Global Cultural Change and Child Anxiety:

Analyzing Socialization Goals Over Three Decades in 70 Countries

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Declarations

Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) - project number GRK-2185/1 (DFG Research Training Group Situated Cognition). Gefördert durch die Deutsche Forschungsgemeinschaft (DFG) - Projektnummer GRK-2185/1 (DFG-Graduiertenkolleg Situated Cognition).

The authors declare no conflict of interest.

No ethical approved was needed for this study.

Analysis script available at https://osf.io/xhe6c/. The research data are available at https://worldvaluessurvey.org, https://vizhub.healthdata.org/gbd-results, and https://hdr.undp.org.

Preprint available at https://doi.org/10.31234/osf.io/btk5h.

Authors' contribution statements: LKK & BV designed research; LKK analyzed data; LKK, ALDR, SSch, & BV wrote the paper.

Main text word count: 5,647 words

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Around the globe, cultures seem to be leaning more towards an independent social orientation while turning away from a more interdependent social orientation. This shift also affects the cultural norms regarding the qualities favored in children, known as socialization goals. The cultural fraud hypothesis suggests that this cultural change has negative consequences for population health. An emphasis on individuation and individual achievement may particularly harm children's mental health. This study explored links between cohort changes in socialization goal norms and the incidence of anxiety disorders in children across 70 countries from all world regions. The World Value Survey provided data on socialization goals, while anxiety disorder incidence rates for 0-19-year-olds were estimated through the Global Burden of Disease study. Additionally, societal development indicators were obtained from the Human Development Report. Mixed-effects models were used to predict anxiety disorder incidence in 70 countries over six study waves (1989-2022). Results revealed expected global shifts towards socialization goals linked to an independent social orientation and away from those linked to an interdependent social orientation. The largest association emerged between religious faith as a quality in children (linked to an interdependent social orientation) and anxiety. When religious faith became less important, anxiety disorder incidence increased. Additionally, changes in the importance of tolerance and thrift were weakly related to changes in anxiety incidence among children. The correlation between thrift and anxiety incidence became insignificant when societal development was taken into account. Overall, a decline in religious socialization, rather than a general shift towards independent social orientations, may explain the increase in child anxiety incidences worldwide. Religion may serve as a protective factor by providing a sense of purpose and relatedness. This analysis underscores the relevance of cultural change for

children's healthy development and the need for increased support of children in increasingly secular societies.

Keywords: longitudinal analysis, youth, public health, prevalence, psychiatric disorders, national culture, individualism/collectivism

Highlights

- This study tested links between cultural changes in socialization goals and child anxiety incidence across cohorts over three decades.
- Culture was globally (70 countries) shifting towards independent socialization goals and away from interdependent socialization goals.
- When religious faith became less important as a desired quality in children, children where more often diagnosed with anxiety disorders.
- Weak links also emerged between the importance of tolerance as well as thrift and anxiety disorder incidence.
- Specific changes in religious socialization rather a general shift towards independent social orientations may explain increases in child anxiety incidences worldwide.

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1 Introduction

In the 1980s, parenting guidebooks by James C. Dobson like “Dare to Discipline” advocating strict parenting that aimed to foster obedience and compliance sold millions of copies. Nowadays, such books are mostly banished to the back corners of thrift stores. Current top sellers include “Parenting with Love and Logic: Teaching Children Responsibility” by Foster Cline and Jim Fay. Their book places importance on very different values that children should develop compared to “Dare to Discipline.” This anecdotical example illustrates how culture and socialization have changed over the last decades. Societies around the world increasingly lean towards independent models of socialization (e.g., encouraging feelings of responsibility) and shift away from interdependent models of socialization (e.g., encouraging obedience). This raises the question how such societal changes impact the lives of children. This study aims to shed light on the interplay between culture and mental health of children by delving into the relationship between changes in socialization goal norms, particularly those aligned with an independent or interdependent social orientation, and the incidence of childhood anxiety disorders across countries around the globe.

1.1 Culture and Socialization

Children are born into complex social systems that are potentially challenging to navigate, even for adults. Culture provides guiding principles through collectively upheld norms that help make sense of this complex environment (Cialdini et al., 1991). In this manner, culture is the “goals, values, and pictures of the world or ideas about what is true, good, beautiful, and efficient” (p. 11; Shweder, 2003). Cultural norms are passed down through generations in the process of socialization. Socialization processes increase the adaptivity of new generations to

their physical and social environment. Thereby, new members of a culture are equipped with culturally adequate cognitions, emotions, and behaviors to successfully navigate the distinct environment their born into (Keller & Kärtner, 2013).

