Novel Research Practices

Diary method in project studies

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ABSTRACT

Diary method is an adaptable research method for recording time-sensitive and context-specific details of a phenomenon. Project researchers have yet to embrace diary methods and the aims of this paper are to raise awareness of the use of diary method in project studies and to share insights into the application and potential use of the method. In this methodological paper, an overview of diary method is provided. Next, the application of a solicited diary as a qualitative research method is demonstrated through an example combining the diaries of 10 project managers or project team members, with pre- and post-diary interviews, to investigate organisational justice in the project context. Using the reflections of participants, and researchers, to develop insight into the use of diary method, the relevance of this method for project studies is discussed. Finally, topic areas that would benefit from the unique insights available from diary method are proposed.

1. Introduction

Diary method is scarcely adopted in management research but has shown very promising results in other fields (Hyers, 2018). It is a flexible tool for researchers to *"capture phenomena of interest on a regular basis, in context, and over time"* (Hyers, 2018, Preface). Using diaries, researchers are able to acquire *"reliable"* (Bolger et al., 2003, p. 581) first-person description of participants' experiences (Becker, 2018). Diary method provides the opportunity for participants – or diarists in this case – to record, and reflect on their actions (Milligan et al., 2005). They enable researchers to learn about the experiences of diarists in work settings (Ohly et al., 2010), following events, as they occur over time, through the observations and recordings of the diarists themselves (Radcliffe, 2013).

To date diary method has not been widely used in the field of project studies, which relies heavily on quantitative surveys or qualitative interviews and case studies. This leads to a potential overreliance on a limited number of methods and as a consequence the insights which are generated through the research are limited. This calls for more plurality in research methods in our field in order to generate new and novel insights. We suggest that diary method is a valuable addition which can contribute to this plurality and which should be considered when designing research in project studies. Hence, the aim of this paper is to raise awareness of this method with the project studies community, share insights into its application and outline its potential use. In this methodological paper, we will first provide a general overview of diaries

as a qualitative research method followed by a demonstration of its application in project studies through one concrete example, combining diaries and interviews, to investigate organisational justice in the project context. Finally, we discuss the relevance of this method for our field and propose topic areas where it might be able to provide useful additional and unique insight in the future.

2. Diary method overview

In health and medicine fields, diaries have been used for recording the experiences of participants suffering from chronic pain (Broom et al., 2015) and for research on sensitive topics, for example, the challenges of caring for a disabled child (Gill and Liamputtong, 2009) and research on aging and wellbeing (Milligan et al., 2005). In organisation and management research, diaries have been used sporadically to explore employee wellbeing such as examining work-life balance issues (Poppleton et al., 2008; Radcliffe, 2013) or fairness experiences (Holman, 2016; Matta et al., 2014; Barclay and Kiefer, 2019).

Diary studies offer researchers methodological flexibility through quantitative as well as qualitative approaches. Researchers in the fields of medicine have extensively used quantitative diaries in the form of structured, fixed responses and checklists (Milligan et al., 2005). Similarly, quantitative, structured, pre-set question diary formats have been used in higher education diary studies (Cao and Henderson, 2021). A mixed-methods approach of quantitative and qualitative diary method containing both check boxes and open-ended questions has also been

adopted in the past (Matta et al., 2014; Hyers, 2018). However, the focus of this paper is on qualitative diary method, which include descriptive (description of person, situation, or event, used for example in historical and biographical research), applied (addressing of practical issues, for example by organisational, clinical, and educational researchers) and constructionist (recognition of the situated nature of knowledge and reality) diary research (Hyers, 2018). Constructionist diary studies allow for elaborate theoretical schemes and enable participants to have a stronger voice by acknowledging the role language plays in recording the diaries. They also appreciate that reality is configured by the historical and cultural environment of the participant and that knowledge is created through social exchanges and negotiation (Hyers, 2018).

Qualitative diary method offers researchers the opportunity to capture the first-person experiences of participants, allowing participants to freely express what is important to them (Milligan et al., 2005) and their personal perceptions of events (Radcliffe, 2013). Diarists record events in context (Bolger et al., 2003; Ohly et al., 2010; Barclay, and Kiefer, 2019) and this context is captured *"from the perspective of the diarist"* (Mackrill, 2008, p. 10). As diarists record their experiences overtime and close to when an event occurred (Milligan et al., 2005), they can provide researchers with longitudinal data (Radcliffe, 2013), potentially reducing recollection errors and minimising retrospection bias (Bolger et al., 2003). This is in stark contrast to other qualitative methods typically adopted in project research, such as interviews or case studies, which often rely on retrospective recollection and interpretation of events.

Limitations to the use of diary method include potential compliance and quality issues when diarists, rather than researchers, control the recording of data. For example, data recorded in diaries will be influenced by a diarist's motivation, forgetfulness, and selectivity over what they record as well as their diary recording skills, whilst diaries completed retrospectively can be subject to recall errors (Bolger et al., 2003; Mackrill, 2008). Furthermore, researchers may struggle to contact diarists and are not in a position to prompt diarists for information at the point diarist record their diary entries (Radcliffe, 2013).

Without additional data collection activities, such as interviews, researchers face challenges in developing issues raised in diaries (Broom et al., 2015). Researchers should be aware of ethical considerations in respect to asking diarist to record personal issues (Radcliffe, 2013) and that whilst diarist can find the act of recording a diary therapeutic, *"introspective self-monitoring can also artificially accentuate emotions, encourage rumination, alter self-awareness, affect thoughts and feelings, and interfere with daily life tasks"* (Hyers, 2018, p. 152). Further challenges include participant burden as committing to the process of recording a diary places time demands on participants, and researcher burden when handling large quantities of self-reported participant data (Bolger et al., 2003; Radcliffe, 2013).

2.1. Research designs

The research design for diary method differentiates between the origin of the data collected (unsolicited vs solicited), the contingency of recording the data (time vs event contingent), the degree of structure (structured vs unstructured), the use of supporting data collection techniques (i.e. interviews) and the duration of data collection. In terms of the origin of the data, researchers can use archival (unsolicited) and solicited diaries. In the former case, researchers locate data from personal diaries (for example, using unpublished personal diaries held in national, local, and web-based archives) and from archival research diaries (for example, using diary entries that have been collected for other research projects and subsequently made available to the wider research community). In contrast to this, the solicited diary method involves researchers identifying, and recruiting diarists, within approved standards of ethics, to generate data to answer specific research questions (Hyers, 2018). With solicited diaries, diarists provide data fully aware that their diary extracts will be used, and reported on,

by the research team (Milligan et al., 2005).

