interestingly, cTTO utilities for these child health states did not differ between child perspectives, and are therefore, unaffected by psychological distance (although they are affected by parental status). Additionally, our study provides novel results on how psychological distance and cTTO utilities may be affected by sociocultural factors, extending the existing research on sociocultural determinants of EQ-5D valuation of adult health states (Bailey & Kind 2010, Roudijk et al. 2019).

We aimed to influence psychological distance by asking adults to consider an unknown, known, or their own child, and our results indicate that depicting a child in a cTTO task as unknown to an adult makes them perceive the child as more socially distant – especially when the adult is a parent, which is a novel result. Perhaps, parents – as potentially more involved in social relationships with children – are more sensitive to depicting a hypothetical child in a cTTO task as not their own (vs. their own). Specifically, parents may be more able to realize having weaker (vs. stronger) social relationships with the not-own (vs. own) child because the actual relationships with their real children may be activated in their minds. In exploring the effects of sociocultural characteristics, we find that psychological distance from a depicted child may be decreased by the adult's collectivism, which may result from a tendency of highly collectivistic people to perceive themselves as socially related to other people (Shavitt et al. 2008).

In terms of the determinants of EQ-5D-Y-3L utilities in cTTO, our study provided no strong evidence linking cTTO utilities with child perspectives and psychological distance. Instead, our results demonstrate that parents value child health states more, as compared to non-parents, in line with previous findings (Åström et al. 2022, Kreimeier et al. 2022, Matza et al. 2014). Also, utilities were higher for child perspectives compared to self-perspectives, in line with Lipman et al. (2021b). In other words, while the current study confirmed the previous

findings in terms of the role of parental status and self-perspective vs. child perspective, our results do not support the role of child perspectives and psychological distance in child health states valuation. Interestingly, our results suggest parents also have higher utilities in self-perspectives. Assuming that this effect is, at least partially, causal, its possible explanation is that parents value their life years more because they want to live longer for their children, who can be considered as significant others (Hansen et al. 2021).

Moreover, our study suggests that adult conservatism increases cTTO utilities: highly conservative people may be less likely to trade off a given period of a child's life in full health. This can be explained by a tendency to preserve, which is typical for conservative people (Schwartz et al. 2012). Highly conservative adults may be less likely to choose an option to give up a child's life years, as it may be interpreted as ceasing the child's life, which would be against preservation. That mechanism may hold for valuing own health, as suggested by our results for adult self-perspective. Our study also indicates that the positive influence of conservatism on cTTO utilities for child health states is increased by the psychological distance from the child. A possible explanation based on the Construal Level Theory (Trope et al. 2007, Trope & Liberman 2010), positing that people perceive psychologically more distant objects through more abstract terms, such as general values (Giacomantonio et al. 2010), may be that when a child is perceived as more distant, the general value of life preservation, endorsed by highly conservative individuals and increasing cTTO utilities as discussed above, plays a larger role.

Our study has several limitations. First, our purposive sample of Polish adults was not representative of the general population. While age is known to differentiate cTTO utilities (Arab-Zozani et al. 2021), our age limit of 55 excluded a considerable portion of adults. Second, we involved only five health states, so other relevant health state blocking can be used, for example, to better isolate the effects of valuation perspective and psychological distance on each EQ-5D dimension (Bailey & Kind 2010). Third, our within-subject design prolonged the interviews, potentially worsening data quality (Augestad et al. 2012), and might increase demand biases.

As a practical implication, our results suggest that child health cTTO valuation studies should consider the sociocultural composition of their adult samples, including conservatism, collectivism, and parental status during the analysis, as they may affect psychological distance and cTTO utilities. Valuation studies should also take into account that adult characteristics

may vary across and within countries (Szymanski et al. 2024, World Value Survey 2023) and depend on data collection techniques. While our data do not support effects of child perspectives on utilities, the perspectives seem to affect psychological distance, which may, in turn, shape utilities. Therefore, the valuation studies should carefully design the way a child is depicted in a TTO task, especially given that adults tend to imagine an unspecified child in various ways (Reckers-Droog et al. 2022).