Socialization goals describe the contents of socialization, such as psychological states, patterns of behaviors, and affective repertoires that current members of a culture evaluate as desirable and strive to cultivate in the children growing up in this respective culture (Keller & Lamm, 2005; Lavelli et al., 2019). Therefore, socialization goals are the answer to the question 'What outcomes do guidebook authors, politicians, teachers, priests, and parents hope to achieve in raising and educating children?' They comprise qualities like imagination, independence, feeling of responsibility, determination, perseverance, religious faith, obedience, hard work, tolerance and respect for other people, thrift, or unselfishness. Socialization goals are the aspect of culture that is explicitly directed towards children. Thus, socialization goals are the driving force behind the directive processes shaping children's psychological development and hence deserve special attention in child research (Bond & Lun, 2014; Keller & Kärtner, 2013). Socialization goals materialize in structural factors of the environment, such as parenting guidebooks, corporal punishment laws, school curricula, or religious practices like infant baptism. They are also expressed in specific behaviors of parents, grandparents, or teachers aimed at fostering certain qualities of character or traits in children (Keller & Kärtner, 2013).

Developmental science has provided strong evidence for the crucial role of socialization goals for child development. They mold early affectivity, relational styles, and self-esteem (Buhler-Wassmann & Hibel, 2021; Hewlett & Lamb, 2002; Tronick & Beeghly, 2011). Studies have shown that socialization goals can potentially influence the cognitive (He et al., 2021), social (Kärtner et al., 2022), and emotional development of children (Lavelli et al., 2019). This has potential implications for child mental health.

1.2 Cultural Dimensions

Socialization goal norms (i.e., the socially shared beliefs about the importance of different socialization goals) differ between cultures worldwide. To examine such global cultural variations, it is useful to apply country as a level analysis (Akaliyski et al., 2021; Minkov & Hofstede, 2012). A cross-sectional analysis of the socialization goals of 78,202 participants across 55 countries in the World Value Survey (Inglehart et al., 2022) showed country-level differences of socialization goal norms (Bond & Lun, 2014). One main dimension of socialization goal variation explained about 36% in global differences: self-directedness vs. other-directedness. Self-directedness and other-directedness mark the two ends of the same dimension. In this empirically-driven conception of socialization goals, self-directedness is marked by imagination, independence, feeling of responsibility, determination, and perseverance. Other-directedness is characterized by religious faith, obedience, and hard work. A pattern emerged showing that self-directedness was more commonly endorsed in Northwestern European countries, whereas other-directedness was more frequently endorsed in African and Latin American countries. This dimension also correlated with societal development indicators like the Human Development Index which takes factors like the standard of living into account (Bond & Lun, 2014).

Interestingly, the dimension of self-directed vs. other-directed socialization goals corresponds to patterns of cultural differences in other domains of cognition, emotion, and behavior. Different researchers have found a difference between cultures regarding their degree of emphasis on individuation and independence vs. an emphasis on group membership and interdependence (Varnum et al., 2010). Geert Hofstede (1980) was one of the earliest researchers to describe this in his landmark study with employees of a technology company from four countries that aimed to identify dimensions of national culture. Despite criticism of the study design (Baskerville, 2003), one of his proposed dimensions inspired several later cultural dimensions: individualism vs. collectivism (Oyserman et al., 2002). Subsequently,

various culture researchers considered a dimension spanning from independence of individuals in contrast to interdependence of individuals within a culture: independent self-construals vs. interdependent self-construals (Markus & Kitayama, 1991); individualistic vs. collectivistic values (Triandis, 1996); socially disengaging emotions vs. socially engaging emotions (Kitayama et al., 2006). Varnum et al. (2010) suggested to summarize these findings from different domains of cognition, emotion, and behavior encompassing this distinction into a unified theoretical framework of social orientation. Independent self-construals, individualistic values, and socially disengaging emotions are aspects of an overall independent social orientation. On the other end, interdependent self-construals, collectivistic values, and socially engaging emotions are aspects of an overall interdependent social orientation. Cultures with a more independent social orientation have been located especially in Northwestern Europe and English-speaking countries (referred to as *Western* countries; Jensen et al., 2015). Cultures with a more interdependent social orientation have been associated with African, Asian and Arab countries (Parkinson et al., 2005). We propose that the cultural dimension of self-directedness vs. other-directedness can be interpreted as the socialization domain-specific attribute of the broader independent social orientation vs. interdependent social orientation dimension of cultures (see table 1). While cultural dimensions enable a meaningful picture of cultural variance, the role of the complex dynamics within social contexts should not be neglected.

- table 1 here -

1.3 Cultural Change

Besides the cross-sectional angle, it is important to note that cultural differences are not cast in stone but that culture is rather a dynamically changing system. Evidence from various regions worldwide and across different domains of cognition, emotion, and behavior suggests that a global shift towards a more independent social orientation, and away from an interdependent

orientation, is occurring (Cai et al., 2019). Out of 53 countries examined by Santos et al. (2017), 39 countries indeed increased in individualistic values (i.e., the value domain of an independent social orientation) while only 5 countries decreased in the endorsement of individualistic values between 1960 and 2011. The study used two representative surveys on value norms (i.e., preference for self-expression) and practices linked to individualistic values (e.g., living alone). A corresponding pattern was found for socialization goal shifts among a subset of parents within the World Value Survey (Inglehart et al., 2022). Compared to older generations, parents from later birth cohorts placed a stronger emphasis on imagination, independence, determination, and perseverance which are all linked to an independent social orientation was well as unselfishness. At the same time, religious faith, obedience, and hard work became less important which are linked to an interdependent social orientation. Feeling of responsibility and thrift were also less important for parents of later birth cohorts. This was evident across Western and East Asian countries (Park et al., 2014).