In terms of the contingency of recording the data, Bolger et al. (2003) categorised the design of solicited diaries into time-based, i.e. interval-contingent and signal-contingent, as well as event-contingent designs. In time-based designs, participants provide data, unprompted or prompted, at fixed, or variable interval schedules for example after each work shift (Holman, 2016). In contrast to this, an event-based diary *"captures people's relatively immediate and spontaneous assessments of daily experiences"* (Poppleton et al., 2008, p. 483). Event-contingent designs require participants to report in their diaries when an event/occasion occurs that meets the 'event' criteria set by the researchers (Bolger et al., 2003). For example, in Barclay and Kiefer's (2019) event sampling design, participants were asked to answer the question *"Think about your day at work. Has anything unfair happened today at work, no matter how big or small?"* (2019, p. 1811) with the event being 'anything unfair' in the working environment.

In terms of the degree of structure, research designs for diary method differentiate between unstructured and structured diaries (Hyers, 2018). Unstructured diaries are typically not completely unstructured, but often outline some prompts or open-ended questions to provide some guidance for the diarists. Due to the unstructured nature of the dairies, the length of entries can vary greatly. In contrast to that, structured diaries provide diarists with forms and dedicated sections to fill out and often take the shape of qualitative surveys (Hyers, 2018). Structured diaries are sometimes viewed as being more efficient as their reporting format is typically standardised, whereas unstructured diaries do not necessarily prescribe the format and medium of the diary.

In terms of the use of supporting data collection techniques, researchers have used interviews in conjunction with diaries in organisation and management research in various ways: 1) commencing with diaries and following on with interviews (Poppleton et al., 2008); 2) initiating contact through interviews and then following on with diaries (Komulainen and Saraniemi, 2019), or 3) slotting the diaries between 'initial interviews' and 'follow-up' interviews (Radcliffe, 2013). There are good reasons for the use of interviews in conjunction with diaries as outlined in the following: Initial (pre-diary) interviews are useful for building relationships between researchers and participants, providing participants with details about the purpose (Matta et al., 2014) and objectives of the research, explaining/instructing participants on how to complete the diary, the types of events/actions to write about and information on how the diary extracts would be used, for example, confidentiality, and anonymity (Radcliffe, 2013). Pre-diary interviews also provide researchers with the opportunity to find out about the background of participants (Radcliffe, 2013; Komulainen and Saraniemi, 2019). Post-diary interviews are used to follow-up on events discussed in the diary by participants (Gill and Liamputtong, 2009) thereby extending the researchers' understanding of the diary text (Radcliffe, 2013) and clarifying uncertainties (Poppleton et al., 2008). Broom et al. (2015) described the lack of a post-diary interview in their research on chronic pain as a *"methodological limitation"* because there was *"no capacity for us to promote further dialogue/discussion which meant that certain issues only briefly commented on by the women could not be developed"* (2015, pp. 728–729). To mitigate the challenges of comparing differences in the diary responses of participants (for example, where participant diary extracts differed in respect to length and levels of intimacy) Milligan et al. (2005) combined interviews (and observations) with diaries. This demonstrates that the deliberate inclusion of supporting interviews in the research design for diary method can be valuable and add further insights through methodological triangulation.

In terms of the duration of data collection, researchers must decide on the length of the diary recording period and the number of participants to be recruited. The diary recording period can vary from a few days to various weeks, e.g. 28 days (Radcliffe, 2013), two weeks (Poppleton et al., 2008; Komulainen and Saraniemi, 2019), one week (Gill and Liamputtong, 2009), 10 working days (Matta et al., 2014),

workdays/weekends (Poppleton et al., 2008). Decisions on this need to be finely balanced based on the goals of the study, the time commitment required from the participants and the likelihood of relevant events occurring during the chosen time period (Hyers, 2018). The sample size of diary studies tends to be small due to the richness of data provided by individual diarists. However, decisions on sample size will be influenced by the potential for participants to 'drop-out' of the study due to the burden of participation on the diarists and the longer-term commitment required (Ohly et al., 2010; Hyers, 2018).

2.2. Data collection

Compared to more traditional research methods employed in project studies, researchers need to consider additional nuances when collecting data for qualitative diaries. Firstly, the data are directly recorded by the participants and not the researcher, so the medium to record solicited diaries needs to be considered. The different options include hand-written, typed (electronic), visual (artwork, collages, and photographs) and audio and video recorded as well as online diaries (Hyers, 2018). Researchers are advised to select the most appropriate form of reporting, considering that participants might be new to certain recording media and to avoid participants being inconvenienced by the reporting medium chosen (Becker, 2018). The design should consider compliance in terms of effective recording (Radcliffe, 2013), the 'validity' and quantity of diary entries (Bolger et al., 2003) and whether to retain partial, or incomplete data from participants (Hyers, 2018). Secondly, it is important for researchers to be aware that participants will have differences in their approach to writing their diaries, for example, length, intimacy, and degrees of reflectivity (Milligan et al., 2005). And thirdly, some participants will be regular diarists, for others writing a daily diary will be a new experience. Hence, different levels of guidance before and during the data collection period might be required. And finally, in diary studies, sustaining the motivation of all participants is important for accessing high quality data from diarists (Mackrill, 2008). Regular contact between researchers and diarists encourages retention and participation, and financial, or non-financial rewards, incentivise diarists to successfully complete the diary exercise (Hyers, 2018).

In general, it is recommended that participants are provided with clear instructions on how to complete the diary and on what they should report on, whilst not 'stifling' or restricting participants' responses (Becker, 2018). This can be done by issuing information sheets to participants before the data collection period explaining the purpose of the research (Holman, 2016). Researchers should also allow for opportunities to regularly contact diary participants (Bolger et al., 2003), to offer support (Milligan et al., 2005), and to motivate participants (Becker, 2018). Moreover, contact provides opportunities for researchers to answer questions, supporting 'participant commitment' (Poppleton et al., 2008; Radcliffe, 2013), provide prompts to help participants report on 'relevant' topics in 'sufficient detail' (Radcliffe, 2013, p. 176), and remind participants to complete their diaries (Holman, 2016), thereby supporting response rates.

Data collection options in qualitative, solicited diary method include issuing diarists with blank diary pages, open-ended questions (Radcliffe, 2013) or narrative prompts (Milligan et al., 2005) to encourage them to describe their experiences in free text. As for other qualitative research methods, including a 'pilot' exercise in the research design creates the opportunity to resolve participant concerns or difficulties in completing the diary exercise (Bolger et al., 2003), and test documentation (Radcliffe, 2013).