References

- Arab-Zozani, M., Safari, H., Dori, Z., Afshari, S., Ameri, H., Namiranian, N., ... & Jafari, A. (2022). Estimating utility values for health states of DFU patients using EQ-5D-5L and cTTO. *The International Journal of Lower Extremity Wounds*, 21(1), 41-49.
- Åström, M., Conte, H., Berg, J., & Burström, K. (2022). 'Like holding the axe on who should live or not': adolescents' and adults' perceptions of valuing children's health states using a standardised valuation protocol for the EQ-5D-Y-3L. *Quality of Life Research*, 31(7), 2133-2142.
- Attema, A. E., Lang, Z., & Lipman, S. A. (2023). Can independently elicited adult-and child-perspective health-state utilities explain priority setting?. *Value in Health*, 26(11), 1645-1654.
- Augustad, L. A., Rand-Hendriksen, K., Kristiansen, I. S., & Stavem, K. (2012). Learning effects in time trade-off based valuation of EQ-5D health states. *Value in Health*, 15(2), 340-345.
- Bailey, H., & Kind, P. (2010). Preliminary findings of an investigation into the relationship between national culture and EQ-5D value sets. *Quality of Life Research*, 19, 1145-1154.
- Carroll, A. E., & Downs, S. M. (2009). Improving decision analyses: parent preferences (utility values) for pediatric health outcomes. *The Journal of Pediatrics*, 155(1), 21-25.
- Devlin, N. J. (2022). Valuing child health isn't child's play. *Value in Health*, 25(7), 1087-1089.
- Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: a predictive validity perspective. *Journal of the Academy of Marketing Science*, 40, 434-449.
- Donahue, M. J. (1985). Intrinsic and extrinsic religiousness: Review and meta-analysis. *Journal of personality and social psychology*, 48(2), 400.
- Eurostat (2024). Age of leaving the parental home steady in 2023. <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240930-2> [accessed on Jan 15, 2025].
- Giacomantonio, M., De Dreu, C. K., Shalvi, S., Sligte, D., & Leder, S. (2010). Psychological distance boosts value-behavior correspondence in ultimatum bargaining and integrative negotiation. *Journal of Experimental Social Psychology*, 46(5), 824-829.
- Golicki, D., & Młyńczak, K. (2022). Measurement properties of the EQ-5D-Y: a systematic review. *Value in health*, 25(11), 1910-1921.
- Gorsuch, R. L., & McPherson, S. E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 348-354.
- Hansen, T. M., Stavem, K., & Rand, K. (2021). Time trade-off with someone to live for: impact of having significant others on time trade-off valuations of hypothetical health states. *Quality of Life Research*, 1-9.
- Hill, H., Rowen, D., Pennington, B., Wong, R., & Wailoo, A. (2020). A review of the methods used to generate utility values in NICE technology assessments for children and adolescents. *Value in Health*, 23(7), 907-917.
- Janssen, B. M., Oppe, M., Versteegh, M. M., & Stolk, E. A. (2013). Introducing the composite time trade-off: a test of feasibility and face validity. *The European Journal of Health Economics*, 14, 5-13.

- Kaleta, J. P., & Aasheim, C. (2023). Construal of social relationships in online consumer reviews. *Journal of Computer Information Systems*, 63(2), 269-280.
- Kogut, T., Ritov, I., Rubaltelli, E., & Liberman, N. (2018). How far is the suffering? The role of psychological distance and victims' identifiability in donation decisions. *Judgment and Decision making*, 13(5), 458-466.
- Kreimeier, S., Mott, D., Ludwig, K., & Greiner, W. (2022). EQ-5D-Y value set for Germany. *Pharmacoeconomics*, 40(Suppl 2), 217-229.
- Kwon, J., Kim, S. W., Ungar, W. J., Tsiplova, K., Madan, J., & Petrou, S. (2018). A systematic review and meta-analysis of childhood health utilities. *Medical Decision Making*, 38(3), 277-305.
- Lewis, J. A., Hamilton, J. C., Dean Elmore, J., & Tullett, A. M. (2019). The effects of severity and number of misfortunes on reactions to victims. *Social justice research*, 32(4), 445-458.
- Lang, Z., Attema, A. E., & Lipman, S. A. (2024). The effect of duration and time preference on the gap between adult and child health state valuations in time trade-off. *The European Journal of Health Economics*, 25(4), 601-613.
- Lipman, S. A., Reckers-Droog, V. T., & Kreimeier, S. (2021a). Think of the children: a discussion of the rationale for and implications of the perspective used for EQ-5D-Y health state valuation. *Value in Health*, 24(7), 976-982.
- Lipman, S. A., Reckers-Droog, V. T., Karimi, M., Jakubczyk, M., & Attema, A. E. (2021b). Self vs. other, child vs. adult. An experimental comparison of valuation perspectives for valuation of EQ-5D-Y-3L health states. *The European Journal of Health Economics*, 22(9), 1507-1518.
- Matza, L. S., Boye, K. S., Feeny, D. H., Johnston, J. A., Bowman, L., & Jordan, J. B. (2014). Impact of caregiver and parenting status on time trade-off and standard gamble utility scores for health state descriptions. *Health and Quality of Life Outcomes*, 12(1), 1-11.
- Powell, P. A., Rowen, D., Rivero-Arias, O., Tsuchiya, A., & Brazier, J. E. (2021). Valuing child and adolescent health: a qualitative study on different perspectives and priorities taken by the adult general public. *Health and quality of life outcomes*, 19(1), 1-14.
- Powell, P. A., Rowen, D., Keetharuth, A., Mukuria, C., & Shah, K. (2024). Who should value children's health and how? An international Delphi study. *Social Science & Medicine*, 355, 117127.
- Ramos-Goñi, J. M., Oppe, M., Stolk, E., Shah, K., Kreimeier, S., Rivero-Arias, O., & Devlin, N. (2020). International valuation protocol for the EQ-5D-Y-3L. *Pharmacoeconomics*, 38, 653-663.
- Reckers-Droog, V., Karimi, M., Lipman, S., & Verstraete, J. (2022). Why do adults value EQ-5D-Y-3L health states differently for themselves than for children and adolescents: a think-aloud study. *Value in Health*, 25(7), 1174-1184.
- Rencz, F., Ruzsa, G., Bató, A., Yang, Z., Finch, A. P., & Brodsky, V. (2022). Value set for the EQ-5D-Y-3L in Hungary. *Pharmacoeconomics*, 40(Suppl 2), 205-215.
- Roudijk, B., Donders, A. R. T., & Stalmeier, P. F. (2019). Cultural values: can they explain differences in health utilities between countries?. *Medical Decision Making*, 39(5), 605-616.
- Roudijk, B., Sajjad, A., Essers, B., Lipman, S., Stalmeier, P., & Finch, A. P. (2022). A value set for the EQ-5D-Y-3L in the Netherlands. *Pharmacoeconomics*, 40(Suppl 2), 193-203.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1), 11.
- Shavitt, S.; Lee, A.Y.; Johnson, T.P. (2008). Cross-cultural consumer psychology. In *Handbook of Consumer Psychology*; Haugtvedt, C., Herr, P., Kardes, F., Eds.; Mahwah: Erlbaum, NJ, 1103–1131.
- Singelis, T. M., Triandis, H. C., Bhawuk, D. P., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-cultural research*, 29(3), 240-275.
- Szałtys, D., Cierniak-Piotrowska, M. (2022). Wybrane wskaźniki z zakresu diety w latach 1980-2021. Uwarunkowania diety (conference paper). <https://www.gov.pl/attachment/68660185-68a0-4c4d-ac9e-56ae2f91ce5a> [accessed on Mar 14, 2025].
- Szymanski, M., & Wilczewski, M. (2024). Where West Meets East: Culture and Preferred Leader Behavior in Poland A and Poland B. *Cross-Cultural Research*, 58(4), 334-345.

- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, 17(2), 83-95.
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological review*, 117(2), 440.
- Yang, Z., Jiang, J., Wang, P., Jin, X., Wu, J., Fang, Y., Feng, D., Xiaoyu, X., Li, S., Jing, M., Zheng, B., Huang, W., & Luo, N. (2022). Estimating an EQ-5D-Y-3L value set for China. *Pharmacoeconomics*, 40(Suppl 2), 147-155.
- Wasserman, J., Clair, J. M., & Ritchey, F. J. (2005). A scale to assess attitudes toward euthanasia. *OMEGA-Journal of Death and Dying*, 51(3), 229-237.
- World Values Survey (2023). The Inglehart-Welzel World Cultural Map - World Values Survey 7. Source: <http://www.worldvaluessurvey.org/> [accessed on Mar 14, 2025].

SUPPLEMENTARY MATERIALS

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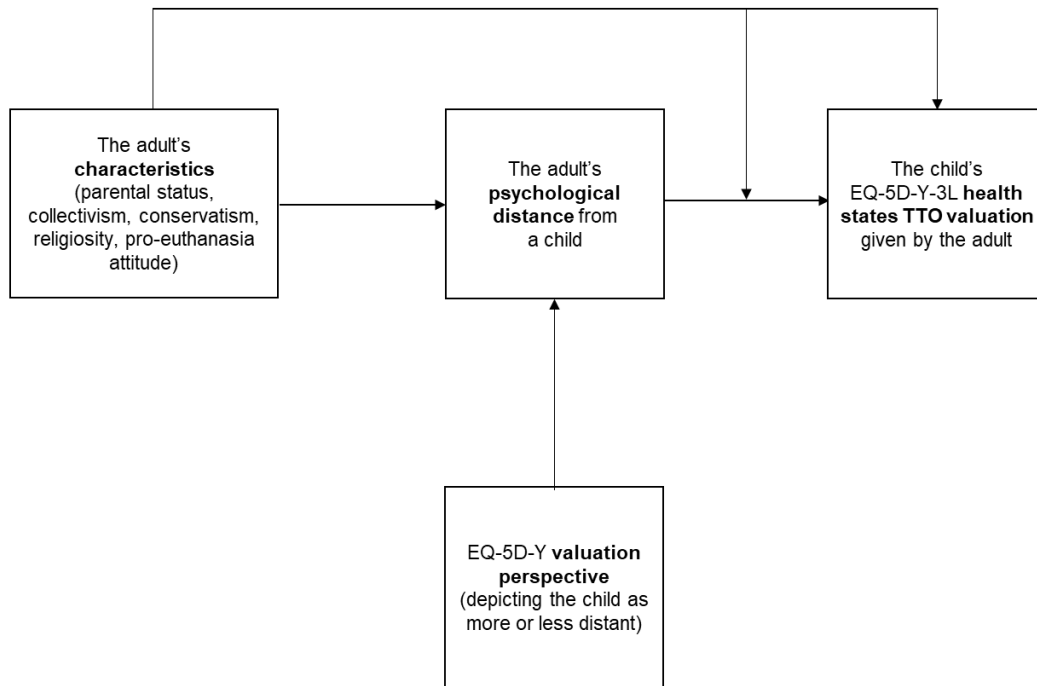
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1 – CONCEPTUAL DIAGRAM