1.4 Culture and Child Mental Health

The cultural fraud hypothesis proposed by Eckersley (2006) connects this cultural change to negative physical and mental health consequences on population level. Eckersley (2006) defined cultural fraud as "the promotion of images and ideals of 'the good life' that serve the economy but do not meet psychological needs or reflect social realities" (p. 256). He argued that modern Western culture characterized by a strong independent social orientation (especially individualistic values) is not adaptive. While such norms may have been beneficial for the economic growth and respective increase in life quality decades ago, this is not the case anymore. Eckersley acknowledged the general notion that culture does not develop or change out of nowhere but adapts to features of the physical, social, and political environment (Levine, 2007; Rogoff, 2003). After all, the evolutionary root of culture is to adapt humans to the environment (Keller & Kärtner, 2013). However, already Whiting & Whiting (1960) agreed

that socially shared ideals can weigh heavier than adaptation to the environment in some scenarios. Some cultural practices (e.g., socialization goals) may persist even if they become objectively maladaptive (for further discussion see Greenfield et al., 2003). The cultural fraud hypothesis addresses especially population mental health: the rise of strong individualistic values may have led to more loneliness, and increased expectations towards children and young people, physical inactivity, and diminished intrinsic motivation.

Evidence for the hypothesis comes from a systematic review that summarized 14 empirical studies testing associations between individualistic values and wellbeing on individual and country level. The review focused on young people aged 18 to 29 years old living in Western countries. Numerous studies confirmed a negative relationship between the endorsement of individualistic (vs. collectivistic) values and wellbeing. The authors noted that extreme self-sufficiency and comparisons with others seem to be the main drivers of this link (Humphrey & Bliuc, 2021). Longitudinal research delivers further clues for possible effects of the described cultural shift on child mental health. As societies shift their focus towards fostering independence over interdependence, there has been a simultaneous increase in mental health issues among children. Representative surveys in the United States revealed substantial decreases in mental health among children and young adults (Twenge et al., 2018, 2019). This trend is evident across all world regions, as revealed by a comprehensive analysis of data from the Global Burden of Disease study, which draws on published health statistics. The burden of mental health disorders among children aged 5 to 14 years increased between the years 2000 and 2015 (Baranne & Falissard, 2018). Hower, these studies did not explicitly test the links between changes in culture and such changes in child mental health. Taken together, there is some evidence from Western countries for the cultural fraud hypothesis that postulates a negative impact of a shift towards an independent social orientation on population mental health. Studies are missing that consider longitudinal associations across multiple decades. Moreover, no previous study has explored mental health consequences of changing

socialization goals which deserve special attention as they are the aspect of culture that is directly aimed at children and shaping their psychological states. Further, research is needed that covers various world regions besides Western countries and includes the Majority World (i.e., the non-Western countries in which the majority of humans live but which are underrepresented in research) to form solid conclusion that are generalizable across the whole spectrum of cultures and cultural changes.

1.5 Present Study

This study aimed to explore the longitudinal relationship between changes in socialization goal norms and changes in child mental health. We focused on socialization goals as a cultural aspect specifically directed at children (Keller & Kärtner, 2013). The incidence rate of anxiety disorders was selected as an appropriate outcome measure of child mental health for the following reasons. Firstly, anxiety disorders (e.g. specific phobias, separation anxiety disorder) are among the first emerging (Solmi et al., 2022) and most common (Polanczyk et al., 2015) mental health issues during childhood. Furthermore, anxiety disorders are largely influenced by environmental factors (Burmeister et al., 2008; Gregory & Eley, 2007) and their prevalence is sensitive to cultural factors (Hofmann & Hinton, 2014). We analyzed data from countries across the globe in addition to the Western countries that were studied in most previous works (e.g., Humphrey & Bliuc, 2021). Previous research often tested linear trends in culture and mental health across time. We extended this by also considering the unique patterns of change within each country when calculating cross-temporal correlations between socialization goal norms and anxiety disorder incidence rates.

Following the cultural fraud hypothesis (Eckersley, 2006), we expected positive cross-temporal correlations between the importance of socialization goals linked to an independent social orientation (i.e., imagination, independence, feeling of responsibility, determination, and perseverance) and anxiety disorder incidence. Negative cross-temporal correlations were

expected between the relative importance of socialization goals linked to an interdependent social orientation (i.e., religious faith, obedience, and hard work) and anxiety disorder incidence. We also included further socialization goals to gain a broader picture and test the assumption that those socialization goals linked to independence and interdependence are especially relevant for mental health (i.e., tolerance and respect for other people, thrift, saving money and things, and unselfishness). To establish that any correlations are not solely the by-product of the influence of social and political environmental factors on children's mental health, we tested whether the correlations persisted when controlling for three important measures of societal development (i.e., human development index, life expectancy, gross national income).

