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Family Ties, Knots and Gaps: Mapping the Linked Lives Principle in the Family and Life Course Literature

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ABSTRACT

Linked lives, recognizing the interdependent nature of lives, is one of the principles of the life course perspective, particularly appraised in the context of family and intergenerational relations. It has been used as a consensual general premise, although empirically underexplored. As a consequence, its contribution has been limited. Therefore, we aimed to understand how this principle, within family relations, has been researched by carrying out a systematic collection and multivariate analysis of bibliographical references (N = 507). We identified three profiles of publications: Theoretical Holistic; Nuclear Family Qualitative; and Contemporary Expansion. This recent development reflects a greater diversification of theoretical, thematic and methodological approaches. However, there is a continued prevalence of unidirectional, intergenerational and top-down family links, and room for improvement in cross-comparative and methodological perspectives.

KEYWORDS

Bibliometric analysis; family; life course; linked lives; social sciences

Introduction

Family has been long recognized as an exemplary setting for the application of the life course perspective and concepts, especially for the understanding of intergenerational links (George & Gold, 1991). This article aims to contribute to the understanding of Linked Lives, an important life course theoretical principle, on family and life course research. Inspired by other literature and field analysis from the family studies and the life course perspective (for example Billari, 2009; Ewald et al., 2020; Hanappi et al., 2015), we performed a bibliometric analysis centered on the linked lives principle within the family. A systematic and/or comprehensive literature review is not, in our regard, a secondary scientific task. A meticulous, methodical, reflexive, and critical approach to the understanding of the trends and gaps of a research field should be a crucial step in a research. Regardless, and moreover, it represents an empirical finding on its own, and, therefore, a

contribution to the knowledge of the field. As such, this analysis represents the inaugural step of a research project¹ centered on the linked lives theoretical principle within families.

First, we argue and present "linked lives" as one of the most central (especially regarding family relationships), yet understudied (especially empirically and methodologically), life course principles. Second, we describe the processes, procedures and results of a bibliometric analysis that aims to map the social sciences' major publishing trends on the principle of linked lives in the family. By doing so, we track the trajectory, evolution and empirical applicability of this concept. This systematic literature analysis allowed us to identify and characterize in a comprehensive way the main stages and arenas, the evolutions and oscillations, of family linked lives in the family, life course and sociological literature. As a result of a multivariate analysis, we reached a typology of three profiles of published research on linked lives within the family.

This panoramic perspective of the scholarly research provides the recognition of the contributions of the linked lives principle to the understanding of life trajectories and transitions, the interdependencies of family and intergenerational relations, as well as the possibility to identify some fragilities and/or under developed areas. This knowledge contributes both to the bridging of past and future life course research and to the overall framing of family as microcosms of inequalities and observatories of interdependencies and cross effects of life events.

The linked lives principle: definitions, uses and role

Lives are inherently social, and social relationships and its importance have been recognized since classical sociological production. In a life course context, social relationships and networks are also significant to many spheres of life and life course stages, and, in fact, most life course experiences are interpersonal. Family interdependencies are emphasized with the development of a configurational approach and perspective (Widmer, 2010), involving issues of resources, power, support and conflict, and inevitably, legacies from notable sociologists such as Norbert Elias. Both the configurational and life course approaches recognize that individuals and families need to be understood taking into consideration the embeddedness of their surrounding relationships (Gouveia, 2014). The linked lives principle, particularly, reflects this relevance, and is one of the central and consensual theoretical principles that is summoned by the life course perspective (Elder et al., 2003). In the classic study of the Children of the Great Depression, Elder (1974) revealed how economic harshness experienced by parents can impact their children's development. This principle emphasizes that

individual events, trajectories, or transitions, have meaningful consequences, trans and intergenerationally, in other's life courses; that "each generation is bound to fateful decisions and events in the other's life course" (Elder, 1994). It therefore recognizes that lives are interdependent, meaning that one person's life changes can affect the lives of other individuals that are in its close networks (Elder et al., 2003). Therefore, the linked lives principle consequently seeks to explore how life courses are intertwined with close relations and, specifically, how life events or transitions can impact trajectories, transitions or adjustments in the life courses of those who are related to them. In fact, some authors have been arguing that "human agency is profoundly affected by interpersonal relationships and other social factors. Because agency and linked lives are inseparable, agency cannot be conceptualized as an individual characteristic of 'independent' actors." (Landes & Settersten, 2019, p. 1).

