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Life events and participant engagement in pension plans

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CONTENTS

<i>Abstract</i>	4
<i>Samenvatting</i>	5
1. <i>Introduction</i>	6
2. <i>Life events and teachable moments</i>	10
3. <i>Insights from in-depth interviews</i>	13
4. <i>Survey results</i>	17
5. <i>Summary and outlook</i>	21
<i>References</i>	22
<i>Appendix: Overview of the Effects of Life Events</i>	25

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Abstract

We study the use of life events (e.g., getting married, starting a new job) for effective pension communication. Pension plan participants are often not open to pension communication, nor do they engage in pension planning. Overcoming this lack of engagement is important: participants should form realistic expectations about their retirement finances, discover pension gaps early enough to be able to take appropriate action, and experience less negative emotions and retirement anxiety in case of unwarranted pessimistic expectations. Sending pension-related information when important life events take place is often suggested to enhance the effectiveness of communication. Life events may represent teachable moments and thus lead to more openness to pension communication and planning. In this paper, we first review the literature on life events as teachable moments. Second, we provide an overview of life events that are especially suited to increase engagement. Third, we present empirical evidence on life events and participant engagement. Finally, we derive implications for theory as well as practice. Overall, we find that in theory life events appear to be good points to improve communications. The evidence from in-depth interviews with experts and pension plan participants, as well as survey data from participants, shows mixed results. It seems that several major challenges need to be addressed for successful use of life events.

Samenvatting

Wij onderzoeken het gebruik van life events (bijvoorbeeld trouwen, een nieuwe baan starten) voor het creëren van effectieve pensioencommunicatie. Pensioendeelnemers staan vaak niet open voor pensioencommunicatie en houden zich niet bezig met hun pensioenplanning. Het is belangrijk om dit gebrek aan betrokkenheid te overwinnen: deelnemers zouden realistische verwachtingen kunnen vormen over hun financiële gesteldheid tijdens hun pensioen, zouden vroeg genoeg gaten kunnen ontdekken in hun pensioen zodat ze de nodige maatregelen kunnen treffen en zouden negatieve emoties en bezorgdheid om hun pensioen door onterechte verwachtingen kunnen vermijden. Het toesturen van communicatie rondom belangrijke levensgebeurtenissen wordt vaak gezien als een manier om de effectiviteit van communicatie te verhogen. Belangrijke levensgebeurtenissen kunnen overeenkomen met leermomenten en dus ook met meer openheid voor pensioencommunicatie en planning. In dit onderzoek vatten we de bestaande literatuur over levensgebeurtenissen als leermomenten samen. Daarna geven we een overzicht van de levensgebeurtenissen die het meest geschikt zijn om betrokkenheid te verhogen. Vervolgens presenteren we empirisch bewijs voor de relatie tussen belangrijke levensgebeurtenissen en de betrokkenheid van deelnemers. We eindigen met de implicaties van het onderzoek in theorie en voor de praktijk.

1. Introduction

Pension funds and policymakers around the world struggle to increase the engagement of pension plan participants. Many participants do not seem open to pension communication and do not open letters, read email newsletters, or log in on their personal accounts (Gustman and Steinmeier, 2004; Chan and Stevens, 2008; Visser, Oosterveld, and Kloosterboer, 2012; Barrett, Mosca, and Whelan, 2013; EIOPA, 2013; HSBC, 2015). This situation becomes more pronounced when automatic enrollment is used as the method to include new participants. This increasingly popular behavioral technique is a highly effective way to increase participation, but it tends to induce participants having lower levels of awareness and engagement compared to voluntary enrollees (Madrian and Shea, 2001).

Low engagement creates two serious potential challenges. On the one hand, participants may face a pension gap, meaning that they are projected to receive less pension and other retirement income than needed. Lack of awareness of a pension gap prevents participants from taking corrective action, for example by building up additional savings. On the other hand, for many participants the pension news may actually be positive; for example, two third of Dutch pension plan participants save enough (Knoef et al., 2016). Thus, many participants may be worried about their financial future (see, e.g., Eberhardt et al., 2016) even though there is no objective reason for concern. Being engaged could relieve such concern.

In recent years, substantial progress in ideas and interventions that aim at increasing participant engagement has been made. These ideas and interventions include, for example, making participants more future-oriented (Hershfield et al., 2011, Brüggem, Rohde, and Van den Broeke, 2013), improving information and choice architecture (Nell, Lentz, and Pander Maat, 2016; Brüggem, Post, and Van der Heijden, 2017), using peer information and social norms (Beshears et al., 2015), segmenting plan participants along beliefs and preferences and customization of communication (Eberhardt et al., 2016), and nudging and framing of communication (Eberhardt et al., 2017).

A different avenue discussed and used, especially in pension practice, is to adapt communication such as to reach participants at moments when they are expected to be more open to pension communication, in other words: to take life events into account. Communication can be adapted in terms of both timing and content (BMC, 2014). Life events may include, for example, getting married, becoming a parent, starting a new job, or experiencing the death of a spouse. Another example is sending pension communication at round-number birthdays as shown in Figure 1:

Figure 1. Example of life event–specific communication material



spf
Stichting Pensioenfonds SABIC

Congratulations!

You've turned 40 – time to start thinking about your pension!

OK, so you're still far from retirement. But experience has taught us that it's not a bad idea to take stock of your pension options when you turn 40. After all, you are now at the point where you have a reasonably clear picture of the final stretch of your career path. And as a 40-year-old, you still have enough time to take action if you feel that your pension will be inadequate for whatever reason.

So, may we invite you?

We would like to invite you for a personal consultation about your pension with one of our advisors from the SPF Pension Desk. An informal and no-obligation opportunity to:

- Discuss your pension situation
- Answer any questions you may have about your pension
- Evaluate your pension choices

Make an appointment now!

[Yes, I would like to schedule a pension consultation](#)

The session is offered to you purely as part of SABIC's services. Rest assured: there are no costs involved and SABIC has no commercial interest whatsoever in this consultation.

This figure shows life–event–adapted communication material from the pension fund for the Dutch branch of SABIC, provided to us from its pension administrator, DSM Pension Services.