2 – SAMPLE SIZE DETERMINATION

We assumed a required sample size of $N_{\text{required}} = 100$, similar to Lipman et al. (2021b, Block 1, Block 2). Based on previous studies, we consider this sample size sufficient to detect differences in cTTO. Matza et al. (2014, Study 1) used a sample of 80 adults (including 30 caregivers and 50 non-caregivers) and reported significant differences in cTTO valuation between those groups (p 's $< .05$) for mild and severe health states (mild: $M_{\text{caregivers}} = .92$, $SD = .06$, $M_{\text{non-caregivers}} = .85$, $SD = .13$, $t = 3.2$, $p < .01$, Cohen's $d = .69$; severe: $M_{\text{caregivers}} = .69$, $SD = .28$, $M_{\text{non-caregivers}} = .53$, $SD = .29$, $t = 2.3$, $p = .03$, Cohen's $d = .56$). Therefore, we assumed a large effect size ($d = .5$) for the above difference. As a proxy, we considered the total sample size for the independent t-test ($\alpha = .05$, $\beta = .8$), which equals $N=102$, being in line with our planned sample size. Apart from the difference between parents and non-parents, the important part of our analysis will pertain to how the difference in cTTO between parents and non-parents depends on the valuation perspective (i.e., different social distance to a depicted child). As there is no estimation of the effect sizes for such (parental status) \times (social distance) interaction effect on cTTO (because it is a novel relationship to be studied), we set our sample size according to samples used in similar previous studies (e.g., Lipman et al. 2021a).

Applying the required sample size of $N_{\text{required}} = 100$ to our quota structure (i.e., 12 even quotas), we assumed the size of each quota as $N_{\text{quota}} = 9$, leading to the total sample size of $N_{\text{total}} = 108$ ($N_{\text{quota}} \times (\text{number of quotas}) = 12 \times 9 = 108 = N_{\text{total}}$).

3 – MEASUREMENTS SCALES

Specifically, we measured collectivism using a 16-item scale based on Singelis et al. (1995), consisting of two subscales corresponding to two subdimensions of collectivism (i.e., horizontal collectivism and vertical collectivism). Conservatism was measured using a 15-item scale based on Schwartz et al. (2012), consisting of five three-item subscales corresponding to five subdimensions of conservation values according to the Schwartz et al. (2012) model of personal values (i.e., personal security, societal security, tradition, conformity to rules, and interpersonal conformity). Religiosity was measured using a 14-item scale based on Gorsuch & McPherson (1989). The scale comprised three aspects of religiosity (Donahue 1985), i.e., intrinsic religiosity, extrinsic social religiosity, and extrinsic personal religiosity. Compared to the original scale (Gorsuch & McPherson 1989), the items used in the current study were modified to be relevant not only to people practicing a religion but also to non-religious people. The pro-euthanasia attitude was measured using a 10-item scale based on Wasserman et al. (2005), comprising different aspects of euthanasia, for example, allowing a patient to die if they request it or ending a patient's life in a hopeless medical condition.

All items use a 7-point response format coded from 1=definitely NO to 7=definitely YES.

[collectivism][based on Singelis et al. (1995)] [horizontal collectivism]

| | |
|---------------|---|
| HCOLL1 | The well-being of other people I work with is important to me. |
| HCOLL2 | If a person I work with gets a prize, I would feel proud. |
| HCOLL3 | If my relative was in financial difficulty, I would help within my means. |
| HCOLL4 | It is important to maintain harmony within my group. |
| HCOLL5 | I like sharing little things with other people around me. |
| HCOLL6 | I feel good when I cooperate with others. |
| HCOLL7 | My happiness depends very much on the happiness of those around me. |
| HCOLL8 | To me, pleasure is spending time with others. |

[vertical collectivism]

| | |
|---------------|--|
| VCOLL1 | I would sacrifice, to a certain degree, an activity that I enjoy very much if my family did not approve it. |
| VCOLL2 | To some extent, I would do what would please my family, even if I disliked that activity. |
| VCOLL3 | Before taking a major trip, I consult with most members of my family and many friends. |
| VCOLL4 | I usually sacrifice my self-interest for the benefit of my group. |
| VCOLL5 | Children should be taught to place duty before pleasure. |
| VCOLL6 | I hate to disagree with others in my group. |
| VCOLL7 | In some circumstances, we should keep - if possible - our aging parents with us at home. |
| VCOLL8 | Children should feel honored if their parents receive a distinguished award. |

[conservatism][based on Schwartz et al. (2012)]

[security – personal]

| | |
|-------------------|---|
| CONS_PSAF1 | We should avoid anything that might endanger our safety. |
| CONS_PSAF2 | Apart from taking care of others, our personal security is extremely important. |
| CONS_PSAF3 | It is important to live in secure surroundings. |

[security – societal]

| | |
|-------------------|--|
| CONS_SSAF1 | It is extremely important that our country protects itself against all threats. |
|-------------------|--|

| | |
|------------|---|
| CONS_SSAF2 | The state must be strong, so it can defend its citizens. |
| CONS_SSAF3 | Having order and stability in society is extremely important. |