2 Methods

This research utilized publicly available datasets to gather country-level estimates of socialization goal norms, incidences of child anxiety disorders, and three measures of societal development. The data sources were selected based on the available variables, the timeframe of observation, and the range of countries included. Additional information about timeframes of observation and a full list of included countries can be found in supplementary table S1 and S2.

2.1 Socialization Goal Norms

The World Value Survey (WVS; Inglehart et al., 2022) contributed information on descriptive socialization goal norms. This collaborative research project contains individual-level data from representative samples of people aged 16 years and older collected across 120 countries and regions. Data collection was performed during seven study waves, each spanning approximately five years. The first wave look place 1981-1984. We used data from the second wave (1989-1993) until the most recent wave (2017-2022) to match the data collection periods of all used datasets (see supplementary table S2). Included study wave contained answers of 2,400 to 40,230 people per country (M = 14,336, SD = 5,741). Variables in the WVS feature aspects of social, political, religious, occupational, and familial dimensions and are the foundation of the Inglehart-Welzl cultural map (Inglehart, 2006). The data has been frequently used for cross-cultural studies (Park et al., 2014; Santos et al., 2017).

In the present investigation, we focused on one specific question in the WVS. Participants were instructed: ‘Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?’ This was followed by a list of ten socialization goals that could be selected or not: imagination, independence, feeling of responsibility, determination and perseverance, religious faith, obedience, hard work, tolerance and respect for other people, thrift saving money and things, and unselfishness. For each of the ten socialization goals, the proportion of participants selecting a given socialization

goal was calculated for each country and study wave as an indicator for the descriptive norm (i.e., the relative socialization goal importance). Participant weights were applied to obtain representative estimates on country level. In most cases, participants were allowed to choose up to five socialization goals. However, this was not consistent. To eliminate possible bias, the average number of selected socialization goals was statistically taken into account for all subsequent inferential analyses.

2.2 Incidence of Child Anxiety Disorders

The Global Burden of Disease study (GBD; Institute for Health Metrics and Evaluation (IHME), 2020) provided country-level anxiety disorder incidence estimates. It stands as the most extensive and comprehensive scientific database of health measures. The GDB contains more than 350 health outcomes and risk factors for 204 countries and regions. Estimates are available for each year between 1990 and 2019. The GBD does not conduct own epidemiological surveys but rather draws on administrative records, censuses, clinical trials, demographic surveillance, disease registries, surveys, and vital registration. Standardized estimates are modeled on the basis of available publications.

Anxiety among children was measured as the anxiety disorder incidence rate per 100,000 inhabitants in the age group of people younger than 20 years old. While the GBD also provides confidence intervals, this study utilized the point estimates. To increase reliability and match the GBD data with the WVS data, the yearly estimates were summarized as mean incidence rates for the 5-year study waves of the WVS (for details, see supplementary table S2).

2.3 Societal Development

The societal development measures were taken from the Human Development Report (HDR; UNDP (United Nations Development Programme), 2022). The aim of the HDR is to provide global information on country-level variables that are linked to human wellbeing. It contains a

range of economic, social, and medical indicators. Yearly estimates are available for 206 countries and regions between 1990 and 2021.

The human development index, life expectancy, and gross national income in purchasing power parity were selected for this study. They cover a range of characteristics of societal development and are potentially associated with socialization goals (Bond & Lun, 2014) and socioemotional development of children (Bornstein et al., 2021). While life expectancy and gross national income are already included in the calculation of the human development index, as raw variables they provide a focused insight into the importance of medical and economic environmental factors. Again, the yearly estimates were summarized as mean values for the 5-year study waves of the WVS (for details, see supplementary table S2).

2.4 Data Analyses

Data was retrieved from the websites of the WVS (https://worldvaluessurvey.org), GBD (https://vizhub.healthdata.org/gbd-results), and HDR (https://hdr.undp.org) in August 2023. A merged dataset was created where each row contained information on ten socialization goal norm variables, one child anxiety disorder variable, and three societal development variables for each given country and study wave. Rows with incomplete data in any variable were removed. Additionally, data was included only for countries with full data sets for at least two study waves. The final dataset comprised data of 70 countries across six study waves. On average 3.4 study waves were included per country (SD = 1.3).

Firstly, descriptive analysis was performed. Mean, standard deviation, minimum, and maximum were calculated to assess between-country variation of anxiety disorder incidence, socialization goal norms, and societal development indicators. Secondly, linear associations between the study variables and year of study wave were calculated to analyze the within-country trends. Thirdly, we tested the main hypothesis concerning cross-temporal associations between socialization goal norms and the incidence rate of anxiety disorders. The anxiety

disorder incidence rate was predicted by the relative importance of each of the ten socialization goals (fixed effects), with a random effect of country, using linear mixed-effects models. These models were fitted through restricted maximum likelihood, while maximum likelihood was employed for model comparisons. This longitudinal approach does not take linear trends across time into account, but considers the individual patterns of change in each country instead. The advantage of this approach compared to other appropriate methods (e.g., bivariate latent change score models) is that the number of study waves per country can be flexible. Countries with less than six measurement occasions can still be included. This allows for the investigation of a large sample covering many countries from all continents (except Antarctica).

