A systematic review of the ecological and longitudinal methods to study daily stress

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Abstract

The objective was to review the methods used to assess daily stress, focusing on the types records used, as well as the methods used to describe daily stressors, the ways to operationally define stress, and the different research approaches. A search for quantitative research articles published between January 2008 and December 2017 was carried out on indexed entries of four electronic databases. Of the 254 publications found in the search after duplicates were removed, eft 57 articles were selected to analyse. A large diversity of recording methods was detected, a single daily record for a week being the most frequently used. The different ways to operationalize stress highlight the different implicit definitions of stress: the number or intensity of stressful event refers to stress as an external factor, negative feelings refer to the individual's responses, and reactivity or "pile-up" are related to the process by which stress develops over time. Such variation suggests that stress is not a precise concept that can be assessed by a single measure, stress is rather a generic label for the complex process of adaptation to specific situations. The first one is that it can be concluded that stress is a process that explains the short- and long-term effects of exposure to stressors on health and wellbeing through a complex chain of mediators and moderators. The second point is that although it is known that the changes produced in stressful situations are adaptive at first, studies of the negative side of stress prevail. And the third point is that the studies analysed were not reduced to the analysis of the stress process or of any particular aspect of stress but rather, the evaluation of daily stress served to study other processes with marked social and affective components.

Keywords: coping; experience; methodology; psychological distress; stress

Introduction

Daily stress builds up as the minor stressors experienced over the course of everday life accumulate (Serido, Almeida, & Wethington, 2004). These daily stressors can range from trivial occurances to highly significant events, and they are related to irritating, challenging, or anxiety-producing demands upon individuals in the course of their daily interactions with their environment. Moreover, the consequences of these interactions depend largely on how the individual perceives them, yet it is likely that no one's life is entirely free of stressors (Kanner, Coyne, Schaefer, & Lazarus, 1981).

It has been noted that exposure to everyday stressors, the emotional reactions to such stressors, and the accumulation and assimilation of the minor stresses that arise in the course of everyday life all affect the individuals health and well-being. Indeed, it has been proposed that daily stress has as similar or stronger impact on the individual than major life events (Bolger, DeLongis, Kessler, & Schilling, 1989; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Segerstrom & O'Connor, 2012; Wagner, Compas, & Howell, 1988.)

The use of methods based on real-time data collection allow everyday life to be examined by capturing events as they occur, enabling the generation of models of their evolution over time (Bolger & Laurenceau, 2013). Such longitudinal methodologies have been used for many years, initially taking the form of paper and pencil diaries and currently through smart phones. Such studies first appeared in the 1940s (See Bolger, Davis, and Rafaeli, 2003) and historically, they have been identified with the Experience-Sampling Method (ESM: (Csikszentmihalyi & Larson, 1992), the Ecological Momentary Assessment (EMA) method (Stone & Shiffman, 1994), the Day Reconstruction Method (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) and other intensive longitudinal methods (Bolger, Davis, & Rafaeli, 2003; Bolger & Laurenceau, 2013). The use of these approaches to analyze exposure to stressors and emotional reactions, using simple questionnaires and pencil and paper diaries, was boosted towards the end of the last century (Bolger et al., 1989), since when the body of literature in this area has proliferated. Given the amount of research that has been published on this topic, it is now possible to design instruments to assess daily stressors whose use can be supported by established evidence of utility and validity (Mehl & Conner, 2012). Particular breakthroughs have been made in modernizing these methods and in how to analyze the data they record (Bolger &

Laurenceau, 2013). However, because the body of research on daily stress is so diverse, it is hard to arrive at firm conclusions regarding several basic issues, including how many times a day to take measurements, once at the end of the day or several times throughout the day. Likewise, it is unclear whether data on all the stressors that arise in different contexts throughout the day should be collected, whether it is better to ask the respondent to provide a description of the stressor, or whether the participant should simply select the stressor from a checklist.