2.3. Data analysis

Thematic analysis (Hyers, 2018), content analysis (Matta et al., 2014; Komulainen and Saraniemi, 2019), biographical or case study analysis, grounded theory (Hyers, 2018) and template analysis (Poppleton et al., 2008; Radcliffe, 2013) are all coding methods used by researchers to analyse diary data. It is important that researchers are conscious of the impact on research findings of participants failing to complete the diary exercise (for example, dropping out (Ohly et al., 2010)) or being over-represented (for example, by writing more than other diarists (Hyers, 2018)). Credibility of the *"diarist's telling and the researcher's retelling of phenomena of interest"*, procedural transparency (pre, during and post data collection) and the social relevance (or utility) of the study, are all quality criteria for evaluating qualitative diary studies (Hyers, 2018, p. 160). Considering this overview of diary method in general we will provide an example of how diary methods has been applied in project studies in the following section.

3. Application of diary method in project studies – an example

As outlined earlier, the aim of this methodological paper is to raise awareness of the diary method, share insights into its application and outline its potential use for project studies. The aim is not to report the empirical results of any particular diary study, but rather to use the methodological insights generated from a study and to reflect on them. We conducted a qualitative solicited unstructured diary study from January to November 2021 to investigate how organisational justice is characterised in projects and which factors influence justice judgements. We will use this study as our example and insights generated from it for reflection. Hence, we will provide only a brief overview of the study context and then present the research design adopted for this specific study.

3.1. Study context

Organisational justice is concerned with the perception of fairness in the working environment. Perceptions of fairness and justice are subjective and *"in the eye of the beholder"* (Colquitt et al., 2018, p. 159). Organisational justice is often categorised into three dimensions: distributive justice, procedural justice and interactional justice. Distributive justice is concerned with the fair distribution of outcomes (Cropanzano et al., 2007), procedural justice is concerned with decision making procedures and justice rules (Thibaut and Walker, 1975; Leventhal, 1980), and interactional justice, is concerned with the communication of outcomes and procedures (Bies and Moag, 1986). Interactions between the three dimensions influence individual's perceptions of justice and injustice. Justice rules, or what is perceived as fair treatment, and the underlying principles for each of the dimensions are detailed in Table 1.

Studies conducted in the context of permanent organisations show positive impacts on individuals and organisations if justice rules are adopted. However, the perceptions and impact of fairness in the temporary, and often inter-organisational, context of projects is an underdeveloped area of study (Unterhitzenberger, and Bryde, 2019). Therefore, we set out to investigate organisational justice and the impacts of fair and unfair treatment in the project context and to answer the following research question: How is organisational justice in intra- or inter-organisational projects characterised and which factors influence justice judgements?

3.2. Research design

Self-reported diaries, recorded on a regular basis and over a set period, are a flexible tool for capturing project managers, and project team members, perceptions of organisational justice in their work settings. To capture project managers, and project team member's experiences of fair and unfair treatment, close to when the events occurred, a daily diary and event-sampling research design combined with pre- and post-diary interviews was developed. Fig. 1 provides an overview of the research design implemented for this study.

Table 1
Justice rules and underlying principles.

Dimensions		Rules	Underlying Principles
Distributive[b]		Equity	Outcomes are allocated according to contributions
		Equality	Outcomes are allocated equally
		Need	Outcomes are allocated according to need
Procedural[a]		Process control	Procedures provide opportunities for voice
		Decision control	Procedures provide influence over outcomes
		Consistency	Procedures are consistent across persons and time
		Bias suppression	Procedures are neutral and unbiased
		Accuracy	Procedures are based on accurate information
		Correctability	Procedures offer opportunities for appeals of outcomes
		Representativeness	Procedures take into account concerns of subgroups
		Ethicality	Procedures uphold standards of morality
Interactional	Interpersonal[c]	Respect	Enactment of procedures are sincere and polite
		Propriety	Enactment of procedures refrain from improper remarks
	Informational[c]	Truthfulness	Explanations about procedures are honest
		Justification	Explanations about procedures are thorough

Table taken from Unterhitzenberger and Moeller (2021), who adapted the table from Colquitt and Rodell (2015).
[a] Rules taken from Thibaut and Walker (1975) and Leventhal (1980).
[b] Rules taken from Adams (1965) and Leventhal (1976).
[c] Rules taken from Bies and Moag (1986) and Greenberg (1993).

3.2.1. Sampling approach and locating participants

To gain an understanding of the justice and fairness experiences of individuals involved in projects, the selection criteria for participants included individuals who worked as project managers or project team members on inter- or intra-organisational projects. Research participants/diarists were located through academic and professional networks (for example, Linkedin, and the Association of Project Management). An invitation to participate email was sent to 18 potential participants attaching an outline of the research project and what participation would involve ['Invitation to Engage' document]. Table 2 lists the 14 participants who consented to take part in the diary study. The diary data collection period ran from early February to the end of May 2021. During the data collection period participants were hybrid working, working on sites/in workplaces, or working from home.

The 'Invitation to Engage' document included an introduction to the research project, detailing the aim of the project and research question. The document also provided contact details for the researchers and confirmation that the research project had received ethics approval, that participants responses would be confidential, and would not be shared beyond the research team and that all data would be anonymised. An overview of the engagement process was also provided: initial introduction (pre-diary) interview, diary exercise, and follow-up (post-diary) interview.

3.2.2. Pre-diary interview

Members of the research team made an introductory video call with potential participants. The calls lasted about 30 min and during this time the researchers explained the research and the data collection process in more detail, discussed what was required from the participants, and provided potential participants with an opportunity to ask questions. They also explained that the participation was completely voluntary and that individuals could withdraw at any time. Following the interview, an email was forwarded to participants attaching a 'Participant Information Sheet', 'Diary Instruction Sheet' and 'Consent Form' and details of the proposed diary collection period. At this point participants had the opportunity to decide if they wanted to go ahead and participate or decline the invitation. If participants were happy to proceed, they were asked to return the signed consent form.

3.2.3. Diary study

The 'Diary Instruction Sheet' provided participants with guidelines on what they would be required to do. Participants were asked to write a diary about their perceptions of fairness during their working day. The diary period was four weeks, and participants were asked to write at least three times a week. This timeframe and frequency were chosen as we expected to be able to obtain sufficient diary entries over a four-week period, but at the same time we were conscious to minimise the burden on the diarists and therefore did not request daily entries. Participants could choose to keep a written (recorded by hand or on an electrical device), audio or video diary (on personal computers or smartphones). Participants were asked to send the researchers copies of their diaries at the end of each week. They could request to receive a regular reminder and were provided with contact details should they have any questions relating to the diary exercise. They were also supplied with information about what to do if they did not manage to record the minimum of three diary entries a week. To facilitate the writing and offer some guidance to the diarists, seven questions/prompts were outlined (see Table 3). The role of the prompts was to illicit from the participant examples of fair, and unfair, treatment. The prompts did not use organisational justice terminology, such as distributive, procedural, or interpersonal justice, as these are expert terminology and could potentially be interpreted differently.