Lastly, we tested whether the cross-temporal correlations remained when the effect of societal development on anxiety disorder incidence was taken into account. For that purpose, the three societal development indicators were included as additional predictors in the linear mixed-effects model. A commented R script is available for further insights and replication at https://osf.io/xhe6c/.

3 Results

3.1 Descriptive Analysis

Mean, standard deviation, and range of all study variables summarized across study waves are depicted in table 2. The anxiety disorder incidence per 100,000 inhabitants showed large cross-country differences ranging from 301.63 cases on average in Kazakhstan to 1,157.88 cases on average in Norway (M = 649.72, SD = 231.90). The overall most frequently selected socialization goals were feeling of responsibility (M = 0.70, SD = 0.12) as well as tolerance and respect for other people (M = 0.69, SD = 0.11). The overall least frequently selected socialization goals were imagination (M = 0.22, SD = 0.09) as well as unselfishness (M = 0.31, SD = 0.10).

- table 2 here -

3.2 Cohort Effects in Anxiety and Culture

Table 2 also shows the within-country linear trends across time for all study variables as measured by bivariate associations with year of study wave. The anxiety disorder incidence rate increased during the observation period. Global increases were also found for the importance of two socialization goals linked to an independent social orientation (i.e., imagination and independence) as well as a global decrease for the importance of a socialization goal linked to an interdependent social orientation (i.e., religious faith). There were also other trends in socialization goals norms (i.e., unselfishness, thrift, saving money and things) and all three indicators of societal development (i.e., human development index, life expectancy, gross national income). Visual inspection of temporal changes within individual countries indicated more complex patterns of longitudinal variance. The 70 countries showed unique trajectories that went beyond linear increases or decreases, especially for the socialization goal norms. See figure 1 for exemplary insights.

- figure 1 here -

3.3 Cross-Temporal Correlation Analysis

Table 3 shows the longitudinal linear mixed effects of socialization goal norms and societal development indicators on the anxiety disorder incidence rate. The regression model predicting anxiety disorder incidence rate from socialization goal norms only (model 1) explained significantly more variance than a null model without any fixed effects ($R^2_{\text{fixed effects}} = .04$), $F(10, 3) = 20.51$, $p = .025$. The relative importance of religious faith ($\beta = -.13$, $p = .005$), thrift, saving money and things ($\beta = -.05$, $p = .035$), as well as tolerance and respect for other people ($\beta = .04$, $p = .038$) were meaningful predictors across the studied 70 countries. In study waves where religious faith, thrift, saving money and things became relatively more important, the anxiety disorder incidence rate decreased. Contrarily, when tolerance and respect for other people became more important, the anxiety disorder incidence rate increased. The extension of the regression model with societal development indicators (model 2) did not lead to an improved prediction of longitudinal anxiety disorder incidence rate variance ($R^2_{\text{fixed effects}} = .07$), $F(3, 13) = 4.59$, $p = .205$. In this model, the fixed effects of religious faith, tolerance and respect for other people socialization goal norms remained while thrift, saving money and thing was not a meaningful predictor anymore. The societal development indicators did not show any meaningful association with the anxiety disorder incidence rate.

- table 3 here -

4 Discussion

The present study aimed to shed light on the potential consequences of cultural change for child mental health with a specific focus on socialization goals as an aspect of culture that directly focuses on children. Based on the cultural fraud hypothesis (Eckersley, 2006) and empirical evidence from Western countries (Humphrey & Bliuc, 2021), we expected to find associations between socialization goals linked to an independent (vs. interdependent) social orientation and an increased incidence rate of anxiety disorders among children worldwide. The results indicated only limited evidence for this hypothesis.

This longitudinal analysis of socialization goals and child anxiety across three decades and 70 countries worldwide, revealed five key findings. Firstly, the anxiety disorder incidence rate globally increased among children aged 0 to 19 years old. Secondly, changes in the importance of imagination, independence, and religious faith point to a global trend away from socialization norms linked to an interdependent social orientation and towards socialization norms linked to an independent social orientation. Thirdly, a decrease in the endorsement of religious faith as an important quality in children went along with an increase in the number of children diagnosed with anxiety disorders. Fourthly, when tolerance and respect for other people became less important as a quality in child, less children were diagnosed with anxiety disorders. Fifthly, a decrease in the importance of thrift, saving money and things was correlated with an increase in the anxiety disorder incidence rate but insignificant when controlling for changes in societal development indicators.

