

## The intergenerational transmission of loneliness between parents and their adult children

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### Abstract

**Objective:** This study examined the relationship between loneliness in parents and in their adult children, and took into account the role of gender differences in the intergenerational transmission of loneliness.

**Background:** Although it is well documented that loneliness has negative effects on a person's physical and mental health, only a relatively small number of empirical studies have investigated the intergenerational transmission of loneliness between parents and their children, including the potential long-term effects of transmission processes. Moreover, the findings of the few existing studies have been inconsistent and contradictory, particularly with regard to gender differences.

**Method:** The statistical analysis drew on data from the German Socio-Economic Panel Study (SOEP). Based on data from 2013 and 2017, stepwise multilevel linear regression models were estimated for 4,457 respondents between the ages of 18 and 40 and their parents.

**Results:** Significant associations were found between loneliness in parents and in their adult children. The analysis also revealed that the relationship between loneliness in mothers and in their children did not depend on whether mothers and children were living in the same household. However, no significant differences were found between same-sex and opposite-sex parent-child dyads.

**Conclusion:** This study provided moderate evidence for the intergenerational transmission of loneliness between parents and their adult children, as well as indirect evidence for the long-term effects of transmission processes between mothers and children.

**Key words:** Adult children, gender differences, German Socio-Economic Panel Study (SOEP), intergenerational transmission, loneliness, parent-child relationship



## 1. Introduction

Humans are social beings, and, therefore, engage extensively in social relationships (Asher & Paquette 2003; Heinrich & Gullone 2006). Accordingly, when individuals encounter persistent difficulties in forming and maintaining satisfying social relationships, they experience feelings of loneliness (Heinrich & Gullone 2006; Majka & Cacioppo 2013). Loneliness is, in turn, known to have detrimental effects on a person's physical and mental health (Heinrich & Gullone 2006). For instance, previous research has shown that experiencing prolonged periods of loneliness can cause individuals to develop various physical and psychiatric disorders, including depression or anxiety. Moreover, there is evidence that feelings of loneliness are associated with suicidal ideation, and with an increased prevalence of health-impairing behaviors, such as eating disorders, alcohol abuse, and substance use (Beutel et al. 2017; Heinrich & Gullone 2006; Mushtaq et al. 2014).

Despite the obvious importance of loneliness for a person's health and well-being, and the considerable amount of attention this issue has received in the past (Heinrich & Gullone 2006), knowledge about the intergenerational transmission of loneliness is still scarce and insufficient, as only a relatively small number of empirical studies have examined the potential link between loneliness in parents and in their offspring. However, investigating processes of intergenerational transmission is worthwhile, as these processes can have long-lasting negative consequences for the younger generation if parents pass on their specific disadvantages to their children. Thus, it may be assumed that transmission processes contribute to the reproduction of social and health inequalities within society (Mustillo et al. 2004; Stecher & Zinnecker 2007). Moreover, while most of the few existing studies on this topic have focused on similarities in levels of loneliness in parents and in their young children, the question of whether loneliness in parents is linked to loneliness in their adult children has yet to be adequately addressed. This is unfortunate, because studies of this type could shed more light on the question of whether the intergenerational transmission of loneliness has long-lasting effects on children that go well beyond childhood and adolescence. Furthermore, the conclusions of previous research on gender differences in the intergenerational transmission of loneliness were inconsistent and contradictory.

Therefore, the present study aims to contribute to the current status of research by examining the relationship between loneliness in parents and in their adult children, while clarifying the role of gender differences in the intergenerational transmission of loneliness. Using data from the German Socio-Economic Panel Study (SOEP), hierarchical linear regression models are estimated for 4,457 respondents between the ages of 18 and 40 and their parents. The main purpose of the analysis is to determine whether feelings of loneliness in parents are related to feelings of loneliness in their adult children, thereby providing evidence for the relevance of intergenerational transmission. The second objective is to investigate whether these transmission processes have long-term consequences for children. The third objective is to investigate potential differences between same-sex and opposite-sex parent-child dyads in the intergenerational transmission of loneliness.

