

The use of life satisfaction diagrams and biographical grids as hybrid tools for the collection of sequential data

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Abstract

This article describes the characteristics of two types of hybrid tools that are useful for obtaining both quantitative and qualitative data. It reviews how these tools have been used in previously published studies and identifies the advantages and disadvantages of their use. The two types of tools in question are life satisfaction diagrams and biographical grids. Both types of diagrams were originally designed as instruments for obtaining quantitative data within life course research, and later came to be used as either hybrid tools or only as qualitative tools. Both types of diagrams are evaluated mainly on the use made by the author in studies in which he has participated. The main advantages identified can be summarised in two points: (1) the ease of obtaining an accurate representation of complex facts and (2) the opportunity for this representation to stimulate personal reflection. One main limitation common to both diagrams has been identified: they can be difficult to understand unless interviewees receive a clear explanation. This type of diagrams can be seen as a bridge between the life course perspective and mixed methods research, a combination that has been seldom addressed in the methodological literature.

Keywords: hybrid tools; life course perspective; mixed methods; sequential data; biographical interviews; mixed research; longitudinal perspective

Resumen. *El uso de diagramas de satisfacción vital y parrillas biográficas como herramientas híbridas para la obtención de datos secuenciales*

En el artículo se describen las características de dos tipos de herramientas híbridas útiles para la obtención conjunta de datos cuantitativos y cualitativos, se revisa el tipo de uso que han tenido en trabajos publicados precedentemente y se identifican las ventajas e inconvenientes de su uso. Estos dos tipos de herramientas son los diagramas de satisfacción vital y las parrillas biográficas. Ambos tipos de diagramas fueron originariamente diseñados como instrumentos de obtención de datos cuantitativos en el marco de la investigación sobre el curso de vida y posteriormente han pasado a ser utilizados también como herramientas híbridas y como herramientas únicamente cualitativas. Ambos tipos de diagramas son evaluados principalmente a partir del uso realizado por el autor en investigaciones en las que ha participado. Las principales ventajas identificadas pueden resumirse en dos puntos: 1) la facilidad para obtener una representación fidedigna de hechos complejos, y 2) la posibilidad de estimular la reflexión personal a partir de dicha representación. Se identifica también una limitación principal común para los dos tipos de diagramas: pueden ser difíciles de entender, a menos que las personas entrevistadas reciban una explicación clara sobre cómo utilizarlos. En cualquier caso, este tipo de diagramas constituyen un puente entre la perspectiva del curso de vida y la investigación con métodos mixtos, una combinación muy poco tratada en la literatura metodológica.

Palabras clave: herramientas híbridas; perspectiva del curso de vida; métodos mixtos; datos secuenciales; entrevistas biográficas; investigación mixta; perspectiva longitudinal

Summary

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1. Introduction

The aim of this article is to review the strengths, weaknesses, and opportunities of using life satisfaction diagrams and biographical grids as tools for obtaining graphic elicitation to assist in simultaneously collecting both quantitative and qualitative data. This article describes the characteristics of these two types of diagrams and reviews a selection of published research to illustrate how these graphic representations have been used as hybrid techniques for the collection of sequential data. This article uses the term *hybrid* to qualify those tools that are useful for jointly collecting quantitative and qualitative information obtained from a single source and in a single instance of data collection. Another term used to refer to this sort of tools or methods

is *mixed* (Johnson and Turner, 2003). However, I believe that the term *hybrid* causes less confusion than the term *mixed* (see below the section devoted to this discussion), and the former is also well-established in the methodological literature (see, for instance, Axinn and Pearce, 2006; Fielding, 2012; Bazeley, 2019).

Diagrams can be considered one type of graphic elicitation technique to facilitate data collection that are more abstract and structured than photographs or drawings when they are used for the same purpose (Banks and Zeitlyn, 2015). Compared to drawings, they require less cognitive effort on the part of the people who complete them, since their abstraction reduces the range of possible interpretations and allows informants to concentrate on only a few characteristics of the topic represented (Varga-Atkins and O'Brien, 2009). Both life satisfaction diagrams and biographical grids were originally designed as tools for obtaining only quantitative data within life course research. Later, they came to be used as qualitative graphic representations and have also occasionally had a hybrid use. To the best of my knowledge, no methodological literature to date has highlighted and systematically reviewed the opportunities that this sort of diagrams can offer as hybrid tools, i.e., as graphic representations that may simultaneously provide quantitative and qualitative data.

The review of the hybrid uses of life satisfaction diagrams and biographical grids presented in this article is carried out by resorting to the methodological literature on multimethod and mixed methods research (MMMR). Mixed methods research is characterised by the integration of quantitative and qualitative methods and data. Multimethod research 'differentiates itself from mixed methods in that its definitional borders do not require having at least one quantitative/qualitative method in any given research project' and 'does not necessarily require the mixing or integration of methods' (Hesse-Biber, 2015: xxxix).

There is still very little methodological reflection in the MMMR literature that deals with hybrid data collection tools that can produce quantitative and qualitative data within the same procedure. This situation contrasts with the fact that the use of a single data collection method that combines quantitative and qualitative elements is fairly common in research; however, this use is usually very basic, as often it only involves collecting responses to open-ended questions embedded in a survey questionnaire, or to quantitative scales embedded in a qualitative interview questionnaire (see, for instance, Fàbregues et al., 2020, or Creswell and Plano-Clark, 2018). The contributions by Axinn and Pearce (2006) and by Johnson and Turner (2003) are notable exceptions to this lack of methodological reflection, although the latter is much more comprehensive in scope and more ambitious in terms of content.¹ Some other contributions with a much more restrained focus are also reviewed in this article.

1. Johnson and Turner's publication (2003) has been recently adapted and updated in Tshakori et al. (2021).

Regarding data analysis, the use of a hybrid tool makes it possible to analyse the data obtained in different ways, and not all of these ways entail adopting an integrative mixed methods approach. Quantitative and qualitative data could be analysed independently using either exclusively quantitative or exclusively qualitative analysis methods or analysed in an integrated way by following a mixed methods analysis procedure. Nevertheless, the kind of analysis that could follow the data collection stage is not addressed in this article, as the focus here is on data collection.

The remainder of this article is structured as follows. Section 2 is devoted to presenting and discussing how the methodological MMMR literature has addressed hybrid data collection tools. Section 3 focuses on some more specific methodological literature, which has dealt with the use of data collection tools beyond the use of openended questions in a survey questionnaire. Section 4 constitutes the core of the article and presents a collection of research examples where life satisfaction diagrams and biographical grids are used as hybrid data collection tools from a sequential perspective. Section 5 discusses the advantages and disadvantages of the use of the two types of diagrams reviewed. Finally, section 6 presents the conclusions of the article.

2. Mixed data collection tools or hybrid data collection tools?

The methodological literature on mixed methods generally assumes that quantitative and qualitative data in a mixed design are obtained by the separate use of two different methods, one quantitative and the other qualitative (see, for example, Morse and Niehaus, 2009; Morgan, 2014; Creswell, 2014; Creswell and Plano-Clark, 2018). In fact, many of the textbooks dedicated to mixed methods research are committed to reflecting on how and when to articulate the different quantitative and qualitative components in the methodological design. In this context, the term *component* refers to the separate design and development of the quantitative or qualitative part of the research for obtaining data that are later integrated following a mixed strategy. In other words, it is generally assumed that a mixed methods design applies a rationale in which different strands or phases of research are conducted separately, following ‘standard research rules outlined in many basic research texts’ (Morse and Niehaus, 2009: 27) corresponding to exclusively quantitative or qualitative methods. At a later stage, the data or findings obtained are integrated following the rationale of some of the core designs within mixed methods research (Morse and Niehaus, 2009; Creswell, 2014; Creswell and Plano-Clark, 2018).