3.2.4. Diary study – interim analysis

In total, the researchers received diaries from 10 individuals, totalling 118 days, 75 pages, and 28,920 words. Requests from participants to extend diary periods because of holidays were agreed by the research team. Over the diary collection period, if participants had not emailed across daily diaries within the guideline period, members of the research team contacted the participants, offering support. Participants ID9 and ID10 confirmed to the research team that they were finding the diary exercise challenging to complete, resulting in dialogue between the participants and research team. As can be seen in Table 2, Participants ID8, ID11, ID12 and ID14, failed to record meaningful diaries or abandoned the exercise. On receipt of the final daily diary from each research participants, an initial stage of qualitative data analysis was undertaken. Template analysis (King, 1998, 2004) was used to code and categorise the diary data into themes. The initial template was developed using a priori themes from organisational justice and project studies literature. As diaries were forwarded to the research team, the template developed to account for emerging themes from the data. Once the initial reading and interim analysis of a participant's diary was completed, a date and time for the post-diary interview was agreed between the research team and the diarist.

3.2.5. Post-diary interview

The purpose of the post-diary interviews for this study was to have the opportunity to follow up on specific entries and allow for time-lagged reflection for the participants. We decided to adopt the critical incident technique (Flanagan, 1954) for the post-diary interviews. Based on the interim analysis, interesting and relevant examples of fair or unfair treatment, as recorded by the participant, were selected by the researchers as critical incidents. Each participant was provided with a brief description of their individual incidents in advance to give them time to reflect on the events prior to the interview. The post-diary
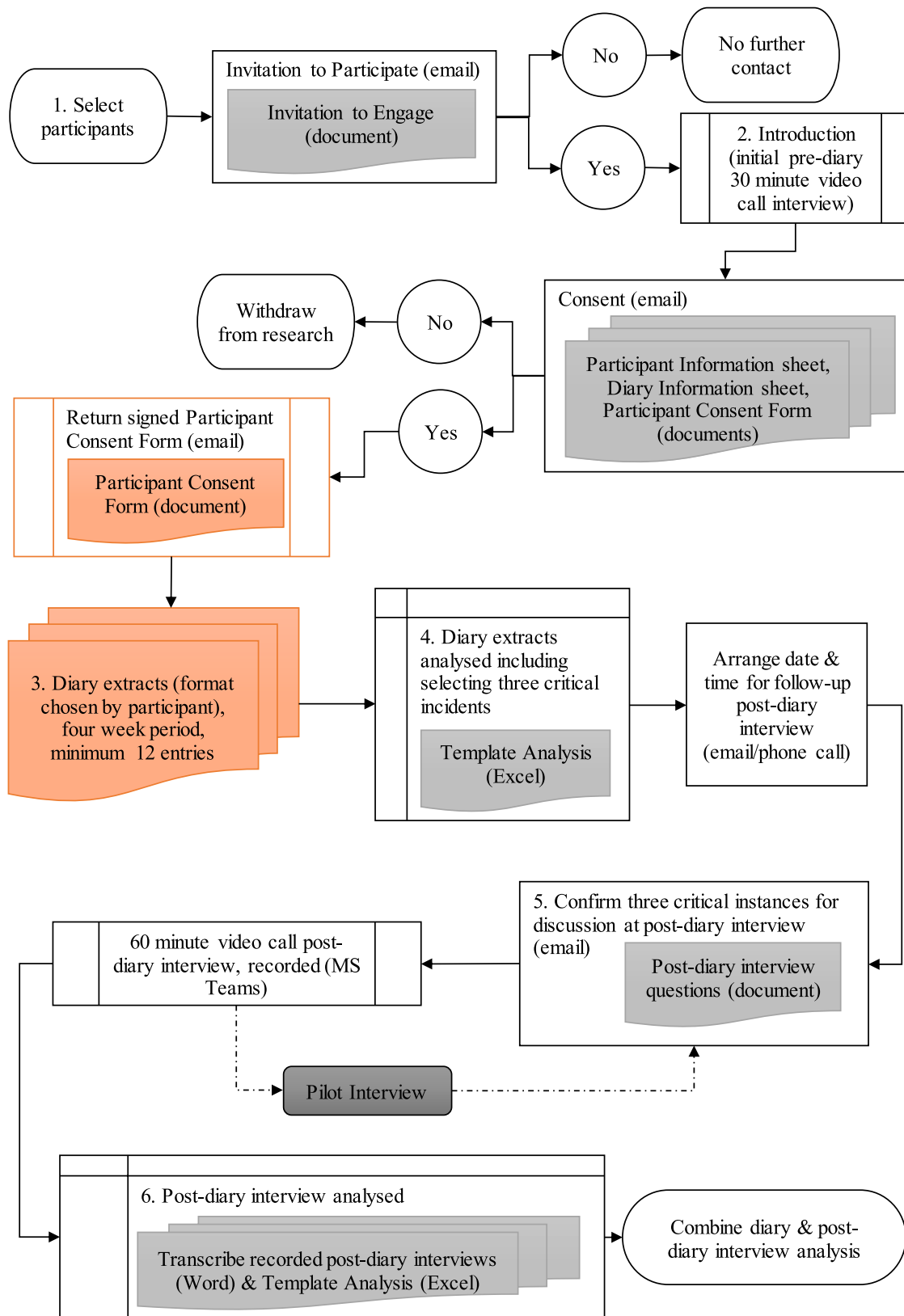
Fig. 1. Research design.

Table 2
Participants who consented to take part in the diary study.