## 2. Background and hypotheses

*Loneliness* is a subjective feeling of distress that results from a cognitive discrepancy between a person's actual and desired social relationships (Majka & Cacioppo 2013). This discrepancy can refer to both the quantity and the quality of personal relationships, and it is associated with affective reactions of sadness, emptiness, or longing (Asher & Paquette 2003). To understand the origins of loneliness, an evolutionary perspective is required. For most of human history, living in social groups significantly enhanced human survival, because a group was not only more effective in providing shelter, food, and protection against predators; it also offered its members a greater selection of potential mates. Social isolation, in contrast, posed a severe threat to an individual's survival, and made reproduction less likely. As a result, natural selection favored those individuals who showed high levels of sociability, and who participated actively in social groups (Baumeister & Leary 1995; Heinrich & Gullone 2006). Although human beings perceive loneliness as a distressing and highly unpleasant emotion, the ability to feel lonely can be seen as an evolutionary advantage. In this sense, loneliness is comparable to other conditions that are critical for survival (e.g., hunger, thirst, or pain), because it protects an individual from the risks associated with social isolation (Bodford 2017; Cacioppo & Patrick 2008; Distel et al. 2010; Heinrich & Gullone 2006). Loneliness can, for example, motivate people to intensify their interactions with others, and to renew and reinforce their personal connections, thus countering the risks of becoming isolated from others (Cacioppo et al. 2014).

In general, two forms of loneliness can be distinguished. *Social loneliness* describes the perceived absence of a social network or a person's feeling that he or she does not belong to a group, whereas *emotional loneliness* refers to the lack of close and intimate relationships (attachments) with another person (Asher et al. 1990). As loneliness is a highly subjective internal and emotional state, it is clearly distinguishable from the more objective concept of social isolation (Majka & Cacioppo 2013). For example, even people with large social networks and frequent social contacts might suffer extensively from feelings of loneliness if their social relationships do not meet their expectations, and are less satisfying than the individuals want them to be (Asher & Paquette 2003; Bodford 2017; Russell & Pang 2016). Consequently, perceived loneliness is relatively independent of the objective extent of social isolation; e.g., the number of social contacts a person has or the actual size of a person's social network (Junttila & Vauras 2009).

Theoretical explanations of the *intergenerational transmission of loneliness* need to focus on childhood and adolescence, and consider both environmental and genetic factors. *Cultural transmission* is one specific form of intergenerational transmission that can be defined as the "acquisition of behaviors, attitudes, or technologies through imprinting, conditioning, imitation, active teaching and learning, or combinations of these" (Cavalli-Sforza et al. 1982: 19). Processes of cultural transmission from parents to children encompass not just parents' conscious and intentional efforts to teach their children through, for example, instructions or feedback (*socialization*); but also implicit and unintentional learning processes (*enculturation*). Thus, cultural transmission always requires some form of social learning (Schönpflug 2001).

According to social learning theory (Bandura 1977), children acquire specific behaviors and personality traits by observing and by interacting with available role models. One explanation for the similarities in the levels of loneliness observed in parents and in their children is that social skills and communication patterns are transmitted from one generation to another. Acquiring adequate social skills is crucial for both the development and the maintenance of personal relationships (Burke et al. 2013), whereas deficits in social skills can prevent people from establishing and maintaining satisfying relationships (Majka & Cacioppo 2013). As the family environment provides children with numerous opportunities to observe their parents and to use them as role models for their own behavior and personalities, the family of origin has been shown to be “one of the primary contexts in which individuals learn communication skills” (Burke et al. 2013: 78). However, socially detached parents will generally not be able to facilitate their children’s social integration by modeling appropriate social behaviors (Junttila & Vauras 2009). Consequently, lonely parents often transmit their poor communication patterns and their insufficient or inadequate social skills to the next generation, thereby increasing the risk of loneliness in their offspring (Burke et al. 2013; Solomon 2000).

In addition to these direct influences, parents can indirectly affect their children’s levels of loneliness by providing them with an environment that promotes social interactions and the acquisition of appropriate skills. Furthermore, parents may determine the frequency and the type of social interactions their children engage in by, for example, setting up “playdates” (Henwood & Solano 1994). In using these indirect approaches parents are not controlling the specific nature of their children’s interactions. Instead, parents are simply increasing their children’s opportunities to engage in social interactions, as well as their chances of acquiring a set of appropriate social skills (Putallaz & Heflin 1990).

Although research on this subject is scarce, there is also some evidence for the *genetic transmission* of loneliness. McGuire and Clifford (2000) were the first researchers to investigate the intergenerational transmission of loneliness from a behavioral genetic perspective. The results of their analysis suggested that genetic transmission significantly contributes to inter-individual differences in loneliness. Although they rejected the assumption that these differences are likely to be caused by one specific gene, the authors hypothesized that inter-individual differences can be explained by a combination of environmental factors and the genetic inheritability of personality traits and behaviors that are associated with loneliness, such as neuroticism and extraversion (Russell & Pang 2016). Later studies came to similar conclusions; i.e., that loneliness is moderately heritable (Boomsma et al. 2005; Distel et al. 2010). With these findings taken into account, the first hypothesis of the present study is that *loneliness in parents predicts loneliness in their adult children (H1)*.