As an alternative to designs that combine the use of two or more components, a *conversion design* may be employed, in which the information is obtained through a single method, either quantitative or qualitative, and is then qualitisised or quantitised (Tashakkori and Teddlie, 2003; Tashakkori et al., 2021) as appropriate. Later, in the analysis phase, the information collected in its original format may be integrated with that achieved through qualitisising or quantitising, so that quantitative and qualitative data can be simultaneously

used.² There is no agreement in the literature on whether these types of designs are genuinely mixed (Bryman, 2006), although many authors assert that a study in which a qualitisising or quantitisising strategy is applied can, in fact, be classified as mixed (Onwuegbuzie and Teddlie, 2003; Teddlie and Tashakkori, 2006; Hollstein, 2014).

However, there is still a third way of obtaining quantitative and qualitative data within a mixed methods design, namely, by using a single form of data collection that yields both quantitative and qualitative information from a single source. As mentioned above, the most common and basic form to do so is collecting the responses to openended questions embedded in a survey questionnaire, or to quantitative scales in a qualitative interview questionnaire, which are later analysed separately with appropriate qualitative and quantitative methods of analysis (Johnson and Turner, 2003; Creswell et al., 2008; Morgan, 2014; Creswell and Plano-Clark, 2018). But other than describing this possibility, no further assessment of the range of tools suitable for the joint production of quantitative and qualitative data can be found in general MMR textbooks (see, for instance, Creswell and Plano-Clark, 2011; 2018; Morgan, 2014; Hesse-Biber and Johnson, 2015).

Johnson and Turner's review (2003) and its updated version in Tashakkori et al. (2021) are one exception to this lack of methodological reflection about tools or methods that produce quantitative and qualitative data simultaneously. These authors argued that all data collection methods (including interviews, focus groups, tests, observation, and secondary data) have pure qualitative and pure quantitative forms,³ and a third in-between form with quantitative and qualitative elements, which they called *mixed*. They also distinguished between *inter-method mixing*, which occurs when two pure forms are combined to obtain quantitative and qualitative information (that is, when quantitative and qualitative data are collected by using the above mentioned two-component design), and *intra-method mixing*, which occurs when a single method is used concurrently or sequentially to obtain quantitative and qualitative data.

Johnson and Turner (2003) used the term *mixed* to name different things at the same time. It seems clear that both the combination of two pure methods (inter-method mixing) and the use of intra-method mixing (being sequential or concurrent) result in a mixed design. In addition, the term *mixed* was

2. Tashakkori and Teddlie (2003) also distinguish between *multistrand* and *monostrand* conversion designs. This distinction is not addressed here to keep discussion focused on the different ways of obtaining quantitative and qualitative information using a single data collection method in a study.
3. While this statement may apply to some methods, it is arguable whether it may apply to each and every method that these authors reviewed. For example, they were not able to provide any examples of a 'quantitative focus group', which they finally equated with a quantitative 'structured group interview' (Johnson and Turner, 2003:309); similarly, the examples that the authors provided for 'qualitative tests' and 'qualitative questionnaires' did not show clear differences between the two methods. Nevertheless, their statement that all (or at least *many*) methods may have 'in-between forms' is highly relevant to the discussion in this article.

also used to refer to the third ‘in-between form’ of every method, which suggests that these authors were referring to situations in which a single method allows quantitative and qualitative information to be obtained in a single (concurrent) instance of data collection. Moreover, they stated that a single item in a questionnaire may also be *mixed*, for example, when one of the response options in a closed-ended question is left open (i.e., when the question ends with the interviewee being given the opportunity to add a new option to those listed initially in the question) (Johnson and Turner, 2003: 304). To avoid this polysemy of the term *mixed* and prevent any possible misunderstanding on the following pages, the term *hybrid* will be used throughout the article to designate those methods and techniques that lead to the collection of quantitative and qualitative data from a same single source and in a single instance of data collection. In this sense, the definition of *hybrid method* used here clearly corresponds to the ‘in-between forms’ of the methods discussed by Johnson and Turner (2003).

The term *hybrid* is commonly used in the methodological literature to design forms of data collection or analysis which generally combine quantitative and qualitative elements in the same procedure. Fielding and Fielding (2008) and Fielding (2012) exemplified this type of analysis applied to qualitative data by arguing that a conventional, interpretive qualitative analysis can be conducted first, followed by a quantitative content analysis that uses the same data based on the categories used in the interpretive phase. Their approach can be also related to the data conversion strategies (qualitising or quantitising) outlined in the previous section. Bazeley (2010; 2012; 2018; 2019) mentioned the use of hybrid strategies within data integration procedures during the analysis phase, although she also referred to some data collection methods. Specifically, she used the term *hybrid* for a specific type of integrative analysis strategy ‘that inherently combine[s] both qualitative and quantitative elements to create a single source or set of data that is then, typically, further examined using iterative quantitative and qualitative strategies’ (2018: 242). In this definition, Bazeley (2019) pointed to the possibility of obtaining information that can be treated quantitatively or qualitatively and cited social network analysis and qualitative comparative analysis (QCA) as examples. However, Bazeley did not expand her reasoning to include the use of a single method for obtaining both quantitative and qualitative information. This possibility was more directly addressed by Axinn and Pearce (2006), who after discussing data collection strategies that integrate multiple methods sequentially, focused on developing ‘a different type of mixed methods approach, one that uses elements from several different methods to create a new, single hybrid method’ (2006: 103).

The following section reviews the characteristics and objectives of the research by Axinn and Pearce (2006) and of other research in which tools similar to the one proposed by these authors have been developed. The uses of life satisfaction diagrams and biographical grids as hybrid techniques for the collection of sequential data will be addressed more specifically in a later section.

3. Hybrid data collection tools other than the use of open-ended questions in a survey questionnaire

The procedure that is most typically employed to simultaneously produce quantitative and qualitative data by using a single data collection tool involves embedding open-ended questions within a (quantitative) survey questionnaire (Morgan, 2014: 159; Creswell and Plano-Clark, 2018: 189-190). However, this article is more concerned with those tools that are *intrinsically* hybrid, in the sense that the qualitative and quantitative elements in the tool are both necessary; therefore, for the data collection method to work, it needs the combination of quantitative and qualitative characteristics. This is why this section is devoted to reviewing some proposals and research examples (Idler et al., 1999; Letenyei et al., 2013; Gobo and Mauceri, 2014) where quantitative and qualitative elements are combined to produce an 'in-between' or hybrid form of data collection tool. The more integrated approach of these proposals is closest to the characteristics of the two types of diagrams to be presented later, and thus offers interesting aspects for comparison. The contributions from Axinn and Pearce (2006) and Nilsen and Brannen (2010) are also reviewed, as they not only proposed the use of a hybrid or multimodal approach to data collection, but also shared their interest in collecting sequential data.