4.1 Cohort Effects in Anxiety and Culture

The general increase in the anxiety disorder incidence rate is in line with the increased burden of mental health disorder found previously among children aged 5 to 14 years using a previous version of the same dataset (Baranne & Falissard, 2018). However, the detected increase in the child anxiety disorder incidence rate across all 70 included countries was small. This may

reflect the relative divergence in anxiety disorder incidence trends between countries. Figure 1 shows that the unique patterns of change vary from country to country. A recent analysis of health data of adults has also pointed out that anxiety prevalence is relatively stable and that longitudinal trends are country-specific (Javaid et al., 2023). This emphasizes the need to consider individual patterns of change for the estimation of associations between culture and mental health as it was done in the present analysis.

The longitudinal trends regarding imagination, independence, and religious faith as important qualities in children confirmed the hypothesis that socialization goals would shift away from an interdependent social orientation and towards an independent social orientation. But no meaningful trends were found for the other socialization goals linked to an independent social orientation (i.e., feeling of responsibility, determination, perseverance) or an interdependent social orientation (i.e., obedience, hard work). Generally, the magnitude of cultural changes was small. Possibly, changes were detected for imagination, independence, and religious faith because they most closely relate to the dimension of independent vs. interdependent social orientation. In an empirically driven factor analysis, the importance of these three socialization goals together with obedience (where a decrease at $p < .10$ trend level was detected) showed the largest factor loadings on the respective cultural dimension of self-directedness vs. other-directedness (Bond & Lun, 2014).

4.2 Religious Faith and Anxiety

All correlations of socialization goal norms with the anxiety disorder incidence were rather low, whereas religious faith stood out in all analyses. The small negative correlation between changes in the importance of religious faith as a quality in children and changes in the anxiety disorder incidence is an indication for the potential link between religion as a specific aspect of an interdependent social orientation and child mental health. Religious socialization may serve as a protective factor against anxiety problems for children. A recent systematic review and

meta-analysis of longitudinal studies suggests that spiritual wellbeing supports child mental health (Aggarwal et al., 2023). The effectiveness of mental health interventions involving religious practices and spirituality (e.g., prayer) points towards a causal effect of religiosity on child mental health. On the other hand, feelings of being abandoned by or blaming God (i.e., negative religious coping) was found to have a negative correlation with mental health among children (Aggarwal et al., 2023). A close integration of religious practices like prayer or service attendance into one's life may help to meet some of the basic needs for psychological wellbeing, namely purpose in life and positive relations with others (Ryff & Keyes, 1995). Religious socialization may therefore cultivate a personal sense of hope and purpose in life, while also enhancing prosocial, community-oriented attitudes and behaviors during childhood (Eisenberg et al., 2011). Societies that are becoming increasingly secular should take this into account and support children in developing a sense of purpose and belonging without religion.

4.3 Tolerance and Anxiety

Tolerance and respect for other people as desired qualities in children may be weakly linked to anxiety through mental health stigma. Societies that are not tolerant of behaviors that deviate from the perceived normality may also hold prejudice towards people with mental health problems. Stigma is known to reduce the likelihood of people to seek help for their experienced mental health problems such as anxiety symptoms (Schomerus & Angermeyer, 2008). Lower emphasis of tolerance may therefore lead to lower mental health incidence because mental health conditions are not detected within the society. We interpret this finding as an indication of a bias in the mental health data rather than an actual risk factor for child mental health. Stigma may also play a role for the association between religious faith and the anxiety disorder incidence rate. Some evidence shows that religiosity and mental health stigma are correlated (Adu et al., 2021). However, the multivariate nature of the conducted statistical analysis already

takes the effects of tolerance in the estimation of the link between religious faith and anxiety into account.

4.4 Thrift and Anxiety

The socialization goal thrift, saving money and things was correlated with the anxiety disorder incidence in the simple prediction model. Yet, the correlation did not sustain significance when taking changes in societal development into account. This could be interpreted in a way that the link between thrift and anxiety was be explained by societal development such as economic changes. However, the strength of the association between the importance of thrift, saving money and things as a quality in children and the anxiety disorder incidence rate was equal in both models. This indicates that the more complex regression model which included socialization goal norms and societal development indicators lacked power to successfully reveal the association between thrift and anxiety. See supplementary table S3 for a post-hoc power analysis.

In Eckersley's (2006) description of the cultural fraud hypothesis and the detrimental health of modern Western culture, he discussed that materialism (i.e., the notion to achieve happiness through purchasing and possession of goods) can cause mental health problems. Being thrifty could be understood as the opposite of being materialistic. This would explain the link between thrift and mental health benefits (Teng et al., 2022). An American study observing changes in culture and psychopathology among high school and college students from 1938 to 2007 reached similar conclusions. The authors discussed that an increased focus on money, appearance, and status over community and close relationships has led to a rise in mental health problems among young people in the U.S. (Twenge et al., 2010). There could also be links between thriftiness and the ability to delay gratification which is a resilience factor for children (Peake, 2017).

