Investigating the Dynamic Relationship Between Organizational Change Magnitude and Work Engagement

A Longitudinal Multilevel Study

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Abstract

For over two decades researchers have sought to understand the nature of work engagement and its predictors. The present study explores work engagement development over time, and what characterizes this development in terms of functional form. By including organizational change magnitude as a time-varying predictor and a time-invariant predictor, the study continues to explore what predicts differences in work engagement development over time.

In total 223 participants from a variety of Norwegian organizations successfully contributed to this longitudinal multi-wave study. Based on ten measurements spaced by one month, the study was unable to find a common functional form of development across all participants. Yet, based on exploratory analyses and significant variability in intercept and slopes, assumptions of individual development in work engagement are supported.

Change magnitude predicts the development in work engagement over time at a between-person level. Average levels of change magnitude predict a nonlinear development in work engagement. Conversely, the study failed to capture a within-person relationship. That is, within-person variability in change magnitude insignificantly relate to within-person variability in work engagement.

The study is one of the first to explore the functional form of work engagement development over ten months. It is also the first study to investigate the longitudinal relationship between organizational change magnitude and work engagement, and to explain this dynamic interplay by using Event System Theory (EST).

Keywords: longitudinal development; random coefficient modeling; work engagement; organizational change magnitude.

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Investigating the Dynamic Relationship Between Organizational Change Magnitude and Work Engagement

Enhancing and retaining work engagement is key to employees and contemporary organizations. As a motivational construct, meta-analytic evidence stresses work engagement as vital to task performance, extra-role behavior, job initiative, employee well-being and health (Bailey, Madden, Alfes, & Fletcher, 2017; Christian, Garza, & Slaughter, 2011).

In quest of having engaged employees, one needs to understand the work engagement nature. For over two decades the literature has tried to explain whether this is a stable or a dynamic experience over time. Despite sustained effort, the *degree* of stability and dynamism is theoretically and empirically disputed (Bakker, 2014). However, knowledge of *how* work engagement develops over time is key to address it appropriately at the organizational level (Sonnentag, Dormann, & Demerouti, 2010). Conversely, what characterizes work engagement development has received less attention, and more research is needed (Mäkikangas, Kinnunen, Feldt, & Schaufeli, 2016). By using random coefficient modeling (RCM) the first aim of the study is to explore individual work engagement development over time, and what characterizes the *functional form* of development, in terms of shape and rate of change

The relationship between organizational change magnitude and work engagement is yet to be explored. The relationship is important to address, as organizational change is the norm rather than the exception in contemporary organizations (Bouckenooghe, De Vos, Van den Broeck, 2009). Researchers are increasingly aware that organizational change may influence work engagement (Bakker & Albrecht, 2018). As organizational change magnitude captures subjective experiences of change (Caldwell, Herold, & Fedor, 2004), it is a potential key predictor of work engagement. Meta-analytic evidence stresses subjective change experiences as important determinants of employee motivation (Oreg, Vakola, & Armenakis, 2011).

Seeking to explain the dynamic interplay between change magnitude and work engagement is not without challenges. Theoretically and empirically little is known about how subjective experiences of change magnitude develop over time (Pettigrew, Woodman, & Cameron, 2001; Vakola, 2016), or how this influences work engagement *development.* Lack of explanatory framework makes the dynamic interplay between change magnitude and work engagement poorly understood. The second aim of the study is therefore to investigate the longitudinal relationship between change magnitude and work engagement. By using Event

System Theory (EST) the present study recognizes the dynamic nature of change magnitude as an experience, which in turn can explain *why*, *when* and *how* change magnitude will impact work engagement development over time (Morgeson, Mitchell, & Liu, 2015).

The study makes three valuable contributions to scholarship, whereby many of these are related to the strength of the longitudinal research design. First, by having ten measurement waves spaced by one month, the study contributes by enhancing our understanding of the degree of stability and dynamism in work engagement. Above and beyond this it offers a better understanding of the *functional form* of development, in terms of shape and rate of change over time. By understanding the functional form of development, this can in turn enlighten whether the development in work engagement is characterized by change or fluctuation (Hoffman, 2015).

Second, this is the first study to investigate the longitudinal relationship between organizational change magnitude and work engagement. By including change magnitude as a time-invariant predictor and a time-varying predictor allows to investigate a between-person relationship and a within-person relationship (Hoffman, 2015). This offers a more precise understanding of what is it about change experiences that make them impactful, and how this influences employee motivation over time (Pettigrew et al., 2001; Piderit, 2000; Vakola, 2016). This can in turn inform management and HRM practice.

The third contribution extends to theory development, both within the change literature and work engagement literature. EST can explain how experiences of change develop over time, and offers new insight in terms of how to understand the dynamic interplay between change magnitude and work engagement over time.

Development in Work Engagement

The study advocates work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption", as defined by Schaufeli, Salanova, González-Romá and Bakker (2002, p. 74). *Vigor* is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. *Dedication* is characterized by a sense of significance, enthusiasm, inspiration, pride and challenge. *Absorption* involves being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Schaufeli et al., 2002, p. 74-75).

Although the definition of Schaufeli et al. (2002) is most commonly used (Bailey et al., 2017), many disagree on the degree of stability. For instance, Schaufeli et al. (2002)

stresses work engagement as a *persistent* and *stable* cognitive state of mind – independent of events, situations, objects or behaviors. However, this definition emphasizes work engagement *while working* or *while executing job tasks* (p. 74). Assumptions of stability are therefore questioned. Implicitly, this suggests that experiences of work engagement are dependent on how employees experience the job characteristics or job context. In a similar vein, Sonnentag (2017) claims experiences of engagement to be interchangeably linked to characteristics of work. One cannot be engaged in the job without actually working, and development in work engagement is sensitive to changes in job characteristics. This is similar to Kahn (1990), who argued that experiences of work engagement depend on the work context.

The theoretical dispute of stability and dynamism extends to empirical evidence. Longitudinal studies present inconsistent views on the work engagement nature (Bakker, 2014; Ohly, Sonnentag, Niessen, & Zapf, 2010). However, studies with inconsistent assumptions are often based on different methodological underpinnings. In order to get a more accurate understanding of the work engagement nature, one has to review longitudinal evidence and their methodological underpinnings.

Based on some longitudinal studies, employees should be consistently engaged over time. A systematic review found an average rank-order stability of .66 across five longitudinal studies of work engagement (Mäkikangas et al., 2016). A recent multi-wave study attributed 69-77% of construct variation to between-person differences, and only 23-31% of the variance to within-person variation (Seppälä et al., 2015). Other longitudinal studies have reported similar findings (e.g., Mauno, Kinnunen, & Ruokolainen, 2007; Seppälä et al., 2009; Schaufeli, Bakker, & Salanova, 2006; Van Steenbergen, van der Ven, Peeters, & Taris, 2017). Although several have found some within-person variability, they tend to treat it as random measurement error (Sonnentag et al., 2010). From this point of view, work engagement is perhaps best captured as a time-invariant variable, as opposed to a time-varying variable. In turn, if work engagement is best understood as a stable trait-like construct, this question the necessity of modeling the functional form of development.