The lack of agreement on to the operational definition of daily stress most likely explains the differences in how and how often daily stress should be assessed (Rodrigues, Kaiseler, & Queirós, 2015; Crosswell & Lockwood, 2020). It has been proposed that stress arises when individuals perceive that they cannot adequately cope with the demands of a situation (Folkman & Lazarus, 1988), a definition that means stress cannot be reduced to mere exposure to an event or a reaction to such an event. In terms of daily stress, there is a clear aim to capture the specific events, yet the question as to what daily stress is remains unresolved. Several, different responses to this question have been proposed, and one is to operationalize stress as exposure and consider the number of events that happen (Hankin, 2010). Another approach is the subjective evaluation of the importance or severity of these events (Aldridge-Gerry et al., 2011), whereas a further option is to define daily stress as the amount of negative feeling experienced from day-to-day (Gartland et al., 2014). Finally, daily stress could be considered a more sophisticated version of this last option, where it is computed as the change (mostly negative) in the mood of the individual produced by daily events, previously defined as reactivity (Bolger et al., 1989).

Empirical research on daily stress has been approached from different ways, as well. Traditionally, the most important approach of the stress research has been to point out its effects on health and wellbeing. Further, the approaches based of the identification of moderators and mediators of stress are also outstanding. So the considerations about assessment and operational definition of stress have to be done taking in account the approach of each study.

Therefore, the main aim of this review was to summarize the current ecological and longitudinal methods available to assess psychological aspects of daily stress, focusing on the different types records used

and their periodicity/duration, as well as the methods used to describe daily stressors, the different ways to operationally define daily stress, and the different research approaches . In the light of the information obtained, it should be possible to identify lines of improving the daily stress assessment and research. While studies on daily stress based on records of physiological responses have been reviewed previously (Rodrigues et al., 2015; Kudielka, Gierens, Hellhammer, Wüst, & Schlotz, 2012), this review will center on the psychological aspects of daily stress, which have received less attention to date and for which there is little consensuses regarding operative definitions (Crosswell & Lockwood, 2020).