By placing and understanding individuals in its interpersonal and relational context, family relations become particularly central due to the nature of its intimate and continued ties. In fact, the applications of this principle have been specifically useful in the studies on family and intergenerational relations (Allen et al., 2000; Bengtson, 2001). It thus emphasizes the complex relations within family and households by illustrating how its members are connected by events (turning points, critical, demographic), trajectories (in the various life spheres) or time constant or varying social characteristics (education, occupation, social class, etc.), with immediate or more long term, direct or more indirect effects. These studies have approached family members, of more generations, intergenerational transmissions, or influences between generations, for example in issues of family socialization, family solidarity or family (dis)advantage accumulation. Linked lives promote a multigenerational approach to the understanding of the reproduction of social advantages and disadvantages, deepening the knowledge on social inequalities through the role of families (Gilligan et al., 2018). Therefore, this concept has also contributed to the understanding of how generations are linked to each other (Alwin, 2012), and, thus, highlights the generational aspect of time (Gilligan et al., 2018). Taken together, these show how linked lives is a crucial principle to portray the interdependent nature of family and intergenerational relations. We therefore focus on the linked lives specifically within the family.

In spite of being an appraised and promising principle, especially in the family context, by linking life events and trajectories, life spheres, and interdependent family relations, its use, however, has been constrained to a general premise. The life course perspective has excelled for tying conceptual frameworks to understand the development of human life and its social contexts, namely through its four guiding principles (Elder et al., 2003).

Linked Lives, with Historical and Cultural Location, emphasizing the importance of historical times and places; Timing of lives, and its sequencing; and, Agency, recognizing how individuals construct their own life courses within opportunities and constraints; together promote this understanding². However, when comparing the uses of each principle in main life course research arenas, linked lives is, consistently, the least used principle, although conferences papers seem to indicate it has a potential rising application (Nico et al., 2021).

The linked lives principle is, therefore, underexplored, especially as an empirical hypothesis. It is often taken for granted, as a life course principle and/or as a macro-sociological commonplace argument. This idea is shared by Settersten (2015, 2018), which criticizes life course studies for referring to individual life courses and studying them as if they existed in isolation. In other words, one of the identified downsides of linked lives studies is that most of the times they resort to data from a single informant that provides information from the other members of its network (Carr, 2018). Linked Lives is a life course principle that refers to social interaction and interdependency—between individuals, between and within generations, cohorts, families, networks—over the life course. Contrary to other life course principles it is not as suitable to institutional models, but instead to configurational and multi-individual ones.

The principle of "linked lives"—that the lives of individuals affect and are affected by the lives of others—is repeated as a mantra in life course literature (...). And yet this stands in direct contrast to the state of research, which largely treats individuals as if they exist in isolation of others. To say that lives are "linked" says nothing about their nature, length, purposes, or consequences. (Settersten, 2015, p. 217)

To overcome this discrepancy between theoretical appraisal and empirical knowledge on how linked lives are being tackled, this article intends to contribute in producing knowledge about some of these features of family linked lives. By identifying how Linked Lives is being studied, we will reveal trends and gaps in the field. We follow a guiding research question: *How are Linked Lives in the family being studied in the social sciences literature?* And how does this map vary across time and space? We look inside the linked lives concept within the family context to understand how it is being used, across time and space, to identify its geographical, thematic and methodological structure, as well as its development across time.

Methods and data

In order to portray the concept of linked lives within the family, we adopted a systematic bibliometric analysis approach to characterize this field of studies, trace its trends and evolution, and map its diversity. It

consists of an effort to census the literature on linked lives within the family and to uncover its main impacts and relationships. This was conducted by exhaustive and comprehensive searches on online databases and in privileged observatories; the coding of each publication according with variables-most previously defined-to explore the theoretical, thematic and methodological structure of the field; and, finally, performing analysis to identify the main profiles of these publications. A summarized table with the characteristics of the methodological steps and strategies is shown below (Table 1).

Linked lives in the family context: results

These results aim to provide a comprehensive map of how family lives have been linked together by the existing research and publication patterns in the Social Sciences, and more particularly, in Sociology of Family and in Life Course Research.

Publications: the context of production

The publications on family linked lives started expanding in the 2000s, with the largest increase in the last decade. Slightly more than 70% of the publications are from 2010 to 2019 (N=362), reflecting its widespread significance more recently. This confirms Billari's (2009) reading of the evolution of the life course field, that it has reached its maturity approximately in 2009. The research on linked lives, more specifically, has demonstrated a similar trend, with a relevant time lag delay, as its exponential growth emerges in the last decade (since 2010). The majority of the publications are journal articles (almost 80%) and a few (13.2%) are book chapters. The books, working papers, conference papers and reports are, as expected, more residual. Most, about a third of the publications, are by single authors (N=163), a slightly similar proportion by two authors (N=146) and another third by three or more authors. This may indicate a relative and vigorous balance between small and large scale projects on family linked lives, which is always an antidote against the inequalities of a research field.

The life course perspective's emergence is Anglo-Saxon. The paternity of the life course perspective is attributed to Glen Elder Jr. and the large team of American researchers that have consistently collaborated with him and have carried on his important legacy. There are other important satellites of this metropolis of knowledge on the life course, namely Germany, the UK, France and Switzerland. So, it is not surprising that in terms of geographical diversity of the first author's institution, the large majority of the publication are from the Western European (N=200) and North American countries (N=173), especially due to the salience of studies from North

Table 1. Methodological strategies: dataset and data analysis.