4.5 Limitations and Future Studies

This study is limited by its data basis and correlational design. To connect culture, mental health, and societal development globally, three data sets had to be combined. The different data collection procedures and periods led to slight differences in the included years for some study waves. The WVS gradually expended in regards of the included country samples over the years of its existence. Some countries were only included in some waves and later dropped out. This led to a varying amount of available data points per country and hence reduced statistical power to detect smaller correlations. While the WVS contains data from representative samples collected in various countries, the GBD data set relies on published health data. This may cause biases since health estimates could be more or less reliable in some countries. For example, most European countries like Germany officially publish health reports that include prevalences of various mental health problems (see http://rki.de). Less official data is available from some other countries including China, Russia, or India. Therefore, this study drew on calculated estimates for changes in child anxiety problems and could not capture the objective changes in each country. The selection of societal development indicators was based on previous literature (Bond & Lun, 2014) but should be extended to by a range of other relevant variables in future studies (e.g., wealth inequality). However, the results hinted that many predictor variables and a relatively small sample size (since country was the level of analysis) may lead to a lack of power. Future studies need to resolve this issue by finding balance between inclusion of all necessary predictors of child mental health and sufficient statistical power. Finally, the most important limitation of the present study is the correlational nature of the findings. The analysis does not allow for causal conclusions. Yet, the results may inform future studies to test whether the importance of religious faith, tolerance, or thriftiness in child socialization does have a causal effect on child mental health and anxiety specifically.

5 Conclusion

Using longitudinal data from across the globe, this study unraveled novel links between changes in socially shared socialization goals and changes in child mental health. A trend towards child socialization models marked by an independent (vs. interdependent) social orientation as well a global increase in the anxiety disorder incidence emerged reinforcing previous research findings (Baranne & Falissard, 2018; Park et al., 2014; Santos et al., 2017). The hypothesis that socialization that increasingly fosters an independent social orientation would be linked to more anxiety problems in children could not be fully supported. Instead, religious faith as a specific aspect of the interdependent social orientation seems important for child mental health. This seems true for countries across the globe. Religious socialization can provide psychological benefits like purpose and positive social relations. As societies become more secular, research should explore alternative modes to support children's development of purpose and belonging without religion. This may inform policymakers with critical evidence to better prevent mental health problems among children worldwide.

Acknowledgments

Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) - project number GRK-2185/1 (DFG Research Training Group Situated Cognition). Gefördert durch die Deutsche Forschungsgemeinschaft (DFG) - Projektnummer GRK-2185/1 (DFG-Graduiertenkolleg Situated Cognition).

Statements and Declarations

The authors declare no conflict of interest.

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Tables

Table 1. Independent versus Interdependent Social Orientation Patterns

Domain	Independent social orientation	Interdependent social orientation
Self	Independent self-construal	Interdependent self-construal
Values	Individualistic values	Collectivistic values
Emotion	Socially disengaging emotions	Socially engaging emotions
Socialization goals	Self-directed socialization goals	Other-directed socialization goals

Note. Adapted and extended from Varnum et al. (2010)

Table 2. Descriptive statistics

Variable	*M*	*SD*	*Min*	*Max*	r_{time}	p_{time}
Anxiety disorder incidence per 100k	649.72	231.90	301.63 (Kazakhstan)	1157.88 (Norway)	0.02	0.034*
Socialization goals						
Imagination $_{IND}$	0.22	0.09	0.06 (Trinidad and Tobago)	0.46 (Norway)	0.14	0.009**
Independence $_{IND}$	0.48	0.15	0.24 (Pakistan)	0.90 (Norway)	0.09	0.043*
Feeling of responsibility $_{IND}$	0.70	0.12	0.40 (Ghana)	0.91 (Norway)	-0.07	0.092
Determination perseverance $_{IND}$	0.38	0.11	0.15 (Egypt)	0.65 (Slovenia)	0.03	0.489
Religious faith $_{INT}$	0.39	0.25	0.02 (China)	0.87 (Indonesia)	-0.08	0.005**
Obedience $_{INT}$	0.39	0.17	0.06 (Japan)	0.78 (Ghana)	-0.07	0.081
Hard work $_{INT}$	0.56	0.21	0.08 (Sweden)	0.91 (Georgia)	0.02	0.540
Tolerance and respect for other people	0.69	0.11	0.41 (Ethiopia)	0.91 (Sweden)	-0.03	0.489
Thrift saving money and things	0.36	0.12	0.14 (Norway)	0.62 (Republic of Korea)	-0.11	0.010*
Unselfishness	0.31	0.10	0.06 (Germany)	0.51 (Rwanda)	0.13	0.012*
Societal development						
Human development index	0.74	0.12	0.43 (Ethiopia)	0.92 (Netherlands)	0.35	<0.001***
Life expectancy	72.97	6.43	52.06 (Nigeria)	82.12 (Andorra)	0.31	<0.001***
Gross national income	20492.63	16679.78	1461.11 (Rwanda)	74782.26 (Singapore)	0.22	<0.001***

Note. $N_{country}$ = 70 (used for *M*, *SD*, *Min*, *Max*); $N_{data\ points}$ = 236 (used for r_{time},p_{time}); *IND*, linked to an independent social orientation; *INT*, linked to an interdependent social orientation; *M*, mean; *Max*, maximum; *Min*, minimum; r_{time}, bivariate association with year of study wave; *SD*, standard deviation.