Methods

Search strategy

A search for quantitative research articles published between January 2008 and December 2017 was carried out on indexed entries of four electronic databases: Web of Science, PychInfo, Scopus and Medline. The search was performed with the terms: *(hassle* OR "daily hassle*" OR "daily stress*") AND (diar* OR "daily diary" OR "longitudinal study" OR "intensive longitudinal method" OR "ecological momentary assessment")*. All the publications found in this manner were extracted using Endnote X4 software and after excluding repeated articles, the 254 remaining articles were examined for their suitability (see below).
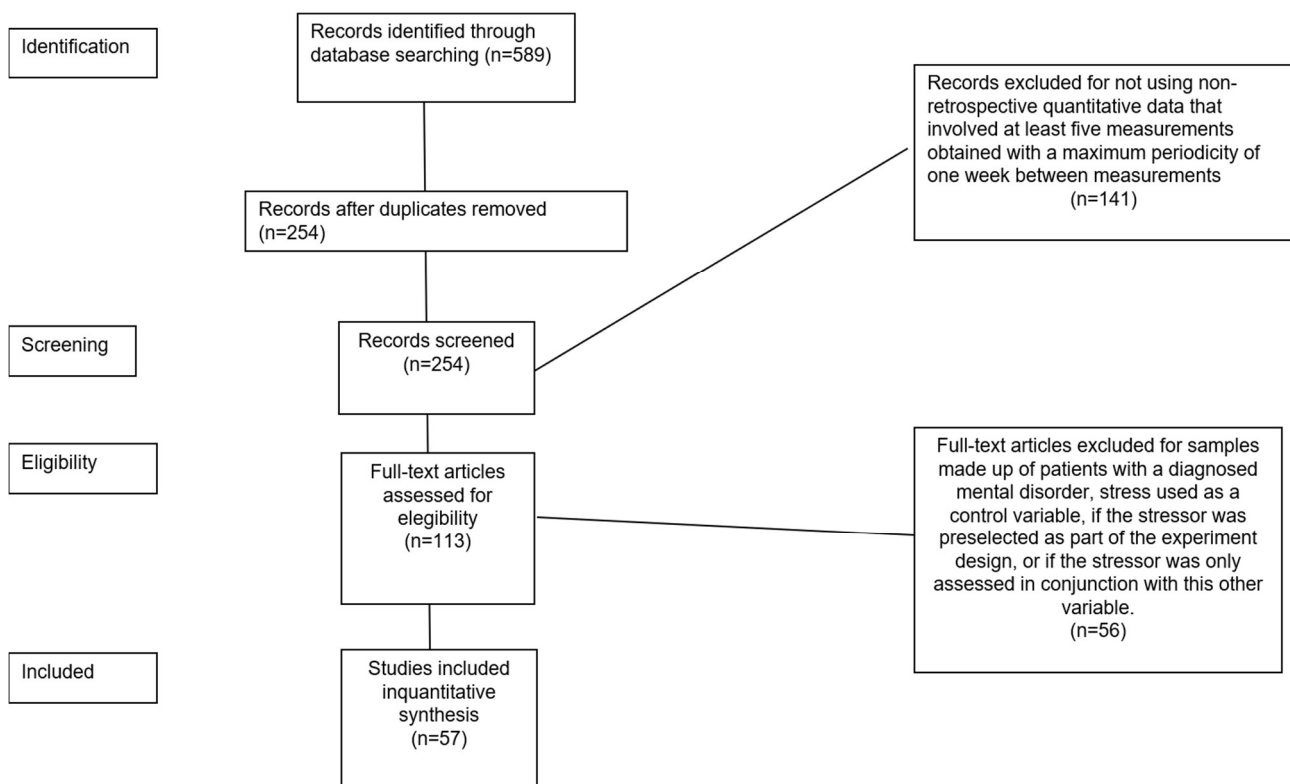
Inclusion and exclusion criteria

The following criteria were applied to include a publication in this study: the use of repeated quantitative data that involved at least five measurements obtained with a maximum periodicity of one week between measurements. The publications must also be written in English. Articles meeting these criteria were nonetheless excluded if they used samples made up of patients with a diagnosed mental disorder, or if the stressor was preselected as part of the experiment design. This latter criterion was applied as this study aimed to examine stressors that arise in all contexts of life and not just in a selected context. In addition, publications were also excluded when the stressor was subordinate to another variable and thus, was only assessed in conjunction with this other variable (e.g., cortisol, smoking or compulsive shopping).

In the first phase of the review process, publications were pre-selected based on their titles and abstracts. Subsequently, they were reviewed independently by four experts in the field to determine their final inclusion or exclusion. These experts applied the list of criteria to the pre-selected articles, on this occasion reviewing the full text and settling any disagreements by consensus.

Coding

The information contained in the selected articles was coded in a table with the following items: authors and year, aim, sample size, recorded days, record per day, stressor description method, operational definitions, and research approach.

Figure 1: - Flow chart of the selection of articles through the different phases of the systematic review.

Identification	Records identified through database searching (n=589)	

Records excluded for not using non-retrospective quantitative data that involved at least five measurements obtained with a maximum periodicity of one week between measurements (n=141)

Records after duplicates removed (n=254)

Screening	Records screened (n=254)

Eligibility	Full-text articles assessed for elegibility (n=113)

Full-text articles excluded for samples made up of patients with a diagnosed mental disorder, stress used as a control variable, if the stressor was preselected as part of the experiment design, or if the stressor was only assessed in conjunction with this other variable. (n=56)

Included	Studies included inquantitative synthesis (n=57)

Results

Type and duration of daily stress measurements

The number and frequency of the records used in the distinct studies that took measurements more than once daily are shown in Appendix 1. Fifty-one of the articles (89.47%) measure stress once a day (at bedtime) and while four studies did so several times throughout the day, the remaining two only collected weekly recordings. The total number of days on which recordings were made ranged from 5 to 56. Of the studies that took measurements once daily, readings were taken over 8 days in 17 studies (33.33%), over 14 days in 14 (27.45%), over 7 days in 10 studies (13.72%), over 5 days in 3 (5.88%), over 30 or 28 days in 2 studies (3.92% each), and readings were obtained over 21 days, 35 days or 56 days in only 1 study (1.96% each).