A typical narrative that motivates the use of life events for effective pension communication is presented in the following:

Imagine Alice and Peter, a young hard–working couple with double income and no kids yet. They are both involved in many exciting activities, they have friends, enjoy sailing and regularly go on vacation. The subject of pensions is hardly on

their minds. Why bother looking into that boring topic when enough money hits their bank account each month? But suddenly they discover that a baby is on its way. Overwhelmed by many new emotions and concerns, their view on the future changes. They now feel the responsibility for a soon-to-be-born child. With a new family member around, they'd better make sure things are properly arranged. Numerous thoughts float around. Having a child is great, they are happy, but worries pop up too. Is the house large enough? If not, can they afford a bigger one? Should they (or will they need to) work part-time? Should they put money aside for the child's education? Where will they buy a stroller and other necessities? Should they do a health checkup (after all, for the next 18 years or more, somebody will be around that needs them)? Is this life event a moment when Alice and Peter will be more open to read information that their pension fund sends them?

Life events, such as the birth of a baby, may trigger numerous economic reasons to take a closer look at future finances (including pensions), as well as non-economic reasons, for example becoming more future-oriented. Life events seem to create teachable moments. Yet the case for communicating around life events is not clear-cut. While a life event may lead to more future orientation and thus more engagement in long-term financial planning (as in the example), the opposite may also occur. A life event disrupts daily routines, may cause stress (positive as well as negative), and the many new duties and things to take care of may result in less time for financial planning. This means that precise timing of communications may be an important issue for a pension fund to consider – how wide is the “window of opportunity?” And will participants appreciate communications targeted to life events, given their privacy concerns? Or will this encourage the perception that the fund is surveilling them, in Big Brother fashion? Can pension funds pinpoint life events with sufficient precision to use them for communication purposes? Are pension funds allowed to retrieve and use information on life events for communication purposes? This paper contributes to the discussion about the use of life events as moments where communication by a pension fund can be more effective, as follows.

First, we review the literature on life events as teachable moments. Although rather new in the pension domain, life events have been used for interventions elsewhere, for example in promoting a healthy lifestyle. Based on this literature, we show and discuss why a life event may be suitable for effective communication in that it creates a teachable moment. We also discuss the channels through which life events create teachable moments. For example, when a life event induces more

future orientation, not only the timing of communications but also their content and framing need to be adapted accordingly.

Second, we provide an overview and discussion of which life events are particularly suited to increasing engagement in the pension domain. We base this overview and discussion on a synthesis of the literature and qualitative interviews with pension experts and participants that was conducted in the Netherlands and the UK in 2016.

Third, we present empirical evidence. Based on a survey among participants of a large British pension fund, we provide largescale correlational evidence on the role of life events in the engagement level of participants.

Overall, our study shows that life events potentially play a strong role in improving pension communication and participant engagement. We identify several challenges for using life events for effective communication. For example, as a critical and not yet sufficiently solved challenge for using life events, we identify a timing issue. To be effectively used, life events need to be detected at or very close to the event, and communication needs to be sent right away. Other challenges include gaining a profound understanding of what each particular life event does with a participant in terms of economic and non-economic impact, as well as not only timing the communication but also adapting its content.

The remainder of this paper is structured as follows. In Section 2 we review the literature on teachable moments related to life events. In Section 3, we enrich that literature with the results from our interviews with pension experts and participants. In Section 4 we present the empirical evidence. Finally, in Section 5 we discuss the implications for actual practice and future research.

2. Life events and teachable moments

Many things can happen in a person's life, but what specifically constitutes a life event? Life events are analyzed in various academic disciplines and contexts, including psychology, economics, health promotion, and sociology. Not surprisingly, various definitions have been developed in the literature. In our paper, we follow the definition that was coined by Luhmann et al. in 2012, which integrates views and research on life events from 188 scientific publications. According to these authors,

"Life events are time-discrete transitions that mark the beginning or the end of a specific status."

This definition excludes events that have only minor impact, like daily hassles, as well as slow transitions in life, like puberty (Luhmann et al., 2012). Still, the definition does include a broad range of events, for example changes in marital status (marriage, divorce, death of a spouse), changes in employment status (first job, change of employer, becoming unemployed), childbirth, purchase of a new home, and disablement. Interestingly, it can be debated whether round-number birthdays (see Figure 1), often included under life events in pension practice, would fall under that definition.

Experiencing a life event can have a substantial impact on a person, along multiple dimensions. We divide the major dimensions along which a life event can impact a person into two main categories: economic and non-economic.

Economic impacts include changes in the amount of personal finances (e.g., change in income, pensions, assets including human capital, expenses and financial liabilities) as well as the risk level of finances (e.g., variance of the income stream). The economic impacts may occur objectively, but they may also manifest themselves as changes in subjective expectations (e.g., a change in the perceived likelihood or impact of a future outcome, without a change in objective measures).

Non-economic impacts include changes in subjective well-being and life satisfaction, stress and health, as well as in emotions, moods, and mental conditions (e.g. depression). Life events for which these non-economic impacts have been studied in the literature include marriage, divorce, childbirth, loss of a spouse, unemployment, and disablement. The literature is not always conclusive in its findings, especially (as to non-economic impacts) because the timing of measurements is crucial. For example, a significant reduction in subjective well-being may be induced by a life event, while over time subjective well-being may recover to its former level. The following

Table 1. Non-economic impact of life events

Life event	Subjective Well-being (SWB) and Life Satisfaction	Stress	Emotions, Mood, and Mental Conditions and other Effects
Marriage	Positive boost of subjective well-being and job satisfaction after the event. Adjustment back to original satisfaction levels after 3 years.	Marriage has a score of 50 (out of 100) on the stress scale. It is the seventh most impactful event on the list.	Family, home comfort, and happiness factors become more important to one's perception of quality of life
Divorce	Decrease in SWB after the event. Due to anticipation of the event, the initial effect is small. Only partial return of satisfaction levels after the divorce. Those enduring a bad marriage may actually benefit from a divorce in terms of SWB.	Stress provoked by a divorce does not lead directly to distress, but it creates several minor stressors which result in distress. Stress scale: 73 (second highest)	Individuals report feeling stressed and depressed
Childbirth	Initially increases SWB, followed by a decrease in the long term. This loss is partially compensated by daily affection gained from the child. Job satisfaction decreases in the long run, without any adjustment.	Raising the child after the event probably induces stress. This is possibly reflected in the decline in subjective well-being in the long run.	Those who had a child in the last five years view family as more important, and financial, employment, and friend aspects as less relevant.
Loss of a spouse	Severe and long-lasting decline in SWB. It takes widows very long to adapt to the event.	Bereavement causes distress, which is amplified by minor stressors that are consequences of the main event. Stress Scale: 100 (highest score). Widows also have an increased chance of dying prematurely.	Grief and sadness
Unemployment	Decline in SWB due to various stressors such as financial stress and loss of self-esteem. The adjustment period is long.	Probability of dying in the next 5 years is increased by 34%. This increase is caused by stress-induced diseases. Stress scale: 47	Individuals report feeling stressed and depressed
Disability	Severe decline in SWB. Individuals do not adapt. SWB remains below original levels.	Causes distress, but individuals partly adapt. Stress scale: 53	Depression and stress are the most reported emotional responses

Table 1 is based on a summary of findings from several scientific contributions. Details and references are given in the Appendix.

table summarizes the non-economic impacts of life events that have been covered by the academic literature.