The accuracy of findings presented above is reasonably questioned in light of three methodological considerations. First of all, many rely on few measurements, in some cases as little as two measurement waves (Mauno et al., 2007). Temporally-separating measurements does not make a longitudinal study, and are at best slightly better than cross-sectional designs. Without three or more measurements the relationship can never be other than linear. Rather than describing how each person changes over time, they describe the relative difference of

loss or gains between two measurements (Ployhart & MacKenzie, 2014; Singer & Willett, 2003). Such static relationships are often not likely to hold over time (Pitariu & Ployhart, 2002).

Secondly, studies considering work engagement as stable are often based on inadequate time lags. Waves are typically spaced by one year up to several years (e.g., Mauno et al., 2007; Schaufeli et al., 2006; Seppälä et al., 2015; Seppälä et al., 2009). Hence, they are able to explore work engagement as an *enduring* experience, but not how experiences of work engagement actually develop (Bakker, 2014; Sonnentag et al., 2010). Too long time lags ignore that work engagement can vary between measurements (Ployhart & MacKenzie, 2014). For instance, little is known about whether experiences of work engagement rise and fall prior to returning to average levels. Additional problems extend to the risk of retrospective biases (Ohly et al., 2010). Employees are most likely to use their general level of work engagement over time as a reference. Problems arise, as summary accounts ignore dynamic properties of work engagement experiences (Dalal, Brummel, Wee, & Thomas, 2008; Sonnentag et al., 2010).

The third problem extends to how work engagement stability is measured. In several cases rank-order stability is used (Mauno et al., 2007; Mäkikangas et al., 2016; Seppälä et al., 2015; Seppälä et al., 2009). Problems arise if individuals keep their relative position over time, because it is interpreted as if no one has changed. On the contrary, the relative order of participants yields little information about how individuals change over time or the rate of change (Singer & Willett, 2003). Overall, the methodological considerations presented above question the accuracy of findings related to work engagement stability, and the extent to which they are able to capture the whole story.

Other longitudinal studies advocate work engagement as more dynamic. Experiences of work engagement can change substantially within the same person over time, indicating that phenomenological experiences of work engagement evolve over time (Sonnentag, 2017). That is, employees are not equally engaged at all times. For instance, Bakker and Bal (2010) attributed 47% of the variance in work engagement to within-person variation, whereas Sonnentag (2003) assigned 44% of the variation to similar sources. Xanthopoulou and Bakker (2013) found an average of 42% within-person variability in work engagement (ranging from 28% to 72%). The latter review could be biased, given its reliance on studies with different methodological underpinnings. However, an average of 42% is substantial, and should not be treated as measurement error (Sonnentag et al., 2010).

Studies taking a more dynamic approach to work engagement are argued to have more adequate methodological underpinnings. First, these studies typically apply three or more measurements (e.g., Bakker & Bal, 2010; Sonnentag, 2003; Sonnentag et al., 2010). This makes them more suited to explore actual development (Ployhart & MacKenzie, 2014). Second, waves are typically spaced by hours, days, weeks or a couple of months (Bakker, 2014; Sonnentag, 2003; Xanthopoulou & Bakker, 2013). Combined, the chances of capturing within-person variability increase, providing a more accurate understanding of construct development (Ployhart & MacKenzie, 2014; Sonnentag et al., 2010). Simultaneously, the odds for retrospective biases are reduced (Ohly et al., 2010). Overall, work engagement is expected to show within-person variability (i.e. individual development). Considered within a broader perspective, recognizing the dynamic properties of work engagement coincides more with the conventional understanding of how employee motivation develops (e.g., Christian et al., 2011; Kanfer, Frese, & Johnson, 2017).

Knowing that work engagement has dynamic qualities may be of limited use without knowing what characterizes this development. From an overarching perspective, attempts to describe individual growth trajectories are rare in organizational science (Pitariu & Ployhart, 2002; Schalk, van der Heijden, de Lange, & Van Vedhoven, 2011). Moreover, the functional form of work engagement development, in terms of shape and rate of change is less clear. However, recent progress has been made in the work engagement literature.

A four-wave longitudinal study explored work engagement trajectories among older workers (de Wind et al., 2017). Experiences of work engagement could increase and decrease over time. Others displayed only a slight change, as trajectories were consistently high or low over time. Similarly, Saks and Gruman (2018) investigated work engagement trajectories in newly employed. Over the first year of employment, five different trajectories were identified. Experiences of work engagement could rise and fall over time at different rates. Change could be rapid and steep, but also slow and modest. From this perspective work engagement can develop in a numerous of different ways, and are not easily categorized by one functional form. Despite supporting a dynamic perspective on work engagement, this understanding is based on quite few measurements with long spacing. Whether work engagement is more or less dynamic when measured more frequently within shorter time frames, is less clear.

Research question: What characterizes individual development in work engagement over time in terms of functional form?

The Relationship Between Organizational Change Magnitude and Work Engagement

A further question extends to what predicts differences in work engagement development over time. The present study continues to explore organizational change magnitude as a between-person predictor and within-person predictor of work engagement.

Organizational Change Magnitude as a Between-Person Predictor of Work Engagement

The present study operationalizes organizational change magnitude as subjective experiences of *changes* or *disruptions* in *work processes, procedures* or *routines*, which constitute an employee's immediate work contexts and job characteristics (Caldwell et al., 2004, p. 873). Based on theoretical and empirical evidence, change magnitude is a potential key between-person predictor of work engagement. Empirical evidence stresses subjective change impact as the most profound determinant of employee motivation (Caldwell et al., 2004; Kim, Hornung, & Rousseau, 2011; Lau & Woodman, 1995; Oreg et al., 2011). For instance, Petrou, Demerouti, Peeters, Schaufeli and Hetland (2012) argued that the more personally impactful a change is, the stronger impact it will have on work engagement. From this point of view, the level of change magnitude is expected to predict the level of work engagement.

The relationship between change magnitude and work engagement is expected to be negative. Meta-analytic evidence stresses a consistent negative relationship between experiences of change and employee motivation (Oreg et al., 2011). Changes that are personally impactful influence employee motivation more negatively, as opposed to low impact changes (Fedor, Caldwell, & Herold, 2006). Fedor et al. (2006) argued that highly impactful changes were perceived more negatively, given their novel and disruptive qualities. Such changes interfere with regular ways of working and require major adjustment efforts.