In the studies that took more than one reading daily, two made five records per day for 7 or 6 days, one obtained 10 readings over five days, and another obtained readings every three waking hours for 42 days. All the studies took measurements on consecutive days with the exception of two, one of which gathered data each week for 16 weeks (Faulkner & Smith, 2009) and another that obtained weekly records over 10 weeks (Ivarsson, Johnson, Lindwall, Gustafsson, & Altemyr, 2014).

Description of daily stressors

In 44 articles stressors were registered using checklists and the respondents were asked to mark all the items that applied to them. Other measurement methods included requesting open descriptions of stressors (Eight articles) or they asked for an evaluation of the stress using a Likert scale, without requesting any description of the event (Four articles). One article simply recorded the number of stressors that participants had experienced since the last prompt (Verkuil et al., 2012).

Operational definition

A wide variety of methods were used to operationalize stress and, in some articles, more than one method was used. Since no standard method was used, it was difficult to classify the methods used to

operationalize stress and as such, in Table 1 a column was included to indicate the method used to operationalize stress that most closely resembled that used in each study. In 20 articles, the number of stressors faced on each day were added up and the figure obtained was used to quantify daily stress, one of them recorded the number of stressors five times a day (Verkuil et al., 2012) In five articles both the number of stressors and the perceived intensity of each was registered, calculating an average, in one of them an average was calculated for hassles and another for uplifts. In another 5 studies the daily stress was operationalized using scales of intensity for the main stressor, without recording the number of daily stressors. In four articles, the intensities of the stressors occurred were added, obtaining a total sum; of those four, two articles calculated the sum separately for hassles and uplifts In 3 articles stress was identified through feelings as perceived stress or a negative appraisal, and in one of these studies (Gartland et al., 2014) stress was considered both as an increase in negative feelings and as a decrease in positive feelings.

The reactivity method compared the days on which the individual was exposed to stressful events with those on which no stress was experienced, and this was used in 16 articles. In this case, stress is not considered as the presence of a stressful event nor as a response but rather, stress is operationalized based on the differential response. Two articles operationalized stress as an accumulation of daily stressors ("pile-up"). While in one of these the number of days over the past three days a stressor was recorded was evaluated (Grzywacz & Almeida, 2008), another summed the individual's daily stress up to a specific day and weighting them according to their temporal proximity (Schilling & Diehl, 2014).

Finally, one article operationalized stress by aggregating three measures of appraised stressors, "distress", "control" and "coping", although stress was not associated with any specific variable (South & Miller, 2014), and another used simultaneously the number of stressors, the sum of intensities and also their average (Winzeler et al., 2014).

Research approaches

There were 19 articles focused in negative effects of stress on healths, wellbeing, and marital relationships. Moreover, in a notable number of studies, long term effects of daily stress were detected, such

as distress 10 years later (Charles, Piazza, Mogle, Sliwinski, & Almeida, 2013), the persistence of sub-clinical psychotic experiences (Collip et al., 2013), longitudinal recurrence of herpes (Faulkner & Smith, 2009), ten-year survival (Mroczek et al., 2015), and a risk of chronic disease (Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013).

A more complex relationship between daily stress and health was proposed in some studies and for example, headache complaints were considered strongest when daily stress coincided with sleep disturbances (Houle et al., 2012). Similarly, daily stress was associated with an increase in unhealthy eating habits (O'Connor, Jones, Conner, McMillan, & Ferguson, 2008); O'Connor, Conner, Jones, McMillan, & Ferguson, 2009)and such changes may reflect an indirect pathway through which stress can influences health risk, over and above the physiological changes produced. Moreover, additional support for a reciprocal relationship between stress and health was reflected by the causal relationship in irritable bowel patients (Blanchard et al., 2008).