To use life events as moments for pension communications, an understanding of economic and non-economic impacts is a necessary although not sufficient condition. Experiencing those impacts may not necessarily make an individual more open to communication and behavioral change. To analyze this question, especially the literature in psychology and health promotion has developed the concept of a "teachable moment."

Teachable moments are supposed to make an individual more open to cues to action (e.g., communication) and behavioral change. A typical example of a teachable moment in the literature is that, right at the moment of diagnosis of cancer, interventions for stopping smoking can be more successful (e.g., Gritz, 1991). McBride, Emmons, and Lipkus (2003) provide the following definition of a teachable moment:

A teachable moment is an event that "(1) increases perceptions of personal risk and outcome expectancies, (2) prompts strong affective or emotional responses, and (3) redefines self-concept or social role."

A teachable moment may be very short-lived: after an event has occurred, the time period in which an intervention is effective may only be a few days (see, e.g., Williams et al., 2005).

To summarize this section, to use life events for improving the effectiveness of pension communication it is important to assess:

- whether a life event creates a teachable moment in the first place,
- which economic and non-economic impacts are triggered by the life event (in order to adapt the content, style, and framing of communication appropriately),
- how long the life event will create a teachable moment (in order to time communication appropriately).

3. Insights from in-depth interviews

In Section 2 we identified a broader set of life events that are likely to coincide with a teachable moment. In this section, we report insights from in-depth interviews with pension experts and pension plan participants. From these interviews we derive further dimensions that are relevant in pension practice for the selection of life events that can be used for communication.

We conducted a series of semi-structured interviews with pension experts and plan participants. Interviews took place in 2016 by telephone or in person, lasting between 25 and 60 minutes. We developed an interview guide that provided structure, while questions were mostly open-ended. In total we interviewed six pension industry experts and ten pension plan participants. In order to gain a broad set of insights, the interviewees selected were as diverse as possible. With respect to the industry experts, interviewees were from the Netherlands and the UK, with functions within occupational pension funds, insurers that provide pension products, and consultancy firms. Interviewees worked in various departments including marketing, communications, and research. Pension plan participants interviewed were from the Netherlands and varied significantly in age (25 to 61 years). They include both men and women, some had children while others did not, and they varied in both marital and employment status. Note that, as is usually the case with qualitative interviews, the small sample size did not allow the results to be interpreted as representative findings. Instead, they served as inspiration for further quantitative research (see Section 4).

Experts mentioned the following life events that they view as relevant for effective pension communication in that participants may be more open to communication and/or behavioral change: approaching retirement (i.e., the moment just before retirement), death of a spouse, marriage, divorce, getting children, change of job, start of working life, buying a house, and round-number birthdays.

In terms of the channels and reasons through which life events may make participants more open to communication and behavioral change, the interviews extend the set of potential economic and non-economic reasons included in the literature analysis in Section 2. The following additional reasons were mentioned:

- Change of job: the benefit package is on the table and pension is part of it (economic).
- Buying a house: participants (as well as their bank) need to determine whether they will be able to afford the house over the next 30 years; this induces a moment of long-term planning (economic).

- Divorce: pensions are an aspect of the finances that need to be disentangled between partners and as such they become highly relevant. In addition, pension amounts usually change because of transfers between partners (economic).
- Marriage, having children: these events trigger feelings of long-term responsibility for the partner or children and can raise interest in survivor benefits and pensions (economic and non-economic).
- Round-number birthdays: may make participants more aware of their mortality and induce long-term planning (economic).

However, contrasting with statements that speak in favor of using life events for pension communication, some experts also stated:

- Divorce, getting children: such events increase the cognitive and emotional load, many decisions must be made within a short period of time, attention must be prioritized and may be shifted (or biased) towards more short-term urgent needs, as opposed to pensions (economic and non-economic).

Two further important issues emerged during the interviews. The first issue concerns practicalities, that is, no matter how suited a life event may be for pension communication, the event needs to be reliably detected by the pension fund in a timely way. The second issue relates to privacy concerns – that is, would participants appreciate receiving communication around life events, implying that the pension fund knows much about their supposedly private matters?

Compared to the UK, Dutch pension funds operate in a regulatory environment that by default gives them slightly better direct access to life event information. British funds usually have information on the date of birth, address, and income of the participant. In addition, Dutch funds have reliable information about marriage (including registered partnerships), divorce, and childbirth. This information, however, is usually not available right away when the life event occurs but arrives on a delayed basis. To a lesser extent a Dutch fund can identify job changes. The event of buying a house cannot reliably be detected in either country, as an address change (which is generally known to the fund) may or may not coincide with the purchase of a home. Most experts raise the concern that some events are detected too late to use them effectively for communication. For example, some experts argued that childbirth may be a valuable life event for communication. But they stated that, when they are informed about it (i.e., after the birth), it may be too late as parents are then too occupied with other matters. Ideally, communication should be delivered during pregnancy, but at that point the funds are not yet aware of the situation.

As an alternative method of gathering and predicting data, pension experts also mentioned the use of big data. Although not yet used by the funds included in the expert sample, big data was seen as a potential opportunity. For example, sudden activity patterns in the usage of a personal account may indicate that information needed for a mortgage application is being requested. However, the discussion on using big data also resulted in identifying a threat in terms of privacy concerns. According to some experts, using life events for communication will be only accepted by participants and positively received if, from the participant's perspective, it is obvious that the fund should know about the event (e.g., marriage in the Netherlands). If, however, the fund uses big data and predictive modeling, participants may view communication as a breach of their privacy and respond negatively.

The interviews with pension plan participants in general confirmed results from the expert interviews: all of the experts' issues were mentioned in at least one interview as well. There is, however, greater variation between participants than between experts, both in terms of the mention of issues at all (within a single interview), judging the importance of specific events, and potential channels for events having an impact, as well using events for pension communication.