Data collection

Systematic collection of bibliographical references on family linked lives:

- Collected between January to May 2019
- Various sources: university libraries and repositories, bibliographical databases, publishers, journals and research centers (see Table S1 in the Supplementary Appendix)
- Two main search strategies were employed: (i) via keywords, related to the life course and linked lives, as well as various synonyms (see Table S2 in the Supplementary Appendix); and/or (ii) via census, where all content (all titles, and when necessary, abstracts) of privileged sources were checked.
- All types of publications were collected articles, books, chapters, working papers, policy briefs, reports and conference papers - in English, Portuguese or French language*. The inclusion of French and Portuguese published reports, besides English, do not biased the results. Prior preliminary findings based only on Englishwritten literature showed extremely similar results.
- After collecting all the references, the database was reduced to a more specific selection, ensuring that they complied with the defined criteria of inclusion and were related with a family linked lives effect (N = 507 publications).
- The defined criteria for the inclusion/exclusion of the publications: all and any publication that fit the social sciences area or had a social component (so, for example, health and psychological publications with no social relevance were not included); content related to the life course (i.e. had components of life trajectories or life events); and, approaches that referred to family links (meaning that studies solely on peers, friends, colleagues, etc. were excluded), and finally, has a linked lives effect (meaning that more general references on life course, family and intergenerational relations that did not refer to a linked effect were excluded).

Data coding

The research team discussed the relevant variables to be identified in each publication and designed a coding scheme. Some codes were determined prior to data analysis with theoretical guidelines, others arose from the empirical material, and some changed throughout the coding process. Definitions of categories and codes were discussed and adjusted during the coding process. After concluding the coding, multiple answer situations and residual frequency codes were recoded.

Variables

- Publication documents' variables: language used in documents; publication type and year; main and secondary disciplinary field of the publication; number of authors of the document; country of nationality of institution of the first author. These variables are the ones that characterize the Life Course Field as a whole, as an interdisciplinary arena.
- Methodological approaches' variables: methodological nature of the document (empirical, theoretical, methodological); if empirical, number of countries studied, what countries studied; main data collection; main data analysis methods; longitudinal design and/or data. These variables are the ones that characterize the Life Course Research and "Craft", as an analytical apparatus to study the individuals and groups over time.
- Linked lives effects' variables: type of impact concerned (according to our typology of impacts regarding the different family members, individual and household level indicators and time, explained further on); its implication (positive, negative or ambiguous); life course stages (childhood, youth, adulthood or old age); family ties (parents, children, brothers, etc.); spheres of life (education, work, etc.). These variables are the ones that characterize the specificity of the Linked Lives Principle.

See Table S3 in the Supplementary Appendix for more information on the coding variables. The variables selected to be used in Multiple Correspondence Analysis (MCA) enabled the identification and discussion of "Family Linked Lives" profiles in the Life Course Publication. Moreover, it was also guided by a statistical criterion. Several binary variables were excluded because one of the two categories was residual, thus they had low variation, and, consequently, would not differentiate the profiles.

Data analysis

Univariate and bivariate descriptive analysis: frequencies and crosstabs

MCA allows to identify and discuss main profiles of the publications on family linked lives (the most relevant associations between the different categories).

The selection of these variables was carried out keeping in mind theoretical and previous knowledge of the field, and therefore include variables related with the methodological and analytical content of the articles (the spheres of life as factors, as outcomes, the kinships, etc..), on one hand, and the context of production of the publication (the decades, or the disciplines, for example), on the other.

As in an exploratory factorial analysis (EFA), MCA defines new orthogonal axis (dimensions /factors), which reduces the multidimensionality of the input space. The first two dimensions were selected to explain the configuration of family linked lives map in the Social Science's literature.

(continued)



Data presentation

Descriptive references and MCA analysis (Joint Category Plot + MCA table (Table 4 in the appendix) listing measures and contributions per active variable) Mendeley for managing and organizing the references and its information + Excel for coding + SPSS (Version 27.0) for data analysis.

Software

America (N=141) and Swiss production (N=74). Australia and the United Kingdom also play an important relevance (N=49 and N=45, respectively), most likely due to their importance on the family and youth studies.

Regarding the main disciplinary areas, an important percentage of the publications are from the field of family studies (N=210, 41.4%), and another relevant part from the life course field (N = 126, 24.9%). A relevant part is from Sociology (12.0%). Other areas represent less than 5% of the publications, including Demography, Psychology, Aging and other subareas of Sociology and social sciences. Observing these percentages across time, we can state that along the decades the family linked lives concept has been opening up to more disciplinary perspectives. This data reflects both the importance of family research to the linked lives principle (Allen et al., 2000), as well as the relevance it has been gaining in the social sciences. It also corroborates the interdisciplinary nature most authors recognize of the life course field, and reflects the different arenas in which life course has been developing, such as Sociology, Demography, Psychology or Aging (Bernardi et al., 2019).