Findings presented above do not explicitly investigate the relationship between change magnitude and work engagement. However, findings expect to apply to the present study, as they demonstrate the importance of subjective change experiences and how this impacts the level of employee motivation. By extension, Event System Theory (EST) supports this perspective from a theoretical point of view. According to EST, the extent to which changes influence employee motivation depends on how changes are *experienced* in terms change strength. This is in turn captured by experiences of change novelty, criticality and disruption (Morgeson et al., 2015). One can reasonably argue that change magnitude is synonymous to experiences of novelty, criticality and disruption.

First of all, change magnitude indicates that there is a discrepancy between the new and old work condition (i.e. novelty) (Morgeson et al., 2015). Second, changes are personally important when affecting employees' immediate work context (i.e. critical) (Morgeson & DeRue, 2006). Experiences of change magnitude are largely interfering, forcing employees to break out of established ways of working (i.e. disruptive) (Gersick & Hackman, 1990; Louis & Sutton, 1991; Morgeson, 2005). By extension, employees become increasingly willing to adjust their motivation as levels of change magnitude increase (Morgeson, 2005; Morgeson et al., 2015). Based on the empirical rationale presented above and EST, employees with higher levels of change magnitude on average are expected to have lower levels of work engagement on average.

> **Hypothesis 1a**: There is a negative between-person relationship between organizational change magnitude and employees' average level of work engagement.

Despite that change magnitude is expected to be a between-person predictor of work engagement, one has to reflect about how the relationship unfolds longitudinally. In order to do so, one has to understand the nature of organizational change magnitude, and how such experiences unfolds across time.

Development in Organizational Change Magnitude

Few have explicitly investigated the nature of change experiences and how such experiences evolve over time (Pettigrew et al., 2001; Piderit, 2000; Vakola, 2016). However, opposing views are presented in the literature. Meta-analytic evidence suggests that experiences of change are static and time-invariant (Oreg et al., 2011). However, Oreg et al. (2011) is critical to this. They argue that this assumption may be a product of the reliance on cross-sectional research, whereby change or change experiences are primarily treated dichotomously. The legitimacy of such cross-sectional evidence is reasonably doubted. In fact, they only document whether a change has occurred or not, or they capture the particular change experience at the time of measurement. Conversely, they do not consider how experiences of change unfold over time (Pettigrew et al., 2001; Gover, Halinski, & Duxbury, 2016; Vakola, 2016; Piderit, 2000). A static perspective on change experiences may stem from methodological limitations, rather than reflecting the true nature of change experiences across time.

From another point of view, one can reasonably argue that experiences of change magnitude are time varying. Contemporary organizations are increasingly dynamic and

continuously changing (Bouckenooghe et al., 2009). According to Gover and Duxbury (2018), not only are there differences between employees in how they experience change impact, but also individual variation in change experiences over time. In their study, individual trajectories of change impact could increase and decrease over time. This suggests that change magnitude is dynamic, as opposed to a constant experience.

A dynamic perspective on change magnitude is supported by other longitudinal studies. Organizations engage in different types of change over time, in order to meet the changing requirements of stakeholders, markets and legislation (Löwstedt & Räisänen, 2012). A four-wave study showed that a merger between two companies was followed by several changes over time, such as downsizing, restructuring, job alterations and reallocation (Fugate, Kinicki, & Scheck, 2002). Experiences of change are therefore claimed to be dynamic, because each change is uniquely experienced in terms of impact, momentum and trajectory (Pettigrew et al., 2001). Despite not measuring change magnitude explicitly, studies above show how employees are exposed to changes that to a varying extent influence work processes, procedures and routines over time (i.e. change magnitude). EST makes similar propositions. Experiences of change magnitude will vary over time, because organizations engage in different types of changes over time, that to a varying extent characterizes by novelty, criticality and disruption (Morgeson et al., 2015).

Theoretical and empirical evidence support that change magnitude is a time-varying experience. In turn, the dynamic nature of change magnitude has important implications for how to understand the longitudinal relationship between change magnitude and work engagement, and how this relationship unfolds over time.

Organizational Change Magnitude as Within-Person Predictor of Work Engagement

The longitudinal relationship between change magnitude and work engagement is expected to be dynamic. First of all, employee motivation is found to vary, depending on how experiences of change develop over time (Vakola, 2016). Secondly, as a time-varying experience change magnitude captures *how* job related experiences develop over time, in terms of changes in work processes, procedures and routines. Based on longitudinal evidence, work engagement development is predicted by *how* job-related experiences develop over time (Breevaart et al., 2014; Christian, Eisenkraft, & Kapadia, 2015; Demerouti, Bakker, & Halbesleben, 2015; Sonnentag, 2003, 2017; Xanthopoulou & Bakker, 2013). From this perspective, change magnitude should not consistently impact work engagement development over time.

EST can explain the nature of the longitudinal relationship. That is, *why*, *how* and *when* change magnitude is likely to impact work engagement development over time. EST suggests that the relationship can be stronger or weaker over time, depending on how change experiences develop (i.e., novelty, criticality, disruption). As previously noted, these three characteristics are core to experiences of change magnitude (e.g., Morgeson, 2005; Morgeson & DeRue, 2006; Morgeson et al., 2015).

EST suggests that the steepness of increase or decrease in change magnitude development is decisive for its impact on work engagement development. The relationship expects to peak on occasions when individuals experience a rapid and steep increase in change magnitude. The development is unexpected because the work situation becomes novel, disruptive and critical at such a rapid pace (Morgeson et al., 2015). It demands immediate attention and action, and the personal salience causes individuals to rethink what they think of the job situation. Such impactful changes are difficult to ignore. Persistent and profound changes in employee motivation are expected to rapidly occur (Morgeson, 2005; Morgeson et al., 2015).

The relationship is expected to weaken on occasions when individuals experience less change magnitude than usual. The change is of little importance, as the job condition remains more or less unchanged (Morgeson & DeRue, 2006; Morgeson et al., 2015). As work experiences have not changed, the situation is ignored and employees lack incentives to adjust their motivation (Morgeson, 2005; Morgeson et al., 2015). However, the relationship weakens at a faster rate if the decrease in change magnitude is rapid and steep, as opposed to slow and steady. Again, a steep decrease in change magnitude indicates that the change loses its property of being novel, critical and disruptive at a very fast rate. Employees' inclination to adjust motivation correspondingly drops, as change experiences lack the necessary qualities to cause employees to adjust their motivation (Morgeson et al., 2015).

Conversely, the relationship can strengthen if experiences of change magnitude start to increase once more. Yet, a rapid and steep increase predicts a stronger relationship, whereas a slow and steady increase predicts a somewhat weaker relationship. Slowly increasing levels of change magnitude involve some experiences of novelty, criticality and disruption. However, the change does not influence employees' work experiences extensively enough to cause major shifts in behavior and motivation (Morgeson, 2005; Morgeson et al., 2015). Change magnitude is expected to have only a slight impact on work engagement.