ID	Role	Organisation Type	Experience	Projects (during diary window)	Phase One (Diary) & Phase Two (Interview)
ID1	Project Manager	Construction	0–5 years	Working on multiple projects	Phase One & Phase Two
ID2	Project Engineer	Boiler Manufacturer	0–5 years	Working on multiple projects	Phase One & Phase Two
ID3	Project Manager	Education Trust	Over 20 years	Single project (delivery stage)	Phase One & Phase Two
ID4	Project Planner	Construction	Over 20 years	Working on multiple projects	Phase One & Phase Two
ID5	Principal Mechanical Engineer	University	Over 20 years	Working on multiple projects	Phase One & Phase Two
ID6	Research Facilitator	Design and Consulting	0–5 years	Single project (delivery stage)	Phase One & Phase Two
ID7	Communication Lead	Communications	Over 20 years	Single project (delivery stage)	Phase One & Phase Two
ID8	Change Portfolio Manager	Government	10–20 years	N/A	Abandoned participation during Phase One
ID9	Building Services Manager	Construction	10–20 years	Single project (delivery stage)	Phase One & Phase Two
ID10	Project Manager	Nuclear Operator	10–20 years	Working on multiple projects	Phase One & Phase Two
ID11	Project Manager	Infrastructure Consultancy	10–20 years	N/A	Abandoned participation during Phase One
ID12	Commercial Manager	Design and Consulting	10–20 years	N/A	Abandoned participation during Phase One
ID13	Project Manager	Airport Operator	10–20 years	Working on multiple projects	Phase One & Phase Two
ID14	Project Manager	Management Consultancy	0–5 years	N/A	Abandoned participation during Phase One

Table 3
Prompts for events to include in daily diaries.

You are asked to address the following questions in your diary:
a) Please describe how you felt today.
b) Was there any time today when you felt treated fairly or unfairly?
c) Could you please describe this situation in more detail?
d) Who treated you fairly/unfairly?
e) How did this treatment make you feel?
f) Will you change your behaviour based on this treatment?
g) Do you have any other thoughts you would like to share?

interview provided an opportunity for the participants to reflect on their justice perceptions and on the experience of keeping the diary. Additionally, the interview enabled the researchers to ask participants to talk in more detail about the selected critical incidents and clarify any questions the researchers had in respect to the submitted diaries. The interviews were audio recorded and conducted via video (Microsoft Teams). Interviews lasted approximately 1 h. During the interview, researchers followed an interview protocol document (see Table 4). A pilot interview was carried out with Participant ID1 to test the documentation. Following the pilot interview, changes to the order, and number, of interview questions were made to minimise the potential for duplication of responses.

Table 4
Interview protocol document.

1. Can you tell us a little bit about your role, your projects, your reporting line and your organisation?
2. From your diaries we have selected examples of 'fair' and 'unfair' events. We would like to discuss these examples in more detail.
a) Can you please describe the people involved in the event (roles and organisations), their relationship to you and the project that you are all collaborating on?
b) Can you describe the actions of each person in the event and how their actions made you feel?
c) Will this event impact on how you do your work in the future? If so, why and how?
d) Does this event impact on how you feel about the individuals involved? If so, why and how?
3. In completing the diary you have had an opportunity to reflect on whether you are being treated fairly or unfairly:
a) Do you ever think about if you are being treated fairly or not? What would you describe as fair treatment?
b) Do your perceptions of fairness (or how you are treated) differ if your treatment is due to the actions of your line-manager (or someone in your organisation) or due to the actions of someone outside of your organisation (for example, a client, or someone within your project team, but outside of your organisation)?
c) What has been your experience of writing the diary?
4. Would it be possible to provide further details on specific information detailed within the diary texts to ensure we have the appropriate understanding of your notes?
5. Is there anything you would like to add to what has been said already? Anything else you would like to talk about?

3.2.6. Interview analysis and triangulation

In total, 476 min of interviews were recorded with 10 individuals, resulting in 148 pages of transcripts (69,969 words). Once transcribed, the post-diary interviews were analysed in the same way as the diaries. Interview data was added to the analysis templates and data were triangulated methodologically. Combining the two data sets created opportunities for comparing the experiences described by participants in the diaries and at the post-diary interviews (for differences, or for new information) and for enhancing credibility by identifying illustrative quotes for each theme.

4. Insights from applying diary method in project studies

The aim of this paper is to raise awareness of diary method with the project studies community, share insights into its application and outline its potential use. Therefore, in the following sections, we will share participants' as well as the research team's reflection about the adoption and application of diary method and provide exemplary insights derived from the data where the diary method has enabled us to extend what is known about organisational justice in projects.

4.1. Reflections by the participants

During the post-diary interview, participants were asked about their experience of writing the diary. Participants responded with comments that acknowledged both the opportunities (Table 5) and challenges (Table 6) of the diary exercise. Participants appreciated that, in writing close to when an event happened, experiences that could be potentially forgotten about were captured. Participants described how writing the diary encouraged them to reflect on their experiences and how it had acted as a driver for them to ensure that they consciously passed on fairness to colleagues and subordinates in future. The diary exercise was perceived as an opportunity to reflect on what had happened, acting as a stimulus for change, and also as a means to talk about an injustice that would otherwise remain unreported.

Challenges participants experienced were e.g. associated with the restricted diary window, as they felt they had not been treated unfairly, or overtly fairly during this time period. Furthermore, the busy schedules of our participants meant that diaries were not always completed on the day of the justice event, leading to the potential that participants self-edited their diary, or for retrospection bias to occur. Some participants also explained how they actually struggled to recognise and therefore write about justice and fairness.

4.2. Reflections by the research team

Through the diary method we were able to identify incidents, and discuss details of incidents, which would otherwise be difficult to capture. Participants mostly recorded their diary entries in a timely fashion

Table 5
Participant reflections on the diary exercise: opportunities.

Theme	Participant Comments (made in post-diary interview)
Time-sensitive reporting	• *"No I do like writing, and when you see things written down and you go back over them, you're a bit surprised at what you've written, and you're surprised at what you forget. I read stuff that I wrote a few weeks ago, and you've forgot that you've written it, so you must forget so much in life."* (ID4) • *"Yeah, that whole thing actually, I'd kind of forgotten that I'd written that."* (ID6)
Learning and adapting own practice	• *" …. because I learned a lot just by going through and thinking about things a little bit more, and also a bit of self-reflection. So, if I feel not treated well in this situation that I wrote up, I want to make sure that I'm not doing that to someone else."* (ID1) • *"So this project actually made me understand better what I live every day and made me do questions to myself that I would not do normally. So this was very, very helpful for me actually. I have to be fair from this point for this."* (ID2)
Reflection	• *"Right this, this is complex this, it's quite emotive and (laughs) it's good to talk about it really."* (ID4) • *"But yeah, it certainly opened my eyes about other consortium-run projects for the future. It's been a useful exercise actually."* (Participant ID5) • *"But it actually did highlight, again, in the world of work, sometimes you need a thick skin and you need a particular attitude regarding sometimes letting things go when you could actually make a problem."* (ID5) • *"But with the perspective of whether things are fair or not, it was quite an interesting way to reflect on my day, especially because of being in an unusual situation where you're answering to two different organisations. It's good to kind of be able to pinpoint then what is the issue with the relationships you're managing. So it was a useful way to examine how things are going, especially in lockdown because it's so strange to be working quite isolated and to not have people to have those kinds of informal conversations with, like, "Oh, such-and-such did this today." So if you're able to then write it down, I can kind of think, well okay, this is what they did, and maybe this is why they did it. So it was an interesting exercise and it really helped unpick things a little bit more, but I'm not sure I would continue with the writing process."* (ID6)

Table 6
Participant reflections on the diary exercise: challenges.