Methods: how are linked lives studied?

Research methods reflect their historical context and, thus, the pressure of scientific and funding agendas, the development of software, the sophistication of theoretical debates, and, inevitably, they reveal how social reality invites researchers to get into the topics, complexifying and understanding them. The methodological development of the life course is also responsible for the development of "more ambitious theory", which can be done by "refining well-established quantitative and qualitative methods and by incorporating multiple methods from different traditions and disciplines" (Bernardi et al., 2019, p. 1).

Analyzing methods is fundamental to understand the development of the field and, for that reason, we coded the methodological perspectives used in the collected bibliographical references. In this paper, we use the expression life course "field" in the sense it is composed of authors, trends, relations,

^{*}The Life Course Perspective is Anglo-Saxon in its origin, and its development has been internationalized mainly through English written publications. However, relevant debates, findings and empirical research have been carried out and published in other languages. Therefore, we also included the French and the Portuguese-written literature. None of these exceptions, and consequent inclusions, have biased the results, as prior preliminary findings, based only on English-written literature, have shown extremely similar results.

networks, dynamics, and connections. The agenda of a field thus also advances according to the internal tensions and dynamics. More than half of the publications on family linked lives are of empirical-quantitative nature (N=296) and, to a much lesser extent, empirical-qualitative studies (N=71). This reflects the known predominance of quantitative methods in the field of the life course (Nico, 2015). A trend that, as we will recognize next, is slowly changing (for the family linked lives, at least). The theoretical publications, literature reviews and methodological pieces, each represented between 4 and 6% of the total number of publications. Across time we can observe a slight increase in the proportion of qualitative empirical studies, in the last decade reaching a more balanced distribution between the quantitative studies, that still dominate, and all the other types of publications. This may be fulfilling the agenda of multi-methodologies that is frequently advocated in family and life course mappings.

Life course researchers still "have a clear preference for one type of approach over the other, and sometimes contest the usefulness or even the legitimacy of 'competing' approaches" (Liefbroer, 2019, p. 2). We can see this reflected in our data, as we verify the predominance of the quantitative instruments, particularly the time-line surveys (Longitudinal and Panel, N=201) over other types of data. This reflects what many authors have recognized; the importance of the longitudinal data and perspective to the development and innovation of the life course field and studies (Billari, 2009; Mayer, 2009). In the qualitative approach, a variety of methods are employed, with many studies resorting to more than one collection method, as is common in qualitative research. The use of mixed quantitative and qualitative instruments are residual.

Whenever empirical, most of these studies focused on a single country (73.4% of all publication, n = 372). This is consistent with the complexity implied in the analysis of family histories or network analysis, that besides representing systems of intergenerational relationships, imply a profound knowledge of each families' social historical contexts. Only 27 (5.3%) studies involved a truly larger comparative perspective, ten of which compared only two countries, six used three countries, and eleven with more than five countries. The lack of "cross comparative perspectives" (Furstenberg, 2003) is clearly a gap to be fulfilled for the development of the linked lives studies, although some effort has been made in this direction in the last decades, with an increase in the number of comparative publications.

Reflecting their production contexts, most empirical studies were performed in the United States of America (N=113), Switzerland (N=59), the United Kingdom (N=44) and Australia (N=36). This reflects both the funding resources in these countries, and also, as mentioned, the Anglo-Saxon nature of the emergence of the life course perspective, and the

existence of centers such as CICLE (France), LIVES (Switzerland) or FLaG (UK). Longitudinal and/or multi-person researches are not autonomous from these funding schemes nor of science's centers and peripheries. By observing the main country studied per region it is possible to confirm the dominance European (N=157)and Western North American (N = 133)observatories.

Finally, the main methods of data analysis of these publications were also registered, and to this regard we can note that, consistently with the hegemony of the quantitative approach, general regressions were the widely employed tool (N=141), used in almost a third of the publications (27.8%). Regarding more specific instruments, the use of Multilevel, Multichannel and Actor-partner models is common to observe the linked lives effects (N=45). They reflect the particular and demanding nature of the analysis of linked lives, that requires such specific statistical procedures. In fact, the development of analytical techniques is a key mark in linked lives studies, allowing the consideration of the perspective and effect of more than one member (Carr, 2018). These produce more intricate and new understandings of relational effects. Carr, for example, showed how recent studies with these new resources, with a dyadic and network perspective, allowed to conclude that the assumed protective benefit of marriage on health is debatable and more complex (2018). One of the most used approaches is the actor-partner independence model which enables the measurement of the effect of the actor and the partner in variable. Reconstruction of missing life course data through complementary information of linked lives is also a promising approach (Albrecht et al., 2017). Additionally, thematic content analysis was also a popular method (N=38), this time around from qualitative data. Latent, Path and Growth models, as well as Sequence Analysis and Event History Analysis are also applied instruments, all gaining relevance in the last decades.