Summing up, individual development in change magnitude uniquely predicts individual development in work engagement – above and beyond between-person differences

in change magnitude. Hence, within-person variability in change magnitude expects to predict within-person variability in work engagement.

> **Hypothesis 1b**: There is a negative within-person relationship between organizational change magnitude and work engagement.

Methodology

Procedure

The present longitudinal study is part of a larger research program at the University of Oslo (Department of Psychology). The overarching research project investigates the changing dynamics of employee attitudes and behavior over time within a Norwegian work context. Participants have been recruited through personal networks and online advertisements. Online advertisements were placed on social media (e.g. Facebook) and the university webpage. It was communicated that the population of interest represented a variety of Norwegian organizations or employees within such organizations. Hence, the study applies to organizations of different sizes within the private and public sectors. The target age group covers the age span between 22 and 67 years of age.

There were in total five different groups of participants, who followed a slightly different data collection schedule, with a one-month lag per group. This was necessary as the recruitment process spanned over six months. However, this is not a problem in RCM as long as all groups apply the same metric of time (Singer & Willett, 2003). This is addressed further below.

As part of a larger research program at the University, the study had received approval from The Norwegian Social Science Data Services (NSD) prior to the initiation of the present thesis. The research project followed strict and ethical codes of conducts set by The Norwegian Data Protection Authority and NSD. All respondents received additional information by email about implications and formal requirements of the research project. The email included a consent form where the principles of voluntary participation, privacy and implications were clearly emphasized. It was further communicated that the research project had clear procedures for complying with such ethical rules as anonymity, data storage and the right to withdraw from the study at any point in time without any explanation needed. Anonymity was maintained by providing a subject-generated identification code (SGIC). This key was created from four questions and was unknown to other persons than the participant.

SGIC is popular in longitudinal research as it ensures anonymity while still enabling comparison of individuals in repeated measures (Yurek, Vasey, & Havens, 2008).

All participants received an email invitation at the time of measurement. By clicking on a hyperlink, participants were directed to the online survey. Response time was set to two weeks, and a reminder of participation was sent out after one week. Incentives were used to encourage continued participation. By completing all ten measurements participants were given the chance to win one out of ten travel gift cards valued to 500 NOK. The opportunity for lottery participation was communicated in every survey, along with the informed consent form that was always readily available.

Research Design

A longitudinal design with ten waves spaced by one month was considered suitable for addressing the research question and hypotheses. First, the ten waves allowed to investigate both quadratic and cubic development trends. The inclusion of these polynomial effects made model building more sophisticated (Bliese & Ployhart, 2002; Hoffman, 2015; Kwok et al., 2008). Change magnitude and work engagement are time-varying variables expected to change over time. To capture their dynamics, they were measured simultaneously on all ten occasions (wave 0-5 and wave 7-11). Hoffman (2015) recommends using the same measurement schedule and time metric for time-varying variables, as long as no lagged relationship is expected.

Second, all waves were spaced by one month (see Table 1 for exception). For one reason, this was practical as data collection in the present study was constrained to ten months. A second reason was due to attrition, because one wants to increase the chances of participation. Monthly spacing is less demanding compared with daily or weekly spaced waves (Field, 2013).

Third, too large spacing will lose important information about what happens in between measurements, concealing true construct development. Conversely, too short spacing offers a limited and narrowed picture of construct development and is unable to capture central development tendencies over time (Ployhart & MacKenzie, 2014; Sonnentag et al., 2010). Previous studies have investigated dynamic properties of work engagement within an hourly, daily or weekly time frame. Based on reviews, development within a monthly time frame was unexplored and sparked opportunities for generating knowledge (Bakker, 2014; Mäkikangas et al., 2016).

Suited time frames for investigating change magnitude was less clear. Few guidelines are offered in the literature, as change experiences in the past have been treated as definite and time-invariant. Little is known about how change experiences develop over time (Gover, et al., 2016; Oreg et al., 2011; Pettigrew et al., 2001; Piderit, 2000; Vakola, 2016). However, a monthly time interval was reasonably justified, given the increasing dynamic and changing nature of contemporary organizations (Bouckenooghe et al., 2009; Caldwell et al., 2004).

Data Sample

Table 1 presents an overview of sample size, response rates and attrition rates. The data are summarized as statistics per wave. To investigate the dynamic relationship between change magnitude and work engagement, usable responses required minimum one measure of each of the two variables. Responses below this threshold were excluded from subsequent analyses. Out of 256 registered participants, 223 participants yielded eligible responses at the start of survey. This is above the minimum recommendation of 50 units in a two-level analysis (Maas & Hox, 2005).

Table 1

Sample Size across Measurement Waves (N = 223)

Survey	Total attrition rate	Participation per administered survey	Response rate relative to administered surveys
Wave 0	12.89%	197	76.95%
Wave 1	18.36%	179	69.92%
Wave 2	25.39%	165	64.45%
Wave 3	33.59%	154	60.16%
Wave 4	37.11%	147	57.42%
Wave 5	42.19%	133	51.95%
Wave 7	44.92%	114	44.53%
Wave 8	53.91%	117	45.70%
Wave 9	52.34%	113	44.14%
Wave 10	53.12%	117	45.70%

Note. All measurements were collected at a monthly time interval except wave 5 and 7, which were spaced with two months.

Data collection relied on employee self reporting. Participants yielding eligible responses varied on demographic variables. The majority of participants worked in the public sector (66.8%), and the average age was 41 years (spanning from 19 to 66 years). Average tenure was approximately 8 years. However, years of tenure varied extensively, ranging from less than 1 year to more than 40 years. There were more women (54.3%) than men (45.7%) in

the study. Most respondents had completed higher education (83.5%), and some reported a leadership position (21%).

Measurement Variables

Work engagement. Work engagement was operationalized as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), whereby vigor, dedication and absorption constitute subscales of work engagement. The Norwegian edition of the nine-item Utrecht Work Engagement Scale (UWES) was used as the measurement scale. The UWES scale is most commonly used for measuring work engagement (Bailey et al., 2017), and the scale has previously been successfully used within a Norwegian work context (e.g. Schaufeli et al., 2006). The nine-item UWES captures within-person variation and between-person variation in work engagement (Breevaart, Bakker, Demerouti, & Hetland, 2012), which is important to the present study. The nine-item version is less demanding to participants, hence reducing fatigue problems (Ohly et al., 2010).

The measurement scale was adapted to fit the present study by instructing participants to refer to the last month when rating. Respondents were asked to rate the accuracy of statements regarding their personal work engagement on a 5-point Likert scale (1 = fully disagree, 5 = fully agree). All three subcomponents of work engagement were measured by three item questions each. Examples of measures: vigor (e.g. in the last month, I have been enthusiastic about my job), dedication (e.g. in the last month, I have been enthusiastic about my work), and absorption (e.g. in the last month, I have been immersed in my work). Cronbach's alpha ranged between .92 and .95 across measurements.