Idler et al. (1999) were interested in exploring the extent to which self-rated health status reports are associated with different subjective conceptions of health. Their study contained interviews that included both closed-ended questions on the self-ratings of health and open-ended questions to help identify the respondents' perception of health. The interviews were recorded and transcribed, while the answers to the closed-ended questions were collected using computer-assisted survey software. The qualitative information was analysed by means of a qualitative data analysis software. The analysis carried out by the authors showed that the respondents who overrated their health in relation to what biomedical criteria would indicate had a concept of health that was more linked to activities and social relationships or to psychological or emotional characteristics. The authors therefore concluded that inclusive definitions of health facilitated more positive health self-ratings. Furthermore, methodologically speaking, they concluded that obtaining quantitative and qualitative information from the same respondents helped to understand what their self-ratings of health meant to them.

The contribution by Gobo and Mauceri (2014) was based on ideas similar to those of Idler et al. (1999), since its main objective was to better collect and understand the meaning of the answers given by respondents in survey questionnaires. These authors were inspired by the characteristics of the *conversational interview* (Schober and Conrad, 1997) to propose a type of survey, which they called an *inter-vey*, in which both qualitative and quantitative elements were combined into a single instrument. Similar to the conversational interview, one of the objectives was to clarify the concepts used in the questions to improve the validity of responses, but this clarification was framed in a

verbal interaction similar to the dialogue between interviewer and interviewee in qualitative interviews (Gobo and Mauceri, 2014). Gobo did not use the term *hybrid* to refer to this type of instrument but rather described it as a *merged method* and noted that ‘it combines both qualitative and quantitative approaches in a single instrument, squeezing the advantages of both in a single technique’ (Gobo, 2015: 331). Gobo and Mauceri (2014) highlighted that the interviewer should have a good understanding of the meaning of respondents’ answers to the questions through the use of open-ended questions, without offering any possible response options (i.e., without using closed-ended questions). In this way, interviewers can translate the responses given by the interviewees into the most appropriate standardised categories or develop new response categories not initially considered in the survey questionnaire.

Similarly, the ultimate objective of the proposal by Letenyi et al. (2013) was to improve the validity of the survey data without losing reliability. These authors called the instrument they proposed an *elastic survey*. It involved the application of a standard survey questionnaire in which the interviewers asked if the response categories proposed matched the respondents’ point of view. If the respondents provided response categories different from those initially proposed, these categories were qualitatively collected by the interviewers. In this way, both qualitative and quantitative information was obtained. The qualitative information could be coded, tabulated, and subsequently merged with the quantitative data directly obtained from the survey’s closed-ended questions to the effect that the final categories are the result of considering both quantitative and qualitative information.

The two publications on data collection to be discussed below were part of sequential studies, which brings them closer to the diagrams reviewed in the next section. However, while Axinn and Pearce (2006) used a more hybrid approach, the approach adopted by Nilsen and Brannen (2010) was more multimodal than hybrid.

The contribution by Axinn and Pearce (2006) was part of a study focused on the changes that occurred in the resources and institutions in various areas of the Chitwan Valley in Nepal over 42 years (1954-1996). These authors wanted to obtain information regarding the arrival of electricity and public transportation, the opening of schools, and the creation of cooperatives. To do this, they adapted the characteristics of the *life history calendar* (Freedman et al., 1988), which is a quantitative instrument designed to collect retrospective sequential data, to the particularities of their research question and to the population they wanted to study. In this way, they made very flexible use of individual life history calendars, applying them in the style of a semi-structured interview, even completely changing the order of the previously established questions, and obtaining more information than was strictly necessary to complete the boxes of the calendar questionnaire. They also designed what they called a *neighbourhood history calendar*, inspired by life history calendars (Freedman et al., 1988), but aimed at obtaining contextual information. Both tools are similar in the sense that what was initially a survey questionnaire with

a timeline designed to help respondents to ‘fix their memory’ – for example, placing in it events collectively remembered, such as national elections, floods, or a king’s abdication – became a new, single data collection tool with some characteristics of both structured methods (surveys) and less structured methods (unstructured interviewing) (Axinn and Pearce, 2006: 111-112).

Nilsen and Brannen (2010) also proposed producing retrospective sequential data with different formats, although these were not strictly quantitative and qualitative data. In contrast to the study by Axinn and Pearce (2006), these authors started from a qualitative method, specifically, the biographical-interpretive interview, to develop what they called *lifelines*, which are very useful graphs for formalising and comparing the biographies obtained through the interview.⁴ This formalisation was not based on obtaining quantitative information but rather on the ‘streamlining’ of qualitative information with the objective of facilitating a comparison between biographies and, especially, the way in which different institutional contexts in different countries influence these biographies. In addition, this comparison made it possible to link the development of the biography with the relevant historical context for each country.

4. The use of diagrams as hybrid data collection tools from a sequential perspective

4.1. Some examples of the hybrid use of life satisfaction diagrams and biographical grids

Diagrams, tables, graphs, and bar charts are forms of visual representation which, compared to photographs, are not mechanical representations of reality (Banks, 2007). These representations have a reductive quality, ‘allowing the researcher to spot patterns and trends of sociological significance’ (Banks, 2007: 32). At the same time, when diagrams are used as a graphic elicitation technique for data collection, they combine the open-endedness of a photograph and the abstraction and simplicity of tables or graphs (Banks and Zeitlyn, 2015). This simplicity reduces the cognitive load of informants in an interview or fieldwork, especially compared with drawings, since the task structure of diagramming is higher than that of drawing, and informants may be focused on only a few characteristics of the topic represented (Varga-Atkins and O’Brien, 2009).

This section reviews two kinds of diagrams – life satisfaction diagrams and biographical grids – which may be considered examples of graphic elicitation. Both diagrams were originally designed as tools for obtaining quantitative data within life course research (Runyan, 1980; Elder, 1985; Settersten and

4. This use of *lifelines* should not be confused with the graphic elicitation tools also called ‘lifelines’ or ‘timelines’ (see section 4.3). When ‘lifelines’ or ‘timelines’ are used for obtaining graphic elicitation they are very similar to drawings in which an interviewee sketches the most relevant events of their biographical history on a horizontal line representing the passage of time, but without any additional formalisation.

Mayer, 1997); only recently have they been used to obtain qualitative data and they are seldom employed as hybrid data collection tools. The examples of a hybrid use of these diagrams reviewed next come mostly from research in which I was involved. However, some other examples have been added with the aim of providing a more comprehensive review. The final objective of the selection is to present different uses of the diagrams in order to illustrate their diverse potential and to allow readers to understand the strengths, weaknesses, and opportunities they offer. This section (section 4) only introduces the use of life satisfaction diagrams and biographical grids, whereas the following section (section 5), discusses the advantages and disadvantages resulting from their use.

The two subsections below provide at least one example in which quantitative and qualitative data obtained from the diagrams were integrated in the analysis phase. In contrast, additional examples are offered that show an exclusive use of quantitative data or an exclusive use of qualitative data, to illustrate all the possible options in the use of the data once it has been collected.⁵ Later, in the discussion section, it is argued that the use of a hybrid device helps to improve research, even when only quantitative or qualitative data are used in the analysis phase, as the quality of the data used is enhanced. Tables 1 and 2 below show an initial overview of the selected examples and the type of use made of the data obtained. Subsections 4.2 and 4.3 will provide additional details of how the diagrams were used in the research projects described.