[tradition]

| | |
|-------------------|---|
| CONS_TRAD1 | It is important to maintain traditional values or beliefs. |
| CONS_TRAD2 | Following a family's customs or the customs of religion is important. |
| CONS_TRAD3 | The traditional practices are valuable. |

[conformity - rules]

| | |
|---------------------|---|
| CONS_CONF_R1 | People should listen to what people in authority say. |
| CONS_CONF_R2 | It is important to follow the rules even when no one is watching. |
| CONS_CONF_R3 | Obedying all the laws is important. |

[conformity - interpersonal]

| | |
|----------------------|---|
| CONS_CONF_IP1 | It is important to avoid unnecessarily upsetting other people. |
| CONS_CONF_IP2 | It is important never to be annoying to anyone. |
| CONS_CONF_IP3 | People should try to be tactful and avoid irritating people. |

[religiosity][based on Gorsuch & McPherson (1989)]

| | |
|---------------|---|
| RELIG1 | I can say that I have my own religion, and I enjoy reading texts related to this religion. |
| RELIG2 | I go to church, and it happens that I make friends there. |
| RELIG3 | It doesn't much matter what I believe so long as I am good. (REVERSED CODING) |
| RELIG4 | It is important to me to spend time in private thought and prayer. |
| RELIG5 | I have often had a strong sense of God's presence. |
| RELIG6 | I pray to gain relief and protection. |
| RELIG7 | I have religious beliefs and try to live all my life according to them. |
| RELIG8 | I have my own religion, and it offers me comfort in times of trouble and sorrow. |
| RELIG9 | I pray, and it gives me peace and happiness. |
| RELIG10 | I don't let religion affect my daily life. (REVERSED CODING) |
| RELIG11 | I go to church, and I like meeting my friends there. |
| RELIG12 | I have my own religion, and my whole approach to life is based on it. |
| RELIG13 | I can say I go to church, and I enjoy seeing the people I know there. |
| RELIG14 | Many other things beyond religion are more important in life. (REVERSED CODING) |

[attitude towards euthanasia][based on Wasserman et al. (2005)]

| | |
|------------------|--|
| PRO-EUTH1 | If a patient in severe pain requests it, a doctor should remove life support and allow that patient to die. |
|------------------|--|

| | |
|------------|--|
| PRO-EUTH2 | In certain circumstances and after relevant consultations, it is okay for a doctor to administer enough medicine to end a patient's life if the doctor does not believe that they will recover. |
| PRO-EUTH3 | If a patient in severe pain requests it, a doctor should prescribe that patient enough medicine to end their life. |
| PRO-EUTH4 | In certain circumstances and after relevant consultations, it is okay for a doctor to remove life-support and let a patient die if the doctor does not believe the patient will recover. |
| PRO-EUTH5 | It is okay for a doctor to administer enough medicine to a suffering patient to end that patient's life if the doctor thinks that the patient's pain is too severe. |
| PRO-EUTH6 | Even if a doctor does not think that a patient will recover, it would be wrong for the doctor to end the life of a patient. (REVERSED CODING) |
| PRO-EUTH7 | In certain circumstances and after relevant consultations, it is okay for a doctor to remove a patient's life-support and let them die if the doctor thinks that the patient's pain is too severe. |
| PRO-EUTH8 | If a dying patient requests it, a doctor should prescribe enough medicine to end their life. |
| PRO-EUTH9 | Even if a doctor knows that a patient is in severe, uncontrollable pain, it would be wrong for the doctor to end the life of that patient. (REVERSED CODING) |
| PRO-EUTH10 | If a dying patient requests it, a doctor should remove their life support and allow them to die. |

[psychological distance from a depicted child]

[adapted from Kogut et al. 2018]

| | |
|------------|---|
| PSYCHDIST1 | It would be natural for me to use the term "we" to describe myself and that child. (REVERSED CODING) |
|------------|---|

[adapted from Kaleta & Aasheim 2022]

| | |
|------------|--|
| PSYCHDIST2 | That child seems close to me. (REVERSED CODING) |
| PSYCHDIST3 | I could belong to the same group as that child. (REVERSED CODING) |
| PSYCHDIST4 | I could be a similar person to that child. (REVERSED CODING) |

4 – CHILD VALUATION PERSPECTIVES

Child valuation perspectives were operationalized by the following instructions provided within video interviews, before TTO tasks for each perspective:

PERSPECTIVE A: an unknown child (= a relatively distant child); the instruction read, “Think of a child that you do not personally know (or imagine such a child). Let's assume the child is 10 years old. You do not know anything about that child and do not know their relatives. You do not have any connections to that child. You have never seen that child in person.”

PERSPECTIVE B: a known (but not own) child (= a moderately distant child); the instruction read, “Think of a child that you personally know but not your own child (or imagine such a child). Let's assume the child is 10 years old. You are somewhat familiar with that child and know their relatives, so you have some connections to that child. You have seen that child in person.”