Organizational change magnitude. Organizational change magnitude was operationalized as experiences of disruption or changes in dimensions such as work processes, procedures or routines (Caldwell et al., 2004, p. 873). While referring to the last month, participants were instructed to rate the accuracy of three item statements on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Item statements asked about the extent to which participants had experienced "… changes within the department's processes and procedures," "… changes in the way people do their job within the department," and "… changes in daily routines for employees in this department". Cronbach's alpha ranged between .89 and .98 across measurements.

Control variables. Gender, leadership position and tenure were included as control variables. A better understanding is needed for how demographic variables influence the

development of work engagement (Bakker & Albrecht, 2018). Also, slightly more women than men participated in the study, and women have been found to report higher levels of work engagement (Mauno et al., 2007). Similarly, leaders are likely to have higher levels of work engagement as opposed to non-leaders. Leadership positions relate strongly to organizational engagement and job resources, which in turn are likely to influence the level of work engagement (Albrecht, Breidahl, & Marty, 2018). In addition, work engagement can differ between tenured and less tenured employees. The numbers of years working in an organization can express how satisfied one is with work arrangements and conditions. This often predicts favorable job attitudes and motivation (Griffeth, Hom, & Gaertner, 2000).

Time. In order to compare and make the results more readily interpretable, a polynomial coding of time (wave 0-10) was necessary. The first time of measurement was coded as time point zero (i.e. initial status) (Hoffman, 2015).

Data Analysis

Surveys were downloaded directly from the online software program. All data processing (i.e., coding and computations of measurement scales) and statistical analyses were conducted in IBM SPSS 25. Commands and procedures were executed in syntax to avoid typing errors.

Attrition. The study experienced attrition (see Table 1). RCM robustly handles this, as long as attrition is random (Ployhart & MacKenzie, 2014). Systematically missing data can influence inference statistics, causing biased and erroneous results (Hoffman, 2015; Kwok et al., 2008). The more restrictive missing completely at random (MCAR) analysis was preferred over the less restrictive missing at random analysis (MAR). It ensures that missing values are independent of time, values of predictors or values of outcome (Singer & Willett, 2003). A Little's missing completely at random (MCAR) analysis was requested in SPSS, including study variables of interest. Results were indistinguishable from zero, implying that data were missing completely at random. Multilevel modeling continued without any further corrections to the data (Hoffman, 2015; Singer & Willett, 2003).

Inspecting residuals. Residuals in multilevel regression are assumed to be normally, homoscedastic and linearly distributed. If not, estimates and standard errors can be biased (Hoffman, 2015; Hox, 2010). Residuals were graphically inspected in probability plots and scatterplots. In the scatterplot, residuals were evenly distributed around the horizontal value of zero. Residuals did not follow a systematic pattern, as they did not deviate from a rectangular distribution. Residual variance was likewise across all predicted values of work engagement.

In the probability plot, residuals were evenly distributed around the diagonally straight line. Results imply that assumptions of multilevel modeling were not violated (Hoffman, 2015).

Exploratory analyses. Change magnitude and work engagement were investigated through separate exploratory analyses. They are both considered time-varying variables. Hoffman (2015) argues that time-varying predictors and outcomes should be investigated through exploratory analyses, to get an overview of development trends.

First, a person-period data set was calculated, where each wave of measurement was represented by one row of data (Singer & Willett, 2003). Second, growth plots for both change magnitude and work engagement were inspected. This was beneficial, as growth plots enable visualization of the functional form of development, in terms of shape and rate of change (Singer & Willett, 2003). Plots were investigated at a group level, representing the development trend in the group as whole. Given the large sample size it was not possible to investigate all cases individually. A random subsample was therefore selected to explore individual development trends.

Growth plots were first investigated non-parametrically. The data was allowed to unfold freely, without imposing assumptions of development (Singer & Willett, 2003). This was valuable to the subsequent parametrical analyses, informing about the functional form of development. Second, a parametric investigation followed, whereby trajectories were summarized as different functional forms (i.e., linear, quadratic^2, cubic^3) (Singer & Willett, 2003). A regular regression analysis was conducted to explore the quality of fitted trajectories. The participants were examined in terms of model summary, means, intercepts, slopes and variance. However, regular regression gauges residuals as independent. The assumption is likely to be violated in the current study, as measurements are repeated and nested within individuals (Hoffman, 2015; Singer & Willett, 2003). Some key findings are presented in the Results section.

Random coefficient modeling (RCM). RCM was a suited approach for the present study given two important reasons. First, the two sub-models of RCM allow to explore the research question and the two hypotheses. The Level-1 model can address the research question, as it investigates characteristics of individual development in work engagement over time. The Level-2 model can address the two hypotheses, as it explores what causes employees to differ in their work engagement development (Hoffman, 2015). In this case, whether change magnitude is a between-person predictor or within-person predictor of work engagement – or both.

A second reason is that RCM solves attrition problems in longitudinal data. Participants can have an incomplete data set, but still be included in the analysis. This robustness in handling missing data offers more flexible modeling (Bliese & Ployhart, 2002; Ployhart & MacKenzie, 2014).

RCM model development was based on Hoffman's (2015) stepwise procedure. The iterative process was informed by the research question, hypotheses and exploratory analyses. The model development progressed from simple to more complex models. Pseudo-R^2 was calculated to measure the effect size (Hox, 2010). It quantifies the relative proportion of reduced variance, and is easy to interpret (Kwok et al., 2008). It was calculated by comparing variance estimates from models with fewer parameters against models with more parameters (Hoffman, 2015). All models were compared in terms of goodness-of-fit. Akaike Information Criterion (AIC) was used as a standard of comparison. Lower values imply better model fit. AIC was beneficial, as it can compare models with different predictors (Singer & Willett, 2003).

RCM includes both fixed and random effects. Fixed effects were consequently introduced prior to corresponding random effects. First of all, this made it more readily interpretable what caused model fit to increase or decrease (Bliese & Ployhart, 2002; Hoffman, 2015). Secondly, fixed effects assign all participants with the same effect, and can investigate average development effects. Random effects allow individuals to vary, by assigning them with individual effects. Conversely, although no common development effect is found on average, individuals can still vary around the sample average. Without investigating random effects, one could inaccurately conclude that there is no development at all (Hoffman, 2015).

The Level-1 consists of unconditional models, as time was the only predictor included. The analysis started with developing an unconditional mean model. The aim was to explore mean differences in work engagement across respondents, and to calculate Intraclass Correlation (ICC). Based on variance estimates, ICC can pile out the proportion of variance in work engagement assigned to within-person sources and between-person sources (Hoffman, 2015). Hoffman (2015) stresses this as important, because the sources of variance have important implications for what type of predictors to include later on.