In light of these theoretical considerations, it also appears reasonable to assume that a person’s predisposition for loneliness is acquired early in life (Lobdell & Perlman 1986), and that this predisposition has long-term consequences for a person’s risk of experiencing loneliness during adulthood. Childhood and adolescence are stages in life when individuals are especially receptive for transmission processes (Baier & Hadjar 2004). Because parents function as role models for their children (Barber et al. 1992), and because children are exposed to their parents’ behavior and personality traits on a daily

basis, processes of intergenerational transmission should be particularly effective during the early years of life. Thus, parents provide their offspring with either a secure or an insecure basis for engaging in social interactions and forming personal relationships (Junttila & Vauras 2009). Correspondingly, when children observe and internalize interaction and communication patterns modeled by their parents that are likely to lead to loneliness, they are put at a great disadvantage that might be hard to compensate for in later life. Therefore, the second hypothesis is that *loneliness in parents has long-term effects on loneliness in their children (H2)*.

When investigating processes of intergenerational transmission, another aspect needs to be considered. Several theoretical approaches (e.g., social learning theory and developmental psychology) have argued that same-sex role models are particularly important for children's overall development. According to these theories, children have a tendency to model their own behavior and personality primarily on individuals of the same sex, while rejecting the examples set by models of the opposite sex. One potential explanation for this tendency is that children view models of the same sex as being more similar to themselves in terms of their interests and attributes (Downey & Powell 1993; Mischel 1970; Slaby & Frey 1975; Starrels 1992). Consequently, it may be assumed that the same-sex parent plays the dominant role in the intergenerational transmission of loneliness from parent to child, and that there are significant differences between mother-daughter and mother-son dyads, as well as between father-son and father-daughter dyads. Therefore, this study's third hypothesis is that *the intergenerational transmission of loneliness is stronger in same-sex parent-child dyads than in opposite-sex parent-child dyads (H3)*.

One of the earliest studies that concentrated on the intergenerational transmission of loneliness from parents to their undergraduate daughters was conducted by Lobdell and Perlman (1986). Their analysis of 130 parent-daughter triads provided some evidence for the relevance of transmission processes, as the authors found that levels of loneliness in the parents were significantly related to levels of loneliness in their daughters. Their findings also indicated that parents' childrearing practices significantly contributed to feelings of loneliness in their daughters, particularly a lack of positive parental involvement. In contrast, a later study by Henwood and Solano (1994) that focused on the intergenerational transmission of loneliness from parents to their young children (first graders) obtained contradictory results. Their analysis suggested that there was a positive relationship between loneliness in mothers and in their children, but that there was no corresponding relationship between loneliness in fathers and in their children. The findings of this study should, however, be interpreted with caution due to the small sample size ( $n=52$ ).

A study from Finland that investigated the impact of parents' self-efficacy in parenting on the social and academic behavior of their elementary school children found that the children of lonely parents were at higher risk of experiencing loneliness themselves. Furthermore, the analysis revealed that the relationship between loneliness in parents and in children was mediated by both the parents' self-efficacy in parenting and the children's social competence (Junttila et al. 2007). However, one major limitation of this study was that the statistical analysis did not consider potential gender differences. A subsequent study by Junttila and Vauras (2009) examined the intergenerational transmission of loneliness from parents to their 10-year-old children, while also taking into account the

gender of both parents and their children. The results showed that parents did not have a direct influence on their children's levels of loneliness, but that loneliness in both the mother and the father had negative effects on their daughters' cooperating skills, which were, in turn, associated with higher levels of loneliness. As no similar relationship between feelings of loneliness in parents and in their sons could be found, the authors concluded that girls are more likely than boys to be affected by negative emotions in their parents, including feelings of loneliness.

The most recent study that examined the intergenerational transmission of loneliness through the transmission of social skills from parents to their young adult children (university students) in the US was from Burke et al. (2013). Based on a sample of 255 parent-child triads, their findings suggested that levels of loneliness in both mothers and fathers were significant predictors of their children's levels of loneliness. However, only fathers' social skills were found to be significantly related to social skills in their offspring. As the study revealed that lower levels of social skills were associated with higher levels of loneliness in all of the respondents, the authors drew the conclusion that fathers indirectly affected levels of loneliness in their adult children via the transmission of social skills. Moreover, the analysis provided some evidence for the long-term effects of the intergenerational transmission of loneliness from parents to children, as the study focused on adult children who were no longer sharing a household with their parents.

In summary, the intergenerational transmission of loneliness from parents to their children is an understudied topic, because only a small number of studies have investigated the extent to which parents' experiences of loneliness are similar to those of their children—and especially to those of their adult children. Furthermore, as the review of the existing literature has shown that the findings of previous research on gender differences in the intergenerational transmission of loneliness are inconsistent and contradictory, it is clear that this topic merits more attention.