Regarding life satisfaction diagrams, Table 1 shows four different uses connected with four different research projects, which touch on topics as varied as employment trajectories, emigration trajectories, life course after a religious conversion, and political mobilisation paths among ex-combatants in armed conflicts. In addition, the examples illustrate different ways of using the data collected. In the first two examples, the quantitative information obtained was used only as ordinal information, without operating on it mathematically. In the third example, the numerical data were quantitatively used and a narrative analysis of the qualitative data was carried out. The fourth example is somewhat different from the previous ones, since the diagram used replaced the usual numerical scale of satisfaction with an ordinal scale. Therefore, in this case it could be argued that it is not strictly a hybrid tool, since it does not allow for numerical data to be obtained. Strictly speaking, this is true, but the example is provided due to the originality of the subject matter and the rather particular use of a life satisfaction diagram within a fully qualitative design. While (to my knowledge) this qualitative use of life satisfaction diagrams is unusual in the existing literature, it is relatively frequent regarding the use of biographical grids. As can be seen, no examples of the exclusive use of quan-

5. To provide a better understanding of these three different options, a simile may be useful. They would be the equivalent, in a survey questionnaire that includes closed- and open-ended questions, of using a combination of the data obtained from the open-ended questions and the closed-ended questions, only the data obtained from the open-ended questions, or only the data obtained from the closed-ended questions.

Table 1. Selected examples to show the hybrid use of life satisfaction diagrams

Reference	Type of data collected using the diagram	Use of the data collected
Verd and Sánchez-Mira (2010)	Quantitative: Scores on job satisfaction and life satisfaction. Qualitative: Narrative sequencing of jobs and (upward or downward) evolution of satisfaction	Job satisfaction scores were used as ordinal information. Narrative sequencing and evolution of job satisfaction were used to assess the whole labour market trajectory of interviewees, according to their different profiles. Life satisfaction scores and narratives were used only to contextualise the labour market trajectory.
Petroff (2016, 2017)	Quantitative: Scores on training and job career. Qualitative: Narrative sequencing and (upward or downward) evolution of training and career satisfaction	Training and career scores were used as ordinal information. Narrative sequencing and evolution of training and career satisfaction were used to identify turning points in the trajectory and to build an 'ideal type' of trajectory associated with every different kind of profile identified in the interviews.
Masías-Hinojosa (2010)	Quantitative: Scores on well-being in life. Qualitative: Narrative sequencing and evolution (upward or downward) of well-being throughout life	Scores were used to calculate the average well-being values before and after the turning point produced by religious conversion. Qualitative information was used to identify the prototypical narrative sequences used in the interviews, according to different profiles
Söderström (2020)	Qualitative: (Upward or downward) evolution of (high and low) values of political activity and political interest	The evolution of political activity and political interest over the years is displayed using two different colours. The patterns of stability and change in these trajectories are used to identify three types of political life courses.

Source: Developed by the author

titative data from a hybrid diagram are offered, the reason being that no such uses have been found in the reviewed literature.

Table 2 shows selected examples of the use of biographical grids. The rationale followed to choose and present these examples differs to some extent from the one used for life satisfaction diagrams. Firstly, all the selected examples were from two closely related projects carried out within the Department of Sociology of the Autonomous University of Barcelona (see subsection 4.3 for an explanation of these projects). It was not necessary to choose examples less well-known by me, as the selected articles show the three possibilities of data use mentioned above: combined use of quantitative and qualitative data,

Table 2. Selected examples to show the hybrid use of biographical grids

Reference	Type of data collected using the diagram	Use of the data collected
Muntanyola et al. (2019); Vacchiano et al. (2021)	Quantitative: Ordered sequence of events and sociodemographic characteristics of the personal contacts who helped to find a job throughout people's labour market trajectories. Qualitative: Narrative about the reasons or circumstances that had caused or driven the changes from one event to another and about the role played by their personal contacts in these changes (e.g., whether a personal contact had helped people to find a job).	Quantitative information was used to identify those transitions where a personal contact was used and the distribution of sociodemographic characteristics of these personal contacts (in Vacchiano et al., 2021); it was also employed to represent and calculate social network indicators of the personal social network mobilised (in Muntanyola et al., 2019). Qualitative information was used to identify how personal contacts were used, the kind of resources or help (advice, information, influence, etc.) that were obtained from these personal contacts (in both Muntanyola et al. 2019 and Vacchiano et al., 2021) and the kind of labour market trajectory that resulted from this help (only in Muntanyola et al., 2019).
Vacchiano et al. (2018); Bolibar et al. (2019); Verd and Yepes-Cayuela (2021)	Quantitative: Ordered sequence of events and sociodemographic characteristics of the personal contacts who helped to find a job throughout people's labour market trajectories. Qualitative: Narrative about the reasons or circumstances that had caused or driven the changes from one event to another and about the role played by their personal contacts in these changes (e.g., whether a personal contact had helped people to find a job).	Quantitative information on the characteristics of personal contacts was used to perform multilevel regression models (in Vacchiano et al., 2018 and in Bolibar et al., 2019). The information about the duration and sequence of events was used to perform a sequence analysis (in Bolibar et al., 2019 and in Verd and Yepes-Cayuela, 2021). Qualitative information was not used.
Vacchiano (2022)	Quantitative: Ordered sequence of events and sociodemographic characteristics of the personal contacts who helped to find a job throughout people's labour market trajectories. Qualitative: Narrative about the reasons or circumstances that had caused or driven the changes from one event to another and about the role played by their personal contacts in these changes (e.g., whether a personal contact had helped people to find a job).	The narratives of respondents describing the role played by personal contacts were analysed to build a qualitative typology of the different relational mechanisms involved in job-searching and job-finding. Quantitative information was used only to describe the sociodemographic characteristics of the sample used; therefore, it did not play a role in the analysis.

Source: Developed by the author

exclusive use of quantitative data and exclusive use of qualitative data. Secondly, an overall presentation in subsection 4.3 is made of all the selected examples regarding how the diagram was used in fieldwork, since this use was very similar in the two projects concerned. In addition, the type of data collected was the same. In this case, therefore, the differences lie in the particular objectives of each article and the corresponding data analysis conducted, and not in the fieldwork performed. In this sense, subsection 4.3 highlights the type of data that was used, the objectives that justify the use of each type of data, and the analysis carried out using these data for each article.

