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BiB WORKING PAPER

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Labor market participation and informal family care among older adults in Germany: Role substitution, role expansion, role extension or dis-/nonengagement?

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Labor Market Participation and Informal Family Care Among Older Adults in Germany: Role Substitution, Role Expansion, Role Extension or Dis-/Nonengagement?

Andreas Mergenthaler*, Norbert F. Schneider*

Abstract

Despite increasing research, the diversity of role transitions and the interplay between productive roles among older adults are still not adequately understood. This also applies to labor force participation and family care at the transition to retirement. In order to narrow this research gap, this article examines the diversity of transitions/continuities between employment and informal family care among older adults in Germany. Based on role theory and disengagement approach, a typology of transitions/continuities between employment and informal family care was created using data from three waves of the study “Transitions and Old Age Potential” (TOP) over a period of six years (2013-2019). Transitions/continuities between labor market participation and family roles can be described empirically in terms of four main types: role substitution, role expansion, role extension, and dis-/nonengagement. These can be broken down further into subtypes, which reveals the diversity of role transitions/continuities among older adults and suggests different causal relationships. Continuity and fluctuation are found to coexist, with strong evidence for either episodic or gradual/fluid patterns of role transitions. Time commitment in productive roles has a noticeable influence on transition/continuity types. However, the impact of sociodemographic, occupational and personal predictors suggests that labor market-related inequalities and subjective preferences are also influencing the transitions between employment and family care. The findings are innovative in terms of a theory-based typology of role transitions/continuities that offers new insights into the diversity of role transitions and their determinants among older adults not only in Germany, but also in other countries with aging populations.

Keywords: informal family care, employment, role transitions, disengagement, old-age diversity

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Prolonged Labor Market Participation and Informal Family Care in Late Adulthood

Since the “double paradigm shift” of German pension policy (Bäcker et al., 2009), the labor market participation of older adults has risen steadily over the last few years, even beyond the former statutory retirement age of 65 years (e.g., Brenke, 2013; Scherger, 2013; Hofäcker & Naumann, 2015) that is now gradually being raised to 67 for the birth cohorts from 1947 onwards. According to Eurostat data, 82% of men aged 55-64 in Germany were employed in 2019, compared to 74% of women in the same age group. This means that, in the last twenty years, the proportion of women between the ages of 55 and 64 who were employed has almost doubled. In addition, the proportion of employed persons in the 65 to 74 age group has increased for both men and women over the last twenty years and currently stands at 18% for men and 10% for women (Eurostat 2021). About 520,000 people in Germany aged 65 and older were employed in 2005, with the number rising to 1.3 million by 2019. This increase can only be partly explained by the stepwise adjustment of the retirement age, but can also be attributed to favorable economic conditions as well as the increased propensity of older people to work (Schäfer, 2021).

The prolonged working life can lead to a conflict of aims and the amount of time available for other activities, thereby limiting or even preventing the tapping of old age potential with regard to active or productive aging (e. g., Bass & Caro, 2001) in different areas of life. This is especially relevant regarding informal care within the family which is still performed predominantly by women (e.g., Haberkern, Schmid, & Szydlik, 2015; Klaus & Tesch-Römer, 2017). Thus, women in particular are at risk of an “accumulation of compatibility requirements” (Klaus & Tesch-Römer, 2017) between paid work and informal family care throughout their life course. Since both intergenerational support within the family and prolonged labor force participation is of high societal and political relevance, it is important to address potential barriers to being engaged in more than one productive role among older adults.

In the following we will focus on two domains of informal family care: (a) child/grandchild care and (b) caregiving for at least one chronically sick or disabled relative. In general, such supportive activities within the family are more obligatory in character compared to voluntary forms of civic engagement (Burr, Mutchler, & Caro, 2007). Thus, family support is more closely tied to social roles and expectations that might impede other forms of formal or informal productive engagement (e.g., Burr et al., 2005; Burr, Mutchler, & Caro, 2007; Choi et al., 2007) especially time-consuming labor market participation. A number of empirical studies address the relationship between different forms of informal family care and paid employment among older adults. With respect to the relationship between informal caregiving and employment, the overall empirical evidence remains ambivalent (Bauer & Souza-Poza, 2015). While the results of some studies suggest no dependence between informal family care and paid work (e.g., Lei, 2006), most show a negative association between these activities, especially with regard to reduced working hours or lower levels of labor force participation, with women seeming to be more affected than men (e.g., Berecki-Gislof et al., 2008; Bolin, Lindgren, & Lundborg, 2008; Viitanen, 2010; Michaud, Heitmueller, & Nazarov, 2010; Kotsadam, 2011; Meng, 2013; King & Pickard, 2013; Moussa, 2019; Mergenthaler, Sackreuther, & Staudinger, 2019; Backhaus & Barslund, 2021). However, the effects observed in some of those studies are quite small and vary between countries (e. g., Spieß & Schneider, 2003) and different types of informal caregiving (Bertogg, Nazio, & Strauss, 2021). Moreover, evidence from longitudinal studies shows that persons who provide informal care seem to have a weaker attachment to the labor market from the outset, suggesting a selection effect (Michaud, Heitmueller, & Nazarov, 2010; Moscarola 2010). Women in mid and late adulthood living in deprived conditions are less likely to leave the labor market when caring for an ill, frail or disabled family member (Austen et al., 2015).

Thus, the opportunity cost of leaving the labor market is especially high for female family caregivers with low socioeconomic status. Overall, the strongest effects are observed for time-intensive caregiving, which is primarily provided by working-age women who are less likely to be in full-time employment, earn lower wages, and have a higher risk of withdrawing from the labor market than noncaregivers (e. g., Lilly, Laporte, & Coyte, 2007; Bauer & Souza-Poza, 2015).

Even if the results from empirical studies provide a fairly good overview of the relationship between paid work and informal family care, some important questions still remain unanswered. Since most studies focus on people of working age, research gaps emerge with regard to the situation in older adulthood which also includes the first decade of retirement – usually between 65 and 75 years of age. As employment trajectories have increasingly stretched beyond retirement age in many developed countries in recent years, the transitions from paid employment to retirement are becoming even more diverse and the relation between paid work and informal caregiving is also becoming an issue for those age groups.

Against this background, the article aims to answer the following research questions:

- (a) Can the diversity of transitions/continuities between paid work and informal family care in late working age and retirement be classified using a theoretically based typology? How are those types distributed among older adults?
- (b) How do the dynamics between role transitions/continuities evolve with age? Is there evidence for episodic or gradual/fluid patterns of role transitions?
- (c) Which individual, (socio-)economic, family-related, or occupational characteristics might be predictors of specific role transitions/continuities in late working age and retirement?

Theoretical Approaches

The majority of older adults are confronted with role transitions as they approach retirement. The most common of these is age-related withdrawal from the labor market, which can be either gradual/fluid (e.g., reducing the hours of paid work over a certain period of time and then leaving the labor market) or relatively abrupt (e.g., direct and complete withdrawal from paid work). Particularly for older adults who were previously employed full-time and who are in good health, the opportunity often arises for them to become more involved in family roles in retirement than was possible during their active working lives. However, against the background of a prolonged working life in Germany, there is increasing demand for both men and women to parallelize career roles and family roles in the second half of life, depending on their individual, social and economic resources. Therefore, the question of competitiveness or complementarity between productive roles is not only relevant for younger or middle-aged people in the “rush hour of life” (e. g., Zannella et al. 2019), but to an increasing extent also for older adults. Moreover, the interplay between multiple productive roles could prove to be a driver of a further pluralization of living conditions and transitions in older adulthood. To conceptualize the potential interplay between paid work and informal family care among older adults, we draw on the assumptions of life course approach and role theory, especially role substitution and role extension or role expansion hypotheses as two opposing approaches. Additionally, we refer to the assumptions of the disengagement approach to explain the withdrawal from multiple productive roles in later adulthood.

Role Substitution Hypothesis

The role substitution hypothesis assumes a competitive relation among productive activities, which means that a role is either significantly reduced or abandoned when a person takes up or increases the amount of time in another productive role. Therefore, role substitution can be

interpreted as an individual's strategy to prevent physical and emotional strain from role overload (Choi et al., 2007). We thus define role substitution as a type of transition, in which *older adults withdraw from a formal or informal productive role and take up another role, regardless of the amount of time spent on this particular role.*

Since caregiving within the family and full-time employment are both time-consuming and challenging activities in terms of the skills, resources and resilience of the persons involved, it can be assumed that they compete with each other for the individual's time and energy (Choi et al., 2007; Burr, Mutchler, & Caro, 2007). This competitive relationship is more pronounced if at least one productive role is a time-consuming activity which offers only limited time flexibility (e.g., in the case of full-time employment).

Moreover, as already mentioned above, informal family care can be considered at least in part an obligatory activity (Burr, Mutchler, & Caro, 2007) which is anchored in normative expectations to a much higher extent than volunteering, for example. While normative expectations of the occupational role are likely to decrease as a person approaches retirement age, the normativity of grandparenthood or caregiving can be assumed to remain stable or even to increase in the course of aging. Therefore, from a normative viewpoint, the occupational role is more likely to be substituted by informal family care the closer a person is to retirement age.

In accordance with these assumptions, empirical studies have shown that informal family care as a set of obligatory activities competes with discretionary activities like formal or informal volunteering (Choi et al., 2007; Burr, Mutchler, & Caro, 2007). With regard to the empirical evidence on the association between paid work and informal family care, role substitution is especially likely when caregiving is time-intensive or when female caregivers from lower socioeconomic status groups are involved (Lilly, Laporte, & Coyte, 2007; Bauer & Souza-Poza, 2015). Moreover, findings from a longitudinal sample of the Health and Retirement Study (HRS) show that family-related caregiving prior to the withdrawal from full-time work was not associated with paid work in retirement, but persons who start caregiving at a later point in time are less likely to continue paid work beyond retirement (Carr & Kail, 2012). Thus, there is some empirical evidence for a substitutive relation between paid work and family-related caregiving at the transition to retirement.