A new job was mentioned for multiple reasons to make a participant more open to communication, including awareness of pension benefits as part of the labor contract, being triggered to engage in long-term financial planning, taking action (save more), and transfer of pension benefits between funds. Buying a house was mentioned as the major event that triggers thinking about future finances. All of the eight interviewees who once bought a house commented similarly. All of the five interviewees who experienced the birth of a child agreed that this was a major life event. Most of them mention that a feeling of responsibility was triggered, which for some led to more future orientation. In fact, one participant started to build up additional retirement savings. However, interviewees also frequently stated that after childbirth they were overwhelmed by the many new day-to-day duties and routines, and eventually their focus shifted to dealing with present issues rather than long-term financial planning and pensions. Cohabitation and marriage were mentioned only by a few participants as events that made them more future-oriented (imagining a future life together), and none linked that event to thinking about future finances. Contrary to the opinions expressed by the experts, none of the participants attached great importance to round-number birthdays in terms of becoming more future-oriented and more openness to pension communication.

When asked whether pension funds should use life events for communication, the participants revealed mixed feelings. On the one hand, all interviewees would

appreciate more personalized communication, adapted to their individual situation. They stated that they would value communication that would help them to either answer pressing new questions around life events or to get alerted about the substantial impact of certain events on future finances. Almost no disagreement existed as to whether a fund may use, for communication purposes, administrative data that are known to be available because of regulatory or legal requirements. With respect to using big data and predictive modelling, participants showed extremely opposite reactions, ranging from enthusiasm and disinterest (everybody knows everything anyway) to complete opposition.

Overall, the interviews with pension plan experts and participants thus confirmed the results from the literature. In addition, two life events – changing (or starting a new) job and buying a house – were mentioned. While the experts were generally optimistic about the importance of life events and their use for pension communication, participant responses revealed more mixed opinions. In addition, the ability of a pension provider to identify life events in time (and target communications accordingly) was mentioned as a major challenge.

4. Survey results

To gain better insight into the empirical relevance of the experience of life events and into the level of openness to pension communication and behavioral change, we analyzed data from a survey among participants in the British pension scheme NEST. The British government created NEST in 2008 as part of its workplace pension reform program. Under this reform program, all British employers are required to offer a workplace pension plan, automatically enroll all eligible workers, and make an employer contribution. Workers have the right to opt out once enrolled, but due to the effects of status quo bias, few workers do so. NEST has a statutory duty to offer a low-cost defined contribution pension plan to the workers of any employer who wishes to use it to fulfil the new requirements. As a result, NEST is growing rapidly. As of July 2017, five million people were enrolled into NEST by 405,000 employers. Given this rapid growth of both employer and employee volumes, combined with the automatic nature of enrolment, plus the fact that the statutory minimum contributions of participants will continue to rise automatically until 2019¹, NEST has not yet identified the engagement of its participants as a priority. Over the coming years, however, as members' savings grow, this strategic focus is likely to shift. As part of its efforts to better understand the drivers of engagement, NEST therefore developed this survey to gain more insight into participants' current levels of engagement, their perceptions, and their motivations for becoming active.

The survey elicited a broad range of items, including participants' attitudes toward finance, pension planning, NEST, and their motivations for becoming active (i.e., registering online, increasing contribution rates, or switching investment funds), as well as some information on the occurrence of life events and their potential relation to becoming active. Although the latter information cannot be as effective as an event study carried out at the time when these life events occur, we use these results for our analyses in this paper.

The survey was conducted by means of an online questionnaire in 2016. Responses were received from 2,155 participants in the scheme about their pension engagement. Engagement in that sense is behavior (registering on the NEST website, increase of contributions to the DC scheme beyond the default rate) as well as respondents' attitude towards their pension. Pension Attitude measures whether respondents are engaged, in that they report knowing where to find their pension information, how much they saved, how much the savings will be at retirement, and how much they

1 The Pensions Regulator (2017). Detailed guide for employers no. 4 – Pension schemes.

themselves and their employer contribute. Being registered on the NEST website is an engagement measure, as registration only takes place if a participant actively chooses to. Only by registering is a participant able to see the amount saved so far, and to make further choices like increasing contributions or changing the asset allocation. The survey was not distributed randomly; instead, several participant groups were oversampled. In particular, the survey oversampled participant groups that are more engaged, such in order to learn more about the motivations of individuals belonging to those rather small groups. As engagement is generally low, the sample related to those groups would otherwise have been too small to be able to perform meaningful statistical analyses. For example, while registered participants constituted 12% of the total NEST population, the sample contained 77% of registered participants. Likewise, while the share of participants in the total population that raised their contributions was less than 1%, the sample contained 41% of such participants. The average age of respondents in the sample was 43 years, and 48% of respondents were female. Respondents needed 21 minutes on average to fill in the survey.

The survey contained three items related to life events, on which we base our analyses. First, participants were asked to indicate whether they experienced certain life events in the last three years (yes or no). The question was a closed-form item that listed eleven life events. Participants could indicate multiple events or choose a "none of the above" option. Second, a question listing the same life events asked participants whether the life event triggered them to think more about pensions at that point in time (yes or no).² Third, a similar question was asked with respect to participants being triggered to increase their contributions.³ Table 2 contains summary statistics on those survey items, for different subsamples of respondents.

Many of the survey respondents experienced life events. A large majority of respondents, namely 75%, experienced at least one life event in the prior three years (column 1). The three most prevalent life events (see column 1) are starting a new job (49%), death of a family member or close friend (22%), and loss of a job (13%). These statistics do not account for the oversampling of the engaged groups, but the respective numbers within each group are close to the overall sample average.

2 The precise wording was: "Please think again about the first time you logged into your online NEST account. Which of the following events, if any, might have prompted you into thinking more about your finances and your NEST pension?"

3 The precise wording was: "Please think again about the first time you made additional direct contributions to your NEST pension. Which of the following events, if any, were occurring in your life at the time and might have prompted you into thinking more about your finances and therefore contributing more to your NEST pension?"