Indeed, life course research has been relatively dominated by quantitative methods of data analysis. Important articles have argued that it is necessary to bring the "course" back into the life course research, advocating for the need to embrace complex descriptions of the order and sequence of the events, putting the event history analysis approach aside, and focusing on trajectories - social, family, work (Aisenbrey & Fasang, 2010). Others take this argument further, proposing bringing "life" back into life course research (Nico, 2015), including qualitative data that, using the importance of chronological event data, involves the meanings and narratives of the individuals about their own trajectory, the causal or emotional relations between the events, and the relevance and impact of events on the direction of their lives and others. As mentioned by Moen, "in-depth, qualitative studies as well as creative survey questions are needed to get to the

meanings of social ties" (Moen, 2018, p. ix), and, we add, also the meaning and understanding of family dynamics for individuals and their close connections. Qualitative studies are also important to apprehend how family explicitly negotiate their decisions and how decision-making processes are developed (see for example Stamm, 2016). This evidence confirms the mismatch between what is methodologically advocated in the field and what is, concretely, operationalized in research and in publications. Albeit these instigations toward bridges between qualitative and quantitative research—"that future research on the life course must take fuller account of how circumstances are defined and responded to by actors as well as examine objective markers of success and failure" (Furstenberg, 2005, p. 170)—this bridge remains as an ambition and an intention.

Lives linked: impacts, timings, ties and spheres

In order to grasp the different impacts of linked lives in the family household, and taking into consideration the different family members, both individual and household level indicators, as well as time, we came up with a typology of family linked lives impacts:

- Longitudinal impact: regards consequences of an individual event at a given point in time, in the life of that same individual, at another point in time (in the same or another sphere of life).
- Bi-linked impact: includes the consequence of an individual event at a
 given point in time in the life of a member of the same household at
 another point in time. Here we are not interested solely in
 "intergenerational" links but also to go "beyond intergenerational dyads"
 (Girardin et al., 2018);
- Extra-linked impact: includes consequences of an individual event at a given point in time, in household level indicators at another point in time. This is to fulfill a gap on the study of bottom-up (individual-household) life course effects or processes.
- Intra-linked impact: comprises the consequences of an indicator at the household level in the life of a household member at another point in time and at an individual level.
- Household impact: consists on the consequences of an indicator at the household level in household level indicators at another point in time.

We found this typology useful to describe the diversity of effects, as it fits and focuses not only on the impact of aggregate level to the individual, but also from individual to individual, and individual to aggregate, thus giving prominence to different approaches to social change. We aim,

therefore, to capture, additionally to the multi-disciplinary, multi-dimensional and multilevel perspectives, a multi-person and multi-generational approach to the understanding of life courses and families. Therefore, the codification of the documents was based in a certain logic of causality, but only in the sense of a chronologically organized process, of accumulated sequential experiences. In practice, we looked for a certain event (or more events) of a certain sphere of life of person (family member or a group of family members of the household) that caused an impact on another life or in many lives - of a family member or members of a certain age, on an event (or more events) in a certain sphere of life, etc. It is in this sense that we consistently mention "factor" and "outcome" in the following results.

We could observe that the intra-linked impact, which refers to the impact of household level indicators in the life of an individual household member, is the most studied type of impact (N=174, 34.3%) of all publication), followed by the household level effect on the household. An example of an intra-linked effect is a study on the effect of residential changes in the academic development of Australian children (Vidal & Baxter, 2018). A study of a household level impact is, for example, one that analyses the effect of family characteristics on the family of children when they grow up (Bell, 2018). This reflects the predominance of explaining social phenomena with a more aggregate level, in top-down structural approach, while giving less focus on bottom up explanations or more individually caused impacts.

This majority of the intra-linked impact is observed in all decades, however, the last decades represents more balanced proportions between the different types of impacts, highlighting a combination of different impacts that reflect a greater diversity of theoretical arguments around the interdependent relations and nature of social change. Bottom-up studies tend to approach death or health issues or couple dynamics, like, for example, the study on the effects of health issues of a family member on the financial prosperity of the household (Moen, 2018).

Most of these impacts were classified as both positive and negative, or as ambiguous. Only 10.1% of the publications were clearly reflecting a negative effect, and even less, with 6.5%, a positive effect. There is a lower proportion of ambiguous effects along the decades and a higher balance between positive and negative effects in the last decade. When analyzing the implications per type of impact, we note that the more aggregate level impact (household impact) is more associated to ambiguous nature, contrasting with the individual linked impact (bi-linked), where this proportion is smaller, reflecting more specific studies.