Role Extension and Role Expansion Hypothesis

According to the assumptions of the role expansion hypothesis, a positive or complementary association between productive roles is likely. Furthermore, productive roles may be independent of each other, which can lead to single or multiple roles being extended in time, without starting an additional activity or withdrawing from an existing one. In this case, we can speak of role extension which is distinct from role expansion, which implies that *a productive role in older adulthood is supplemented by another formal or informal role, regardless of the average amount of time spent on these multiple roles.*

The positive association of role expansion is facilitated by access to resources and formal or informal networks that are usually linked with productive roles (e.g., occupation-related opportunities for volunteering) and which increase the probability of individual engagement in more than one activity (Choi et al., 2007). The engagement in more than one role can also be an expression of an individual strategy to cope with stress or anxiety caused by an activity in another domain of life (e.g., volunteering as compensation for stressful caregiving for a family member). Thus, a complementary association between productive roles is likely if at least one activity is not time-consuming beyond a certain degree and a stressful activity can be balanced by an engagement in another domain, or multiple non-stressful activities can be established and maintained

simultaneously. Moreover, a reduction of working hours can also reflect an individual strategy to cope with the demands of caregiving (Lei, 2006). Thus, a reduction of the weekly workload of paid employment of older adults can also be an indicator of a complementary relation between employment and caregiving activities within the family. Consequently, empirical findings that relate informal family care to an adjustment of average working hours per week rather than leaving the labor market completely (Bolin, Lindgren, & Lundborg, 2008; Berecki-Gislof et al., 2008; Kotsadam, 2011; Meng, 2013) can be interpreted in terms of role extension.

Disengagement Approach

The disengagement theory assumes that aging is inevitably related to withdrawal from social roles that were part of everyday life in earlier life phases. The result of disengagement is an ever-decreasing interaction between aging people and their social environment. This process is supposed to be beneficial both for the life satisfaction of older people and for society as a whole (Cumming & Henry, 1979). Disengagement theory can be characterized as a holistic approach towards aging (Bengtson, Burgess, & Parrott, 1997) which hallmarks the first transformation of socio-gerontological theory development (Lynott & Lynott, 1996). Even though disengagement theory belongs to the first generation of social gerontology theories (McMullin, 2000) and was challenged by other approaches such as continuity theory (Atchley, 1989; Atchley, 1999), we refer to it to conceptualize older adults, who *withdrew partially or completely from formal or informal productive roles without the case of role substitution*. However, in contradiction to the functionalist orientation of disengagement theory formulated by Cumming and Henry (1979), we do not see withdrawal from productive roles as beneficial for older people or societies with an aging population. Rather, we define disengagement from productive roles in a non-normative sense and as a transition that does not necessarily occur unidirectionally with increasing age, even if the general probability of disengagement increases with older age.

Furthermore, we suppose that dis-/nonengagement is not only a function of age, but also of cumulative social inequality over the life course (e.g., Dannefer, 2003; Ferraro, Shippee, & Schafer, 2009). Thus, a reduction in the amount of time committed, a withdrawal from or a nonengagement with multiple productive roles among socio-economically disadvantaged older adults is more likely than in more privileged status groups since the former is deprived of individual and social resources (e.g., health or education) to maintain multiple activities.

Extended Push and Pull Framework

To identify potential determinants of role transitions/continuities between employment and informal family care, we make use of an *extended push and pull framework*. Push and pull factors are primarily considered in the context of research on employment and retirement transitions (e.g., Radl, 2017). Push factors can be defined as structural factors which are mostly external to the individual decision-making processes. Thus, factors such as poor health, lack of labor market opportunities or involuntary care in the family are related to an involuntary exit from the labor market. In contrast, pull factors are likely to lead to a voluntarily exit from the labor market as part of a rational decision-making process in older adults. The factors discussed in this context include good health, sufficient financial security or voluntary support in the family.

Many of the push and pull factors mentioned can be considered *ambivalent* with respect to role transitions/continuities of older people. For example, good health can be both a reason to leave working life early in order to devote oneself to private life goals and, at the same time, the necessary prerequisite for prolonging paid work. In such cases, *individual preferences*, such as ideas about how

to organize life in retirement, play a major part in role transitions/continuities. Therefore, “objective” push and pull factors are complemented in this article by subjective attitudes and preferences, such as the importance of paid work, the assessment of one's own financial situation, or plans for retirement. Since normative ties of active working life are increasingly weakened during the transition to retirement, thus raising the degree of individual decision-making for most older adults (e.g., Moen 2011), we suspect that subjective factors have at least equivalent explanatory power with regard to role transitions/continuities to “objective” factors.

Hypotheses

Based on the theoretical considerations in the previous sections, several hypotheses can be formulated for the empirical analyses. First, it can be assumed that role transitions/continuities between paid work and informal family care among older adults in Germany can be described in terms of role substitution, role expansion, role extension, or dis-/nonengagement (*H1*). It is assumed that the frequency of role expansion and role extension decreases with age, while that of role substitution and dis-/nonengagement increases. Due to this age dependence of role transitions/continuities, we expect comparatively high dynamics between the different types, i.e., role transitions show either episodic or gradual/fluid trajectories in the life course of older adults (*H2*).

With regard to the determinants of role transitions/continuities, it can be assumed that the time-intensity with which formal and informal roles are performed has a major influence on the transitions between paid work and informal family care among older adults (*H3a*). For example, it seems plausible that role substitution is the result of competition between time-consuming activities that leads to the withdrawal from one of these roles. In contrast, role expansion is more likely to occur when there are multiple roles of lower time-intensity that are easier to perform simultaneously in everyday life. Thus, caring for a child/grandchild and giving care to a chronically sick or disabled relative can be expected to be positively linked with paid work according to the role expansion or role extension hypothesis as long as the amount of time spent on one of these activities does not exceed a certain level.

Health, as an essential part of human capital, also influences older people's capacity to prolong or take up productive roles. At the same time, formal and informal activities also influence well-being and health. A reciprocal association can thus be assumed, whereby role extension or role expansion in particular is more likely among people in good health than among those with impaired health. In contrast, poor health is more likely to be associated with dis-/nonengagement (*H3b*). Since “objective” factors are mostly ambivalent in terms of their influence on employment and/or family care, subjective attitudes and preferences are assumed to have at least equal explanatory power for different types of role transitions/continuities (*H3c*). Moreover, dis-/nonengagement in both paid work and informal family care is more likely among older adults from socio-economically disadvantaged status groups (*H3d*).

Methods

Data

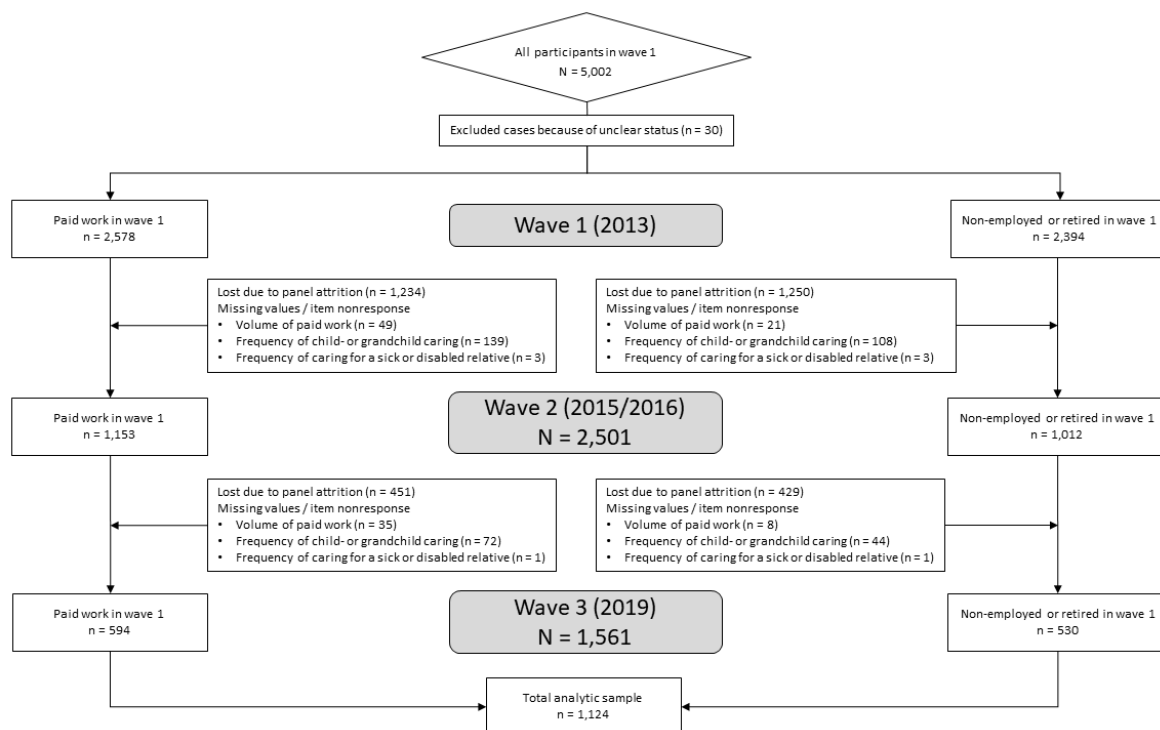
This study uses three waves of the survey “Transitions and Old Age Potential” (TOP), a longitudinal study based on a random sample representative of the birth cohorts 1942 to 1958 residing in private households in Germany (Sackreuther et al., 2016; Mergenthaler et al., 2017; Mergenthaler et al., 2021). The first wave of TOP was conducted in 2013 with an age range at

baseline between 55 and 70 years. Using standardized telephone interviews (CATI), a total of 5,002 respondents provided information on retirement transitions as well as formal and informal activities with a special focus on paid employment beyond retirement age. The second wave of TOP was conducted from November 2015 to February 2016 with a total of 2,501 complete interviews. The data of the third wave of TOP were collected between July and October 2019 from a total number of 1,561 respondents, for whom complete interviews are available from all three waves.

Several selections were made to obtain the analytic sample which are presented in Figure 1. First, two subgroups were separated after 30 cases were excluded due to unclear employment/retirement status at baseline. The first subgroup was limited to respondents that were in paid work at baseline, regardless of old-age pension receipt and employment status (employees versus self-employed). This group includes 2,578 individuals in wave one. Due to panel attrition and missing values or item nonresponse at follow-up, this initial sample reduced in size to 594 cases in wave three, for which complete information on formal and informal activities is available. The second subgroup includes 2,394 respondents who were non-employed or retired at baseline. This means that non-employed persons were not yet receiving an old-age pension at the time of the first wave. Retired persons were at least 60 years of age or older and not employed at the time of the first wave. As in the first subgroup, the number of cases decreased from wave to wave, so that 530 cases with complete information on employment and informal family care were available in wave three. In total, the two subgroups thus comprise 1,124 cases with complete data, for which 3,372 observations are available.