Nineteen articles studied how individual differences moderate daily stress, some of which showed the influence of socio-demographic factors, such as educational level. Other studies highlighted the role of specific psychological traits. A third group of studies explored how social differences moderate individual daily stress. Additionally, surviving cancer is also a moderator of daily stress, as cancer survivors were associated with a greater increase in negative effects related to daily interpersonal conflicts (Costanzo, Stawski, Ryff, Coe, & Almeida, 2012). Finally, genetic moderators of daily stress were also found (Conway, Slavich, & Hammen, 2014, 2015).

The most studied mediator has been coping, In addition to coping, other mediators of the effects of daily stress have been studied, such as getting social support (Cichy, Stawski, & Almeida, 2014) and showing gratitude (Krejtz, Nezlek, Michnicka, Holas, & Rusanowska, 2016), leisure time (Qian, Yarnal, & Almeida, 2014) and perceived control (Diehl & Hay, 2010). Personality was considered a moderator and a mediator of coping with daily stress, with self-critical perfectionism moderating the relationship between daily stress and daily disclosure (Richardson & Rice, 2015).

In two articles, daily stress appeared to mediate the well-established relationship between two variables. Daily stress moderated the relationship between smoking and any negative effects (Aronson, Almeida, Stawski, Klein, & Kozlowski, 2008), and a reduced exposure to stressors partially explained the age-related reduction in negative effects (Charles et al., 2010)

Three studies addressed the stress generation mode (Hammen, 1991), whereby stress promotes depression and at the same time, individuals with antecedents of depressive feelings experience more episodes of stress. While there was evidence supporting that model also for daily stress (Cummings, Hayes, Laurenceau, & Cohen, 2010; Hankin, 2010), daily stress had an effect on daily activities distinct to major life events (Sahl, Cohen, & Dasch, 2009). Moreover, it is possible that the generation of daily stress displays a curvilinear relationship with adjustment, while with major events there is a positive and direct relationship.

Finally, in two studies daily stress was assessed but their aims were not that of daily stress itself but rather, their focus was on psychological processes triggered by daily stressors. Accordingly, a relationship was found between worry and somatic symptoms (Verkuil et al., 2012) , and the role of internalizing and externalizing spectra on personality traits in affective reactions was assessed (South & Miller, 2014).

Discussion

The first issue that stands out in this study is the enormous variety of methods employed when evaluating daily stress. We have not been able to find any pattern that relates stress assessment method, operational definition and research approach. The most frequent method was to make a record once a day for eight days, counting the number of stressors occurred, by means of a checklist. This choice can been explained by the need to achieve a balance between the quality and quantity of the data, and the burden on participants, since this method seems to reflect the minimal effort of the participants to obtain a useful database. Being the economy of effort an inexcusable point in the research, it cannot pass in front of the need to obtain the most relevant and real data depending on the objective of each study.

In this review it has been seen that recording about a week allows us to reach conclusions, however, there is no evidence about how long must be a recording period to be assumed as representative. It can be assumed that more than longer periods would be better to record more than one period of one week

Regarding asking for daily stress once a day, it must be recognized that it is a retrospective measure, even within the last 24 hours. Stressors should tend to be recorded when they happen, although could be more obstructive (Ram, Brinberg, Pincus, & Conroy, 2017). This conflict between immediacy and obstructionism should be solve by future research.

The use of checklist and number of events responds to a vision of stress focused on the stressors. It is also possible to identify stress by asking open questions and recording the intensity or their appraisal which is consistent with the perception of imbalance between demands and resources viewpoint on stress.

Therefore, it should be requested that the investigations justify all those choices about the methods of assessment both methodologically and theoretically.