PERSPECTIVE C: an own child (note: that perspective was displayed regardless of adults' parental status, so that non-parents should imagine their hypothetical child) (= a relatively close child); the instruction read, “Think of your own child, who depends on you. Let's assume the child is 10 years old. By ‘depending,’ I mean that you are responsible for their physical and mental well-being, education, accommodation, etc. If you have a child who depends on you, think of them. If you have more than one such child, think of one of them (assuming the child is 10 years old). If you do not have a child that depends on you, imagine you do. Think a while about what this child would be like (assuming the child is 10 years old).“

5 – SAMPLE CHARACTERISTICS

| | Frequency | Percent |
|---------------------------|-----------|---------|
| Gender | | |
| Females | 54 | 50.0 |
| Males | 54 | 50.0 |
| Age¹ | | |
| 18-30 | 36 | 33.3 |
| 31-40 | 36 | 33.3 |
| 41-55 | 36 | 33.3 |
| Parental status | | |
| parent | 54 | 50.0 |
| non-parent | 54 | 50.0 |
| Marital status | | |
| married | 82 | 75.9 |
| never married | 11 | 10.2 |
| separated or divorced | 15 | 13.9 |
| Education | | |
| master's degree or higher | 57 | 52.8 |
| bachelor's degree | 19 | 17.6 |
| post-secondary or lower | 32 | 29.6 |

| | Frequency | Percent |
|--|-----------|---------|
| Occupation² | | |
| employment contract | 70 | 64.8 |
| business owner | 20 | 18.5 |
| mandate contract or contract work | 21 | 19.4 |
| housekeeping | 10 | 9.3 |
| studying | 9 | 8.3 |
| retirement, pension, or unemployed | 4 | 3.8 |
| City size | | |
| village | 11 | 10.2 |
| small city (up to 20,000 inhabitants) | 12 | 11.1 |
| medium-size city (from 20,000 to 100,000 inhabitants) | 6 | 5.6 |
| big city (from 100,000 to 500,000) | 58 | 53.7 |
| large city (above 500,000 inhabitants) | 21 | 19.4 |
| Income (personal monthly net income in PLN) | | |
| ≤5000 | 26 | 24.0 |
| 5001-8000 | 34 | 31.5 |
| >8000 | 21 | 19.5 |
| I prefer not to answer | 27 | 25.0 |

¹ Mean age was $M = 36.32$, $SD = 10.04$, $95\%CI = (34.41, 38.24)$; the CI is based on normal distribution.

² The options were not mutually exclusive.

6 – RELIABILITY ANALYSIS

Socio-cultural measurements

| Measurement scale | Cronbach's alpha | Item code | Cronbach's alpha if item deleted | Item's correlation with the scale |
|---|------------------|---------------|----------------------------------|-----------------------------------|
| Collectivism (COLL) | 0.83 | HCOLL1 | 0.82 | 0.52 |
| | | HCOLL2 | 0.82 | 0.57 |
| | | HCOLL3 | 0.82 | 0.51 |
| | | HCOLL4 | 0.82 | 0.58 |
| | | HCOLL5 | 0.82 | 0.57 |
| | | HCOLL6 | 0.82 | 0.54 |
| | | HCOLL7 | 0.81 | 0.65 |
| | | HCOLL8 | 0.82 | 0.53 |
| | | VCOLL1 | 0.82 | 0.55 |
| | | VCOLL2 | 0.82 | 0.59 |
| | | VCOLL3 | 0.82 | 0.62 |
| | | VCOLL4 | 0.81 | 0.66 |
| | | VCOLL5 | 0.83 | 0.38 |
| | | VCOLL6 | 0.83 | 0.39 |
| | | VCOLL7 | 0.83 | 0.44 |
| | | VCOLL8 | 0.82 | 0.56 |
| Conservatism (CONS) | 0.85 | CONS_PSAF1 | 0.84 | 0.57 |
| | | CONS_PSAF2 | 0.84 | 0.48 |
| | | CONS_PSAF3 | 0.84 | 0.65 |
| | | CONS_SSAF1 | 0.83 | 0.66 |
| | | CONS_SSAF2 | 0.83 | 0.66 |
| | | CONS_SSAF3 | 0.84 | 0.62 |
| | | CONS_TRAD1 | 0.84 | 0.64 |
| | | CONS_TRAD2 | 0.84 | 0.62 |
| | | CONS_TRAD3 | 0.84 | 0.51 |
| | | CONS_CONF_R1 | 0.85 | 0.40 |
| | | CONS_CONF_R2 | 0.84 | 0.63 |
| | | CONS_CONF_R3 | 0.84 | 0.60 |
| | | CONS_CONF_IP1 | 0.85 | 0.44 |
| | | CONS_CONF_IP2 | 0.84 | 0.56 |
| CONS_CONF_IP3 | 0.84 | 0.62 | | |
| Religiosity (RELIG) | 0.96 | RELIG1 | 0.96 | 0.91 |
| | | RELIG2 | 0.96 | 0.92 |
| | | RELIG3 | 0.97 | 0.49 |
| | | RELIG4 | 0.96 | 0.72 |
| | | RELIG5 | 0.96 | 0.86 |
| | | RELIG6 | 0.96 | 0.87 |
| | | RELIG7 | 0.96 | 0.89 |
| | | RELIG8 | 0.96 | 0.88 |
| | | RELIG9 | 0.96 | 0.89 |
| | | RELIG10 | 0.96 | 0.69 |
| | | RELIG11 | 0.96 | 0.91 |
| | | RELIG12 | 0.96 | 0.88 |
| | | RELIG13 | 0.96 | 0.91 |
| | | RELIG14 | 0.96 | 0.72 |
| Pro-euthanasia attitude (PRO-EUTH) | 0.91 | PRO-EUTH1 | 0.90 | 0.84 |
| | | PRO-EUTH2 | 0.90 | 0.82 |
| | | PRO-EUTH3 | 0.90 | 0.80 |
| | | PRO-EUTH4 | 0.90 | 0.78 |