Figure 1

Flowchart of Participants of the Analytic Sample Across Three Waves of the TOP Study



Variables

To measure different types of role transitions/continuities between labor market participation and informal family care between 2013 and 2019, we used several variables that were consistently collected in TOP from wave one to three. In addition to these variables, several control variables were considered to examine the associations hypothesized above (e.g., time-commitment in productive roles, occupational or family characteristics or individual resources and preferences).

Paid Work

Both those not yet of retirement age and not receiving an old-age pension as well as those already receiving a pension were asked whether they were currently engaged in paid work. Paid work is defined as any kind of gainful activity, regardless of duration, income level or employment status. This means that a 450-euro job or a part-time job also counted as paid work. The indicator includes all employed persons regardless of employment status. This was ascertained directly in TOP by means of a separate question (“What is your current occupation: are you a manual worker, an employee, a civil servant, a judge or a professional soldier, a self-employed person or a helping family member?”). Thus, both employees (e.g., manual workers, employees and civil servants) and the self-employed are defined as being in paid work. Respondents who were either unemployed or not active in the labor market for other reasons (e.g., early retirement, being a homemaker, in further education or retraining at the time of the interview) or who were not engaged in paid work in retirement were defined as non-employed.

Moreover, the average weekly working time in hours was asked of both those of working-age and of those who have reached retirement age and are receiving an old-age pension (“And how many hours, including regular overtime, do you typically work per week?”). During the interview, information on weekly working hours (up to a maximum of 168 hours) was collected. As the number of hours worked per week only exceeded 60 in a few cases of the analytic sample (49 cases at baseline, which corresponds to 1.9 % of the sample after the first step of selection), the range was set between one and 60 hours at baseline and 0 to 60 hours in wave two and three. The average weekly working hours were used to supplement the information on employment status in order to determine the dynamics of any reduction or increase in the volume of paid work during the observation period. Since the volume of paid work variable also includes non-employment (weekly working time of 0 hours), complete withdrawal from the labor market at follow-up can also be indicated.

Informal Family Care

Informal family care was measured in two dimensions, which included the care or supervision of children or grandchildren as well as caregiving for a chronically sick or disabled relative (“Have you performed or been involved in any of the following activities in the last three months: care or supervision of children/care or nursing of chronically sick or disabled adults?”). Subsequent questions determined the recipient of the caregiving. This question was used to focus the indicator on caregiving for family members which included the respondents’ own children or grandchildren, spouses or partners, parents or parents-in-law or other relatives. Moreover, the frequency of caregiving in each dimension was measured using a four-point Likert scale with the categories *daily* (1), *several times a week* (2), *several times per month* (3), and *once a month or less* (1), which were inverted for the analysis. Respondents who were not engaged in informal family care or did not have relatives to care for were assigned to the category *none* (0).

Covariates

Several individual, sociodemographic, familial, economic, and work-related control variables were calculated to empirically examine the hypotheses *H3b* to *H3d*. First, for the individual and sociodemographic factors, the age of the respondents was centered around the grand mean of the longitudinal sample and additionally calculated as a squared term to control for non-linear age trajectories. A dichotomous indicator for living alone was formed based on the information on the number of people living with the respondent in a household across the three waves of the study. Marital status in wave one was also dichotomized to form a variable with the categories *married* versus *not married* at baseline. A categorical indicator of educational attainment at baseline distinguished between low formal education (*7 to 10 years*) versus medium and high formal education (*11 to 18 years*) based on completed years of schooling or of vocational training. With regard to health, an indicator for health limitations in everyday activities (e.g., lifting heavy objects or problems with kneeling or bending) was formed as a dichotomous variable during the observation period. In addition, the two summary scales of physical and mental health-related quality of life of a modified SF12 (Nübling, Andersen & Mühlbacher, 2006) were used as indicators of health and centered around the grand mean of the analysis sample in the long format for the multivariate analysis. The region of residence, divided between Western and Eastern Germany (including Berlin), was used as a dichotomous variable, as was information distinguishing the type of settlement structure in Germany (*urban* versus *rural regions*). The subjective physical and mental age of respondents (“Regardless of your actual age: how old do you feel physically/mentally?”) was used as a supplement to the chronological age and as a continuous characteristic in the multivariate analysis. Just like the chronological age, the subjective mental and physical age of the respondents was centered at the grand mean of the longitudinal sample.

With regard to career and occupational characteristics, employment status at baseline was used as a dichotomous indicator that distinguishes between employees and self-employed persons, including helping family members. In addition, indicators were used to assess the physical and mental strain caused by the current or last job at the time of the first wave (*strong mental/physical strain* versus *weak/no mental/physical strain*). The importance of the current or last job at baseline (“My job was very important to me”. *Strongly agree* (4), *basically agree* (3), *basically disagree* (2), and *agree not at all* (1)) was also coded as a categorical indicator with the two categories *important* and *not important*. The duration of the current or last occupation in years at baseline was used as a continuous variable for the multivariate analysis, as was the general intention to engage in paid work after retirement. This indicator, which was originally coded as a four-point Likert scale with the categories *very well imagine* (1), *easily imagine* (2), *not easily imagine* (3), and *not imagine at all* (4), was collapsed into a dichotomous variable with the two categories *intention to do paid work* and *no intention to do paid work*.

As indicators of the economic situation of the respondents, two categorical variables were formed based on the household's monthly net equivalent income. The first variable divides respondents into households living at or below the poverty risk threshold of 60% or less of median equivalent income and households with monthly equivalent incomes above it. Moreover, a dichotomous variable was coded that divides the monthly net equivalent income of the respondent into materially affluent (150% or more of median equivalent income per month) and less affluent (less than 150% of median equivalent income per month). In addition, these two “objective” indicators were supplemented by a subjective variable reflecting the respondents' assessment of their financial situation (“How do you/does your household cope with the money at your disposal?” *Very well* (1), *quite well* (2), *not very well* (3), and *very badly* (4)). This four-point scale was collapsed

into a dichotomous variable with the categories *cope well with finances* and *do not cope well with finances* for the following analysis. A dichotomous variable on homeownership at baseline (*homeowner* versus *tenant/subtenant*) was included as an additional proxy of respondents' socioeconomic status in late adulthood (Galobardes et al., 2006a; Galobardes et al., 2006b).

In addition to the indicators on employment and informal family care, the frequency of volunteering was included in the multivariate analysis, as this may also be complementarily or competitively related to the productive roles of older people ("In the past three months, have you done or participated in any of the following? Voluntary or volunteer activity, such as participation in an association, initiative, or group"). For this purpose, the inverted data on frequencies of volunteering were used, comprising the categories *daily* (4), *several times a week* (3), *several times a month* (2), and *once a month or less* (1). Respondents who had not volunteered during the observation period were assigned the category *no volunteering* (0).

As further indicators of family situation, financial support for children and grandchildren at the time of the third wave was coded into a dichotomous variable for multivariate analysis (*financial support* versus *no financial support/no children*). Moreover, the employment status of the partner in the observation period was used as a predictor of role transitions/continuities (*partner no longer works* versus *partner is still working/no partner*). Individual preferences for lifestyle in retirement were used as supplementary information to the objective activity-related variables in the multivariate analyses ("Whether or not you are retired today, what would be your preferred lifestyle in retirement? Good retirement for me means that ... *I spend more time with my family* (A), *I do all the things I didn't have time to do before* (B), *I don't have to do anything for society anymore* (C), *I do something useful for free* (D), *I'm still educating myself* (E)"). Using exploratory factor analysis, these categories were reduced to a factor variable which could be interpreted as an indicator of private and family-related preferences in retirement. This indicator of subjective retirement preferences was used as continuous control variable for the multivariate analysis.

Results

Following the hypotheses and methodology described in the previous sections, the first step is to describe the frequencies of employment and informal family care in the analytic sample. The characteristics of persons who were either not employed or did not perform informal care within the family are also considered. Secondly, the results of the typology of transition/continuities in the observation period are presented and their intra-personal dynamics are examined. Thirdly, the predictors of individual (sub-)types of role transitions/continuities are presented using multivariate analysis methods. This methodological approach excludes ex ante role transitions/continuities in earlier life phases, which may be relevant for the specific constellations in the observation period between 2013 and 2019 due to the resulting path dependencies. Since caring for a grandchild and giving care to a chronically sick or disabled relative are productive roles that are typically taken up in the second half of life, it can be assumed that the selected age and time span can sufficiently describe important aspects of the dynamics of role transitions/continuities among older adults.

Descriptive Analysis of Paid Work and Informal Family care

The results of the descriptive analysis, presented in Table 1, show that the volume of paid work in average hours worked per week differs between men and women. Men work between five and six hours more per week on average than women throughout the study period. In addition, men account for a significantly lower share of non-employed persons, although the differences between men and women are somewhat reduced in the last wave. This is due to the fact that a large part of

the analytic sample (70.1% of men and 75.2% of women) had already left the active labor force and retired in 2019. However, the different proportions of retirees in wave three cannot be explained by age differences (M = 68.1 years for both sexes), rather they reflect inequalities of labor market participation between men and women.

Table 1

Characteristics of Paid Work, Child/Grandchild Care and Caregiving for a Chronically Sick or Disabled Relative in the Analytic Sample

Variables	2013		2016		2019	
	Men	Women	Men	Women	Men	Women
Volume of paid work in hours per week (<i>M</i>)	36.4***	30.4***	33.7***	28.9***	28.2***	22.3***
Non-employed persons (%)	44.2**	53.4**	52.1**	62.6**	70.1*	75.2*
Frequency of child/grandchild care (<i>M</i>)	2.4	2.5	2.5	2.4	2.2	2.3
Not involved in child/grandchild care (%)	67.0*	60.8*	71.5*	61.4*	66.6**	52.1**
Frequency of caregiving for a chronically sick or disabled relative (<i>M</i>)	3.1 ⁺	3.3 ⁺	3.1	3.3	3.1*	3.4*
Not involved in caregiving for a chronically sick or disabled relative (%)	85.7***	72.1***	84.8**	73.9**	82.9	79.3
Not involved in any informal family care at all (%)	58.3***	42.6***	62.1**	45.4**	55.9**	44.4**

Note. N = 1,124. Chi-square-tests and one-way analysis of variance (one-way ANOVA) were used to test the differences between men and women for statistical significance. Longitudinal analytic weight is applied for 2013-2019.