Theme	Participant Comments (made in post-diary interview)
Restriction of diary window	• *"Probably where I've found it difficult to complete the diary every week is that I'm probably going through a period where I think the work environment is very fair, so I've not really seen anything that's unfair. If you'd asked me probably nine months ago to fill out the diary, I would've been in a slightly different situation where I was seeing a lot of things which were unfair."* (ID10) • *"I guess I struggled because I was thinking, ….I've not been treated unfairly today. So then I struggled to think about what I was going to put in the boxes really, and if I just answered a question, it was quite uneventful really. No doubt, in a few months' time there'll be another situation that crops up which will be highly unfair, no doubt, and if I were to think a few months earlier, then I think there probably would've been other examples where things might have been viewed as being unfair, at least from my perception of what I thought was unfair."* (ID7)
Self-editing	• *"I think I found it difficult to do every day but I think that's because I hadn't processed what had happened in the day enough to be able to consolidate it, to put it down that it would make sense. So the first week I kind of tried it a lot of what I wrote down when I read it afterwards, it was like, no, it's not going to make sense to anybody, it's just a rant, it's just me ranting, it's not helpful. So I actually found filling it in at the end of the week, so going back and looking at my diary and looking at the meetings that had happened in my diary and going, so how did I feel about each of those? And was there anything in there that I think would have been of interest to you? And then writing. That actually didn't take me very long to do. But trying to write it on the day, trying to process it in the moment when it was live and raw in some aspects was much more difficult to do than having time to reflect and come back to it, so actually writing it at the end."* (ID13)
Difficulties in recognising, or writing about topic	• *"But in terms of what I'm experiencing right now, I would say, well, it's either not happening or I can't see it, let's put it that way, or I'm choosing to ignore it. But yeah, I think that's probably where I struggled to complete it."* (ID10) • *"I do genuinely wish I could have done the inserts, but I'm just – I don't know, maybe that's just me, I find it quite difficult to sort of write and reflect on self if you know what I mean. I can write and reflect on – in the sense of a technical appraisal or whatever ….that's probably one thing I have learnt that from this a little bit, I probably do find it quite difficult to write or describe my feelings in a way. But maybe that's because – not that I don't have them but it never gets to the point where it means enough that I'm not just going to be past it in an hour or a day or whatever. So yeah, I do wish I could have written more. Because my inserts have just been scribbles in notepads, if you know what I mean, but then as I say, it kind of almost seems a little bit meaningless to me."* (ID9) • *"Yeah, it's hard to see the fair examples of fair treatment, because isn't that just normal life. I think it's easier to identify the unfair, the negative examples"* (ID10)

capturing events whilst they were still fresh on their mind. On reflection, participants might not perceive those incidents as significant and might have even forgotten about them by the time a researcher contacts them to collect data in a more traditional way. For example, when questioned further on an incident detailing challenges in reporting to managers in two organisations (dual authorities) Participant ID6 commented at the post-diary interview how *"that whole thing actually, I'd kind of forgotten that I'd written that"*. But often these minor events, or supposedly unimportant details, provided important contextual information for justice perceptions. Also, rather than being constrained to a time-limited period to describe their experiences (for example, in an interview), the participants were free to take as much (or as little) time as they needed to complete the daily diary entries which in some cases resulted in detailed records including elaborate descriptions of feelings and emotions. The longer-term engagement with the topic over a four-week period also led to more comprehensive observations and recordings over time.

However, as already addressed above, the diary exercise proved to be a challenge for some participants. Four participants completely abandoned the study in the process of writing their diaries and two participants only wrote minimal entries. This demonstrates that, whilst diary studies typically rely only on a small number of participants, over-recruitment is essential due to higher drop-out rates compared to more traditional methods. Also, recording experiences on 'justice' in diaries appeared to be more challenging than writing about experiences of 'injustice.' Justice is expected as the everyday norm, injustice therefore stands out when it happens. If participants hadn't experienced

injustice, then they sometimes struggled to put pen to paper. Comments were made along the line of "if this was last month/year, it would be different". This is a potential downside to limiting the diary writing to a very specific researcher defined time period.

The combination of diary method with interviews proved to be particularly useful. The pre-diary introduction interviews enabled us to build relationships with participants, whereas the post-diary interviews allowed us to fill in gaps and clarify unknowns in the diary entries

through the critical incident technique. This also allowed us to use the limited time available during the interviews in the most efficient way as the participants had already shared the incidents with us in the diary and been engaged with the overall topic of research for four weeks. Hence, we were able to identify incidents in the diaries which were of relevance to our research question rather than having to rely on the self-selection by the participants under pressure in the interview. Additionally, the long-term engagement with the topic and reflection that took place over this period provided us with more in-depth insights than we would typically get in a 1-h interview. Finally, the post-diary interviews allowed us to communicate with and capture data from those that experienced challenges in completing the diaries. We were able to understand the root of their challenges, unpick those and capture verbally the thoughts which they weren't able to record in the diaries.

However, the detailed and rich data collected particularly through the diaries, but also the interviews, leads to a vast amount of data which requires a lot of resources to organise and analyse. The timing of analysis and data collection is important as the gap between the date that the last diary entry was submitted to the research team and the date of the post-diary interview needs to be long enough for the research team to analyse the diaries, but not too long so that the participants begin to forget what they had recorded in the first place. In our case the average time between the two dates was one and a half weeks. Furthermore, the diary method also involves the researcher keeping in regular contact with participants over a prolonged period, informing, motivating and responding to participant's questions and concerns, ongoing contact that is potentially resource hungry.

4.3. Exemplary insights on the use of diary method

Through the diary study, participants recorded their experiences of justice and injustice in projects describing the sources, dimensions, context and impact of organisational justice. The diaries provided us with unprecedented time-sensitive and context-specific insights into this phenomenon, whilst the post-diary interviews allowed for follow ups and detailed discussions. We identified five themes on how the combination of diary and post-diary interview facilitated these unprecedented insights: time-sensitive recording in the diaries, clarifications, comprehensive information, setting treatment in context and learning more about an underreported topic. These are discussed in more detail below.