### 3. Data and methods

*Database and sample.* The present study uses data from the German Socio-Economic Panel Study (SOEP), an annual household panel that began in 1984 as a representative cross-section of the adult population of Germany living in private households (Wagner et al. 2007). Questions concerning the respondents' feelings of loneliness were incorporated into the SOEP's individual questionnaire in the years 2013 and 2017. The individual questionnaire is administered to all adult members of a selected household, as well as to all adults who left the selected household at some time in the past, and it collects information about a variety of topics, including the respondents' occupational status, their educational attainment, and different dimensions of well-being. Due to issues such as panel attrition, the number of available parent-child triads was increased by combining the two survey waves. To avoid duplicate observations on the level of the adult children, information from 2017 was used if a respondent had participated in both survey waves. The pooled sample consisted of 5,492 adult children who provided an assessment of their own loneliness, and who could be matched to their parents. To eliminate implausible cases, all parents were excluded from the analytical sample if they were not at least 15

years older than their participating children ( $n=47$ ). Furthermore, all parents above the age of 70 were excluded from the analytical sample ( $n=196$ ), and the sample was limited to adult children between the ages of 18 and 40 ( $n=792$ ). All missing values on the independent variables and the control variables were replaced by means of multiple imputation. Taken together, the final analytical sample consisted of 4,457 parent-child triads (3,140 triads from 2017 and 1,317 triads from 2013). In total, these cases included 4,457 adolescents, as well as 3,028 different mothers and 3,030 different fathers.

*Analytical method.* Because some of the adult children shared the same parents with other respondents in the analytical sample, the data were hierarchically structured. This also explains the discrepancies in the numbers of mothers and fathers, as the adult children might, for example, have shared the same father but not the same mother. To take the hierarchical structure of the data into account, the present study employed a multilevel modelling approach, with the adult children at the first level and their families (i.e., unique combinations of mothers and fathers) at the second level. The use of this approach ensured that potential dependences of the observations at the lower level were adequately accounted for (Hox & Maas 2005; Pötschke 2019).

*Dependent and independent variables.* Both the dependent variable—i.e., the adult child's self-rated loneliness—and the independent variables—i.e., the mother's and the father's self-rated loneliness—were measured using the Loneliness Scale-SOEP (LS-S), a one-dimensional scale that is based on the Three-Item Loneliness Scale (Hughes et al. 2004). It is worth noting that the Three-Item Loneliness Scale was not designed to measure a person's objective level of social integration, but rather his or her subjective levels of loneliness, defined as feelings of "social isolation, absence of companionship, and rejection by peer groups" (Hughes et al. 2004: 668-669). The LS-S can be used to assess levels of social loneliness in respondents from the age of 18 onward, and consists of the following three items: "How often do you miss the company of other people?", "How often do you feel left out?", and "How often do you feel socially isolated?" These items were combined to three mean scales with response categories ranging from 1 = *very often* to 5 = *never* for the adult children, their mothers, and their fathers (Cronbach's  $\alpha$  for adult children = 0.77, Cronbach's  $\alpha$  for mothers = 0.79, Cronbach's  $\alpha$  for fathers = 0.78).

*Control variables.* The gender of each adult child in the sample was identified as either 0 = *male* or 1 = *female*. In addition, each adult child was assigned to one of three age categories based on information about his or her year of birth: 1 = *18-20 years*; 2 = *21-30 years*; and 3 = *31-40 years*. Thus, the youngest age cohort included a large share of adults who had not yet completed their formal education, while the oldest age cohort consisted of adults who were still far below the official retirement age. Furthermore, each adult child's educational level was measured using information from the CASMIN (Comparative Analysis of Social Mobility in Industrial Nations) classification of education. Based on this classification, each respondent was assigned to one of four groups: 1 = *low educational level*; 2 = *medium educational level*; 3 = *high educational level*; and 4 = *still attending school*. To determine an adult child's living arrangements with respect to his or her parents, the sample was split into four groups: 1 = *not living with parents*; 2 = *living with both parents*; 3 = *living only with mother*; and 4 = *living only with father*. Whether an adult child had siblings was indicated by whether he or she belonged to one of two groups: 0 = *no siblings* and 1 = *siblings*. The partnership status of an adult child was determined by his or her

answer to the following question: “Are you in a serious/permanent relationship?” Based on the respondent’s answer, he or she was assigned to one of two groups: 0 = *no partner* and 1 = *partner*. Finally, the two variables *mother’s age* and *father’s age* were used to measure the parents’ ages at the time of the survey. The descriptive results for all variables are displayed in Table 1 and Table 2.