Table 2. Life events and engagement of pension plan participants

Sample Type and Characteristics		Full	Registered		Non-registered	Registered + increased contributions		Registered + default contributions
Life Event Measure		LE experienced	LE experienced	LE prompted to think about pensions at registration	LE experienced	LE experienced	LE prompted to think about pensions and contribute more	LE experienced
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	mean	42,7		43,9	38,8		45,3	42,3
Male	%	52,1		51,8	53,1		48,9	55,0
Pension Attitude	mean	67,4		72,5	50,5		74,1	70,7
Observations	N	2.155		1.654	501		885	769
You/your partner have given birth to a son/daughter	%	5,6	5,0	1,8	7,4	4,5	2,2	5,6
You've got married	%	7,5	8,0	2,2	5,8	6,9	1,5	9,4
A member of the family / close friend has died	%	22,1	22,0	3,7	22,4	22,4	3,3	21,6
One or more of your children have left home	%	7,1	7,4	1,3	6,2	7,8	1,8	7,0
You/your partner have become pregnant – child not yet born	%	1,9	1,8	0,3	2,2	1,7	0,4	1,8
You have bought a new home	%	12,0	12,3	2,6	11,0	12,5	3,6	12,1
You have started a new job	%	49,2	47,4	24,7	55,3	46,6	23,1	48,4
You have left your parent's home	%	7,9	6,7	1,8	11,8	6,1	0,9	7,4
You have been made redundant / lost your job	%	13,4	13,4	4,7	13,4	12,2	5,0	14,7
You've got divorced	%	2,7	2,6	1,0	3,0	2,6	0,7	2,6
You had a serious illness and/or spent some time in hospital	%	7,1	6,9	1,6	7,6	6,8	1,3	7,0
None of the above	%	25,0	25,6	n/a	22,8	26,7	n/a	24,4

Table 2 gives descriptive statistics for different sample types. Age is the age of respondent in 2016. Pension Attitude measures whether respondents are engaged, in the sense that they know where to find their pension information, how much they have saved, how much the savings will be at retirement, how much they and their employer contribute. It is a composite measure consisting of nine items, with each item asking about agreement to a statement on a 10-point Likert scale; the final measure is scaled to range between 0 and 100. The Life Event Measure percentages reflect the self-reported incidence of life events over the past three years (LE experienced) or whether the life event triggered a certain behavior (LE prompted to think about pensions at registration; LE prompted to think about pensions and contribute more). Relative frequencies in Table 2 (e.g., share of registered vs. non-registered participants) are not representative of the NEST population. Registered participants as well as participants who increased their contributions have been oversampled.

In line with the evidence from the literature and interviews, respondents claimed that life events impacted on them in that the events led them to think about pensions at the time they registered with NEST or to increase their contributions (columns

3 and 6). Most prominently, the life event “starting a new job” was indicated by almost one fourth of respondents that performed the respective behavior (registering or changing contributions). Compared to the incidence of that life event in the past three years, for roughly half of respondents the life event (given its occurrence) seemed to have triggered some behavior (compare columns 2 and 3, and 5 and 6). For the other life events the respective share of respondents who reported an impact of the life event was lower (compare columns 2 and 3, and 5 and 6).

The evidence from self-reporting seems to indicate that life events indeed triggered more engagement with pensions. However, a comparison of the incidence of life events between groups that performed a certain behavior with those who stayed passive is not as conclusive. Life events occurred in the passive groups at similar or sometimes even higher frequencies (compare columns 2 and 4, and 5 and 7). As the groups that were compared differ by age and gender (see Table 2), it might be that the impact of life events depends on those respondent characteristics. For example, respondents belonging to the passive groups (columns 4 and 7) were on average younger. Younger respondents may have less time (even given a life event) to think about pensions and perform certain behaviors. Logit regressions of the performance of a certain behavior on life event occurrence (any life event, or a particular one) that control for age and gender do, however, yield no significant coefficients for the dummy variables for the occurrence of life events (results not reported here). The engagement measure Pension Attitude differed between the active and passive groups in that the active groups scored higher. However, when we compare the average of the engagement measure Pension Attitude within each group for respondents that experienced a life event versus respondents who did not, then we find no significant differences. That is, the difference in Pension Attitude across groups does not seem to be driven by the occurrence of a life event.

Based on the data obtained, we can only speculate about the reason for the difference in what respondents report on the importance of life events and their behavioral impact. Potentially, respondents rationalize ex post the decisions they made when seeing the survey item on life events. Alternatively, the data may not be precise enough to capture effects. As Section 2 shows, the duration of the teachable moment that a life event can create may be very short-lived. As the survey questions covered three full years, the data may be too noisy to see effects (e.g. multiple life events may have occurred, with opposing impacts on behavior). Moreover, as indicated above, NEST does not currently adapt its communications to life events. So even though life events may have created teachable moments in the absence of a communication trigger, their impact on behavior may have been small.

5. Summary and outlook

In this paper we looked into the question of using life events to making pension communications more effective. Life events can create teachable moments and therefore make pension plan participants more open to behavioral change. While life events in theory appear to be good points to improve communications, evidence from in-depth interviews with experts and pension plan participants, as well as survey data from participants, showed mixed results. It seems that several major challenges need to be addressed for successful use of life events.

First, the teachable moments created by life events are not long-lived. Thus, it is crucial for a pension provider to have the ability to identify events at or very close to their occurrence and send out communications right away. In addition, there may be legal, privacy, and ethical hurdles that prevent or limit a pension fund in using the complete information on life events available.

Second, based on survey results from the UK, it seems that life events of themselves are not a strong enough trigger to behavioral change. Without additional communications around the life event, no major effects can be expected. However, as survey respondents claimed that life events are in fact important, we think it is worthwhile to conduct more research on their impact, especially in connection with adapted and timed communication.

Third, life events create a variety of responses (e.g., emotions, stress) that may have opposite impact on the openness to communications. In addition, heterogeneity exists not only between life events with respect to their responses, but also within a particular event. For example, the move to a new home may have been triggered by various more or less pleasant reasons.

Overall, we see a well-developed body of literature outside the pension domain, especially with respect to the impact of life events on subjective well-being, stress, health, and life satisfaction. Within the pension domain and financial decision-making, however, the empirical evidence to date is limited. More research, especially event studies are needed for the next step in the successful use of life events for pension communication. In other words, before initiating and sending life-event-related communications, more research is needed that considers precisely at the moment when a specific life event occurs: what economic and non-economic consequences and impacts are triggered by the event, and how do these relate to pension and long-term planning behavior?