⁺ p < .10. * p < .05. ** p < .01. *** p < .001.

In contrast, there are virtually no differences between men and women in terms of the average frequency of child/grandchild care. For both sexes, people who care for children or grandchildren are doing so several times a month up to several times a week on average. The percentages of persons who are not involved in child/grandchild care are quite high for men, ranging from 66.6% to 71.5%, whereas for women they range from 52.1% to 61.4%.

In comparison, caregiving for a sick or disabled relative takes place more frequently, at least several times a week. Women provide care with slightly greater time intensity than men and are more often involved in informal family care. However, it should be noted that caregiving for a chronically sick or disabled relative is quite rare in the analytic sample, and more than 80% of male respondents do not engage in such activities during the study period, with the proportions converging between men and women in the third wave.

With regard to the summarized frequency of informal care within the family, women are engaged in such activities significantly more often compared to men. While more than half of the men neither look after children/grandchildren nor care for a chronically sick or disabled relative, this percentage is only between 42.6% and 45.4% among women. The results thus show the expected patterns, according to which men are more active in the labor market, while women are more likely to be engaged in informal care within the family.

Age does not seem to play a role in the likelihood of not undertaking informal family care for either men or women. However, between 2013 and 2019, the average weekly volume of paid work is negatively associated with the likelihood of being engaged in informal care within the family. For example, average hours worked per week are lower for those caring for children/grandchildren or giving care to a chronically sick or disabled relative (in the first wave, $F(1, 3370) = 13.82, p = .000$, in

the second wave, $F(1, 3370) = 9.62, p = .002$, and in the third wave, $F(1,3370) = 6.81, p = .009$). In addition, individuals who have children of their own ($\chi^2 = 164.2, p = .000$) and are married at baseline ($\chi^2 = 70.9, p = .000$) are more likely to be engaged in informal family care than respondents who either have no children of their own or are single, divorced, or widowed.

Types of Role Transitions/Continuities between Paid Work and Informal Family care

According to the theoretical assumptions, the transitions between paid work and informal family care could be assigned to either (a) role substitution, (b) role extension, (c) role expansion, or (d) dis-/nonengagement. However, the four main types only reveal a rough outline of the underlying dynamics. Thus, they are differentiated into several subtypes reflecting the diversity of transitions/continuities and different causal relationships between formal and informal activities during the observation period. An overview of the subtypes is presented in Table 2.

Table 2
Subtypes of Role Transitions/Continuities

Type	Subtype	Description
Role substitution	I	Beginning or increase of informal family care is associated with a complete withdrawal from paid work
	IIa	Increased employment is associated with a withdrawal from informal family care
	IIb	Continued (non-)employment or increased employment is associated with a shift in informal family care
	III	Withdrawal from one informal family care activity is associated with an increase in another informal family care activity
Role expansion	VI	Continued employment is associated with an uptake of one or more informal family care activities
	V	Uptake of one or more informal family care activities with constant withdrawal from employment
	VI	Uptake of employment and either remaining in relatively constant frequency or completely withdrawing from informal family care
	VII	Uptake of employment and informal family care from nonengagement
Role extension	VIII	Continued employment only
	IX	Informal family care only
	X	Continuation of multiple roles (employment and informal family care)
Dis-/nonengagement	XIa	Partial Disengagement: Withdrawal from at least one informal family care activity without increasing the volume of paid work
	XIb	Partial Disengagement: Withdrawal from employment and remaining engaged with relatively constant frequency in one or more informal family care activities
	XII	Full Disengagement: Withdrawal from all formal and informal productive roles
	XIII	Full disengagement in 2013 to 2016 and 2016 to 2019 (nonengagement)

The main types and subtypes of transitions/continuities between formal and informal roles were examined between 2013 and 2016 and between 2016 and 2019, respectively. This allows the

dynamics of role transitions to be captured in detail during the study period. The descriptive results for the main types and the subtypes of role transitions/continuities are shown in Table 3.

Table 3

Types of Transitions/Continuities Between Labor Market Participation and Informal Family care From 2013-2019

Types of role transitions/continuities		Total analytic sample						$\chi^2(1)$
Main types	Subtypes	2013-2016		2016-2019		Total		
		n	%	n	%	n	%	
Role substitution	I	34	3.0	57	5.1	91	4.0	3.82 ⁺
	IIa	17	1.5	5	0.4	22	1.0	
	IIb	8	0.7	22	2.0	30	1.3	
	III	6	0.5	3	0.3	9	0.4	
	<i>Total</i>	<i>65</i>	<i>5.7</i>	<i>87</i>	<i>7.8</i>	<i>152</i>	<i>6.8</i>	
Role expansion	IV	72	6.4	80	7.1	152	6.8	11.83 ^{**}
	V	58	5.2	97	8.6	155	6.9	
	VI	19	1.7	13	1.2	32	1.4	
	VII	3	0.3	1	0.1	4	0.2	
	<i>Total</i>	<i>152</i>	<i>13.6</i>	<i>191</i>	<i>17.0</i>	<i>343</i>	<i>15.2</i>	
Role extension	VIII	209	18.6	116	10.3	325	14.5	88.37 ^{***}
	IX	172	15.3	153	13.6	325	14.5	
	X	96	8.5	47	4.2	143	6.4	
	<i>Total</i>	<i>477</i>	<i>42.4</i>	<i>316</i>	<i>28.1</i>	<i>793</i>	<i>35.3</i>	
Dis- /nonengagement	XIa	74	6.6	68	6.0	142	6.3	82.46 ^{***}
	XIa	33	2.9	44	3.9	77	3.4	
	XII	129	11.5	169	15.0	298	13.3	
	XIII	194	17.3	249	22.2	443	19.7	
	<i>Total</i>	<i>430</i>	<i>38.3</i>	<i>530</i>	<i>47.1</i>	<i>960</i>	<i>42.7</i>	

Note. N = 1,124. The chi-square test refers to the association within each type of role transition/continuity between 2013 and 2016 and 2016 and 2019, respectively. The chi-square test can thus be interpreted as an indicator of continuity or volatility within each type over time. Longitudinal analytic weight is applied for 2013-2019.

⁺ p < .10. ^{*} p < .05. ^{**} p < .01. ^{***} p < .001.

With regard to role substitution, subtype I is most frequently observed between 2013 and 2019 which means that the beginning or increase of informal family care was associated with a complete withdrawal from paid work (n = 91, 4.0%). Moreover, the frequency of this type of role substitution increases over time from 3.0% between 2013 and 2016 to 5.1% between 2016 and 2019. In contrast, cases that are characterized by an increase of employment which was associated with a withdrawal from informal family care (subtype IIa) were less common (n = 22, 1.0%). Overall, role substitution in its various forms does not seem to be the dominant type of role transition among older adults, since a total of only 152 observations (6.8%) could be assigned to those types of transition between 2013 and 2019.

The result of the chi-square test shows that role substitution between waves one and two is weakly associated with role substitution between waves two and three ($\chi^2 = 3.82$, p = .051). This finding suggests that role substitution is characterized by relatively high volatility during the

observation period. As a result, role substitution seems to lead frequently to other types of role transitions/continuities.

Overall, role expansion subtypes are more common than role substitution (15.2% versus 6.8%). Role expansion can be observed most frequently in two subtypes: (a) continued employment was associated with an uptake of one or more informal care activities within the family (subtype IV, 6.8%) and (b) the beginning of one or more informal care activities within the family was related to constant withdrawal from employment (subtype V, 6.9%). The beginning of employment while still engaged in informal family care at a relatively constant frequency or complete withdrawal from informal family care (subtype VI) had a significantly lower frequency (1.4% of all observations). In particular, taking up employment with at least one case of informal family care after previous nonengagement (subtype VII) was evident in only 0.2% of observations.

Role expansion between 2013 and 2016 was associated with role expansion between 2016 and 2019, even though the results of the chi-square test show that this association was not that strong ($\chi^2 = 11.83$, $p = .001$). Therefore, it can be assumed that role expansion is not a one-time event, but may be linked to the continued uptake of productive roles in older people, at least in some cases. This finding suggests that in many cases there is no punctual, unidirectional transition between employment and informal family care, but rather a processual dynamic which suggests the episodic character of productive roles.

Following the definition above, role extension involves relative continuity of one or more productive roles. Overall, role extension is the second most common type during the observation period, with more than one-third of the observations attributable to this type ($n = 793$, 35.3%). The two most frequent subtypes include continued employment only (subtype VIII, $n = 325$, 14.5%) and informal family care only (subtype IX, $n = 325$, 14.5%). As the result of the chi-square test ($\chi^2 = 88.37$, $p = .000$) shows, a comparatively strong continuity of role extension can be assumed. This finding suggests that respondents who could already be attributed to this type between 2013 and 2016 are also very likely to continue their productive roles between 2016 and 2019.

The largest group in the analysis sample comprises cases of dis-/nonengagement ($n = 960$, 42.7%). While respondents who are characterized by partial disengagement during the study period are quite rare (6.3% for subtype XIa and 3.4% for subtype XIb), those who report full disengagement from all productive roles are far more frequent (13.3%, subtype XII). The largest subgroup is made up of persons with nonengagement, i.e., respondents who were neither employed nor engaged in informal family care during the study period ($n = 443$, 19.7%). Although the results of the chi-square test indicate that the dis-/nonengagement group is relatively constant over time ($\chi^2 = 82.46$, $p = .000$), taking up a productive role from dis-/nonengagement is not completely excluded, as the following analyses show.