We can observe that the quantitative empirical studies contribute to the majority of the intra-linked studies, it is in fact in these types of studies

where it has greater proportion (43.6%), probably due to its more typically deductive approach. In contrast, the empirical qualitative studies address more equivalently the different types of impact, due to its more inductive perspectives. Regarding the impacts by scientific and disciplinary area, we can observe that the life course and the sociological studies are those which also contribute to the preponderance of the intra-linked impact, with about half of the studies focusing on these effects. In social sciences in general, in the areas of Family, Psychology, and Demography, the household impact is also noteworthy.

Regarding the addressed life stages covered in these linked lives publications, it is possible to observe a predominance of "until adulthood" studies. However, this is true, in a greater proportion, as a factor (39.3 and 31.0%) than as an outcome. As an outcome, the stages solely "until childhood" or "young adulthood" increase (from 3.7 and 4.3% to 8.1 and 13.8%, respectively), reflecting a preponderance of looking at adult phase effects on younger phases. This is also an identified trend: the focus of the impact of older generations on newer generations. The "until old age" stage of life is equally present in both factor and outcome, representing 10.1 and 11.8% of the studies, respectively. It is also possible to observe a greater focus on old age, compared to the past, probably reflecting the greater attention given to this stage of life due to the social phenomena of aging of contemporary societies. This is true both in life stages as predictors and as outcomes, compared with the stages of "childhood" and "until young adulthood" that have consequently decreased their use both as determinants (factors) and as consequences (outcomes), in the more recent decades. The window of observation of linked lives is relatively short, encompassing mainly up to two life stages (from childhood to youth, from youth to adulthood, for example). More recently, broader windows of observation (three life stages or the whole life course) have been gaining prominence. Some authors have pointed out how research has been focusing either on the earlier or later relations, disregarding the middle years (Bucx, 2009), or, as we have shown, the whole life course.

Regarding the kinship ties at stake, the most studied family tie in the linked lives literature is, not surprisingly, the parent-child one, representing almost two-thirds of the studies ($N\!=\!202$), and consistently regarding the effects of the parents on the children, thus, disregarding the effects of the younger generations to the parents, as previously shown. On one hand, this reflects the enduring relevance of parent-child relations and parental effects, regarded as increasingly relevant in advanced societies, due to sociodemographic, economic and social changes like prolonged education or precarity of the labor market (Bucx, 2009). On the other, it reflects and reinforces the unidirectional focus on the approach to generational change, and a

considerable room for improvement in the family linked lives research. They are, however, relevant exceptions to this trend: the study on how children's divorce impacts the well-being of older parents (Albertini & Tosi, 2018), the effect of the death of children on parents, for instance (Dijkstra & Stroebe, 1998). Linked lives studies centered on couples also revealed some importance (N=72), focusing many times on intimate lives and gender inequality issues, for example in Wong (2018).

Regarding the types of events that are linking these lives together, we can identify that regarding factor variables, the holistic approach (considered when studies used three or more different spheres of life) is the most frequent, followed by the emotional, conjugality and residential spheres, having impact, to a larger extent, on the emotional spheres of life, as well as the holistic, health and work spheres. Observing how these life sphere factors and outcomes connect, we verify that the most frequent connection is between the holistic character as a factor and the holistic character as an outcome. This testifies the vagueness of the field and the lack of focus it demonstrates in detecting exactly how lives may be linked. Moreover, the other more frequent links are between the emotional/subjective, the conjugality or the health spheres to the emotional sphere, reflecting a still prominent psychological approach in the life course field. We can therefore conclude that there is a preponderance of explaining life course phenomena with holistic or emotional, subjective related variables.

In intersecting the studied spheres of lives as predictor and as outcomes, we can state they differ, taking into account which phase of life is being considered. Concerning the explaining factor, the studies encompassing childhood focus more on the residential and health related events. Until young adulthood, the emotional and holistic variables are more evident. Regarding the life stage until adulthood, the proportions are more balanced, with many spheres covered: holistic, emotional, conjugality, residential and work. One of the main themes integrated in the residential sphere is related to migration. Regarding old age, holistic and health predictors are more common. Considering the outcomes studied, we can see that emotional spheres are common across all stages. Apart from these events, regarding childhood, the dependent variables are more educational related. Regarding the until young adulthood stage, the educational sphere maintains, but the residential aspects gains importance as explaining phenomena. The explained variables concerning adulthood, as well as old age are, again, distributed by many spheres, with the more frequent effect on the holistic sphere, as well as the impacts on aspects of parenthood, work and health.

How are these life course variables linked? A multivariate analysis

To identify the configuration of the literature map of how family lives are being linked in the Social Science's literature, we performed a multiple correspondence analysis (MCA), enabling a graphical representation of the most relevant associations between all the categories of the suitable variables that characterize this field (Carvalho, 2008).