References

- Adams, G. A. & Rau, B. L. (2011). Putting off tomorrow to do what you want today: Planning for retirement. *American Psychologist*, 66(3), 180–192.
- Anusic, I., Yap, S. C. Y. & Lucas, R. E. (2014). Testing set–point theory in a Swiss national sample: reaction and adaptation to major life events. *Social Indicator Research*, 119(3), 1265–1288.
- Barrett, A., Mosca, I. & Whelan, B. J. (2013). (Lack of) Pension Knowledge, IZA Discussion Paper, No. 7596.
- Beshears, J., Choi, J. J., Laibson, D., Madrian, B. C. & Milkman, K. L. (2015). The effect of providing peer information on retirement savings decisions. *The Journal of Finance*, 70(3), 1161–1201.
- Bloemen, H., Hochguertel, S. & Zweerink, J. (2015). Job loss, firm–level heterogeneity and mortality evidence from administrative data. *Netspar Discussion Paper No. 11/2015*.
- BMC (2014). Life–events leidend bij pensioencommunicatie [Life events lead pension communication]. Retrieved June 8, 2017, <http://www.bmcpensioen.nl/nieuws/life-events-leidend-bij-pensioencommunicatie/>
- Brüggen, E., Post, T. & Van der Heijden, K. (2017). Creating Good Choice Environments: Insights from research and industry practice. *Netspar Design Papers* (forthcoming), Tilburg.
- Brüggen, E., Rohde, I. & Van den Broeke, M. (2013). Different people, different choices. The influence of visual stimuli in communication on pension choice. *Netspar Design Papers* (15), Tilburg.
- Buccil, A. & Zarri, L. (2015). The shadow of the past: Financial risk taking and negative life events. *Journal of Economic Psychology*, 48, 1–16.
- Chan, S. & Stevens, A. H. (2008). What you don't know can't help you: Pension knowledge and retirement decision–making. *The Review of Economics and Statistics*, 90(2), 253–266.
- Damman, M., Henkens, K. & Kalmijn, M. (2015). Women's retirement intentions and behavior: The role of childbearing and marital histories. *European Journal of Population*, 31(4), 339–363.
- Eberhardt, W., Brüggen, E., Post, T. & Hoet, C. (2016). Segmentation of pension plan participants. Identifying dimensions of heterogeneity. *Netspar Design Paper*, 47, Tilburg.
- Eberhardt, W., Brüggen, E., Post, T. & Hoet, C. (2017). Activating pension plan participants: investment and assurance frames. *Netspar Design Paper*, 72, Tilburg.
- EIOPA (2013). Good practices on information provision for DC schemes: Enabling occupational DC scheme members to plan for retirement. EIOPA–BoS–13/010, January 24, 2013.
- Faravelli, C., Catena, M., Scarpato, A. & Ricca, V. (2007). Epidemiology of life events: Life events and psychiatric disorders in the sexto fiorentino study. *Psychother Psychosom*, 76(6), 361–368.
- Georgellis, Y., Lange, T. & Tabvuma, V. (2012). The impact of life events on job satisfaction. *Journal of Vocational Behavior*, 80(2), 464–473.
- Gritz, E. R. (1991). Smoking and smoking cessation in cancer patients. *British Journal of Addiction*, 86, 549–554.
- Gustman, A. L. & Steinmeier, T. L. (2004). What people don't know about their pensions and social security, in: *Private Pensions and Public Policies*, W. G. Gale, J. B. Shoven, and M. J. Warshawsky (Eds.), Brookings Institute, Washington D.C.
- Hershfield, H.E., Goldstein, D.G., Sharpe, W.F., Fox, J., Yeykelis, L., Carstensen, L.L. & Bailenson, J.N. (2011). Increasing Saving Behavior Through Age–Progressed Renderings of the Future Self. *Journal of Marketing Research*, 48, 23–37.
- Ho, M. Y., Cheung, F. M. & Cheung, S. F. (2008). Personality and life events as predictors of adolescents' life satisfaction: Do life events mediate the link between personality and life satisfaction? *Social Indicators Research*, 89(3), 457–471.

- Holmes, T. H. & Rahe, R. H. (1967). Social readjustment rating scale. *Journal of Psychosomatic Research*, 11(2), 213–218.
- HSBC (2015). The Future of Retirement. A Balancing Act. Published by HSBC Holdings plc., London.
- Kelly, S. J., Percival, R., Schofield, D. J., Shrestha, R. N., Callander, E. J. & Passey, M. E. (2012). The impact of illness on retirement finances. *Economic Record*, 88(283), 576–584.
- Knoef, M., Been, J., Alessie, R., Caminada, K., Goudswaard, K. & Kalwij, A. (2016). Measuring retirement savings adequacy: developing a multi-pillar approach in the Netherlands. *Journal of Pension Economics and Finance*, 15(01), 55–89.
- Knoll, M. A. Z., Tamborini, C. R. & Whitman, K. (2012). I do ... want to save: Marriage and retirement savings in young households. *Journal of Marriage and Family*, 74(1), 86–100.
- Lantz, P. M., House, J. S., Mero, R. P. & Williams, D. R. (2005). Stress, life events, and socioeconomic disparities in health: Results from the Americans' changing lives study. *Journal of Health and Social Behavior*, 46(3), 274–288. Retrieved from <http://www.jstor.org/stable/4147672>.
- Lucas, R. E. (2005). Time does not heal all wounds: A longitudinal study of reaction and adaptation to divorce. *Psychological Science*, 16(12), 945–950. Retrieved from <http://pss.sagepub.com/content/16/12/945.abstract>.
- Lucas, R. E. (2007a). Adaptation and the set-point model of subjective well-being: Does happiness change after major life events? *Current Directions in Psychological Science*, 16(2), 75–79.
- Lucas, R. E. (2007b). Long-term disability is associated with lasting changes in subjective well-being: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology*, 92(4), 717–730.
- Lucas, R. E., Clark, A. E., Georgellis, Y. & Diener, E. (2003). Re-examining adaptation and the set-point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), 527–539.
- Luhmann, M. & Eid, M. (2009). Does it really feel the same? Changes in life satisfaction following repeated life events. *Journal of Personality and Social Psychology*, 97(2), 363–381.
- Luhmann, M., Hofmann, W., Eid, M. & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A Meta-Analysis. *Journal of Personality and Social Psychology*, 102(3), 592–615.
- Madrian, B. C. & Shea, D. F. (2001). The power of suggestion: inertia in 401(k) participation and savings behavior. *Quarterly Journal of Economics*, 116, 1149–1225.
- Martikainen, P. & Valkonen, T. (1996). Mortality after the death of a spouse: Rates and causes of death in a large Finnish cohort. *American Journal of Public Health*, 86(1), 1087–1093.
- McBride, C. M., Emmons, K. M. & Lipkus, I. M. (2003). Understanding the potential of teachable moments: the case of smoking cessation. *Health Education Research*, 18(2), 156–170.
- Nell, L., Lentz, L. & Pander Maat, H. (2016). Effecten van gelaagdheid in pensioendocumenten: een gebruikersstudie [Effects of layering in pension documents: a user study]. Netspar Design Paper, 53, Tilburg.
- Parker, G., Paterson, A. & Hadzi-Pavlovic, D. (2015). Emotional response patterns of depression, grief, sadness and stress to differing life events: A quantitative analysis. *Journal of Affective Disorders*, 175, 229–232.
- Pillow, D. R., Zautra, A. J. & Sandler, I. (1996). Major life events and minor stressors: Identifying mediational links in the stress process. *Journal of Personality and Social Psychology*, 70(2), 381–394.
- Plagnol, A. C. & Scott, J. (2010). What matters for well-being: Individual perceptions of quality of life before and after important life events. *Applied Research in Quality of Life*, 6(2), 115–137.