*Table 1:* Descriptive sample statistics for adult children: Percentages or means (standard deviations)

	Adult children	Adult sons	Adult daughters
<b>Levels of loneliness</b> (1: Never - 5: Very often)	2.0 (0.7)	1.9 (0.7)	2.1 (0.8)
<b>Gender</b>			
Male	51.3		
Female	48.7		
<b>Age</b>			
18 - 20 years	33.6	33.4	33.8
21 - 30 years	50.5	51.9	49.1
31 - 40 years	15.9	14.7	17.1
<b>Educational level</b>			
Low educational level	15.5	19.0	11.8
Medium educational level	54.2	52.6	56.1
High educational level	15.7	14.1	17.3
Still attending school	14.6	14.3	14.8
<b>Living conditions</b>			
Not living with parents	34.9	29.8	40.1
Living with both parents	57.6	62.1	53.0
Living only with mother	5.8	6.1	5.5
Living only with father	1.7	2.0	1.4
<b>Siblings</b>			
No siblings	8.8	9.5	8.0
Siblings	91.2	90.5	92.0
<b>Relationship status</b>			
No partner	50.9	59.1	42.2
Partner	49.1	40.9	57.8
<b>Number of observations</b>	4,457	2,286	2,171

Source: Own analysis; SOEP v34; 2013 + 2017

*Table 2:* Descriptive sample statistics for parents: Means (standard deviations)

	Fathers	Mothers
<b>Levels of loneliness</b> (1: Never - 5: Very often)	2.0 (0.0)	2.0 (0.0)
<b>Age</b>	54.7 (7.0)	52.0 (6.6)



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(33 - 70 years)		
Number of observations	3,030	3,028

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Source: Own analysis; SOEP v34; 2013 + 2017

## 4. Results

To investigate the relationship between loneliness in parents and their adult children, stepwise multilevel mixed-effects linear regression models were estimated. The results are presented in Table 3. The first model shows the correlation between loneliness in parents and in their adult children (Model 1a); the second model adds all relevant sociodemographic and family-related control variables to the regression (Model 1b); and the third model includes the two interaction terms for mother-child and father-child dyads (Model 1c).

*Loneliness in parents and their adult children.* The results displayed in Model 1a suggest that feelings of loneliness in parents were positively and highly significantly related to feelings of loneliness in their adult children. Even after controlling for sociodemographic and family-related characteristics in Model 1b, the size of the regression coefficients did not change noticeably, and the associations remained significant. As this finding applied to both mothers and fathers, the first hypothesis of the present study, which stated that loneliness in parents predicts loneliness in their adult children (H1), was confirmed.

*Same-sex and opposite-sex parent-child dyads.* The two interaction terms in Model 1c were estimated by, respectively, multiplying the variables for loneliness in mothers and in fathers with their children's gender, thus allowing for a comparison of same-sex and opposite-sex parent-child dyads. In other words, the analysis investigated whether loneliness in mothers had a stronger influence on their daughters than on their sons, and whether loneliness in fathers had a stronger influence on their sons than on their daughters. As both regression coefficients were found to be small and insignificant, the results indicated that there were no differences in the intergenerational transmission of loneliness between mother-daughter and mother-son dyads, or between father-son and father-daughter dyads. As a result, it must be concluded that the relationship between loneliness in parents and in their children did not differ noticeably between same-sex and opposite-sex parent-child dyads. Therefore, the third hypothesis, which stated that the intergenerational transmission of loneliness is stronger in same-sex parent-child dyads than in opposite-sex parent-child dyads (H3), had to be rejected.

*Table 3:* Multilevel regression: The relationship between loneliness in parents and their adult children (unstandardized coefficients)

	Model 1a	Model 1b	Model 1c
<b>Mother's loneliness</b>	0.20*** (0.02)	0.19*** (0.02)	0.19*** (0.02)
<b>Father's loneliness</b>	0.10*** (0.02)	0.10*** (0.02)	0.08** (0.02)
<b>Adult child is female (Ref.: Male)</b>		0.13*** (0.02)	0.13*** (0.02)
<b>Adult child's age</b>			
18 - 20 years		Ref.	Ref.
21 - 30 years		-0.05 (0.03)	-0.05 (0.03)
31 - 40 years		-0.05 (0.05)	-0.05 (0.05)
<b>Adult child's educational level</b>			
Low educational level		Ref.	Ref.
Medium educational level		-0.01 (0.03)	-0.01 (0.03)
High educational level		-0.08 (0.04)	-0.08 (0.04)
Still attending school		-0.13** (0.04)	-0.13** (0.04)
<b>Adult child's living conditions</b>			
Not living with parents		Ref.	Ref.
Living with both parents		-0.10** (0.03)	-0.10** (0.03)
Living only with mother		-0.16** (0.05)	-0.16** (0.05)
Living only with father		0.04 (0.09)	0.04 (0.09)
<b>Adult child has siblings (Ref.: No siblings)</b>		-0.03 (0.04)	-0.03 (0.04)
<b>Adult child has a partner (Ref.: No partner)</b>		-0.14*** (0.02)	-0.14*** (0.02)