It would be useful if future research would attempt to standardize the evaluation of the distinct components of daily stress, as well as the terminology used, to facilitate comparison between different studies, something that is currently virtually impossible due to the diversity of methods used.

The different ways to operationalize stress highlight the different implicit definitions of stress (Rodrigues et al., 2015). The number or intensity of stressful event refers to stress as an external factor, while negative feelings (or the lack of positive feelings) refer to the individual's responses, and reactivity or "pile-up" are related to the process by which stress develops over time. Such variation suggests that stress is not a precise concept that can be assessed by a single measure, since the description of the external events, the individual`s response and the interaction between both must all be considered. As has been repeatedly discussed, stress is rather a generic label for the complex process of adaptation to specific situations, yet to be studied scientifically. Thus, it must be specified in empirically verifiable terms which feature of stress is considered (Jones & Bright, 20011; Segerstrom & O'Connor, 2012). It should also not be forgotten that in order to achieve comprehensive assessment, the psychological measures of stress must be complemented with physiological measures (such as cortisol levels, heart rate, heart rate variability and blood pressure).

These measures are not measures of stress in themselves but rather, physiological indicators that are strongly associated with and influenced by stress (Kudielka et al., 2012; Rodrigues et al., 2015).

It was not possible to relate each approach to specific methods. But in analyzing the different approaches to research on daily stress, some point have emerged that deserve comment. The first one is that it can be concluded that stress is a process that explains the short and long term effects of exposure to stressors on health and wellbeing through a complex chain of mediators and moderators. The complexity of these relationships can be seen in different studies (Aronson et al., 2008; Charles et al., 2010) and indeed, exposure to some stressors can provoke negative emotions that are in turn stressors, generating a panorama of mutual interactions (Blanchard et al., 2008).

The second point is that although it is known that the changes produced in stressful situations are adaptive at first, studies of the negative side of stress prevail. The information regarding moderators and, especially that about mediators, allows criteria to be established to distinguish between the adaptive and maladaptive sides of stress. Even in clinical settings, it is relevant to highlight that stress is not only a negative response, because it was seen that a negative concept of stress interacted with stress interventions (Liu, Vickers, Reed, & Hadad, 2017).

And the third point is that the studies analyzed were not reduced to the analysis of the stress process or of any particular aspect of stress but rather, the evaluation of daily stress served to study other processes with marked social and affective components. For example, two studies treated daily stress as a moderator of other processes, while another two studies considered daily stress as an opportunity to study emotions in more detail.

However, this review has a limitation that cannot be overlooked, the information collected in these studies is based on self-reports and depends on the collaboration of the participants. Further, it cannot be assumed that the mere fact of taking measurements over time makes a method ecologically valid. Since all these techniques were first used, attention was drawn to the burden on the participant and the fact that these measures can be reactive (Affleck, Zautra, Tennen, & Armeli, 1999). Indeed, the need for non-

obstructive and more ecological measures has been recognized and this challenge will mark the progress of the ecological evaluation of daily stress (Ram et al., 2017).

In conclusion, daily stress is a process of adaptation that is activated by everyday events that beyond their importance or number are evaluated as overwhelming, however, it is not yet reached a point of having standardized methods to evaluate it in an ecological way. In the future it is needed to better standardize the methods used, bring them closer to daily experience and justify the choice of evaluation methods based on the research objectives to reach.

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Appendix 1: Summary of articles reviewed