- Rickwood, C. & White, L. (2009). Pre-purchase decision-making for a complex service: Retirement planning. *Journal of Services Marketing*, 23(3), 145-153.
- Turner, J. E., Goodin, J. B. & Lokey, C. (2012). Exploring the roles of emotions, motivations, self-efficacy, and secondary control following critical unexpected life events. *Journal of Adult Development*, 19(4), 215-227.
- Visser, J., Oosterveld, P. & Kloosterboer, M. (2012). Pensioencommunicatie: behoeften en barrières. Geïntegreerd rapport van onderzoek onder deelnemers en gepensioneerden [Pension communication: needs and barriers. Integrated report of research among participants and pensioners]. TNS Nipo, Amsterdam.
- Williams, S., Brown, A., Patton, R., Crawford, M. J. & Touquet, R. (2005). The half-life of the 'teachable moment' for alcohol misusing patients in the emergency department. *Drug and alcohol dependence*, 205-208.

Appendix: Overview of the effects of life events

Authors	Area	Life Event	(mediator)	Dependent Variable	Result	Sample country and size
Adams & Rau (2011)	Psychology	Marriage		Retirement planning	Married people are better prepared for retirement and accumulate more overall savings compared to single or divorced individuals.	Literature review
Anusic, Yap & Lucas (2014)	Quality of life research	Marriage	-	Subjective well-being	After marriage, people experience a short positive burst of life satisfaction, but over time life satisfaction returns to pre-marriage levels.	Swiss (n: 19,000)
Damman, Henkens & Kalmijn (2015)	Demography	Marriage		Retirement intentions	Married women intend to and actually retire earlier compared to divorced women.	Dutch (n: 420)
Georgellis, Lange & Tabvuma (2012)	Vocational behavior	Marriage		Job satisfaction	Prior to the first marriage, people experience an increase in job satisfaction. However, in the following three years, partial reversal takes place towards original satisfaction levels.	UK (n: 10,000)
Knoll, Tamborini & Whitman (2012)	Marriage and family research	Marriage		Retirement intentions	Young adults who are married are more likely to perceive retirement as an important savings goal, to have an individual retirement account and to sign up for a defined contribution plan.	US (n: 3,894)
Lucas, Clark, Georgellis & Diener (2003)	Psychology	Marriage		Happiness	Marriage induces a small boost in happiness levels, but after the event happiness levels reverse back to pre-marriage levels. However, the authors acknowledge wide variations among individuals. People who reacted strongly to the initial event did not revert but instead developed a new baseline for happiness.	German (n: 24,000)
Luhmann, Hofmann, Eid & Lucas, (2012)	Psychology	Marriage		Subjective well-being	Marriage increases life satisfaction around the event. However, reversal starts rather quickly.	Meta-analysis: 188 publications
Plagnol & Scott (2011)	Quality of life research	Marriage		Changes in what matters to quality of life	Family, home comfort, and happiness factors become more important to a person's perception of quality of life after marriage, while friends and employment become less important.	UK (n: 40,248)
Rickwood & White		Marriage		Retirement planning	Marriage causes people to consider or change their saving behavior.	Australian (n: 55)
Luhmann & Eid (2009)	Psychology	Marriage (repeated)		Life satisfaction	In general, persons who marry only once are more satisfied than those who marry at least twice. Furthermore, repeated marriage does not lead to different levels of life satisfaction between marriages.	German (n: 12,245)
Lucas (2005)	Psychology	Divorce		Happiness	Happiness and satisfaction decline around the divorce, conflicting with the adaption theory that satisfaction levels do not rebound to pre-divorce levels. Remarkably, persons who endure a divorce show lower happiness levels than those who remain married even before the divorce.	German (n: 30,000)

Authors	Area	Life Event (mediator)	Dependent Variable	Result	Sample country and size
Luhmann & Eid (2009)	Psychology	Divorce (repeated)	Life satisfaction	Previous research has shown that people adapt back to their previous life satisfaction levels. Remarkably, people also adapt to the event itself. Repeated divorces result in lower drops in life satisfaction compared to the initial event.	German (n: 12,245)
Luhmann, Hofmann, Eid & Lucas, (2012)	Psychology	Divorce	Subjective well-being	After a divorce SWB experiences a decline, followed by a positive adaptation. The effect around the actual event is rather small, which is a result of a person's anticipation of the divorce, which also decreases life satisfaction (Lucas, 2007b). Furthermore, Luhmann et al. (2012) argue that people enduring a bad marriage can actually benefit from a divorce in terms of SWB.	Meta-analysis: 188 publications
Pillow, Zautra & Sandler (1996)	Psychology	Divorce	Distress	The stress provoked by a divorce does not lead to distress directly. However, it creates many minor stressors which result in distress.	Not stated (n: 359)
Anusic, Yap & Lucas (2014).	Quality of life research	Childbirth	Subjective well-being	Parents experience an increase in life satisfaction around the birth of their first child. In the following years they suffer a decline in terms of well-being. However, in the long term their levels of SWB remain equal compared to couples without children.	Swiss (n: 19,000)
Damman, Henkens & Kalmijn (2015).	Demography	Childbirth	Retirement intentions	Women who gave birth to a child intend to retire later women without children. However, the authors find no statistical evidence regarding their actual behavior.	Dutch (n: 420)
Georgellis, Lange & Tabvuma (2012)	Vocational behavior	Childbirth	Job satisfaction	The birth of a child reduces job satisfaction in the long term. No adaptation takes place.	UK (n: 10,000)
Luhmann, Hofmann, Eid & Lucas (2012)	Psychology	Childbirth	Subjective well-being	In the long term, the birth of a child decreases life satisfaction, after an initial increase. However, these long-term negative effects are compensated by daily effects that parents gain from their child.	Meta-analysis: 188 publications
Plagnol & Scott (2011)	Quality of life research	Childbirth	Changes in what matters to quality of life	Life events are capable of a person's perception of what is important for the quality of life. Persons who had a child in the last five years view family as more important and financial, employment and friend aspects as less relevant.	UK (n: 40,248)
Anusic, Yap & Lucas (2014).	Quality of life research	Loss of spouse	Subjective well-being	In the year of death of a spouse, life satisfaction levels drop steeply. Although widows adapt to their loss to some degree, the loss of a spouse has a long-lasting impact on SWB.	Swiss (n: 19,000)
Lucas, Clark, Georgellis & Diener (2003)	Psychology	Loss of spouse	Happiness	After the death of the spouse, widows experience a substantial decline in happiness. The impact of this event is so severe that people are unable to adapt to it.	German (n: 24,000)
Luhmann, Hofmann, Eid & Lucas (2012)	Psychology	Loss of spouse	Subjective well-being	The loss of a spouse has severe impact on life satisfaction. The initial decline as a result of the event is steeper compared to other events. Additionally, it takes much longer for widows to adapt.	Meta-analysis: 188 publications