First, the daily diaries provided an opportunity for participants to write about their perceptions of fair/unfair treatment over time (Table 7). Within the same project, participants described both fair and unfair treatment over the period of recording their diaries. Moreover, participants described their perceptions of fairness/unfairness of incidents that occurred over multiple days, for example, over consecutive days (yesterday and today), or with gaps of days or weeks between diary entries.

Second, the post-diary interviews were useful to provide clarifications on diary extracts (Table 8). This was especially the case in the context of identifying the sources of justice and injustice. Sources in the diaries were described in terms of individuals, units/teams and organisations which could be within, and outside of, the participants own organisation. The post-diary interviews were useful in clarifying terms such as 'consortium members' and 'stakeholders' enabling the research team to code the sources of justice and injustice appropriately.

Third, comprehensive information about critical incidents was obtained (Table 9). Participants described in their diaries and during the interview, examples of distributive, procedural, interactional justice (injustice). Participants did not refer to experiences in these terms, these were codes and themes attributed to the diary text, and interview transcripts, by the research team. Again, the post-diary interview provided the opportunity for the participant to describe in detail examples of justice/injustice described in the diaries. For example, participant ID2 was able to explain why the interaction with their line-manager was 'rewarding' and participant ID4 was able to discuss in detail their

Table 7
Time-sensitive recording in diaries.

Theme	Diary Extracts (over time)
Fair and unfair treatment within a project	March 8, 2021. *"I get requests via e mail from members of the project consortium to reset the equipment when it malfunctions … This exercise is a **burden** when I must drop everything at short notice and rearrange my diary …"*March 9, 2021. *"… one member of the [project team] announced that they have not got the resources to complete their part of the decommissioning process as per the project plan" [ID5 was] "Quite frankly **annoyed and disappointed**."*March 12, 2021. *"I felt as though I had been **overlooked** in the early decision-making process regarding the application of these regulations on this project and wasted valuable time putting together documentation that will now no longer be required."*March 16, 2021. *"… my **contribution** to the success of the project was mentioned by a number of the consortium members."*April 6, 2021. *"A senior member of [own organisation] was very complimentary regarding my efforts and expressed **gratitude** on behalf of the other members of [own organisation] executive committee for the work that I had completed on the xxxxx project."* (ID5)
Over time (yesterday & today)	March 5, 2021. *"In order to involve a skilled technician in the activities, I asked his line manager, and he confirmed the availability of this guy. ….Today, the personnel manager, who is the chief of the line manager abovementioned, denied the availability of the technician, just saying that he was already too busy …..**Today** I have clearly felt the unfairness of what has happened, as the lack of communication between the line manager and his boss made me, and the colleagues of mine, waste part of our time **yesterday**."* (ID2)
Over time (days & weeks)	March 10, 2021. *"I was at the regional office during the morning to undertake some software refresher training for a software platform that the business has invested heavily in (time and cost) over the past two years ….My line managers who I did the software training with this morning could have been a bit harder on us as some of us have not yet made the full transition to the new software system yet, despite numerous requests to do so."*March 30, 2021. *"In terms of the example of fairness, the reason for the Teams meeting with my line manager (xxxxx) was to go through a few issues that we are having with the progress reporting on the new cloud-based dashboard system that the company have invested heavily in."* (ID4)

Table 8
Clarifications – sources of justice/injustice.

ID	Diary	Post-diary interview
ID5	March 8, 2021. Who treated you fairly/unfairly? *"The consortium members for making repeated requests and my line manager for not sharing the burden."*	*"There are a number of stakeholders but, principally, it was the manufacturer of the equipment that I felt— I would've expected more engagement, really, from them, and assistance …"*
ID13	April 29, 2021. *"In a meeting today with the stakeholders talking around the operational restrictions in place, I felt that I was at first treated unfairly as not being able to raise points of clarification."*	*"Some would be my project team, and my project team is built up of internals and externals. And some were from xxxx, so our xxxxxxx, and some were our xxxxx operational colleagues. And I think we had one engineer on the team. So it was a combination of different departments within the [own org.] and then organisations outside of [own org.]."*

'heated exchange' with a contracts manager.

Fourth, the contextual nature of fair or unfair treatment was further explored (Table 10). Through reflecting on justice, participants described the contexts in which justice or injustice occurred, describing

Table 9
Comprehensive information – justice dimensions.

ID	Diary	Post-diary interview
ID2	February 22, 2021. *"My line manager replied that his team members have done until now their best …..That was __rewarding,__ because it means he was able to see the hard work beyond the easy complaints from people who are not fully aware of the requirements to take into account for managing the activities nowadays."*	*" … from him [Line-manager] actually in this case I felt very respected because ……he showed me that he actually understands what is the situation, he understands what are the difficulties we are withstanding every day. So I felt supported in that occasion." (ID2 interview)*
ID4	March 26, 2021. *"Some actions that [contracts manager" was hoping to see completed by myself on [project] over recent days are lagging behind and are seriously stacking up now. This culminated in the __heated exchange__ in the site meeting room the second I walked through the door this morning … I've rarely seen [contracts manager] as angry …"*	*"I walked into a firestorm. And I think a lot of people would've walked off site and told HR, because it was a bit, it was a bit threatening really, what [contracts manager] did, right, it was a bit intense. But there's a bit more to the story. I believe he's the best construction manager that I've ever met; and I'll cut him slack …. it was an intense, not a full-blown argument, but it was hard, it was tough ….he wanted things off me, I couldn't hit deadlines …."*

Table 10
Setting treatment in context.

ID	Diary	Post-diary interview
ID1	February 25, 2021. *"… the customers became a bit aggressive and hinted that I did not do my job right and did not provide the right answers."*	How did that make you feel? *"That's tricky because, in that conversation, we discussed quite a few things. Not to pushback, but I would say quite a bit was on their side. They didn't play right, but I could've done something __better as well."__*
ID3	March 15, 2021. *"A really difficult day with huge pressure to go live with the [project] and no resource to support … I am dragged in to crisis meeting after crisis meeting. In the end, all goes well and I am treated reasonably fairly although there is a nagging voice in my head which says that __I should have done more to avoid the situation in the first place__."*	*"I felt treated fairly – I mean, as I say, it was extremely stressful, but I'm __used to situations__ when things go like that there's a lot of shouting, there's a lot of accusations, a lot of drama. And while it was very stressful, there was none of that. So there were no cross words, there were no inappropriate comments or attempts to make somebody the guilty party. There was none of that from anybody."*
ID6	March 17, 2021. *"… this is a great example of how I am treated fairly in this role as my supervisors on both sides ….have given me a __lot of independence__ in my work and trust that I will deliver what is needed without needing micromanaging."*	*"Actually, because they give so much __independence, neither side is that pushy__, which is then quite good that they've left it to me. Thankfully, I'm the kind of person who has then pushed things forward, because I think some things could have been lost a bit."*

interesting relationships between organisational justice and decision making/independence. Participants also used comparisons to set the context to their feelings of justice/injustice, for example, comparing current treatment with prior experiences, or treatment by their own organisation with treatment from external organisations. Furthermore, participants explained reasons why they would sometimes tolerate injustice, for example, by understanding the actions of others, self-blame, to avoid project failure.