| Measurement scale | Cronbach's alpha | Item code | Cronbach's alpha if item deleted | Item's correlation with the scale |
|-------------------|------------------|------------|----------------------------------|-----------------------------------|
| | | PRO-EUTH5 | 0.90 | 0.83 |
| | | PRO-EUTH6 | 0.92 | 0.52 |
| | | PRO-EUTH7 | 0.91 | 0.72 |
| | | PRO-EUTH8 | 0.90 | 0.77 |
| | | PRO-EUTH9 | 0.91 | 0.64 |
| | | PRO-EUTH10 | 0.9 | 0.76 |

Psychological distance measurement

| Perspective | Cronbach's alpha | Item code | Cronbach's alpha if item deleted | Item's correlation with the scale |
|------------------------------------|------------------|------------|----------------------------------|-----------------------------------|
| A (unknown child) | 0.84 | PSYCHDIST1 | 0.80 | 0.84 |
| | | PSYCHDIST2 | 0.83 | 0.74 |
| | | PSYCHDIST3 | 0.78 | 0.85 |
| | | PSYCHDIST4 | 0.77 | 0.86 |
| B (known but not own child) | 0.85 | PSYCHDIST1 | 0.82 | 0.84 |
| | | PSYCHDIST2 | 0.83 | 0.79 |
| | | PSYCHDIST3 | 0.81 | 0.84 |
| | | PSYCHDIST4 | 0.79 | 0.87 |
| C (own child) | 0.73 | PSYCHDIST1 | 0.70 | 0.65 |
| | | PSYCHDIST2 | 0.75 | 0.53 |
| | | PSYCHDIST3 | 0.54 | 0.89 |
| | | PSYCHDIST4 | 0.59 | 0.85 |

7 – DESCRIPTIVES AND INTERCORRELATIONS FOR SOCIOCULTURAL INDICES

| | Mean (SD) | 1 | 2 | 3 | 4 |
|---------------------|---------------|--------------|--------------|--------------|--------------|
| COLL (1) | 4.928 (0.828) | 0.832 | | | |
| CONS (2) | 5.199 (0.811) | 0.528*** | 0.849 | | |
| RELIG (3) | 3.025 (1.657) | 0.242* | 0.313** | 0.964 | |
| PRO-EUTH (4) | 4.137 (1.356) | -0.140 | -0.184 | -0.606*** | 0.913 |

*** p < 0.001, ** p < 0.01, * p < 0.05

The standard deviation is reported in brackets. Cronbach's alphas are shown in the diagonal.

COLL = collectivism, CONS = conservatism, RELIG = religiosity, PRO_EUTH = pro-euthanasia attitude.

8 – DESCRIPTIVE STATISTICS FOR THE PSYCHOLOGICAL DISTANCE INDEX

| Perspective | Mean | Lower 95%CI | Upper 95%CI | SD | Skewness | Kurtosis |
|-----------------------------|-------|-------------|-------------|-------|----------|----------|
| A (unknown child) | 5.442 | 5.133 | 5.751 | 1.619 | -0.945 | -0.076 |
| B (known but not own child) | 3.375 | 3.076 | 3.674 | 1.566 | 0.063 | -0.953 |
| C (own child) | 1.475 | 1.320 | 1.629 | 0.810 | 2.210 | 4.932 |

9 – DESCRIPTIVE STATISTICS FOR $cTTO$ UTILITIES

| Means (standard deviations) | | | |
|-----------------------------|----------------------|----------------------|----------------------|
| | Overall | Parents | Non-parents |
| Perspective A | 0.604 (0.324) | 0.681 (0.295) | 0.526 (0.336) |
| 11121 | 0.929 (0.209) | 0.923 (0.275) | 0.934 (0.112) |
| 22222 | 0.813 (0.298) | 0.856 (0.176) | 0.769 (0.380) |
| 32211 | 0.801 (0.350) | 0.841 (0.296) | 0.762 (0.396) |
| 33323 | 0.399 (0.571) | 0.540 (0.512) | 0.258 (0.596) |
| 33333 | 0.077 (0.698) | 0.244 (0.667) | -0.091 (0.693) |
| Perspective B | 0.615 (0.305) | 0.686 (0.271) | 0.543 (0.323) |
| 11121 | 0.952 (0.084) | 0.951 (0.095) | 0.954 (0.072) |
| 22222 | 0.822 (0.336) | 0.857 (0.287) | 0.787 (0.379) |
| 32211 | 0.827 (0.291) | 0.868 (0.161) | 0.786 (0.377) |
| 33323 | 0.386 (0.591) | 0.503 (0.545) | 0.269 (0.617) |
| 33333 | 0.088 (0.685) | 0.254 (0.674) | -0.079 (0.660) |
| Perspective C | 0.611 (0.368) | 0.694 (0.356) | 0.528 (0.365) |
| 11121 | 0.951 (0.101) | 0.950 (0.130) | 0.952 (0.060) |
| 22222 | 0.789 (0.428) | 0.825 (0.401) | 0.754 (0.454) |
| 32211 | 0.803 (0.420) | 0.829 (0.384) | 0.777 (0.454) |
| 33323 | 0.436 (0.622) | 0.551 (0.562) | 0.320 (0.661) |