Subsequent models were unconditional growth models where the effect of time was hierarchically introduced. The linear development effect (wave) was introduced prior to the quadratic ($wave^2$) and cubic ($wave^3$) development effect. By gradually increasing complexity, the aim was to investigate the functional form in individual work engagement development

over time (Hoffman, 2015). A linear effect of time suggests that work engagement trajectories are expected to be linear and constant. On the other hand, quadratic and cubic effects are more advanced polynomial terms, indicative of an acceleration parameter, as well as changes in acceleration over time. The two latter are thus capturing nonlinear development (Bliese & Ployhart, 2002; Hoffman, 2015). Moreover, despite that fixed effects were not statistically significant, they were included in subsequent models if the corresponding variance components were significant. By including Level-1 predictors and Level-2 predictors, one could be able to account for variance (Hoffman, 2015; Singer & Willett, 2003).

After having established the most suitable unconditional model, the next step was to test for alternative covariance structures (i.e., compound symmetry, compound symmetry heterogeneous, auto-regressive, auto-regressive heterogeneous, teoplitz, teoplitz heterogeneous) (Hoffman, 2015). There are two main reasons for this. First of all, misspecification of covariance structure can result in less precise interpretations of fixed effects (e.g., too conservative or too liberal). Hence, there would be a mismatch between the actual variance and covariance and those reflected by the data (Hoffman, 2015). This can impact model fit and significance testing of hypotheses (Bliese & Ployhart, 2002; Singer & Willett, 2003). Second, a correct understanding of variance and covariance structures is important to subsequent model building. This will decide the extent to which model building assumes within-person change or within-person fluctuation (Hoffman, 2015).

As recommended by Hoffman (2015), the Level-2 analysis followed the same principles of model development as the Level-1 analysis. The best fitting unconditional model was expanded by successively including control variables and change magnitude as predictors. Models in the Level-2 analysis are therefore conditional, because the growth of fixed and random effects is conditioned on the predictors respectively. The overarching aim was to explore whether predictors can explain differences in development of work engagement over time, and to account for more variance (Hoffman, 2015). Specifically, how predictors are related to growth parameters (i.e., intercept and slope) of work engagement. Hence, how predictors relate to average levels of work engagement, as well as the functional form of development.

Control variables were included as fixed effects in the first conditional model, aimed at investigating main effects. Additional models investigated control variables in interaction with time (i.e., linear, quadratic^2, cubic^3). This was necessary to examine the extent to which effects of control variables differed over time, and to investigate the extent to which overall model fit improved (Hoffman, 2015).

Prior to including change magnitude as a predictor in the Level-2 analysis, the variable was separated into two distinct variables. In line with Hoffman (2015), time-varying predictors contains a between-person effect and a within-person effect. It is important to make the unique contribution of each effect readily interpretable. The between-person effect was reflected by an individual's person mean average change magnitude, which is a time-invariant variable. The within-person effect is the actual time-varying variable. Based on person-mean centering, it expresses how individuals deviate from their own person mean change magnitude (Hoffman, 2015). Person-mean centering was preferred, as it is easy to interpret, and is suited to explore within-person variation in work engagement (Sonnentag et al., 2010).

Continuing the Level-2 analysis, change magnitude was introduced as a between-person predictor (i.e. time-invariant) and within-person predictor (i.e. time-varying) successively. Both variables were tested as main effects, but also in interaction with time (i.e., linear, quadratic^2, cubic^3). This enabled investigation of whether the between-person effect and within-person effect of change magnitude varied over time. This was an important step also for the between-person predictor. Time-invariant predictors do not necessarily impact the development of an outcome variable consistently over time (Singer & Willett, 1993, 2003).

A common denominator to all models, was that predictors or terms that did not make significant contributions to the model in terms of overall model fit, were ruled out from subsequent models. This was necessary to retain the principle of parsimony (Hoffman, 2015; Singer & Willett, 2003). An exception was control variables, as they usually remain until the final step (Hoffman, 2015).

The iterative process generated a large number of models. Some key intermediate models are included in the Results section, in order not to lose important building blocks of the story (Singer & Willett, 2003).

Results

Descriptive Statistics

Descriptive statistics are summarized in Table 2 as means, standard deviations, internal consistency and correlations among variables. The average level of work engagement was quite stable across measurements, ranging between 3.29 and 3.42. Cronbach's alpha ranged between .89 and .98 for change magnitude, and .92 and .95 for work engagement. This indicates high reliability across measures (Field, 2013).

Table 2

Means (M), Standard Deviations (SD), Reliability (Cronbach's alpha), Intercorrelation

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Control Variables																								
1 Gender	.47	.50	-																					
2 Tenure	8.03	8.27	-.01	-																				
3 Leader	.21	.40	.10	.18*	-																			
Independent Variable																								
4 CM T0	2.73	1.28	-.01	.09	.05	(.94)																		
5 CM T1	2.58	1.24	-.08	.00	.05	.40**	(.91)																	
6 CM T2	2.48	1.27	-.05	.02	.03	.39**	.54**	(.98)																
7 CM T3	2.52	1.23	-.02	.09	-.01	.41**	.47**	.57**	(.92)															
8 CM T4	2.42	1.17	-.09	.10	.09	.37**	.39**	.43**	.49**	(.89)														
9 CM T5	2.39	1.21	-.05	.13	.09	.35**	.45**	.50**	.47**	.49**	(.94)													
11 CM T7	2.23	1.10	-.15	.22*	.04	.49**	.35**	.42**	.39**	.46**	.60**	(.93)												
12 CM T8	2.22	1.20	-.05	.13	.18*	.39**	.37**	.42**	.39**	.36**	.60**	.58**	(.93)											
13 CM T9	2.20	1.18	-.23*	.08	.04	.41**	.42**	.31**	.48**	.45**	.58**	.57**	.63**	(.92)										
14 CM T10	2.27	1.20	-.04	-.01	.02	.39**	.27**	.20*	.30**	.48**	.46**	.51**	.44**	.58**	(.94)									
Dependent Variable																								
15 WE T0	3.39	.89	.03	.15*	.06	-.01	-.08	-.11	.05	-.03	-.03	-.07	.16	.14	.05	(.93)								
16 WE T1	3.37	.81	.09	.13	.09	-.01	-.03	-.11	.10	.06	.01	.05	.17	.20*	.17	.73**	(.92)							
17 WE T2	3.42	.94	.01	.07	.03	-.06	-.04	-.21**	-.10	-.24**	-.15	-.03	.05	-.07	-.01	.63**	.66**	(.95)						
18 WE T3	3.40	.91	.09	.12	-.08	-.12	-.04	-.19*	-.08	-.17*	-.18*	-.05	.00	-.03	-.02	.59**	.59**	.71**	(.94)					
19 WE T4	3.33	.99	-.04	.10	-.01	.02	.01	-.09	.03	-.17*	-.12	-.01	.12	.08	.01	.64**	.64**	.71**	.80**	(.96)				
20 WE T5	3.35	.83	-.11	.14	.01	.06	.09	-.08	.13	.06	-.11	.08	-.01	.11	-.07	.64**	.58**	.62**	.71**	.72**	(.93)			
21 WE T7	3.38	.82	-.01	.02	.03	.12	.16	-.02	.25*	-.01	-.01	.02	.04	.14	-.09	.40**	.41**	.47**	.52**	.52**	.71**	(.93)		
22 WE T8	3.37	.81	-.01	.19*	.01	-.01	.04	.05	.14	-.05	-.00	.13	-.05	.02	-.07	.42**	.36**	.50**	.57**	.51**	.60**	.62**	(.93)	
23 WE T9	3.29	.95	-.05	.09	-.01	.01	.12	-.07	.15	.02	-.09	.18	-.10	.10	-.01	.41**	.48**	.49**	.52**	.51**	.58**	.59**	.79**	(.95)
24 WE T10	3.40	.87	-.01	.25**	-.05	.01	.02	-.01	.05	-.06	-.14	.07	-.03	.06	-.05	.53**	.41**	.57**	.56**	.55**	.54**	.53**	.72**	.69** (.94)