Table 4*Correlations for Types of Role Transitions/Continuities 2013-2016 and 2016-2019*

Types of role transitions/continuities			2013-2016									
			Role substitution		Role expansion		Role extension			Dis-/nonengagement		
			I	IIa, IIb, III	IV	V, VI, VII	VIII	IX	X	XIa, XIb	XII	XIII
2016- 2019	Role substitution	I	-.041	.070*	.002	-.027	.172***	.037	-.043	.123***	-.083**	-.048
		IIa, IIb, III	.036	.065*	.106***	.001	-.080**	.110***	-.055	.010	-.061*	-.110*
	Role expansion	IV	-.049	.105***	-.015	.203***	.223***	.085**	-.065	.035	-.099***	-.071
		V, VI, VII	.006	-.051 ⁺	-.086**	-.145***	-.158***	-.101***	-.062	.010	.337***	-.036
	Role extension	VIII	-.060*	.016	-.089**	.140**	.517***	-.104***	-.039	.087**	-.122***	-.043
		IX	-.037	.026	.211***	.244***	-.100***	.312***	-.069	-.055 ⁺	-.075*	-.075 ⁺
		X	.158***	-.039	-.104***	.027	-.190***	-.122***	.562***	-.014	-.143***	-.417***
	Dis- /nonengagement	XIa, XIb	-.007	-.003	.344***	.342***	-.159***	.323***	.006	-.078**	-.119***	-.171***
		XII	.075*	.011	-.037	.235***	.129***	-.098**	.175***	.122***	-.152***	-.279***
		XIII	-.095**	-.090**	-.139***	-.333***	-.255***	-.163***	-.546***	-.173***	.348***	.728***

Note. N = 1,124 cases with 2,248 observations. Estimates of the Pearson product-moment correlation coefficient (r) between the types of role transitions/continuities from 2013-2016 and 2016-2019 are shown. Longitudinal analytic weight is applied for 2013-2019.

⁺ p < .10. * p < .05. ** p < .01. *** p < .001.

Temporal Associations Between Types of Role Transitions/Continuities

With regard to the temporal associations of role transitions/continuities in the observation period, *coexistence of continuity and fluctuation* can be observed. As the results of the correlation of the types of role transitions/continuities from 2013-2016 and 2016-2019 in Table 4 show, subtype I of role substitution is positively associated with subtype X of role extension ($r = .158, p = .000$). This means that respondents whose beginning or increase of informal family care was associated with a complete withdrawal from paid work between 2013 and 2016 were likely to extend their informal family care between 2016 and 2019. However, there is also a positive, albeit weaker, correlation of subtype I with complete disengagement between 2016 and 2019 ($r = .075, p = .012$). Therefore, role substitution of subtype I can be interpreted at least for some respondents as an antecedent to complete withdrawal from productive roles, which suggests an episodic engagement in informal family care.

Subtypes IIa, IIb and III of role substitution were combined for the following analyses due to the small number of cases. What these subtypes have in common is that role substitution tends to occur with regard to informal family care, while the volume of paid employment remains constant or increases. It can therefore be assumed that the association between employment and informal family care follows a *reverse causality* in those three types of role substitution compared to subtype I.

Subtypes IIa, IIb, and III from 2013-2016 are positively associated with subtype I of role substitution between 2016 and 2019 ($r = .070, p = .019$). This finding suggests that some respondents engage in *double role substitution* within a relatively short period of time, which suggests a strongly episodic character of productive roles within those types of transitions. Thus, roles are substituted once in favor of employment and then again later in favor of informal family care. This seems plausible because as respondents age, withdrawal from the labor market in favor of informal family engagement becomes more likely. However, a positive correlation between the subtypes IIa, IIb, and III can also be observed ($r = .065, p = .031$). This association can be explained by fluctuations within informal family care, such as when child/grandchild care between 2013 and 2016 is replaced by caregiving for a chronically sick or disabled relative from 2016-2019. This finding highlights the episodic character of family care within those types of role transitions. However, the strongest association of subtypes IIa, IIb, and III is observed with subtype IV of role expansion, that is characterized by continued employment which is associated with an uptake of one or more informal care activities within the family ($r = .105, p = .000$). This result suggests that the withdrawal from or a shift in informal family care is temporary for some respondents and resumes after a relatively short period of time.

Subtype IV of role expansion is positively associated with subtype IX of role extension between 2016 and 2019 ($r = .211, p = .000$), which suggests a continuity of family roles after withdrawal from the labor market in those cases. Subtype IV is also strongly associated with partial disengagement at a later point in time ($r = .344, p = .000$), which illustrates the ambivalence of this type of role transition/continuities with regard to future pathways of engagement. A similar pattern can be observed with regard to subtypes V, VI and VII. Additionally, these subtypes show a strong association with subtype IV of role expansion ($r = .203, p = .000$) and full disengagement from productive roles between 2016 and 2019 ($r = .235, p = .000$).

Subtype VIII of role extension, which relates to continued employment only, is associated with subtype I of role substitution ($r = .172, p = .000$), with subtype IV of role expansion ($r = .223, p = .000$), and with full disengagement (subtype XII) between 2016 and 2019 ($r = .129, p = .000$). These results also indicate temporal variability within this subtype which can comprise both gradual/fluid

or episodic transitions. However, the strongest association in the observation period is with subtype VIII itself ($r = .517, p = .000$). This finding shows that there is a relatively strong probability of continuity among older adults who are exclusively active in the labor market.

A similar pattern could be shown for subtype IX of role extension. Although associations with subtypes IIa, IIb and III of role substitution ($r = .110, p = .000$), subtype IV of role expansion ($r = .085, p = .005$) and partial disengagement ($r = .323, p = .000$) suggest a relatively high degree of variability, the correlation among subtype IX is strong ($r = .312, p = .000$). Similar to people who are exclusively employed, a certain degree of role continuity can thus be observed in respondents who were involved exclusively in the family. An even stronger correlation is seen among respondents of subtype X who were engaged in both labor market and family activities, indicating high continuity in this subtype as well ($r = .562, p = .000$). However, the likelihood of full disengagement between 2016 and 2019 was also comparatively high for this subtype ($r = .175, p = .000$).

The results further show that neither partial nor full disengagement implies definitive and permanent withdrawal from productive roles. Thus, full disengagement between 2013 and 2016 is positively associated with role expansion in subtypes V, VI, and VII ($r = .337, p = .000$), which can either mean taking up informal family care or paid employment, or both. However, the probability of full disengagement becoming nonengagement is also comparatively high ($r = .348, p = .000$). Nonengagement shows the lowest temporal variability of all subtypes, i.e., respondents who were already neither employed nor engaged with informal family care between 2013 and 2016 have a very high probability of remaining so during the study period ($r = .728, p = .000$).

Descriptive analyses show that individuals who were consistently nonengaged were primarily older individuals ($M = 65.1, SD = 3.49, p < .000$) who were more likely to experience health-related functional limitations to their daily lives ($\chi^2 = 7.14, p = .008$). At the same time, these respondents were also significantly less likely to report an intention to resume paid work in retirement compared to other persons from the analytic sample ($\chi^2 = 9.34, p = .002$). Thus, it can be assumed that these are individuals who are both no longer able to perform productive roles due to their limited individual capacities and at the same time no longer want to do so. It therefore seems unlikely that such cases hold significant potential for engagement in the future.

Overall, the results show that paid employment and informal family care among older adults interact in multiple ways over time, suggesting both *continuity* and *volatility* between those productive roles. It can therefore be assumed that the types of role transitions/continuities differ not only between older adults, but rather are subject to *intra-personal variability* that implies shifts of productive roles within a relatively short period of time among older adults. Thus, role transitions among older adults are often episodic in character, in some cases also following circular patterns.

Predictors of the (Sub-)Types of Role Transitions/Continuities

To determine the appropriate method for multivariate analysis of the available longitudinal data, a variance component model was first calculated for the different types of role transitions/continuities. Intraclass correlation coefficient (ICC) was estimated to control for within-person dependence across the waves of the study. In order to calculate the variance component model, the panel data were transformed from wide to long format, containing information from three waves of the TOP study. The subtypes for role transitions/continuities that were presented in Table 3 were used as the outcome measure. The results of the variance component model indicate comparatively low dependence of subtypes across waves ($\rho_i = .301, 95\% \text{ CI } [.251, .357]$). Therefore, a number of pooled multiple binary logistic regression models were used for the comparison between subtypes of role transitions/continuities. Variables in the models were selected based on the lasso

procedure in Stata 16 to optimize model fit. This procedure was validated by manual forward-selection for each subtype. Moreover, the mean variance inflation factor (VIF) for each model was calculated to control for potential multicollinearity between predictors. Missing values across the waves were excluded, giving each of the models a balanced design. The aim of the following analysis is to identify predictors of the types of role transitions/continuities according to sociodemographic, family, occupational, spatial, economic, and personal characteristics based on the conceptual assumptions of the extended push- and pull-framework.

Role Substitution

The results of the pooled logistic regression models for the subtypes of role substitution are presented in Table 5. The strongest positive predictor of a respondent's likelihood of making a role transition as defined by subtype I of role substitution is volume of paid work at baseline (OR = 1.050, $z = 6.99$, $p = .000$). This finding suggests that persons from this subtype were working more hours per week on average at the beginning of the observation period compared to other subtypes. However, the intention to extend paid work beyond retirement at baseline lowers the chance of role substitution in terms of subtype I (OR = .438, $z = -2.82$, $p = .005$). Thus, it can be assumed that respondents whose transitioning is characterized by subtype I might have a higher probability of voluntarily reducing the volume of paid work or exiting the labor market and committing with increased frequency to informal family care in wave two and three. This assumption is supported by the empirical findings, which show a positive association of the frequency of child/grandchild care in 2016 (OR = 1.267, $z = 2.00$, $p = .045$) and 2019 (OR = 1.711, $z = 4.99$, $p = .000$) and caregiving for a chronically sick or disabled relative in 2019 (OR = 1.392, $z = 3.93$, $p = .000$) with the probability of belonging to subtype I. Moreover, the results suggest that this group is more likely to provide financial support for children and grandchildren compared to other types of role transitions/continuities (OR = 1.789, $z = 1.69$, $p = .092$) and there is some evidence for the negative influence of homeownership at baseline on the chance of belonging to subtype I. Since home ownership serves as a proxy for socioeconomic status among older persons, it can therefore be assumed that a lower socioeconomic status increases the chance of role substitution.

With regard to subtypes IIa, IIb, and III, only the volume of paid work in wave three (OR = 1.023, $z = 2.93$, $p = .003$), the frequency of child/grandchild care in wave three (OR = 1.416, $z = 3.42$, $p = .001$), and caregiving for a chronically sick or disabled relative at baseline (OR = 1.544, $z = 5.49$, $p = .000$) remained as significant predictors after the selection procedure. Since subtypes IIb and III are related to a role shift within the family, the finding suggests that time-intensive caregiving for a chronically sick or disabled relative at baseline might be carried out temporarily and/or in a competitive relationship with child/grandchild care. Although the volume of paid work for subtypes IIa, IIb, and III does not differ from that of the other sample in waves one and two, the positive odds in wave three suggest that these subtypes have greater continuity or even increase the average weekly volume of employment. However, it cannot be stated that the selected variables predict the transitions in subtypes IIa, IIb, and III very well ($R^2 = .093$).