(continues)

*Table 3: Multilevel regression: The relationship between loneliness in parents and their adult children (unstandardized coefficients) (continued)*

<b>Mother's age</b>		0.00 (0.00)	0.00 (0.00)
<b>Father's age</b>		0.00 (0.00)	0.00 (0.00)
<b>Mother's loneliness x Child's gender</b>			-0.01 (0.03)
<b>Father's loneliness x Child's gender</b>			0.04 (0.04)
<b>Constant</b>	2.00*** (0.01)	1.93*** (0.13)	1.93*** (0.13)
<b>N (adult children)</b>		4,457	
<b>N (families)</b>		3,037	

*Source:* Own analysis; SOEP v34; 2013 + 2017

*Dependent variable:* Adult child's loneliness

*Standard errors in parentheses; \*\*\* p<0.001, \*\* p<0.01, \* p<0.05*

*Control variables.* With regard to the sociodemographic and family-related control variables, the results provided evidence for significant differences between male and female respondents, with women reporting higher levels of loneliness than men. Moreover, the findings indicated that the living conditions of the adult children were related to their experiences of loneliness. Respondents who were living either with both of their parents or with their mothers only experienced significantly lower levels of loneliness than respondents who did not share a household with their parents. In contrast, no differences were found between respondents who were living with their fathers only and respondents who were not living with either of their parents. Another predictor of levels of loneliness in the respondents was educational attainment. Although no differences were found between respondents with a low educational level and respondents who had attained either a medium or a high educational level, respondents who were still attending school reported significantly lower levels of loneliness than respondents with a low level of education. Furthermore, respondents who reported being in a serious or permanent relationship were shown to be less likely to experience feelings of loneliness than respondents who did not have a partner.

*The long-term effects of transmission processes.* As the present study uses cross-sectional data, the statistical analysis can provide only indirect evidence for the long-term effects of transmission processes by investigating the relationship between loneliness in parents and in their adult children living in separate households. Children who have left the parental household differ from children who are still living with their parents, as the former are exposed to their parents' behavior and personality traits less frequently and less

intensely. Furthermore, children who have left home should be more influenced by other members of their social networks, including their partners, friends, and colleagues. Therefore, stepwise multilevel mixed-effects linear regression models were estimated for a subsample of 1,552 adult children who were no longer sharing a household with their parents. The results of the regression models are displayed in Table 4.

*Table 4:* Multilevel regression: The relationship between loneliness in parents and their adult children living in their own household (unstandardized coefficients)

	Model 2a	Model 2b	Model 2c
<b>Mother's loneliness</b>	0.16*** (0.03)	0.15*** (0.03)	0.14** (0.04)
<b>Father's loneliness</b>	0.04 (0.04)	0.03 (0.04)	0.02 (0.05)
<b>Adult child is female (Ref.: Male)</b>		0.18*** (0.04)	0.18*** (0.04)
<b>Adult child's age</b>			
18 - 20 years		Ref.	Ref.
21 - 30 years		-0.23* (0.09)	-0.23* (0.09)
31 - 40 years		-0.14 (0.10)	-0.14 (0.10)
<b>Adult child's educational level</b>			
Low educational level		Ref.	Ref.
Medium educational level		0.00 (0.06)	0.00 (0.06)
High educational level		-0.04 (0.06)	-0.04 (0.06)
Still attending school		-0.15 (0.18)	-0.15 (0.18)
<b>Adult child has siblings (Ref.: No siblings)</b>		-0.01 (0.07)	-0.01 (0.07)
<b>Adult child has a partner (Ref.: No partner)</b>		-0.31*** (0.04)	-0.31*** (0.04)

(continues)

*Table 4:* Multilevel regression: The relationship between loneliness in parents and their adult children living in their own household (unstandardized coefficients) (continued)

<b>Mother's age</b>		0.00 (0.00)	0.00 (0.00)
<b>Father's age</b>		0.00 (0.00)	0.00 (0.00)
<b>Mother's loneliness x Child's gender</b>			0.03 (0.06)
<b>Father's loneliness x Child's gender</b>			0.03 (0.07)
<b>Constant</b>	2.05*** (0.02)	2.65*** (0.23)	2.65*** (0.23)
<b>N (adult children)</b>		1,552	
<b>N (families)</b>		1,239	