| | | | | |
|----------------------|-------|----------------------|----------------------|----------------------|
| | 33333 | 0.078 (0.733) | 0.317 (0.679) | -0.161 (0.713) |
| Perspective D | | 0.491 (0.383) | 0.567 (0.404) | 0.414 (0.348) |
| | 11121 | 0.930 (0.274) | 0.893 (0.383) | 0.968 (0.047) |
| | 22222 | 0.778 (0.388) | 0.806 (0.386) | 0.750 (0.393) |
| | 32211 | 0.709 (0.438) | 0.744 (0.401) | 0.674 (0.473) |
| | 33323 | 0.183 (0.672) | 0.354 (0.621) | 0.013 (0.684) |
| | 33333 | -0.147 (0.723) | 0.040 (0.723) | -0.334 (0.680) |

For each child perspective (A, B, and C), utility was higher vs. self-perspective (D) utility ($M_{\text{perspective A}} = 0.604$, $M_{\text{perspective B}} = 0.615$, $M_{\text{perspective C}} = 0.611$, $M_{\text{perspective D}} = 0.491$; A vs. D: $t(107) = 4.160$, $p < 0.001$, B vs. D: $t(107) = 4.561$, $p < 0.001$, C vs. D: $t(107) = 4.364$, $p < 0.001$; the other differences across perspectives were non-significant). Overall utilities were higher for parents vs. non-parents in child perspectives ($M_{\text{parents}} = 0.687$, $M_{\text{non-parents}} = 0.533$, $t(106) = 2.627$, $p = 0.001$) and self-perspective ($M_{\text{parents}} = 0.567$, $M_{\text{non-parents}} = 0.414$, $t(106) = 2.114$, $p = 0.037$). Utilities were differentiated across health states (for child perspectives overall, the significant differences were: 11121 vs. 22222 ($t(107) = 5.304$, $p < 0.001$), 11121 vs. 32211 ($t(107) = 5.204$, $p < 0.001$), 11121 vs. 33323 ($t(107) = 10.673$, $p < 0.001$), 11121 vs. 33333 ($t(107) = 14.435$, $p < 0.001$), 22222 vs. 33323 ($t(107) = 9.409$, $p < 0.001$), 22222 vs. 33333 ($t(107) = 12.372$, $p < 0.001$), 32211 vs. 33323 ($t(107) = 9.569$, $p < 0.001$), 32211 vs. 33333 ($t(107) = 12.087$, $p < 0.001$), and 33323 vs. 33333 ($t(107) = 7.630$, $p < 0.001$); for self-perspective, the significant differences were: 11121 vs. 22222 ($t(107) = 5.203$, $p < 0.001$), 11121 vs. 32211 ($t(107) = 6.196$, $p < 0.001$), 11121 vs. 33323 ($t(107) = 11.625$, $p < 0.001$), 11121 vs. 33333 ($t(107) = 15.071$, $p < 0.001$), 22222 vs. 32211 ($t(107) = 2.889$, $p < 0.005$), 22222 vs. 33323 ($t(107) = 10.190$, $p < 0.001$), 22222 vs. 33333 ($t(107) = 13.421$, $p < 0.001$), 32211 vs. 33323 ($t(107) = 9.380$, $p < 0.001$), 32211 vs. 33333 ($t(107) = 12.566$, $p < 0.001$), and 33323 vs. 33333 ($t(107) = 6.430$, $p < 0.001$).

References

- Gorsuch, R. L., & McPherson, S. E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 348-354.
- Kaletka, J. P., & Aasheim, C. (2023). Construal of social relationships in online consumer reviews. *Journal of Computer Information Systems*, 63(2), 269-280.
- Kogut, T., Ritov, I., Rubaltelli, E., & Liberman, N. (2018). How far is the suffering? The role of psychological distance and victims' identifiability in donation decisions. *Judgment and Decision making*, 13(5), 458-466.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1), 11.
- Singelis, T. M., Triandis, H. C., Bhawuk, D. P., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-cultural research*, 29(3), 240-275.
- Wasserman, J., Clair, J. M., & Ritchey, F. J. (2005). A scale to assess attitudes toward euthanasia. *OMEGA-Journal of Death and Dying*, 51(3), 229-237.

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