Table 5*Results of Pooled Multiple Binary Logistic Regressions for the Subtypes of Role Substitution from 2013-2019*

Variables	Subtypes of role substitution					
	OR	Ia		OR	IIa, IIb, III	
		95% CI for OR			95% CI for OR	
		<i>LL</i>	<i>UL</i>		<i>LL</i>	<i>UL</i>
Volume of paid work						
At baseline (2013)	1.050***	1.036	1.064			
Wave three (2019)	.852***	.792	.915	1.023**	1.008	1.039
Intention to work in retirement at baseline (ref.: no intention)	.438**	.247	.777			
Homeowner at baseline (ref.: no homeowner)	.562*	.318	.991			
Financial support of children/grandchildren (ref.: no financial support/no children)	1.789 ⁺	.910	3.515			
Frequency of child/grandchild care						
At baseline (2013)	.559***	.425	.735			
Wave two (2016)	1.267*	1.005	1.598			
Wave three (2019)	1.711***	1.386	2.113	1.416**	1.160	1.729
Frequency of caregiving for a chronically sick or disabled relative						
At baseline (2013)				1.544***	1.322	1.804
Wave three (2019)	1.392***	1.181	1.642			
Constant	.015***	.006	.037	.011***	.006	.018
χ^2	182.88***			45.80***		
Df	9			3		
Log-likelihood	-246.14			-223.37		
Pseudo-R ²	.271			.093		
VIF (mean)	2.35			1.13		

Note. OR = odds ratio; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *VIF* = variance inflation factor. N = 1,702 due to item nonresponse for the covariates. Models are based on unweighted pooled data.

⁺ p < .10. * p < .05. ** p < .01. *** p < .001.

Role Expansion

With regard to role expansion, the probability that continued employment is associated with an uptake of one or more informal family care activities (subtype IV) increases if respondents report a better health-related quality of life (OR = 1.025, $z = 2.10$, $p = .035$), as shown in Table 6. The volume of paid work in wave two and three also increase the odds of subtype IV (for 2016: OR = 1.042, $z = 5.75$, $p = .000$; for 2019: OR = 1.025, $z = 3.70$, $p = .000$). This finding suggests that taking up informal family care in subtype IV is by no means limited to persons with low volumes of paid work, but also includes those who continue to work full-time (30 hours and more per week) during the observational period. The frequency of child/grandchild care (OR = .531, $z = -5.44$, $p = .000$) and caregiving for chronically sick or disabled relative (OR = .519, $z = -6.09$, $p = .000$) at baseline decreases the odds of subtype IV. However, in the second and third wave the odds of both caregiving activities are positive, suggesting that a relatively high volume of paid work can be complemented by these respondents with time-consuming informal family care.

In the case of subtypes V, VI and VII, only the volume of paid work and the frequency of informal family care could be identified as significant predictors. Moreover, these predictors show similar patterns of associations as in subtype IV. These subtypes of role expansion thus show that several productive roles can be performed simultaneously by older adults with a comparatively high time intensity. However, the positive odds of physical health-related quality of life with regard to subtype IV suggest that it is more likely that older adults with higher individual resources and potential can engage in multiple productive roles simultaneously.

Table 6

Results of Pooled Multiple Binary Logistic Regressions for the Subtypes of Role Expansion from 2013-2019

Variables	Subtypes of role expansion					
	OR	IV ^a		OR	V, VI, VII ^b	
		95% CI for OR			95% CI for OR	
		<i>LL</i>	<i>UL</i>		<i>LL</i>	<i>UL</i>
Physical Component Scale (PCS, centered)	1.025*	1.002	1.050			
Volume of paid work						
Wave two (2016)	1.042***	1.028	1.056	.735***	.655	.825
Wave three (2019)	1.025***	1.011	1.038	1.143**	1.047	1.216
Strong mental strain in occupation at baseline (ref.: weak or no mental strain)	.620*	.406	.947			
Financial support of children/grandchildren (ref.: no financial support/no children)						
Frequency of child/grandchild care						
At baseline (2013)	.531***	.422	.667	.574***	.456	.721
Wave two (2016)						
Wave three (2019)	1.988***	1.669	2.367	1.821***	1.483	2.237
Frequency of caregiving for a chronically sick or disabled relative						
At baseline (2013)	.519***	.420	.641	.696***	.561	.865
Wave two (2016)	1.620***	1.380	1.900			
Wave three (2019)	1.483***	1.278	1.721	1.774***	1.521	2.069
Constant	.011***	.006	.020	.128***	.094	.173
χ^2	291.80***			215.91***		
Df	9			6		
Log-likelihood	-320.81			-280.20		
Pseudo-R ²	.313			.278		
VIF (mean)	1.78			1.80		

Note. OR = odds ratio; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *VIF* = variance inflation factor. Models are based on unweighted pooled data.

^a N = 1,702 in models for subtype IV due to item nonresponse for the covariates.

^b N = 1,162 in models for subtypes V, VI, and VII due to missing values from 2013-2016 and item nonresponse for the covariates.

+ p < .10. * p < .05. ** p < .01. *** p < .001.

Role Extension

The results of the pooled logistic regression in Table 7 show that age decreases the odds of being exclusively engaged in the labor market in 2013-2016 or 2016-2019, as it is characteristic of subtype VIII (OR = .880, $z = -5.21$, $p = .000$). At the same time, however, the respondents rate their mental age higher than other groups do. There are positive odds of a higher volume of paid work, indicating that the probability of belonging to subtype VIII is increased with the average working hours per week in 2016 (OR = 1.043, $z = 7.19$, $p = .000$) and 2019 (OR = 1.026, $z = 4.43$, $p = .000$). Moreover, self-employed and helping family members are more likely to belong to subtype VIII, as the odds of employees doing so are significantly lower than one (OR = .515, $z = -2.54$, $p = .011$). However, respondents are less likely than other groups to have 150% or more of the median equivalent income per month and could therefore be considered materially affluent. This result suggests that this subtype consists mainly of self-employed persons with lower incomes who need to work longer in order to be financially secure in retirement. The labor market orientation of subtype VIII is also supported by the fact that respondents are less likely to express plans about retirement that focus on private life and family orientation (OR = .805, $z = -2.42$, $p = .016$).

Subtype VIII, like most other groups, is characterized by variability over time, i.e., individuals who belonged to subtype VIII from 2013-2016 may have transitioned to another subtype between 2016 and 2019. Similarly, individuals who belonged to another subtype between 2013 and 2016 may have transitioned to subtype VIII between 2016 and 2019. Because of these dynamics between subtypes over the observation period, subtype VIII shows significant associations with the frequency of informal family care. The odds of child/grandchild care or caregiving for a chronically sick or disabled relative are significantly below one, indicating that there was a slightly below-average frequency of informal family engagement before the transition to subtype VIII or after the withdrawal from this subtype, respectively.

Table 7

Results of Pooled Multiple Binary Logistic Regressions for the Subtypes of Role Extension from 2013-2019

Variables	Subtypes of role extension								
	OR	VIII ^a		OR	IX ^a		OR	X ^b	
		95% CI for OR			95% CI for OR			95% CI for OR	
		LL	UL		LL	UL		LL	UL
Age (centered)	.880***	.838	.923	.936*	.885	.990			
Low educational attainment (ref.: medium or high)				.564 ⁺	.304	1.048			
Western Germany (ref.: Eastern Germany)							.387***	.289	.627
Subjective mental age at baseline (centered)	1.051***	1.027	1.075						
Volume of paid work									
At baseline (2013)							.936***	.920	.951
Wave two (2016)	1.043***	1.031	1.055	1.047***	1.033	1.062			
Wave three (2019)	1.026***	1.015	1.038	1.015*	1.002	1.029			
Employee at baseline (ref.: self-employed or helping family member)	.515*	.309	.860						
Heavy physical strain in occupation at baseline (ref.: weak or no physical strain)				.614 ⁺	.346	1.088			
Homeowner at baseline (ref.: no homeowner)				.552**	.354	.860	1.756*	1.050	2.936
Cope well with financial situation (ref.: don't cope well with finances)				.511 ⁺	.246	1.059			
Financial support of children/grandchildren (ref.: no financial support/no children)				2.042**	1.252	3.329			
Affluent (150% and more of median equivalent income at baseline, ref.: not affluent)	.681 ⁺	.455	1.019						
Frequency of child/grandchild care									
At baseline (2013)	.340***	.255	.452	1.502***	1.254	1.799	1.182 ⁺	.996	1.403
Wave two (2016)				1.795***	1.499	2.150	1.921***	1.587	2.326
Wave three (2019)	.505***	.412	.619				1.433***	1.192	1.723
Frequency of caregiving for a chronically sick or disabled relative									
At baseline (2013)	.489***	.400	.598	1.252**	1.081	1.451			
Wave two (2016)				1.293**	1.114	1.500			
Wave three (2019)	.645***	.540	.770	1.145 ⁺	.999	1.313	1.197*	1.030	1.391
Plans for retirement: private life and family	.805*	.675	.960						
Constant	.366**	.196	.682	.009***	.003	.025	.096***	.053	.172
χ^2	652.11***			314.56***			355.81***		
Df	11			13			7		
Log-likelihood	-447.73			-354.91			-334.78		
Pseudo-R ²	.421			.307			.347		
VIF (mean)	1.83			2.75			2.51		

Note. OR = odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit; VIF = variance inflation factor. Models are based on unweighted pooled data.

^a N = 1,702 in models for subtypes VIII and IX due to item nonresponse for the covariates.

^b N = 1,162 in the model for subtype X due to missing values from 2013-2016 and item nonresponse for the covariates.

⁺ p < .10. * p < .05. ** p < .01. *** p < .001.

Respondents who were engaged in informal family care at least one time in the observation period were younger (OR = .936, $z = -2.33$, $p = .020$) and less likely to have low educational attainment (OR = .564, $z = -1.81$, $p = .070$) compared to other groups. They also show a lower probability of being homeowners at baseline (OR = .552, $z = -2.63$, $p = .009$) and to rate their financial situation as adequate (OR = .511, $z = -1.80$, $p = .071$). These findings may indicate that respondents from lower socioeconomic status groups are more likely to belong to subtype IX, which is characterized by informal family care only. However, this subtype is also more likely to support children/grandchildren financially (OR = 2.042, $z = 2.86$, $p = .004$). The positive odds of volume of paid work in waves two and three point to the fact that respondents are likely to take up employment at a later point in time despite being engaged at an above-average frequency in informal family care. Thus, subtype IX shows relatively high volatility with regard to taking up employment between 2016 and 2019, which might be related to the necessity to earn money in order to provide financial support or to improve the financial situation.