*Source:* Own analysis; SOEP v34; 2013 + 2017

*Dependent variable:* Adult child's loneliness

*Standard errors in parentheses; \*\*\* p<0.001, \*\* p<0.01, \* p<0.05*

The results of Model 2a show that there was a significant, albeit moderate, relationship between loneliness in mothers and their adult children, with higher levels of loneliness in mothers predicting higher levels of loneliness in their children. Although the effect became slightly smaller after the control variables were added to the regression in Model 2b, the relationship remained highly significant, which provides some evidence for the long-term effects of the intergenerational transmission of loneliness between mothers and their adult children. Moreover, as the interaction term for mother-child dyads indicates that there were no significant differences between mother-daughter and mother-son dyads, it may be concluded that feelings of loneliness in mothers have similar long-term effects on both their adult daughters and their adult sons. In contrast, the results in Table 4 provide no evidence for a significant relationship between loneliness in fathers and in their adult children, as the coefficient for father's loneliness was small and insignificant across all three of the estimated regression models. This finding suggests that loneliness in fathers has no long-term effects on loneliness in their adult children. Consequently, the second hypothesis, which stated that loneliness in parents has long-term effects on loneliness in their children (H2), could be confirmed for mothers only, and had to be rejected for fathers.

## 5. Conclusions

The purpose of the present study was threefold: (1) to investigate the intergenerational transmission of loneliness between parents and their adult children; (2) to examine whether processes of intergenerational transmission have long-term consequences for children; and (3) to uncover potential differences between same-sex and opposite-sex parent-child dyads in the intergenerational transmission of loneliness.

The findings of this study have provided moderate evidence for the intergenerational transmission of loneliness between parents and their children, as the results showed that higher levels of loneliness in both mothers and fathers predicted higher levels of loneliness in their adult children. Additionally, the results provided some indirect evidence for the long-term effects of transmission processes, as the analysis of a subsample of children who were no longer living with their parents revealed a significant association between feelings of loneliness in mothers and their adult children. However, no corresponding relationship was found between fathers and their adult children who were no longer sharing a household with their parents. Consequently, it appears that the intergenerational transmission of loneliness between fathers and their children was limited to father-child dyads sharing the same household, and that the fathers' loneliness had no long-lasting effects on children who had left the parental household. This finding may indicate that mothers, as the primary socialization agents of children, have more influence on their children than fathers. Moreover, this result may be partially explained by the unequal division of child care between mothers and fathers. As the intergenerational transmission of loneliness is assumed to occur not only through genetic inheritance, but via environmental factors, transmission processes from parents to their children require them to have close relationships and frequent interactions. Because mothers typically have more responsibility than fathers for household and child care tasks (Craig & Mullan 2011; Steinbach 2019; Yeung et al. 2001), children usually have more opportunities to interact with their mother than their father, to observe their mother's behavior and personality, and to use their mother as a role model (Frost et al. 1991). Finally, the results indicated that there were no significant differences between same-sex and opposite-sex parent-child dyads in the intergenerational transmission of loneliness; a finding that also applied to children who were no longer living with their parents.

The findings of the present study are in line with some of the results obtained by previous research. This study could, for instance, confirm the early findings of Lobdell and Perlman (1986), who showed that loneliness in both mothers and fathers was positively related to levels of loneliness in their daughters. However, as the authors focused exclusively on the association between loneliness in parents and their female offspring, it was not possible to compare this study's findings on the relationship between loneliness in parents and their sons with the results of this early investigation. In addition, the outcomes of the present study support the more recent findings of Burke et al. (2013), which provided evidence of a relationship between loneliness in both parents and in their adult children. Also in accordance with Burke et al. (2013), the results of this study suggest that the intergenerational transmission of loneliness has long-lasting effects on children that extend beyond childhood and adolescence.

This study has a number of strengths that clearly distinguish it from previous research, including its use of a well-established and large panel study with high case numbers. Furthermore, as the present study was able to draw on information about the self-reported levels of loneliness of both parents and their adult children, it did not have to rely on proxy information. Another strength of this study lies in its inclusion of both mothers and fathers in the statistical analysis, which allowed for the investigation of gender differences in the intergenerational transmission of loneliness. Moreover, a variety of potentially important sociodemographic and family-related control variables were considered in the multivariate analysis (e.g., the respondent's age and living conditions).