And fifth, an under-reported topic in the diaries was investigated through questioning at the post-diary interviews (Table 11). Participants recorded in their diary examples of fair and unfair treatment and how their treatment had impacted on a personal level. Beyond personal feelings and emotions, participants rarely wrote about the wider impact of fair or unfair treatment on project or organisational outcomes, or the longer-term impacts on themselves. For example, in their diary ID7 did not anticipate making any changes to their ways of working following injustice, however during the interview, they had further thoughts on

Table 11
Learning more about an under reported topic in the diaries.

ID	Diary	Post-diary interview
ID7	April 16, 2021. *"Annoyed … …I was singled out regarding whether I needed to attend a key project performance review meeting. Implication being that someone else would cover my project, thereby reducing my impact and exposure."* Will you change your behaviour based on this treatment? *"No"*	Will that change anything with how you interact with him? *"Yeah, well, __I won't be sharing as much information with him__. Yeah, definitely. He won't know that, but I'll be keeping him at arm's length."*
ID10	*	Impact of "bullying" and "unprofessional behaviour" of senior management *"… it contributed to quite a few __people leaving__ … like myself and a few other colleagues, or …..moved to a different region …..Key resources that were able to make stuff happen and get things done were moved, so the client lost out in that respect …. you can sort of see the repercussions of these events at a personal, professional and __reputational__ level."*
ID13	May 7, 2021. *"Really bad day, operational decision out of nowhere has derailed my programme and I'm having to pull my slides from the governance meetings. Although feeling like it is not only incredibly unfair to not be even allowed to speak on the topic, also incredibly unfair to my team as to the work and dedication gone in and no consideration for the extra work and stress this will cause everyone."*	*"In the call we were discussing that and the senior manager said he was not prepared to take the safety risk … …This would mean a three week delay to the project which would __increase the costs and the programme length,__ ….So I knew as soon as he suggested it that it would mean pulling the governance slides, because I couldn't commit to what we put in that slide pack in terms of the cost of the programme was going to be what we could deliver, given this three week delay."*

their future interactions with the source of the injustice. The post-diary interviews were an opportunity to explore the impacts of justice/injustice across multiple levels: individual (for example, people resigning/transferring), project (for example, increased costs and programme times) and organisation (for example, reputational damage, impacts on clients).

5. Relevance of diary method in project studies

Based on the overview, application and insights outlined so far, we believe that the diary method is worthwhile to consider as a research method in project studies in addition to traditional research methods. Research published in the leading journals in project management relies predominantly on quantitative surveys, qualitative interviews and qualitative (multiple) case studies. The overreliance on a very limited number of methods means that the insights which are generated through the research is restricted. If data are collected in the same way time and again, important nuances and context are not captured. By diversifying research methods applied in project studies, the field can be developed further and our understanding of projects and the people working in project settings will be enhanced. Diary method as presented in this paper is one potential method which should be considered by researchers in the future. In the following we outline which insights the diary method can provide and how and why it might be particularly useful in project studies.

The unique insights diary method can provide are two-folded but interrelated. Firstly, diaries are self-reported by the participants and do not go through a filter of researcher reporting. Typically, in qualitative research, the reporting happens through the researcher. This might be through interviews, where the researcher asks the questions or through observations, where the researcher records what they see and how they see it. The immediate report by the participant without researcher

involvment is rare. Secondly, diaries are produced in a timely fashion to events or experiences and therefore provide immediacy. Diary method therefore overcomes the dependence on retrospective accounts (Bolger et al., 2003) which is typically the case in surveys or interviews. Hence, it captures events and experiences that could be easily forgotten by project professionals who are usually busy and under pressure from their working environment. This is even more the case for event-contingent rather than time-contingent research designs, which focus on entries triggered by a specific event rather than a specific date (Poppleton et al., 2008; Bolger et al., 2003). Diary method is also recognised to *"harness the power of the immediate personal witness"* (Hyers, 2018, p. 27), which enables the participant to access and preserve information which is more instantaneous and contextualised than it is typically the case with retrospective methods. Depending on the timeframe chosen for data collection, the diary exercise also requires the participants to engage with a specific topic for an elongated amount of time which enhances the sensitivity towards the topic and refines observations over time.

These insights are particularly relevant in project studies and more specifically in studies related to project behaviour (Unterhitzenberger, 2021). Behavioural aspects in and of projects are the focus of micro as well as meso project studies (Geraldi and Söderlund, 2018) and include psychological aspects such as motivation or fairness and organisational aspects such as governance and temporary organising. To deepen our understanding of these areas, the ability to capture "thick descriptions" (Patterson, 2005, p. 154) as it is typically the case in diaries is invaluable. The capacity of diaries to situate events and experiences in the wider social, economic and political context is also relevant for project studies (Wiseman et al., 2005). Projects as temporary organisations have been recognised as unique and diverse contextual settings for the behaviour of individuals and diaries provide the opportunity to account for those and capture them accordingly. Finally, diaries can also be useful to examine the interrelation between two domains (Poppleton et al., 2008) such as temporary project and permanent employment organisation which is often an organisational duality project professionals experience in their everyday work. The diary method can therefore provide rich data for theorising incorporating contextual events, settings and experiences and thereby challenge established theories or inspire new lines of inquiry with the aim to develop theory that is interesting and novel rather than ingenious or inconsequential.

6. Conclusion

With this paper we have introduced the diary method to project studies and demonstrated its application and relevance. Whilst diaries have been used successfully in other fields, their adoption is rare in business and management research and even rarer in project research. However, the diary method as a qualitative research method offers theoretical and methodological flexibility to researchers and can be useful to investigate behavioural aspects in and of projects. Diaries generate in depth and rich insights which are recorded in a timely fashion and therefore overcome potential retrospection bias often found in traditional methods such as interviews. We have also addressed challenges associated with this method such as the resource intensity, risk of participant drop-outs and timing of data collection. Nevertheless, we as research team had the chance to learn from our participants during this exercise and found it gratifying to hear how participants described that they had found the diary writing process a positive experience. We therefore hope to encourage other researchers to adopt this method in project studies research to broaden the understanding we generate through our work.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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