Table 3. Longitudinal regression coefficients

Variable	Null model		Model 1		Model 2	
	β	*SE*	*β*	*SE*	*β*	*SE*
Intercept	-0.01	0.13	-0.01	0.12	-0.01	0.12
Fixed effects: Socialization goals						
Imagination $_{IND}$	-	-	-0.03	0.02	-0.03	0.02
Independence $_{IND}$	-	-	-0.02	0.02	-0.03	0.02
Feeling of responsibility $_{IND}$	-	-	-0.03	0.03	-0.04	0.03
Determination perseverance $_{IND}$	-	-	-0.01	0.02	-0.01	0.02
Religious faith $_{INT}$	-	-	-0.13**	0.04	-0.12**	0.04
Obedience $_{INT}$	-	-	-0.02	0.03	-0.02	0.03
Hard work $_{INT}$	-	-	-0.02	0.03	-0.02	0.03
Tolerance and respect for other people	-	-	0.04*	0.02	0.04*	0.02
Thrift saving money and things	-	-	-0.05*	0.02	-0.05	0.02
Unselfishness	-	-	0.00	0.02	-0.01	0.02
Fixed effects: Societal development						
Human development index	-	-	-	-	0.07	0.12
Life expectancy	-	-	-	-	0.00	0.02
Gross national income	-	-	-	-	-0.02	0.03
Random effects: Country						
Residual (σ^2)	0.14		0.13		0.13	
Intercept (τ_{00})	1.05		1.04		1.03	
R^2 $_{total}$	.98		.98		.98	

R^2 fixed effects	-	.04	.07

Note. * p < .05; ** p < .01; *** p < .001. *IND*, linked to an independent social orientation; *INT*, linked to an interdependent social orientation.

Supplementary Table S1. Countries included in the analysis

Country			
Albania	Ethiopia	Mexico	Slovenia
Algeria	Finland	Morocco	South Africa
Andorra	Georgia	Netherlands	Spain
Argentina	Germany	New Zealand	Sweden
Armenia	Ghana	Nigeria	Switzerland
Australia	Guatemala	Norway	Thailand
Bangladesh	Hungary	Pakistan	Trinidad and Tobago
Brazil	India	Peru	Tunisia
Bulgaria	Indonesia	Philippines	Turkey
Canada	Iran	Poland	Ukraine
Chile	Iraq	Republic of Korea	United Kingdom
China	Japan	Moldova	USA
Colombia	Jordan	Romania	Uruguay
Cyprus	Kazakhstan	Russia	Venezuela
Czechia	Kyrgyzstan	Rwanda	Vietnam
Ecuador	Lebanon	Serbia	Zimbabwe
Egypt	Libya	Singapore	
Estonia	Malaysia	Slovakia	

Supplementary Table S2. Timeframe of study waves (I-VI)

Dataset	Year																
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
WVS	I	I	I	I	I	II	II	II	II	II	III	III	III	III	III	III	IV
GBD		I	I	I	I	II	II	II	II	II	III	III	III	III	III	III	IV
HDR		I	I	I	I	II	II	II	II	II	III	III	III	III	III	III	IV

(continuation)

Dataset	Year																
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
WVS	IV	IV	IV	IV	V	V	V	V	V			VI	VI	VI	VI	VI	VI
GBD	IV	IV	IV	IV	V	V	V	V	V			VI	VI	VI			
HDR	IV	IV	IV	IV	V	V	V	V	V			VI	VI	VI	VI	VI	

Note. *GBD*, Global Burden of Disease study; *HDR*, Human Development Report; *WVS*, world value survey.

Supplementary Table S3. Post-hoc power analysis

Predictor	Power (1-β)	
	Model 1	Model 2
Imagination $_{IND}$	0.213	0.345
Independence $_{IND}$	0.153	0.208
Feeling of responsibility $_{IND}$	0.264	0.303
Determination perseverance $_{IND}$	0.088	0.107
Religious faith $_{INT}$	0.817	0.801
Obedience $_{INT}$	0.138	0.128
Hard work $_{INT}$	0.098	0.143
Tolerance and respect for other people	0.537	0.524
Thrift saving money and things	0.579	0.428
Unselfishness	0.050	0.085
Human development index	-	0.172
Life expectancy	-	0.043
Gross national income	-	0.052

Note. *IND*, linked to an independent social orientation; *INT*, linked to an interdependent social orientation.

Figures

Figure 1. Time series of anxiety disorder incidence per 100k, importance of religious faith, importance of tolerance, and importance of thrift for six selected countries.

Note. Countries portrayed were selected according to world region and number of available data points.