The likelihood of subtype X, which is characterized by a continuation of multiple roles, increases for homeowners (OR = 1.756, $z = 2.15$, $p = .032$) living in Eastern Germany. This subtype is related to a high frequency of child/grandchild care throughout the observation period. The probability of subtype X decreases with the weekly volume of paid work at baseline (OR = .936, $z = -7.92$, $p = .000$), which indicates that those respondents are primarily involved in informal family care with a relatively high intensity and to a lesser extent in the labor market. Caregiving for a chronically sick or disabled relative increases the chance of subtype X only in the last wave (OR = 1.197, $z = 2.35$, $p = .019$).

Table 8*Results of Pooled Multiple Binary Logistic Regressions for the Subtypes of Dis-/Nonengagement from 2013-2019*

Variables	Subtypes of dis-/nonengagement								
	OR	XIa, XIb ^a		OR	XII ^a		OR	XIII ^b	
		95% CI for OR			95% CI for OR			95% CI for OR	
		<i>LL</i>	<i>UL</i>		<i>LL</i>	<i>UL</i>		<i>LL</i>	<i>UL</i>
Age (centered)				1.069*	1.016	1.125			
Subjective mental age at baseline (centered)	1.021 ⁺	.999	1.043						
Volume of paid work									
At baseline (2013)	1.030***	1.020	1.040	1.047***	1.033	1.061			
Wave two (2016)				.987*	.975	1.000			
Wave three (2019)				.797***	.737	.862	.732***	.647	.828
Heavy physical strain in occupation at baseline (ref.: weak or no physical strain)	1.586*	1.024	2.458						
Duration of employment in the current or last occupation in years	.975***	.962	.988						
Frequency of child/grandchild care									
At baseline (2013)	1.653***	1.424	1.920	1.335***	1.150	1.550	.374***	.289	.485
Wave two (2016)	1.215*	1.044	1.413						
Wave three (2019)				.247***	.180	.340	.166***	.103	.267
Frequency of caregiving for a chronically sick or disabled relative									
At baseline (2013)	1.602***	1.416	1.813	1.204**	1.061	1.368	.538***	.438	.660
Wave two (2016)	1.144*	1.004	1.302						
Wave three (2019)	.713***	.609	.835	.478***	.358	.637	.462***	.356	.598
Plans for retirement: private life and family									
Constant	.029***	.196	.682	.153***	.098	.239	2.222***	1.772	2.786
χ^2	245.42***			405.02***			600.55***		
Df	9			8			5		
Log-likelihood	-453.94			-454.63			-339.06		
Pseudo-R ²	.213			.308			.470		
VIF (mean)	1.67			2.47			1.42		

Note. OR = odds ratio; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *VIF* = variance inflation factor. Models are based on unweighted pooled data.

^a N = 1,702 in models for subtypes XIa, XIb and XII due to item nonresponse for the covariates.

^b N = 1,162 in the model for subtype VIII due to missing values from 2013-2016 and item nonresponse for the covariates.

⁺ p < .10. * p < .05. ** p < .01. *** p < .001.

Dis-/Nonengagement

With regard to partial disengagement in subtypes XIa and XIb, the results in Table 8 show that the duration of the last occupation lowers the chance, while considerable physical strain in the current or the last occupation increases the odds (OR = 1.586, $z = 2.07$, $p = .039$), as does the volume of paid work at baseline (OR = 1.030, $z = 6.04$, $p = .000$). This finding suggests that occupational stress may play a major role in partial disengagement. Moreover, the chance of this subtype increases with higher subjective mental age at baseline (OR = 1.021, $z = 1.89$, $p = .059$). In addition, the positive likelihood of informal family care in waves one and two suggest that respondents with partial disengagement are likely to be frequently engaged older adults at baseline who withdraw from at least one time-intensive role during the observation period without completely giving up their engagement.

The chance of full disengagement in the observation period increases with age (OR = 1.069, $z = 2.58$, $p = .010$). Additionally, the probability of subtype XII increases for higher volumes of paid work (OR = 1.047, $z = 6.59$, $p = .000$) as well as higher frequencies of child/grandchild care (OR = 1.335, $z = 3.80$, $p = .000$) and caregiving for a chronically sick or disabled relative (OR = 1.204, $z = 2.87$, $p = .004$) at baseline. As in the case of partial disengagement, full disengagement concerns respondents who were likely to have been engaged in formal or informal roles with a relatively high temporal intensity at the beginning of the observation period. In contrast to the former, respondents of subtype XII completely gave up these roles with increasing age.

The non-engagers of subtype XIII only differ from other groups with regard to the volume of paid work and the frequency of informal family care. The odds associated with the volume/frequency of formal and informal productive roles in wave three suggest that nonengagement may lead to role expansion at a later time. However, when such productive roles are taken up from a state of nonengagement, they are most likely activities with low time intensity.

Nonresponse and Missing Data

The results of previous selectivity analyses presented in the methodology reports of the second and third waves of the TOP study suggest that unit nonresponses are not missing at random, but that the panel data are biased by gender, health, and education level, among other factors (Mergenthaler et al., 2017; Mergenthaler et al., 2021). Therefore, a nonresponse analysis was performed to investigate whether similar biases also arise for the cases in the present analyses. The nonresponse analysis compares the cases that were the basis of the main types and subtypes of role transitions/continuities ($n = 1,124$) with the remaining cases that were interviewed at least in wave one ($n = 3,878$) using multiple binary logistic regression. In order to assess the extent of potential bias in the panel data, the model explains missing data by gender, age, education level, region of residence, retirement status, health-related limitations, marital status, having one's own children, employment status, informal family care, and monthly equivalent income. Most of those variables were used at the time of the first wave of the TOP study. However, there were missing values ($n = 21$) due to item nonresponse, meaning that the model with all variables includes a number of $n = 4,891$ cases.

Table 9*Results of Multiple Binary Logistic Regression for Nonresponse/Missing Data*

Variables	OR	95% CI for OR	
		LL	UL
Female (ref.: male)	.771***	.671	.887
Age at baseline (centered)	1.002	.978	1.026
Education (ref.: low)			
Medium	1.105	.935	1.306
High	1.349**	1.124	1.620
Western Germany (ref.: Eastern Germany, incl. Berlin)	1.028	.857	1.234
Retired at baseline (ref.: not retired at baseline)	.934	.744	1.174
Functional limitation at baseline (ref: no functional limitation)	.740**	.599	.914
Married at baseline (ref.: not married)	1.208*	1.030	1.415
Own children at baseline (ref.: no children)	.999	.814	1.226
Employed at baseline (ref.: not employed)	.923	.786	1.084
Care for children/grandchildren at baseline (re.: no care)	1.155***	1.092	1.221
Caregiving for a chronically sick or disabled relative at baseline (ref.: no care giving)	1.014	.962	1.067
Monthly equivalent income at baseline (centered)	1.0002***	1.0001	1.0003
Constant	.248***	.179	.344
χ^2	121.88***		
Df	13		
Log-likelihood	-2592.62		
Pseudo-R ²	.023		

Note. OR = odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit. N = 4,981 cases. Models are based on unweighted pooled data.

* $p < .05$. ** $p < .01$. *** $p < .001$.

As the results of the model in Table 9 show, women are underrepresented in the analytic sample compared with the overall sample at baseline (OR = .771, $p = .000$). Since informal family care is much more frequently performed by older women, this selection could be one reason for the relatively low prevalence of child/grandchild care and caregiving for chronically sick or disabled relatives as well as the small gender differences between the types of role transitions/continuities.

A gradient by educational level can be observed, i.e., respondents with medium (OR = 1.105, $p = .240$) and high education (OR = 1.349, $p = .001$) have a higher chance of being in the analytic sample. There is also a positive correlation between the monthly net equivalent income and the probability of belonging to the analytic sample (OR = 1.0002, $p = .000$). Therefore, it can be assumed that the cases selected for the present analysis have a higher socioeconomic status than the overall sample of the TOP study at baseline.

In addition, the analytic sample is less often affected by health-related functional limitations (OR = .740, $p = .005$), and is more often married (OR = 1.208, $p = .020$). With regard to informal family care, the model shows that the analytic sample had a higher chance of caring for children/grandchildren at the time of the first wave (OR = 1.155, $p = .000$). In contrast, there were no differences in caregiving to chronically sick or disabled relatives, or in employment status at baseline.

In summary, the analytic sample is a positively selected group, especially in terms of socioeconomic status and health. It can therefore be assumed that the results tend to overestimate the extent of labor market participation as well as the level of activity, especially with regard to certain types of role extension and role expansion. However, the variables considered for nonresponse analysis were similar to those that were already accounted for in the methodology reports when the general longitudinal weights for the TOP study were created (Mergenthaler et al., 2017; Mergenthaler et al., 2021). Therefore, it can be assumed that the weighting of the analytic sample that was applied for the descriptive analyses has already compensated for some of the bias, which benefits the generalizability of the findings.

Summary of the Empirical Findings

The empirical findings in the previous sections have provided a range of evidence to answer the guiding research questions. These are summarized below in reference to the three main hypotheses.

First Hypothesis (H1)

Based on role theory and a modified disengagement approach that deliberately excludes the functionalist implications of the original theoretical framework, it was assumed in the first hypothesis (*H1*) that role transitions/continuities between paid work and informal family care among older adults can be described in terms of role substitution, role expansion, or disengagement, which were characterized by a transition between formal and informal roles or a partial or complete withdrawal from them. Further types of role transitions/continuities are role extension and nonengagement. These are characterized by relative continuity of productive roles or constant withdrawal from those activities. The empirical findings have shown that the transitions between formal and informal roles can be described in terms of these main types. However, one of the main findings of the study is that those main types were not sufficient to adequately capture the underlying diversity of role transitions/continuities patterns. Therefore, several subtypes of role transitions/continuities describing different pathways of role transitions/continuities and their prevalence among older adults in Germany were distinguished. For example, subtype I of role substitution, which describes the withdrawal from paid work and the uptake of one or more informal family care activities, could be observed in only one in twenty-five respondents. Other subtypes of role substitution, in which a withdrawal from or shift in informal family care is accompanied by an uptake of paid work, are even less common. Therefore, with regard to the low prevalence role substitution in general, the present study arrives at similar results as a longitudinal analysis of the English Longitudinal Study of Ageing (ELSA) from the United Kingdom (van der Horst et al., 2017). Role expansion, i.e., taking up an additional formal or informal role, was observed in about one in seven respondents during the observation period. It was extremely rare for a person to take up paid work in addition to family care, as the results for subtypes VI and VII suggest. In contrast, for more than one third of the respondents a role extension was observed, which indicates a relative continuity of productive roles. Even more frequently, dis-/nonengagement could be observed, the prevalence of which increased significantly with the age of the respondents, which is in line with the assumptions of the hypotheses formulated above.