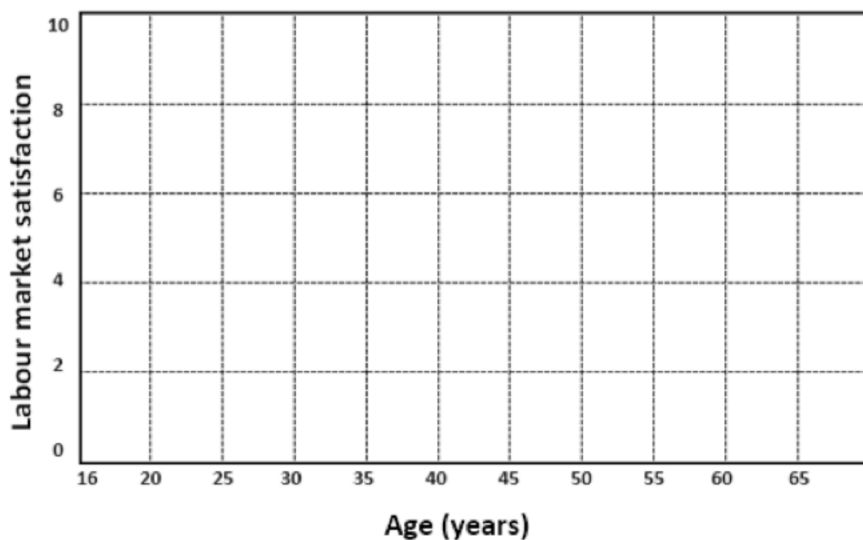
4.2. *Life satisfaction diagrams*

Life satisfaction diagrams originate from life satisfaction charts (Runyan, 1980), which are a strictly quantitative tool. As they were originally formulated, these charts were a device for obtaining scores on a scale of 0 to 10 about different life events throughout respondents' life courses (Runyan, 1980). They were later adapted to become a tool for obtaining a reflection on the events that were part of the respondents' life courses (Clausen, 1998); hence, in addition to the quantitative score, a qualitative assessment of the events represented was sought. The life satisfaction chart, as used by Clausen, consists of a grid with a horizontal axis that extends from early childhood to the time of the interview or even beyond (including the level of satisfaction expected in the future). The vertical axis contains a scale from 0 to 10. In addition to asking the informants to reflect their life satisfaction over time in the grid, Clausen proposed that they labelled the low and high points according to the event they reflected (for example, a marriage, a job promotion, or the death of a family member). This author proposed several alternatives for their use: sending them to the informant before the interview, completing them at the time of the first interview, or completing them in a later session.

This kind of diagram was used as a hybrid tool within a European research project that dealt with the extent to which the social policies deployed in different European countries were able to offer effective social protection in a context of increasingly unstable and changing labour market trajectories (Verd et al., 2009; Abbatecola et al., 2012). The project was carried out between January 2007 and December 2010, and the fieldwork in Spain was conducted by a team from the Autonomous University of Barcelona (Verd and López-Andreu, 2012). In methodological terms, the project adopted a sequential perspective, taking into account the workers' employment trajectories and the type of protection offered at different points and stages of their employment trajectories. In this project, all the interviewees were asked to generally rate their biographical events over their life course on a scale from 0 to 10, and they were also asked to specifically assess their job satisfaction throughout their labour market trajectory, also on a scale from 0 to 10. In relation to the project's objectives, the job satisfaction rating was the most important, while the rating of the biographical events in the life course served to contextualise their employment trajectory. Figure 1 shows an example of a blank template, and Figure 2 shows an example of the final template used in the research as completed by one of the interviewees.

The initial idea was that these diagrams would serve as a warm-up exercise and an ice-breaking activity at the beginning of the biographical interviews carried out in the project. However, after the first interviews, it was found that they worked better in the middle of the interview once the interviewee had already broached the subject of the interview. Additionally, in the analysis phase, it was decided to use the scores only as ordinal information (analysing the high and low points of the graphic representation and their link with the events

Figure 1. Example of a life satisfaction diagram designed for the assessment of interviewees' labour market trajectory



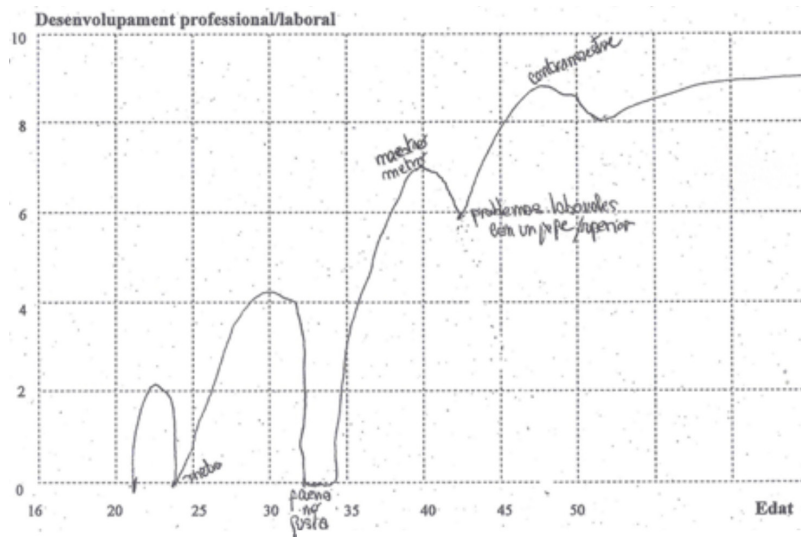
Source: Adapted from Verd and Sánchez-Mira (2010). Figure 5

described), without taking into account the numerical value assigned to these events. This decision was made after noting that the absence of explicit rules on the criteria with which to rate the events described made numerical comparison difficult. This question is explained in greater detail in the discussion in Section 5. As a result of the qualitative analysis performed it was found that there were important differences in the ways that the employment trajectory was represented according to the socioeconomic profile of the interviewees, possibly as a consequence of their different educational level (Verd and Sánchez-Mira, 2010). These differences reinforced the need to contextualise the information obtained.

The same type of life satisfaction diagram was used in Petroff's doctoral thesis (2016, 2017), which focused on the employment trajectories of highly-skilled Romanian immigrants in Spain. On this occasion, life satisfaction diagrams were used for the interviewees to assess the degree of satisfaction with their training and employment events throughout their labour market trajectories. Here again, a quantitative analysis was not carried out, despite the numerical scores given to the different events, and scores were used as ordinal indicators of satisfaction. The type of analysis carried out was interpretive and involved identifying to what extent the events represented constituted turning points in the interviewees' employment trajectories, or whether they had experienced smooth transitions between different events.

Masías-Hinojosa (2010) used life satisfaction diagrams in a way that was very similar to Petroff, in the sense of identifying the turning points and the

Figure 2. Example of an interviewee's assessment of their employment trajectory using a life satisfaction diagram



Source: Developed by the author.

(upward or downward) evolution over time in the rating of the employment trajectory described in the diagrams. However, the theoretical references by Masías-Hinojosa came from psychosocial constructionism and the narrative discourse analysis approaches by Gergen and Gergen (1988). Based on these, Masías-Hinojosa analysed the conversion stories reported by members of the Pentecostal Methodist Church of Chile, based on the understanding that the stories constituted linguistic mediations that facilitated the identification of prototypical narrative sequences. Masías-Hinojosa's use of interviewees' quantitative scoring was rather interesting; scores were used to find the average values of the set of trajectories analysed, on a scale of 1 to 7. The differences in these average values allowed the author to identify and represent different types of prototypical sequences in the narratives.

Finally, regarding the use of this type of diagram, the study by Söderström (2020) looked at the political mobilisation of ex-combatants from three very different armed conflicts: the guerrillas of the M-19 movement in Colombia, independence fighters from the SWAPO organisation in Namibia, and American Vietnam War veterans. The use of life satisfaction diagrams differed from the previously described uses in two important characteristics. Firstly, she opted for an exclusively qualitative use of this type of instrument; the vertical axis originally intended to numerically represent satisfaction was replaced with an axis that represented a continuum between 'high' and 'low' values of political activity and political interest. Secondly, respondents' levels of politi-

cal activity and political interest were presented using different colours in the same diagram. These representations were grouped to identify three types of political life courses. The way that Söderström used this kind of diagram shows the versatility of this tool and illustrates the fact that this type of technique can be used in an exclusively qualitative way.