Note. Cronbach's alpha values are presented in the parentheses diagonally. T0-T10 = Time 0-10. Coding of variables: Gender: 0 = female, 1 = male. Tenure = years. Leader: 0 = no, 1 = yes

* p <.05 ** p <.01

Results from Exploratory Analyses

Work engagement. Individual growth trajectories of work engagement were reflected by heterogeneity. A couple of cases were linear, reflected by a straight downward or upward development trend. However, most cases coincide with a nonlinear development. Some trajectories appear quadratic, given their bend in slope over time. Other participants display a cubic development, as trajectories bend more than one time (Hoffman, 2015).

Individuals differ in their rate of change. Some cases are characterized by a rapid and steep increase or decrease in work engagement. Others change at a more modest rate, and in one rare case no change is observed. In terms of the research question, developments are not easily captured by one functional form. Yet overall findings indicate that experiences of work engagement can both rise and fall at different rates over time, given that most cases are captured by a nonlinear trajectory.

Organizational change magnitude. Similar tendencies are found when inspecting individual growth trajectories of change magnitude. Cases are not easily categorized by one functional form, whereby some are linear whereas most are nonlinear – either quadratic or cubic in shape. Some experience a rapid and steep increase or decline, whereas others display a more slow and steady upward or downward trend of development. In one rare case, the level of change magnitude is consistent over time. Overall, exploratory analyses support that change magnitude posits time-varying qualities.

Results of RCM

Key results from model building are presented in Table 3. The two levels of analyses are treated in separate written sections, as they address the research question and hypotheses differently.

Level-1 Analysis

Model 0 is an unconditional mean model, only containing a fixed and random intercept. Since no predictors are included, no change is predicted over time (Hoffman, 2015). Model fit indices by high levels of AIC (AIC Model 0 = 2773.995). As shown in Table 3, the average level of work engagement across all participants is 3.370 ($p < .000$) at time point zero. The significant variance estimates within-persons (est. .314, $p < .000$) and between-persons (est. .473, $p < .000$) yield an ICC of .61. Hence, 61% of the variance in work engagement is attributed to differences *between* employees, whereas 39% are assigned to

individual differences in development. This speaks in favor of including both time-invariant and time-varying predictors (Hoffman, 2015; Singer & Willett, 2003).

Model 1 is a full linear time model, including the predictor wave as a fixed and random effect. By allowing participants to differ in intercept and slope with reference to time, one can explore average change in work engagement, and the extent to which individuals differ in change over time (Hoffman, 2015).

Model fit improved in Model 1 compared to Model 0 (AIC Model 1 = 2692.707; AIC Model 0 = 2773.995). A relative reduction in AIC of over ten points is quite considerable (Kwok et al., 2008; Singer & Willett, 2003). As displayed in Table 3, participants differ in average levels of work engagement, given the significant fixed intercept (est. 3.403, $p < .000$). Conversely, an insignificant linear time slope (est. -.008, ns) implies that no linear trend of development was found on average. Hence, on average there is no change in work engagement trajectories (Singer & Willett, 2003).

Variance estimates based on the random effects indicate how well the average trajectory is able to capture all participants (Hoffman, 2015). Significant unexplained variance remains within-persons (est. .255, $p < .000$) and between-persons in intercept (est. .583, $p < .000$) and linear slope (est. .005, $p < .000$). Deviations from the sample mean average means that individual development is not constant (Hoffman, 2015; Singer & Willett, 2003).

Polynomial effects of time (i.e., quadratic^2, cubic^3) were included in subsequent models, starting with a quadratic effect. The aim was to account for more variance, and to investigate whether more advanced growth trajectories better capture work engagement development, as opposed to a linear model (Bliese & Ployhart, 2002; Hoffman, 2015).

Model 2 is a quadratic time model, containing a fixed and random effect of quadratic time. The interpretation of effects is slightly different from previous models. The linear time slope now represents the instantaneous rate of change at time point zero. The quadratic slope is a curvature parameter, indexing a gradual bend in linear slope over time (Hoffman, 2015).

Model 2 increases model fit, reflected by a quite considerable improvement in AIC (AIC Model 2 = 2678.570; AIC Model 1 = 2692.707). As shown in Table 3, Model 2 has a slightly negative linear (est. -.002, ns) and quadratic time slope (est. -.001, ns). This combination causes an accelerating negative trajectory (Hoffman, 2015). That is, the rate of decline in work engagement speeds up over time. However, as these effects were indistinguishable from zero, no such trend of development was found on average.