Issue	Authors	The aim of the study	Sample	Days	Records per day	Stressor Description.	Operational definition of Stress
Effects of daily stress on wellbeing and health	Åkerstedt et al., 2014	To investigate the connection between daily stress and sleep impairment	33	42	Every three waking hours	Likert Scale	Feelings
	Charles et al., 2013	To identify long-term implications of affective responses to daily stressors	771	8	1	Checklist	Reactivity
	Collip et al., 2013	To study the relationship between daily stress and persistence of subclinical psychotic experiences	566	5	10	Likert scale	Reactivity
	Faulkner 2009	To investigate the relationship between daily stress and the recurrence of herpes simplex	20 patients and 18 matched controls	16	Weekly	Likert scale	Feelings
	Ivarsson et al., 2014	To assess the relationship between daily stress and injuries in athletes.	101	10	weekly	Checklist	Sum of intensities of hassles
	Kiang et al., 2014	To study same-day, lagged, and chronic associations of daily stress and emotional well-being	180	14	1	Checklist	Number of stressors
	Kotter-Grühn et al., 2015	To test whether daily stress influences subjective age	43	8	1	Checklist	Number of stressors
	Mroczek 2015	To use an index of daily stress to predict 10-year survival	181	8	1	Checklist	Reactivity

Effects of daily stress on wellbeing and health	**Neupert 2008**	To examine the relationship between daily stress and memory failures	333	8	1	Checklist	Number of stressors
	Piazza 2013	To examine whether to daily stress is associated with long-term risk of chronic physical health condition	435	8	1	Checklist	Reactivity
	Ryon 2014	To test whether daily stress influences locus of control	78 couples	21	1	Checklist	Number of stressors
	Stawski 2013	To study the association between daily stress and salivary cortisol	1,694	8	1	Checklist	Reactivity
	Volz 2014	To study individual differences in the relationship between daily stress and daily cigarette craving	56 smokers	14	1	Checklist	Reactivity
	Winzeler 2014	To study the relationship between daily stress and sleep efficiency	145	14	1	Checklist	Number of stressors
	Totenhagen 2011	To study how relational sacrifices and daily stress are associated with relationship satisfaction	17 couples	7	1	Checklist	Sum of intensities
	Buck et al., 2012	To study stress spillover in early marriage	171 couples	14	1	Checklist	Number of stressors
	Totenhagen, Butler, and Ridley, 2012	To study how relational sacrifices and daily stress are associated with relationship satisfaction	40 gay male couples and 55 lesbian couples	7	1	Checklist	Number of stressors

Effects of daily stress on wellbeing and health	**Totenhagen 2013**	To study how relational sacrifices and daily stress impact positive relationship quality constructs	164 couples	7	1	Checklist	Sum of intensities
	Totenhagen, Serido, Curran, and Butler, 2012	To study how both uplifts and hassles are associated with positive and negative relational quality	313 couples	14	1	Checklist	Sum of intensities of social and non-social hassles
Moderators of daily stress	**Conway et al., 2014**	To identify genetic moderators of affective response to daily stress	104	14	1	Checklist	Number of stressors
	Conway et al., 2015	To identify genetic moderators of affective response to daily stress	104	14	1	Checklist	Number of stressors
	Costanzo et al., 2012	To study daily stress in cancer survivors.	111 cancer survivors and 111	8	1	Checklist	Reactivity
	Dunkley 2014	To test longitudinal explanatory conceptualizations of daily stress and coping	223	14	1	Checklist	Reactivity
	Galla 2015	To study the association between individual differences in self-control and daily stress	129	14	1	Checklist	Number of stressors
	Gartland et al., 2014	To establish whether conscientiousness moderates daily stress	103	14	1	Open description	Feelings
	Grzywacz et al., 2008	To study the influence of educational level on daily stress	1031	8	1	Checklist	Pile-up

Moderators of daily stress	Hahn et al., 2014	To examine daily stress in widowed versus married older adults	442	8	1	Checklist	Reactivity
	Hanson et al., 2010	To explore whether childhood family environments moderated the daily stress	87	7	1	Checklist	Number of stressors
	Palder 2013	To test whether affect-amplifying individuals would be more reactive to daily stress	70	14	1	Checklist	Average intensity
	Quian 2014b Using	To assess gender difference in how daily stress severity and leisure time influence affective complexity	2022	8	1	Checklist	Number of stressors
	Robbinete 2013	To study neighbourhood cohesion and daily stress	2,022	8	1	Checklist	Reactivity
	Schilling 2014	To study age differences in the effects of stressor pile-up on negative and positive affect	289	30	1	Checklist	Pile-up
	Stawski 2008	To identify resilience and vulnerability factors associated with daily stress	67 younger and 116 older adults	14	1	Checklist	Reactivity
	Stawski 2010	To examine whether fluid cognitive ability predicts daily stress	1,202	8	1	Checklist	Reactivity
	Whitehead 2014	To investigate the impact of daily stress on depressive symptoms, focusing on whether this effect differs according by age	654	56	1	Checklist	Average intensity of hassles