4.3. Biographical grids

The tool known as a biographical (or life history) grid has already been mentioned in relation to the work of Axinn and Pearce (2006). As was the case for life satisfaction charts (Runyan, 1980), they originated as a strictly quantitative tool to facilitate the recall of past events in the collection of retrospective sequential data. This quantitative version of the diagram has been given different names. Freedman et al. (1988) called it a *life history calendar*, and Settersten and Mayer (1997) called it a *life history matrix*. Settersten and Mayer (1997: 252) aptly described its characteristics as follows:

In life history matrices, the first column calibrates time, and the remaining columns specify domains and events of interest. The date an event began is indicated in the appropriate row, and its duration is then charted vertically. The advantage of this type of instrument is that activities in multiple life domains are simultaneously mapped onto one frame, and the relationships between them are easily seen. In addition, inconsistencies are easily detected and can be double-checked immediately with the respondent.

However, they recognised that very often this type of tool does not provide sufficient context to understand how events unfolded. This led them to propose conducting interviews aimed at collecting information beyond that which was necessary to complete the boxes of events in the biographical matrix. Axinn and Pearce (2006) started from very similar premises when they developed their proposal for a hybrid data collection tool, since they also based their tool on the use of a life history calendar administered in a very flexible way, in the style of a qualitative interview.

Yet, unlike in the case of life satisfaction charts, the use of a 'qualitative version' of life history calendars is widespread (see, among others, Parry et al., 1999; Bell, 2005; Wilson et al., 2007; Nico, 2016; Barbeiro and Spini, 2017). In these cases, the grid is used in the frame of biographical-narrative interviews to facilitate the recall of the events narrated, and to provide a temporal context for the facts reported in relation to historical or collective events. Thus, the grid provides interviewees with a chronological axis with which to create a sequence when events had become muddled in their memory, as is often the case in biographic interviews (Verd and Lozares, 2016: 200-202). In addition, several columns are usually presented that refer to different areas of life so that a holistic and interconnected view of all the events can be obtained. There is even a version of a biographical grid that is completely open (unstructured)

Figure 3. Example of a blank biographical grid used to describe the main and secondary events throughout respondents' employment trajectories

	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Main event										
Secondary event										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Main event										
Secondary event										

Source: Developed by the author

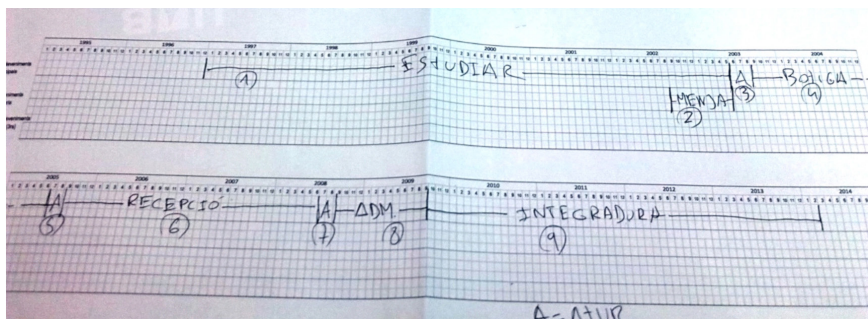
and without a diagrammatic basis, known as *timelines* or *lifelines*, in which the interviewee is free to draw their own biographical timeline and place on that timeline the events that they consider most relevant in relation to the questions posed by the interviewer (Berends, 2011; Gutiérrez-García et al., 2021).

Figure 3 shows the type of grid that was used in two R&D&I projects carried out in the Department of Sociology of the Autonomous University of Barcelona that were generally concerned with the relationship between the employment trajectories of young people and the acquisition and use of social capital throughout these trajectories (Vacchiano et al., 2018; Bolívar et al., 2019; Verd et al., 2021). The first one was carried out between 2013 and 2016 and emphasis was placed on identifying to what extent personal contacts that provided useful support throughout the respondents' employment trajectory overlapped with those that provided other types of support (economic, expressive, emotional, etc.). The second project was conducted between 2017 and 2020, and its main objective was to discover to what extent spells of precarious employment or unemployment throughout the respondents' employment trajectories influenced the characteristics of the social capital acquired and how it was used over time.

In both projects, this type of grid was useful to ask each interviewee to place all the events in their training and employment trajectory (since they were 16 years of age) on a timeline (see an example of a completed grid in Figure 4). As shown, months were used as the time unit in the diagram. The reason for using months, and not years (which is more common), was that all interviewees were young and most had unstable employment trajectories, which meant that some of their employment periods could last one month or even less. Before the interview, interviewees were informed about this interest in recording a month-by-month description of their employment trajectory and were asked to look at their curriculum vitae before the interview or to even bring it to their interview.

In addition to being useful for helping interviewees to recall and chronologically order the events of their employment trajectory, the grid was used to ask about the reasons or circumstances that had caused or driven the changes from one event to another. The biographical narrative developed from the use

Figure 4. Example of a biographical grid completed by one of the interviewees used to describe the main, secondary and tertiary events throughout their employment trajectory*



* In the first of the projects described above, the grid was prepared (Figure 4) to collect up to three simultaneous employment activities (although the third simultaneous activities, collected on few occasions, were not ultimately used in the analysis of the data). In the second project, the grid (Figure 3) was designed to collect only up to two simultaneous activities.

Source: Developed by the author

of the grid was recorded and later analysed in some of the articles derived from the projects described. However, the information displayed in the biographical grid also helped the interviewer to transfer this information to the closed-ended questions focused on the employment trajectory and the use of contacts over time. Once the sketching of these events on the grid was completed, they were reviewed in detail and then the information was used to complete the closed-ended questions through the use of a computer-assisted survey software installed on a laptop. This procedure was similar to the one reported by Gobo and Mauceri (2014) in their research (i.e., before entering the responses into the laptop the interviewer had asked the interviewee about their answers, using the grid as a prompt).

These biographical grids should also be framed in a type of interaction between the interviewer and the interviewee typically used in qualitative interviews. The use of biographical grids and the type of questions posed allowed interviewers to bring the interaction with interviewees closer to that of an informal conversation between two people. Moreover, the entire verbal interaction between the interviewee and the interviewer was recorded in the style of a qualitative interview. These recordings were not transcribed but used directly as qualitative data, since the software used for the qualitative content analysis performed (ATLAS.ti) made it possible to directly analyse the audio files.

Once the quantitative and qualitative data were recorded, these data were put to different uses. The quantitative data were set up in the form of a standard quantitative matrix, which was subsequently analysed using the TraMineR and SPSS programmes (see Vacchiano et al., 2018; Bolívar et al., 2019, or Verd and Yepes-Cayuela, 2021). In addition, the biographical grid facilitated the collection of simultaneous activities, which was crucial information when

the employment histories were analysed using a sequential analysis approach (Bolíbar et al., 2019; Verd and Yepes-Cayuela, 2021).