Overall, the results show that role transitions/continuities among older adults can be described using a typology based on the assumptions of role theory and the disengagement approach. However, this typology needs to be further differentiated significantly on a theoretical basis in order for it to reflect the diversity of role transitions/continuities. Moreover, it can be assumed that exploratory statistical structuring methods, such as cluster analyses or latent class analyses, are of

limited use in capturing the complexity of role transitions/continuities and consequently yield an inaccurate picture of the social reality in older adulthood. We therefore advocate theory-driven and case-based longitudinal coding of the main types and subtypes of role transitions/continuities, as applied in the present article.

Second Hypothesis (H2)

The empirical analyses show some of the suspected associations with regard to the age-dependency of types of role transitions/continuities. Role extension is less likely with increasing age, while full disengagement or nonengagement become more likely. However, there is no evidence for age-dependency of role substitution or role expansion. Especially with regard to full disengagement (subtype XII), only age seems to show a positive association apart from the temporal intensity of formal and informal roles. This is consistent with the findings of Dosman et al. (2006), who showed that older people do not greatly reduce their productive activity until after they have reached their normal life expectancy. However, given the diversity of role transitions/continuities, this does not mean that engagement in formal and informal roles must eventually lead to dis-/nonengagement. Rather, the prevalence of this type increases with age, but without one or more of the other types disappearing completely. This could be the case, however, if the analytic sample were to be extended to an even higher age, which is not possible with the data of the TOP study. From this point of view, the diversity of role transitions/continuities reflects the situation at the transition from the second to the third age, but not necessarily at the transition from the third to the fourth age.

However, another important finding of the present study is that the temporal associations between subtypes across the three waves of the TOP study, namely the intra-personal dynamics between types of role transitions from 2013 to 2019, are characterized by a coexistence of continuity and fluctuation. The findings suggest that role transitions not only differ between older people, but may also exhibit some short-term variability within the life course of individuals, often indicating either an episodic or a gradual/fluid pattern. The findings show that even dis-/nonengagement does not have to mean permanent withdrawal from formal or informal roles. Rather, it can lead to (re-)engagement with one or more roles for some respondents at a later point in time. It can therefore be assumed that the modern life course of older adults is less about a continuous withdrawal from roles, but rather a dynamic process of either transitioning or dropping into or out of productive roles.

Third Hypothesis (H3a-H3d)

Consistent with the assumptions of Hypothesis 3a, the multivariate analyses show that the time-intensity of formal and informal roles has a substantial impact on the likelihood of role transition/continuities. The explanatory power of the weekly volume of paid work and the frequency of informal family care for role transitions/continuities clearly exceeds that of the other variables considered in the models. However, this finding does not mean that other personal, family-related, economic, or work-related characteristics have no explanatory power at all. Health-related quality of life shows a positive association with role expansion, which corresponds to the assumptions of hypothesis 3b. In contrast, a positive association with subjective health could also be observed with regard to partial disengagement, while full disengagement or nonengagement appear to be independent of the health status of the respondents in the multivariate analysis. This could be due to selection processes of the longitudinal sample, which are discussed in more detail below.

In line with the assumptions of hypothesis 3c, subjective factors (e.g., intention to work in retirement at baseline, subjective assessment of the current financial situation, plans for retirement) seem to have as much explanatory power as the “objective” characteristics, especially occupational and career-related indicators such as employment status at baseline, mental or physical strain or duration of employment in the current or last occupation. However, contrary to the assumptions formulated in Hypothesis 3d, no association between disadvantaged social status and the likelihood of dis-/nonengagement was observed. According to the results of the multivariate analyses, socioeconomic status only influences role substitution and role extension. With regard to role substitution, a negative correlation with homeownership at baseline suggests that this type of role transition is more common among socioeconomically disadvantaged respondents. In terms of role extension, the results suggest that homeowners are also less likely to belong to this type, as are respondents in less affluent circumstances who consider their financial situation to be insufficient. Thus, it can be assumed that it is partly for financial reasons that paid work is prolonged among these individuals.

Discussion

This article examined role transitions/continuities between paid work and two types of informal family care, namely caring for children or grandchildren and caregiving for chronically sick or disabled relatives, among a cohort of older adults in Germany born between 1942 and 1958, using data of the TOP study. The research questions formulated at the outset of the study could be answered in the light of the empirical findings as follows:

(a) With regard to the first question, it was shown that role transitions/continuities can be described using a typology based on the assumptions of role theory and disengagement approach. Role substitution was the rarest type (7% of the sample) and role expansion was observed in one respondent in seven. Role extension as well as partial or complete disengagement or nonengagement were observed most frequently. However, the empirical findings have shown that these main types need to be differentiated into several subtypes in order to adequately represent the *diversity of role transitions/continuities* of older people.

(b) The dynamics of role transitions/continuities are characterized by a concurrence of continuity and fluctuation. In addition to relative continuity, expressed through the continuation of one or more productive roles, continuous nonengagement could also be observed, which became more frequent with age. However, a significant dynamic between role transitions was shown at the same time, suggesting that engagement in the labor market or informal family care often occurs either as *episodic or gradual/fluid trajectories* in the life course of older adults.

(c) The multivariate analyses show that a number of predictors are associated with the subtypes of role transitions. However, in addition to the high explanatory power of time-commitment in formal and informal roles, socioeconomic status, occupational factors and subjective intentions with regard to further labor market participation as well as retirement planning also play an important role in predicting subtypes of role transitions/continuities. Thus, both *labor market-related inequalities* and *subjective preferences* were associated with the observed transitions/continuities between paid work and informal family care.

The results of the study add to the existing knowledge as they give an account of the pronounced diversity of role transitions/continuities between employment and informal family care among older adults. Moreover, the results go beyond the findings of previous studies, which have conceptualized and measured role substitution or role extension mostly as unidirectional transition profiles (e.g., Choi et al., 2007; van der Horst et al., 2017). Since the present study observed

relatively high *intra-individual volatility* between the types of role transitions/continuities, this underscores the importance of going beyond conceptualizing role transitions as unidirectional pathways in the life course of older adults. Rather, they should be understood as complex patterns including both *gradual/fluid* and (*circular*) *episodic* trajectories in order to reflect the full diversity of role transitions in this particular life phase.

Limitations of the Study and Outlook for Future Research

As already shown in the nonresponse analysis above, the longitudinal analytic sample of the TOP study shows some selectivity with respect to gender, health, marital status, and socioeconomic status compared with the overall sample of the first wave. This might be a reason for the relatively low associations shown in the multivariate analyses regarding indicators of socioeconomic status (e.g., education or income level) as well as physical, mental, and functional health. However, these biases were counterbalanced in the descriptive analyses by the use of longitudinal weighting for waves two and three (Mergenthaler et al., 2017; Mergenthaler et al., 2021). Therefore, it can be assumed that the main findings were not significantly influenced by the selectivity of the longitudinal sample and that they can thus be generalized at the population level.

The panel data of the study TOP has relatively large time intervals between the waves, which is not unusual in longitudinal surveys. In order to analyze the diversity of role transitions in more detail, it would be desirable for future studies to have shorter study intervals and a longer overall observation period. Related to this, it would be interesting to have information which is as detailed as possible on path dependencies of formal and informal roles from earlier life phases in order to be able to analyze causal relationships in the life course perspective. This would correspond to the arguments of scholars who emphasize that measures to promote an active lifestyle in late adulthood and enable successful aging should adopt a life course perspective which includes a re-organization of activities across different phases of life (e. g., Rowe & Kahn, 2015).

Concluding remarks

In most developed countries, the baby boomers born in the decades after the Second World War are in the last years of their active working life or have reached retirement age. This trend of population aging poses challenges for the labor markets and social security systems in many countries. Most European countries have responded to these challenges with several reforms to old-age provision that have resulted in increasing labor force participation rates among older adults and an extension of working lives until retirement age and sometimes even beyond. The changing macrosocial conditions of employment in later adulthood, along with better health and education have a direct impact on retirement transitions as well as the engagement of older people in informal activities in retirement. The paper has shown that simplified statements about the associations between prolonged labor force participation and informal care within the family do not adequately reflect the complexity of older people's lives. Instead, the findings underline the diversity of role transitions/continuities during the transition phase to retirement age using an innovative theory-based typology of role transitions/continuities.

Against this background, an exclusive focus on activity or productivity of older people is not sufficient to inform policies aimed at comprehensively harnessing the potential of older people. Rather, medium-range measures would need to be developed which reflect the diverse and often volatile engagement trajectories of older people. These also include episodes of non-engagement, which cannot be equated with permanent exclusion from productive roles, but in some cases also lead to a re-entry into such roles. Thus, the reduction of barriers for older adults re-entering

productive roles is an important and hitherto insufficiently regarded issue in the formulation of policies to harness old-age potential.

The findings and the conclusions point beyond the situation of older people in Germany, a country in which the population aging process is quite advanced. Most developed countries with an aging population are facing similar challenges in harnessing the potential of older adults in the labor market, in civil society and the family without restricting older people's freedom of choice for self-determined aging. Thus, the findings on the diversity of role transitions/continuities contribute to a better understanding of contemporary older adulthood, also in an international context. Against this background, future studies on role transitions/continuities should focus on more specific trajectories of engagement among older adults and its predictors, e.g., non-engagers or role-substituters that engage in one or more productive roles at a later point in time. This would consider the diversity and the volatility of the types of engagement in multiple roles among older adults and therefore provide important evidence for specific and appropriate policies. Those policies are an important prerequisite for developed countries to successfully cope with the challenges of population aging regarding the functioning of labor markets and social welfare systems. But beyond that, they also provide an instrument to take advantage of the opportunities offered by population aging and the potential of older adults which will become more and more important in the upcoming decades, not only for labor markets and pension systems but also for the cohesion of societies as a whole.

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