However, this study also has some limitations. First, the mechanisms through which parents may transmit loneliness to their children could not be tested, as the German Socio-Economic Panel Study did not provide the information needed to do so. Second, the causal relationship between loneliness in parents and their adult children could not be determined based on the cross-sectional data used in this study. Although social learning theory and previous research provide convincing evidence for the assumption that it is primarily the parents who transmit their predisposition for loneliness to their children through, for example, the transmission of social skills, other approaches have suggested that processes of intergenerational transmission are a two-way exchange (Martin-Matthews & Kobayashi 2002). For example, previous research has shown that loneliness is likely to spread in social networks due to the passing on of characteristics and behavioral patterns that are harmful to the establishment and maintenance of social relationships between different network members (Cacioppo et al. 2009). Consequently, the possibility that loneliness in children contributes to loneliness in their parents cannot be ruled out. Third, given its cross-sectional design, this study was unable to investigate the relationship between loneliness in parents and in children at earlier stages of the children's lives, such as during childhood and adolescence. As a result, the question of whether the same relationships existed during earlier periods in the respondents' lives could not be addressed. Nevertheless, previous research on the intergenerational transmission of loneliness has generally found significant similarities between parents and their children, which supports the assumption that transmission processes are relevant for children and adolescents. Fourth, due to its cross-sectional design, the present study could provide only indirect evidence for the long-term effects of the intergenerational transmission of loneliness by examining the relationship between loneliness in parents and in their offspring in a subsample of children who were no longer living with their parents.

To summarize, the findings of the present study are quite concerning, because they imply that a person's predisposition for loneliness is likely to be determined to some degree by how strongly that person's parents are affected by loneliness. Transmission processes—particularly those that occur during childhood and adolescence—generally allow parents to pass on a number of advantages and disadvantages to their offspring. As a result, these processes have the potential to contribute to social and health-related inequalities within society, and their effects may be especially harmful if parents transfer long-term disadvantages to their children that may be hard to compensate for in later life, as in the case of loneliness.

It is well known that prolonged feelings of loneliness can lead to a number of negative health and well-being outcomes. These outcomes include a higher prevalence of health-impairing behaviors, increased suicidal ideation, and elevated risks of depression, anxiety, or panic attacks. Therefore, identifying the factors that have the potential to either increase or decrease the risk of loneliness is of great importance for research, and for practitioners. However, relatively few studies have investigated the intergenerational transmission of loneliness, and their results have been contradictory and inconsistent, especially with regard to the long-term effects of transmission processes and the role of gender differences. Hence, more studies are needed to shed light on both the short-term and the long-term effects of the intergenerational transmission of loneliness from parents to their children; particularly studies that employ a longitudinal design. Furthermore, additional information and more reliable knowledge about the mechanisms through which loneliness is transferred from parents to their children are required. Otherwise, the “loneliness of parents today may well add to the loneliness of their children in the next generation” (Lobdell & Perlman 1986: 594).

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## Information in German

### Deutscher Titel

Die intergenerationale Transmission von Einsamkeit zwischen Eltern und ihren erwachsenen Kindern

### Zusammenfassung

**Fragestellung:** Die vorliegende Studie untersucht den Zusammenhang zwischen der Einsamkeit von Eltern und der ihrer erwachsenen Kinder unter Berücksichtigung von geschlechtsspezifischen Unterschieden in Bezug auf die intergenerationale Transmission von Einsamkeit.

**Hintergrund:** Obwohl bekannt ist, dass sich Einsamkeit negativ auf die physische und psychische Gesundheit einer Person auswirken kann, existieren bislang nur wenige empirische Untersuchungen, die die intergenerationale Transmission von Einsamkeit zwischen Eltern und Kindern sowie die möglichen Langzeitfolgen von Transmissionsprozessen erforscht haben. Hinzu kommt, dass die Ergebnisse der bisherigen Studien zum Teil inkonsistent und widersprüchlich waren, insbesondere mit Blick auf geschlechtsspezifische Unterschiede.

**Methode:** Die Grundlage für die statistischen Analysen bildet das Sozio-oekonomische Panel (SOEP). Basierend auf den Daten aus den Jahren 2013 und 2017 wurden Mehrebenenanalysen für 4.457 Befragte im Alter zwischen 18 und 40 Jahren und ihren Eltern durchgeführt.

**Ergebnisse:** Die Ergebnisse der Regressionsanalysen zeigen signifikante Zusammenhänge zwischen der Einsamkeit von Eltern und der ihrer erwachsenen Kinder. Zudem belegen die Analysen, dass der Zusammenhang zwischen der Einsamkeit von Müttern und Kindern unabhängig davon ist, ob Mütter und Kinder in einem gemeinsamen Haushalt leben. Allerdings zeigen sich keine signifikanten Unterschiede zwischen gleichgeschlechtlichen und nichtgleichgeschlechtlichen Eltern-Kind-Dyaden.

**Diskussion:** Die vorliegende Studie liefert moderate Hinweise auf die intergenerationale Transmission von Einsamkeit zwischen Eltern und ihren erwachsenen Kindern sowie indirekte Hinweise auf die langfristige Wirkung von Transmissionsprozessen zwischen Müttern und Kindern.

**Schlagwörter:** Erwachsene Kinder, intergenerationale Transmission, geschlechtsspezifische Unterschiede, Einsamkeit, Eltern-Kind-Beziehung, Sozio-oekonomisches Panel (SOEP)

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