In Table S4 in the Supplementary Appendix we present the discrimination measures and the contributions of each active variable for dimensions 1 and 2. For dimension 1, we can see that the family linkage, the life sphere factor (life sphere of the predictor event studied) and the life sphere outcome (the life sphere of the consequence of the event studied) are the most relevant variables, and thus, dimension 1 represents family *Linked Lives Research*. For dimension 2, which we denominated as *Life Course Field*, the discipline was the variable that most contributed, followed by life sphere factor and life sphere outcome. The decade was also an important variable to define dimension 2.

The combined analysis of the two dimensions provides the graphical display of the configuration of family Linked Lives and Life Course together, enabling the identification of three profiles of publications/research (Figure 1). The Theoretical Holistic Linked Lives associates theoretical literature, with both the life sphere as factor and as outcome being not mentioned and holistic (respectively). It is the linked lives principle being used in a more conceptual and aggregate way, as a "principle" that it is. No specific discipline is associated but the thematic interdisciplinary field of "aging". This profile may show the weakness of the linked lives principle, in a way, as it reveals how vaguely the concept can be used, without an empirical specific operationalization of how lives are linked. It can also characterize the group of studies that aggregate at a more conceptual and holistic level different approaches to family linked lives, illustrated by the references of Mills and Blossfeld (2013) on the theoretical development of family formation changes, as well as Settersten (2015) on the relationships in the context of time and the life course.

Another profile—Nuclear Family Qualitative Linked Lives—associates the decades 1990–1999 and 2000–2009, with empirically mixed and qualitative studies, close to disciplines such as psychology or family, and with a great predominance of emotional and psychological spheres of life (both as factor and outcome studies). Dyadic links such as conjugality or the relation between siblings are also strong in this profile. This profile, compared to the Theoretical Holistic Linked Lives, gains in specificity and loses in broadness. Linked lives here are about emotional and health links between family members, like for example in Swartz's article (Swartz, 2008) on family capital, and intergenerational support or Thomas and Kalucy (2002) qualitative study on

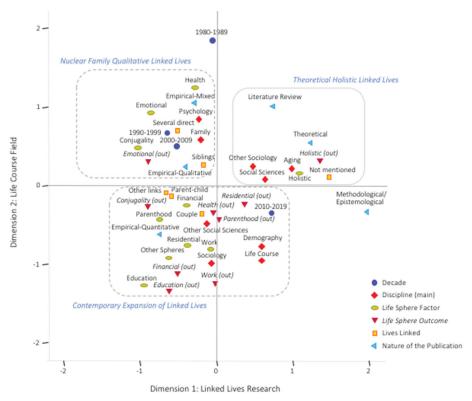


Figure 1. Configuration of "linked lives" profiles in the life course publication space (multiple correspondence analysis). *Source*: N = 507 publications of the authors' data set on linked lives

the impact of parents with mental illness on the family. It is the most represented by the extra-linked effects, that is, the consequences of individual events in the overall household, as shown in the above mentioned examples.

The third profile characterizes the Contemporary Expansion of Linked Lives of the last decade, with mainly quantitative studies, being open to other disciplines such as demography, life course and other social sciences, and to other spheres of life rather than the traditional ones, such as educational, residential, financial and work-related spheres (both as factor and as outcome). The presentation of results, arguments, and contributions gained, at this point, focus when compared to the previous decades and profiles, representing more specific empirical studies. These also represent the increase in cross national and/or longitudinal studies, like, for example, the study comparing Britain and Germany regarding retirement and income inequalities (Fasang, 2012) or the longitudinal study of the impact of parental worklessness on the NEET experience of their young adult children (Schoon, 2014). This profile is associated with bi-linked, intra-linked and the classical longitudinal impacts in the lives linked.

Discussion and conclusions

A bibliometric analysis on the family linked lives principle was developed as a way to map the field and avoid the acritical repetition of the "mantra" of linked lives (Settersten, 2015). The principle of linked lives is not used as a premise but rather as a research hypothesis. We used the principle of family linked lives as a drive for empirical collection of data. We had already seen that the linked lives principle had a less relevant role, comparatively to the other life course principles, in the most important arenas of the life course field (Nico et al. 2021). However, this underrepresentation maybe shifting. But exactly how are family lives linked in the literature? Through which generational links, which spheres of life, what methods of collection of data and analysis? These were some of our guiding questions.

The results in this article confirmed this more recent growth on family linked lives literature. One of the profiles found, most relevant for the last decade, is marked by an expansion of the concept, with more varied, but more clear and specific relations and links between family members. The most relevant indicator of this growth and expansion is the trespassing of disciplinary fields, from an earlier family centered approach to an opening up to many other fields, such as sociology, life course and other social sciences. Therefore, our analysis also confirms the increasingly interdisciplinarity of the life course field as one of its most identifiable trends. Accordingly, we observed both a growth and a greater diversification of concepts, theoretical arguments, methodological approaches and attention to more spheres and periods of life since the last decade. This is also illustrated by the emergence of specific methods to capture the linked lives nature of relations, namely multi-level and multi-channel models, together with the development of longitudinal studies from the life course field. The advance of longitudinal data and methods has been one of the drivers of the life course's development (Mayer, 2009). We can therefore conclude that this progress of the family linked lives, occurs, and consequently reinforces, the maturity and consolidation of the life course field identified by Billari (2009).