The quantitative information also played an important role in those analyses where an integrated analysis of quantitative and qualitative data was performed. In Vacchiano et al. (2021) these quantitative data were used to identify those transitions where a personal contact was used and to identify and measure the importance of family contacts in job search processes. However, only the qualitative data helped the researchers to identify the kind of support obtained from family contacts and how they were ultimately relied on to find a job (see Vacchiano et al., 2021). In Muntanyola et al. (2019) the quantitative data were used to represent and calculate social network indicators of the personal social connections relied on by young people, but only the qualitative narrative data was helpful to identify the kind of pathway used towards entering the labour market according to the different types of networks identified by the quantitative analysis (see Muntanyola et al., 2019).

Finally, only Vacchiano (2022) analysed qualitative data exclusively. In this case, respondents' narratives that described the role played by personal contacts were analysed by means of a qualitative content analysis to build a qualitative typology of the different relational mechanisms involved in job-searching and job-finding. In this article quantitative information was used only to describe the sociodemographic characteristics of the sample used, and therefore did not play any role in the data analysis procedure.

5. Discussion

This section discusses the advantages and disadvantages of the use of the two types of diagrams useful for jointly obtaining sequential quantitative and qualitative data presented in the previous section. These advantages and disadvantages are summarised at the end of the section in Table 3, which presents the characteristics that are shared by both types of diagrams and those that are mostly a feature of each one of them.

Regarding their shared advantages, both types of diagrams serve to trigger or encourage reflection in interviewees about the different events in their employment trajectories. The act of representing the employment trajectory on a time axis provided by the interviewer 'forces' interviewees to synthesise the narrated facts and to look at them from a certain 'distance'. This makes it possible to obtain their perceptions of their entire employment trajectory and their sense of agency throughout it. This shows whether the trajectory described is marked by situations that were outside the control of interviewees and the room for manoeuvre that their personal context offered to them. This qualitative information is essential for understanding individual decision-making in life trajectories (Hollstein, 2019) and for identifying the subjective turning points in respondents' biographies (Verd and López-Andreu, 2011).

In addition to this more subjective dimension, it is possible to provide a fuller picture of the events narrated by respondents by obtaining the differ-

ent dimensions involved and the interrelationships between events. Both life satisfaction diagrams and biographical grids offer a chronologically ordered diagram on which to place events, while the time dimension of the narrated events is mutually contrasted and validated. This reinforces the accuracy and reliability of the retrospective narrative obtained and increases the degree of internal validity of the information. The ease of representing complex information, reducing it to the aspects most relevant to the research question posed is a characteristic common to the use of all types of diagrams as forms of graphic elicitation (Varga-Atkins and O'Brien, 2009). Diagrams provide a pre-established formal framework for simplifying data, and in the case of the reviewed diagrams, the chronological dimension is the essential element that organises and helps structure the information requested from interviewees. The interviewer also benefits from this graphic representation of the life or employment trajectory, since 'the interviewer can trace the order of events and the intertwining of trajectories while following the personalised way the interviewee tells her or his story' (Barbeiro and Spini, 2017: 101).

Finally, last on the list of advantages shared by both kinds of diagrams is that their use in survey studies helps to break the rigidity and stereotyping of closed-ended survey questionnaires. In addition to the benefits linked to the more reliable recording of information, biographical grids were used to introduce more flexibility in the type of interaction imposed by survey questionnaires. The interview style was very close to that described by Axinn and Pearce (2006) or Gobo and Mauceri (2014) in their approaches. The information collected in the grid was always susceptible to being corrected or modified throughout the interview, which meant that an open attitude was adopted towards any new information provided beyond the closed-ended questions of the questionnaire. Although this effect may also be achieved with the use of life satisfaction diagrams, the biographical grid constitutes a better scaffolding for the development of open-ended questions, since it paves the way for obtaining more detailed information.

Some particular features derived from the use of each type of diagram may be added to these common benefits derived from the use of diagrams. Life satisfaction diagrams are more appropriate for prompt reflection on the importance of certain events in respondents' trajectories, since an 'assessment' of the events is explicitly requested. However, the use of a numerical or ordinal scale can make the use of this type of diagram more complex, as explained below. If the objective is to quantify the assessment, it is crucial to provide a numerical scale. This numerical scale was useful for Masías-Hinojosa (2010) to obtain 'average scores' between different trajectories and thus to obtain a prototypical or average trajectory for each of the profiles analysed. In our case (Verd and Sánchez-Mira, 2010), these scores were not very useful, since comparing the scores given by the people interviewed proved to be difficult. The lesson that can be learnt from this is that the comparison of numerical scores makes sense when very specific and similar events are addressed over a given life/employment trajectory and the profile of the interviewees is homo-

geneous. This was the case for Masías-Hinojosa (2010), whose study presented the accounts of the conversion of members of the Pentecostal Methodist Church in Chile. Thus, when a score of more general events (such those over the entire labour market trajectory) is sought and the profiles of the interviewees are more varied, it makes more sense to compare the shape of their trajectories than their scores (Verd and Sánchez-Mira, 2010). Petroff (2016; 2017) successfully managed to compare the ‘shapes’ (ascending, descending, stagnant) of the life and employment trajectories in the profile of immigrants that she studied. Life satisfaction diagrams are therefore a good instrument to easily provide a visual display of the most important characteristics of the biographical information obtained, including the different states, transitions, and potential turning points in the trajectory. Instead, a biographical grid usually represents more information, so its use as a mode of visual display of respondents’ trajectories may be less clear.

Regarding the specific benefits obtained from the use of biographical grids, they are an insurmountable tool for correcting interviewees’ possible errors caused by memory bias. In fact, this tool was initially conceived with the objective of improving the reliability of the data obtained in retrospective surveys (Wahrendorf et al., 2019), but it is perfectly applicable to qualitative data collection with the same objective. In relation to labour market trajectories, the literature has highlighted that periods of unemployment tend to be forgotten more easily than periods of employment (Manzoni et al., 2010; Wahrendorf et al., 2019), especially in trajectories with extensive state variation. In addition, short-lived situations that occur in a very specific way or in an atypical way in respondents’ trajectories tend to be forgotten (Reimer and Matthes, 2007). These effects on memory can be counteracted by using biographical grids (Reimer and Matthes, 2007).

With respect to the use made in the research carried out in the Department of Sociology of the Autonomous University of Barcelona reviewed in previous sections, the biographical grids were organised chronologically month by month precisely to reduce memory biases as much as possible. The representation of the respondents’ trajectories on the grid allowed the interviewer to identify the gaps in their history and to formulate the necessary questions to fill these gaps. In addition to recommending that interviewees bring their curriculum vitae to the interview, the strategy of encouraging interviewees to connect the events that should be remembered with relevant contextual information was also used, as recommended by Reimer and Matthes (2007). All this helped to obtain ‘complete’ employment trajectories, which in many cases consisted of activities that were carried out simultaneously and sometimes very short-lived. However, a lower record of situations of unreported sporadic employment (odd jobs) or short-term unemployment without benefits was not ruled out. This is difficult to verify due to the lack of alternative data sources for comparison with the information obtained.