Moderators of daily stress	**Wong & Shobo, 2016**	To analyse the influence of employment status on daily stress and cortisol levels and responsivity	182 workers and 253 retirees	8	1	**Checklist**	**Number of stressors**
	Yip 2008	To study ethnic differential reactivity to daily stressors	181	14	1	**Checklist**	**Reactivity**
Moderator: Personality and Mediators:	**Richardson 2015**	To test whether perfectionism moderates relationship between daily stress intensity and coping	396	7	1	**Open description**	**Intensity of stressor**
Mediators: Coping	**Ng 2013**	To study whether daily use of adaptive strategies would improve their effectiveness.	101	7	1	**Open description**	**Intensity of stressor**
	Aldridge-Gerry et al., 2011	To identify protective coping strategies and ethnic group variation	365	5	1	**Open description**	**Intensity of stressor**
	Aldrige & Roesch, 2008	To study coping with daily stress in Mexican American Adolescents	67	5	1	**Open description**	**Intensity of stressor**
	Bartley & Roesch, 2011	To analyse how specific coping strategies mediate the daily stress effects	366	5	1	**Open description**	**Intensity of stressor**
Mediators: Leisure time	**Quian 2014 a Does**	To test the applicability of moderation and mediation models to leisure time as a daily stress-coping resource	2022	8	1	**Checklist**	**Number of stressors**
Mediators: Perceived	**Diehl et al., 2010**	To analyse risk and resilience factors in coping with daily stress	239	30	1	**Checklist**	**Reactivity**

Mediators: Showing gratitude	Krejtz 2014	To test whether counting one's blessings can reduce the impact of daily stress	59	14	1	Checklist	Average intensity
Mediators: Social support	Cichy 2014	To study ethnic differences in the effects of family support on daily stress	1,931	8	1	Checklist	Reactivity
Stress generation model	Cummings 2010	To examine the associations between depression, interpersonal competence, and daily stress generation	310	7	1	Checklist	Number of stressors
	Hankin 2010	To examine stress generation model	217	35	1	Checklist	Number of stressors
	Sahl 2009	To evaluate the daily stress generation model and interpersonal competence as a moderator variable	127	7	1	Checklist	Number of stressors
Complex relationships between daily stress and health	Houle et al., 2012	To analyse the relationships between daily stress, sleep duration, and headache pain	33 chronic migraine and 22 chronic tension-type headache sufferers	28	1	Checklist	Average intensity
	Blanchard et al., 2008	To assess the role of daily stress in symptom exacerbation among Irritable Bowel Syndrome patients	200 patients and 66 controls	28	1	Checklist	Average Intensity
	O'Connor 2008	To study the daily hassles-eating behaviour relationship and its moderators	422	7	1	Open description	Number of stressors

Complex relationships between daily	O'Connor 2009	To study the daily hassles-eating behaviour relationship and the moderator role of conscientiousness	422	7	1	Open description	Number of stressors
Daily stress as mediator	Aronson et al., 2008	To assess the stress induction model of smoking	256	8	1	Checklist	Reactivity
	Charles et al., 2010	To examine age differences in daily stress	101	8	1	Checklist	Number of stressors
Daily stress as testing bench	South and Miller, 2014	To examine the ability of internal and external problems to predict affective responses	78	7	5	Likert scale	3 aggregated scales
	Verkuil 2012	To test the perseverative cognition hypothesis	72	6	5	Number of stressors since last prompt	Number of stressors