At the same time, we were also able to conclude that, although in many of these aspects, the field of family linked lives is growing and is increasingly diverse - in the spheres, the generations, and the methods and methodologies - it is still not in full maturity. The differentiation of the type of impact (across time, across people, across analytical levels) is still incipient. There is still, in this regard, a continuity on the hegemonic link of intergenerational, and mostly unidirectional manner, regarding the effects of older generations on younger generations, specifically parental factors on child outcomes. This represents a limitation of the use of the concept. Although many studies continue to stress the relevance of parental effects

on their children, attention should also divert to other relationships, like siblings (Gilligan et al., 2020), grandparents (Sheehan & Petrovic, 2008), and peers or teachers. Crosnoe and Elder (2004) show, for example, how these non-parental relations have a more direct effect on academic behavior than a consequence on its interaction with the negative impact of parentchild relationship. Missing on developing strategies to approach bi or multi directional and generational relations and impacts can create several blind spots. Firstly, on the interdependency between family members, and the associated negotiations, at a given time (for example, concentrating on the dependency of young people and disregarding the interdependency and mutual aid between generations and co-residences). Secondly, on the dynamics of reciprocity between family members over time (especially relevant, for example, when studying the quantity and quality of care practices for the elderly). And lastly, on the demanded holistic approach toward family policies (impaired by centering public policies, for example, exclusively on the children with mental or physical health problems). Another persistency is the focus on top-down determined factors, with continued emphasis on more macro level markers producing effects on smaller level indicators. This can be due to the still incipient methodological development for capturing linked lives. Recent studies reflect new approaches to capture linked lives, with the resort to multi-reporter data on couples, siblings, ego-networks and intergenerational links, together with longitudinal data. However, these are far from being widespread and democratic. This may be due to several factors; firstly, due to the life course perspective being mostly composed by quantitative longitudinal designs, which may imply that some aspects of inter-personal relationships, inter-generational exchanges, and family dynamics and negotiations are overshadowed. Secondly, the simplicity and funding accessibility of developing longitudinal studies that take the individual as the solely unit of analysis, instead of the family. Thirdly, the unfriendliness and inaccessibility of the household panel survey datasets, that limit the research activity and creativity of researchers interested in the complexity of the multilevel and longitudinal aspects of family dynamics. Lastly, but not the least, the still unexplored or fairly known "multilevel" possibilities of Computer Assisted Qualitative Data Software in the analysis of individuals' narrative and stories within family units.

Multi-perspective and longitudinal data, together with the adequate methodological tools, will allow the exploration of new and groundbreaking research issues, like inconsistencies between members, spillover effects, differences of effects between same ties, changes on social networks across time (Carr, 2018). Besides being addressed with specific regression models, like the actor-partner interdependence model, there are also opportunities to explore with sequence analysis adapted for linked lives; the

globally interdependent multiple sequence analysis (Fan & Moen, 2015). Moreover, the family and linked lives literature, as the life course field and science in general, reflect inequalities between countries, with a domination of quantitative and longitudinal studies, especially from Anglo-Saxon countries, as well as Northern and Western European ones. Additionally, there is still a lack of longitudinal data on intimate relationships and family dynamics to capture the marriage between family research and the life course perspective (Huinink & Feldhaus, 2009). Therefore, comparative perspectives on linked lives are still incipient. As Settersten (2018) also stressed, there is still a need for developments in theoretical and methodological approaches to capture the social nature of the life course. And finally, the family linked lives studies still encompass a strong holistic approach, both in the factors and in the outcomes, which can be both a sign of lack of focus, or on the other hand, it can also represent a clear ambition of the field, carried out through an effort to combine and conceptualize linked lives in a holistic approach to life course (Pollock, 2007).

Linked lives has been showing its valuable potential to contribute to the understanding of family and intergenerational relations and interdependencies and therefore represents a promising area within life course, family and sociological fields. As pointed out by Shanahan and Macmillan (2008, p. 279), "the life course is not a systematic theory, it probably never will be, and that is probably okay. What is lost in the rigor of theory is gained in the flexibility of a paradigm." Linked Lives is an elastic and flexible principle that still has much to offer, both analytically and theoretically.

Notes

- 1. Research project "Linked Lives: A mixed multilevel longitudinal approach to family life course", coordinated by Magda Nico.
- 2. Originally, the life course principles comprised Agency, Cultural and Historical Location, Timing of Lives and Linked lives. Other publications have considered a 5 principles typology, that also include Life-Span Development.

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