While the information obtained using biographical grids has greater detail and depth, the interview takes longer, which may be tiring for the

interviewee. A lengthy interaction should not be a problem in open or semi-structured interviews but exceeding the one hour is clearly a drawback if this kind of diagram is used in combination with many closed-ended questions in a survey questionnaire.⁶ The potential negative consequences of this excessive duration were solved in two different ways (Verd, 2022). Firstly, the use of biographical grids and the opportunity to introduce new questions or to change the order of the questions previously established in the questionnaire meant that the interviewer-interviewee interaction was closer to the typically flexible and enjoyable style of qualitative interviews, which reduced the feeling of fatigue. Secondly, all interviewees were informed of the duration of the interview, which was conducted in the places and at the times chosen by them.

Finally, there is one major drawback to the use of the two types of diagrams reviewed: the need to explain the characteristics of the diagram used in the greatest detail possible. This involves thoroughly detailing what the interviewee is expected to do with it, and how the information in the diagram should be interpreted. As observed by Varga-Atkins and O'Brien (2009), the type of representation, the structure of the information, and the type of notation that should be used in diagrams are more directed than those used in drawings. All these elements, therefore, have to be clearly explained to respondents. Although this is needed for any kind of diagram, this difficulty was particularly apparent in our use of life satisfaction diagrams. One of the reasons for this was that no criteria were offered to give a score or to compare the events with each other. In this sense, it may be easier for interviewees to use lifelines or timelines (Berends, 2011; Gutiérrez-García et al., 2021), which are less demanding with respect to the information that must be provided and also reflect the key events in interviewees' trajectories (without graphically reflecting which of them is more or less important than another). So, rather than respondents having difficulty in understanding the functioning of the diagram (something that cannot be ruled out), the main problem seems to be the idea of giving scores without an explicit frame of reference. Additionally, this type of diagram did not work very well at the beginning of the interviews as icebreakers. The tools used at the beginning of a biographical interview (whether quantitative information or qualitative information is sought) should be easier to understand. This problem was partially solved by placing the diagram later on in the questionnaire after the initial interviews were carried out. This lack of warm-up was not a problem with the use of biographical grids since they were always placed after an initial block of sociodemographic questions in the two projects in which this type of tool was used. However, changes were made to improve the location of the biographical grid between the first and second projects regarding the open-ended questions posed to the interviewees (see Verd, 2022).

6. This time problem had been noted earlier by Settersten and Mayer (1997) as a consequence of the introduction of open-ended questions in the life grids used in the German Life History Study.

Table 3. Comparison of the advantages and disadvantages of life satisfaction diagrams and life grids when used as hybrid data collection tools

Type of diagram	Advantages	Disadvantages
<i>Both</i> life satisfaction diagrams and biographical grids	<ul style="list-style-type: none"> — Triggering interviewees' reflection — Enhancing the understanding of individual decision-making — Reinforcing the accuracy and reliability of the retrospective narrative obtained — Assisting interviewer in following up interviewees' narratives — Breaking the rigidity and stereotyping of closed-ended survey questionnaires 	<ul style="list-style-type: none"> — Need to clearly explain the main characteristics of the diagram to ensure that respondents understand how to use it or what information should be provided
<i>Mostly</i> life satisfaction diagrams	<ul style="list-style-type: none"> — Prompting respondents' reflection on the importance of certain events in their trajectory 	<ul style="list-style-type: none"> — Numerical scoring can make the use of the diagram more complex
<i>Mostly</i> biographical grids	<ul style="list-style-type: none"> — Reducing memory bias — Facilitating the introduction of probes by interviewer 	<ul style="list-style-type: none"> — Longer time needed to obtain both quantitative and qualitative information originated from the grid

Source: Developed by the author.

Finally, it is important to mention that the advantages and limitations identified in this discussion are fundamentally derived from our own experience in the use of these diagrams applied to life course research. To put the use of these diagrams in context, it is important to remember that the life satisfaction diagrams were used in a study in which people of all ages and from all social profiles were interviewed. In contrast, biographical grids were used in two studies focused on youth. Therefore, the particular characteristics of the respondents may mark the scope of the assessment presented. The use of hybrid tools applied to data collection goes far beyond the diagrams discussed. Similarly, the adoption of a mixed approach in longitudinal or sequential research designs does not necessarily imply the use of hybrid tools such as those reviewed here.

6. Conclusions

The main contribution of this article has been reviewing the strengths, weaknesses, and opportunities of using life satisfaction diagrams and biographical grids as hybrid tools for data collection. These two types of diagrams were originally designed for obtaining only quantitative data within the life course perspective. A similar review has not been carried out so far in the MMMR methodological literature.

Elliot (2005) highlighted that the life course perspective is a very good example of the interest that sociological research has had since the 1980s in the time

dimension for understanding the relationship between individuals and their social context. Elliot also emphasised that life courses are the result of the articulation between the decisions made by individuals to the extent that they have the capacity for them, and the institutional and social conditions in which their lives take place. This requires the use of both quantitative and qualitative data from the outset (Heinz, 2003; Elliott, 2005). Quantitative information is aimed at identifying the structural conditions in which individual biographies happen, while qualitative data is aimed at discovering the capacity for agency of people in different structural conditions. This requirement shows the need to develop approaches that combine longitudinal or sequential quantitative data with biographic-narrative qualitative data within a mixed methods approach. However, research framed in the life course perspective has always placed greater emphasis on demographic, historical, and structural changes, which has meant prioritising the use of quantitative data over qualitative data (Muñiz and Verd, 2021).

From a mixed methods methodological perspective, despite the interest in and growing use of the longitudinal and sequential perspective, the mixed methods research has paid much more attention to cross-sectional designs than to longitudinal designs (Plano-Clark et al., 2015; Waller et al., 2021). In addition, the mixed methods methodological literature has given little thought to the possibility of obtaining both quantitative and qualitative data from the use of a single tool and a single source of information. This methodological literature assumes, for the most part, that the quantitative and qualitative data are collected with different tools following a well-defined and exclusively quantitative or qualitative procedure. The contribution by Johnson and Turner (2003) is an important exception to this trend, although there have been very little developments subsequent to their work.

The article evaluates and defends the usefulness of life satisfaction diagrams and life grids for simultaneously obtaining quantitative and qualitative sequential data in a single instance of data collection. The two types of data obtained, quantitative and qualitative, allow for either exclusively quantitative analyses, exclusively qualitative analyses, or integrated mixed analyses to be carried out. These integrated analyses based on the use of quantitative and qualitative data obtained from the same people may be the most appropriate if ‘the researcher’s interest is to capture multiple facets of a phenomenon from each participant’ (Creswell and Plano-Clark, 2018: 189), a usual objective in life course research. Thus, the article helps to cover the lack of knowledge of hybrid tools on the side of sequential approaches, while presenting two diagrams for obtaining sequential data that combine quantitative and qualitative elements, on the side of mixed methods.

At a more purely methodological level of reflection, the article showcases the opportunities that the use of life satisfaction diagrams and biographical grids offer to undertake what Pearce (2015) calls *mixed research*, a term that she prefers over mixed methods research. This author contends that researchers should resist ‘the urge to assume methods fit one Q [quantitative or qualitative] box or the other’ (2015: 47), in the sense of thinking that ‘methods

(whether we are talking research methods, methods of data collection, sampling methods, or methods of data analysis) are either qualitative or quantitative' (2015: 47). This way of 'thinking out of the Q box' perfectly fits the characteristics of the diagrams reviewed here.

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