Authors	Area	Life Event	(mediator)	Dependent Variable	Result	Sample country and size
Martikainen & Valkonen (1996)	Health	Loss of spouse		Mortality	Investigating the relationship between the loss of a spouse and mortality, Martikainen and Valkonen (1996) concluded that the bereaved had a highly increased chance of dying from alcohol-related, accidental, and violent causes. Furthermore, death due to heart disease and lung cancer was moderately larger for widows. Additionally, shortly after the event (less than 6 months), excess mortality rates were higher, and the effects were more pronounced for younger people.	Finnish (n: 1,580,000)
Pillow, Zautra & Sandler (1996)	Psychology	Loss of spouse		Distress	Major life events can directly and indirectly induce stress. In the case of bereavement the event on its own was severe enough to cause distress. This effect was amplified by minor stressors that are consequences of the main event.	Not stated (n: 359)
Anusic, Yap & Lucas (2014)	Quality of life research	Unemployment		Subjective well-being	Life satisfaction is lower after unemployment, and people do not revert to their prior satisfaction levels.	Swiss (n: 19,000)
Bloemen, Hochguertel & Zweerink (2015)	Pension, aging, and retirement	Unemployment		Mortality	People who become unemployed have a 34% higher chance of dying in the next 5 years. This increase results from stress-induced diseases.	Dutch (n: not stated)
Luhmann & Eid (2009)	Psychology	Unemployment (repeated)		Life satisfaction	Repeated unemployment decreases life satisfaction after each additional unemployment event. This decline is due to various stressors such as financial stress and loss of self-esteem.	German (n: 12,245)
Luhmann, Hofmann, Eid & Lucas (2012)	Psychology	Unemployment		Subjective well-being	Unemployment is accompanied by a decline in life satisfaction. Furthermore, the adaptation period is long.	Meta-analysis: 188 publications
Anusic, Yap & Lucas (2014)	Quality of life research	Disability		Subjective well-being	Disability has a long-lasting negative impact on a person's subjective well-being.	Swiss (n: 19,000)
Kelly et al. (2012)	Economics	Disability		Retirement income	People who are unable to keep working due to a chronic disease are at a serious disadvantage regarding retirement income.	Australian (n: not stated)
Lucas (2007a)	Psychology	Disability		Distress and subjective well-being	Disability has severe effects on SWB and distress. However, people tend to partially adapt to the induced distress, but SWB remains below the original level.	German (n: 67,000)
Buccioli & Zarri (2015)	Psychology	Loss of a child		Financial risk taking	Losing a child decreases the propensity to invest in stock by 7.8%, and it affects financial risk taking in the long term.	US (n: 9,963)
Faravelli, Catena, Scarpato & Ricca (2007)	Health	Negative life events	Stress	Psychiatric disorder	Negative life events such as the death of a spouse, divorce, and unemployment increase one's susceptibility to psychiatric disorders due to induced stress.	Italian (n: 2,363)
Ho, Cheung & Cheung (2008)	Quality of life research	Personality	Negative life event	Life satisfaction	Negative life events partially counter the positive relation between personality, emotional stability, family orientation, harmony, and life satisfaction. When negative life events take place, they have a negative effect on life satisfaction	Chinese (n: 1,961)

Authors	Area	Life Event	(mediator)	Dependent Variable	Result	Sample country and size
Lantz, House, Mero & Williams (2005)	Sociology	Socioeconomics	(Financial) stress and negative life events	Mortality and health	People who are at a socioeconomic disadvantage endure more negative life events (death of a child, death of a spouse, divorce) that are related to more stress. Consequently, their risk of mortality increase together with poorer health.	US (n: 3,617)
Parker, Paterson & Hadzi-Pavlovic (2015)		Negative life events		Emotional response	To get a more complete understanding of what people go through during and after the life event, it is worth identifying which emotions are evoked by different events. Depression and stress are the most reported emotional responses to disability. The death of a spouse is accompanied by grief and sadness. On the other hand, divorce and unemployment induce depression and stress.	Australian (n: 200)
Lucas (2007b)	Psychology	Life events		Subjective well-being	Lucas (2007b) summarizes the effects of life events. Furthermore, he acknowledges that there are sizable differences among individuals regarding the level of adaptation of SWB. These differences are probably due to variability in a person's response to events and variations in the nature of the events. Closing statement: "Happiness levels do change, adaptation is not inevitable, and life events do matter."	German and British (n: 67,000)
Turner, Goodin & Lokey (2012)	Psychology	Unexpected life events		Cognitive system	Unexpected life events can disturb the cognitive system. During this disturbance people can redesign the cognitive system to their advantage. Life events thus provide opportunities for beneficial life changes.	US (n: 17)
Holmes & Rahe (1967)	Psychosomatic research	Life events		Stress scale	Holmes and Rahe (1967) developed their Stress Scale to test the relationship between stressful life events and illness. Their scale has been validated and shows correlations between life events and illness. The six life events included for this study take top spots on the scale, except for childbirth.	Not stated (n: 394)

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