Table 3

Results of Random Coefficient Modeling Predicting Work Engagement Development

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
	Est. (SE)	Est. (SE)	Est. (SE)	Est. (SE)	Est. (SE)	Est. (SE)
Fixed effects						
Intercept	3.370(.051)***	3.403(.058)***	3.397(.058)***	3.386(.060)***	3.323(.087)***	3.329(.868)**
Tenure (years)					.005(0.005)	.006(.005)
Leader (0=no)					.034(0.104)	.039(.104)
Gender (0=male)					.025(0.101)	.012(.100)
WP change magnitude						-.027(.017)
BP change magnitude						-.031(.065)
Wave (linear)		-.008(.007)	-.002(.019)	.016(.041)	.016(.041)	.015(.040)
Wave^2 (quadratic)			-.001(.002)	-.006(.009)	-.006(.099)	-.006(.009)
Wave^3 (cubic)				.001(.001)	.001(.001)	.001(.001)
BP change magnitude*wave						-.108(.045)*
BP change magnitude*wave^2						.027(.011)*
BP change magnitude*wave^3						-.002(.001)*
Random effects						
Level-1						
Residual variance	.314 (.012)***	.255(.011)***	.233(.011)***	.215(.011)***	.215(.011)***	.214(.011)***
Level-2						
Intercept variance	.473 (.052)***	.583(.068)***	.537(.069)***	.541(.073)***	.527(.072)***	.524(.072)***
Linear slope variance		.005(.001)***	.024(.008)**	.119(.033)***	.118(.033)***	.108(.032)**
Quadratic slope variance			.001(.000)**	.006(.002)**	.006(.002)**	.005(.001)**
Cubic slope variance				.000(.000)**	.000(.000)**	.000(.000)**
Explained variance: Pseudo-R^2	.016	.016	.015	.020	.118	.142
Model fit: AIC	2773.995	2692.707	2678.570	2669.497	2674.122	2673.969

Note. Covariance is excluded from table. Estimates are rounded to three decimal numbers. BP = Between-person, WP = Within-person.

* p <.05. ** p <.01. *** p <.001

Model 2 has significant unexplained variance within-persons (est. .233, $p < .000$) and between-persons in intercept (est. .537, $p < .000$), linear slope (est. .024, $p < .01$) and slightly in the quadratic slope (est. .001, $p < .01$). Although some estimates were small, they were still significant. Hence, individuals differ in their rate of change. The highest polynomial effect of time (i.e. cubic^3) was included in the subsequent model (Hoffman, 2015).

Model 3 represents a full cubic time model, containing a fixed and random cubic effect. Cubic models advocate changes in quadratic slopes to be continuous, as the rate of change changes more than one time (Hoffman, 2015). The decrease in AIC in Model 3 (AIC Model 3 = 2669.497; AIC Model 2 = 2678.570) represents a moderate to high improvement in model fit (Kwok et al., 2008; Singer & Willett, 2003).

As presented in Table 3, work engagement is expected to be 3.386 at time point zero ($p < .000$). A positive linear slope (est. .016, ns) and a negative quadratic slope (est. -.006, ns) create a decelerating positive trajectory (Hoffman, 2015). However, the positive cubic effect (est. .001, ns) hampers the negative quadratic effect, such that the slope eventually accelerates positively. However, estimates are indistinguishable from zero, meaning that no common trend of development was found on average.

Model 3 has statistically significant variation within-persons (est. .215, $p < .000$) and between-persons in intercept (est. .541, $p < .000$), linear slope (est. .119, $p < .000$), and quadratic slope (est. .006, $p < .01$), but minimal in the cubic slope (est. .000, $p < .05$). Hence, individuals differ in the linear rate of change at time point zero, the level of instantaneous rate of deceleration, but only somewhat in acceleration (Hoffman, 2015).

The unstructured covariance structure offered superior AIC. Hence, best fit is offered when the covariance was not imposed by any restrictive structure (Singer & Willett, 2003). This implies that work engagement development is best characterized by *change* as opposed to *fluctuation* (Hoffman, 2015). As recommended by Hoffman (2015), the Level-2 analysis continued to follow principles of standard multilevel modeling.

Returning to the research question, although no common trend of development was found on average, ICC and significant variance estimates speak in favor of individual development in work engagement, whereby individuals differ in their change. This is in line with results from exploratory analyses.

Level-2 Analysis

Reviewing the ICC, work engagement has between-person variability as well as within-person variability. It is therefore essential to include both time-invariant variables as

well as time-varying variables (Hoffman, 2015; Hoffman & Stawski, 2009). This will in turn inform whether the relationship exists at the between-person level or within-person level.

Model 4 includes tenure, leadership position and gender as control variables. Results in Table 3 show that the initial average level of work engagement is 3.323 ($p < .000$) when controlling for control variables. However, tenure (est. .005, ns), leadership position (est. .034, ns) and gender (est. .025, ns) did not have significant contributions to the model. Model 4 has reduced model fit as AIC increased (AIC Model 4 = 2674.122; AIC Model 3 = 2669.497). An increase in AIC after including more model parameters implies that the relative improvement of fit was not sufficient to offset the cost of reduced parsimony (Hoffman, 2015; Singer & Willett, 2003).

As recommended by Hoffman (2015), additional models tested all control variables in interaction with time. However, the effect of control variables did not vary significantly over time, and overall model fit continued to reduce. Overall, none of the control variables significantly relates to average levels of work engagement or work engagement development over time. Although AIC will punish subsequent models for including control variables that do not make significant contributions to the model, control variables usually remain until the final step of model building (Hoffman, 2015). To retain a more parsimonious model, control variables were kept as main effects in subsequent models (Hoffman, 2015; Singer & Willett, 2003).

Model 5 represents the final model, including change magnitude as a between-person predictor (i.e. time-invariant) and within-person predictor (i.e. time-varying). The between-person variable was included as a main effect, as well as in interaction with time (i.e., linear, quadratic^2, cubic^3). The within-person variable was merely included as a main effect. Previous models had tested the within-person variable in interaction with time. These results are omitted from Table 3, as the within-person effect did not significantly vary over time, and interaction terms reduced overall model fit. As suggested by Hoffman (2015), the within-person main effect was included to preserve a more parsimonious model, and to address hypothesis.

As displayed in Table 3, the average work engagement is significantly predicted to be 3.329 ($p < .000$) when all predictor variables equal zero. When time equals zero, the simple main effect of between-person change magnitude suggests that per unit increase in between-person change magnitude, the level of work engagement is insignificantly lowered (est. -.031, ns). On the contrary, average levels of change magnitude relate to the average development in work engagement over time. However, the significant interaction effects have important

implications for how to understand the average development, as it suggests that the between-person relationship varies as a function of time.

The between-person effect of change magnitude has a negative interaction with linear time (est. -.108, $p < .05$) but a positive interaction with quadratic time (est. .027, $p < .05$), which implies a decelerating negative trajectory (Hoffman, 2015). Work engagement trajectories initially start to decline, but the rate of decline slows down per unit increase in time, as the quadratic interaction effect is positive. However, a negative interaction with cubic time (est. -.002, $p < .05$) dampens the positive quadratic effect, ultimately creating a slightly negative accelerating trajectory. Although estimates differ in size, findings generally imply that people who experience more change magnitude on average compared to others tend to have lower average levels of work engagement *over time*. This offers support to Hypothesis 1a.

Hypothesis 1b was not supported, as within-person variability in change magnitude did not predict within-person variability in work engagement. That is, on occasions when individuals experience more change magnitude than usual, this insignificantly predicts experiences of less work engagement than usual on that occasion (est. -0.027, ns).

In Model 5, unexplained variance remained after accounting for predictors, both in intercept (est. = .524, $p < .000$) and slopes. There was unexplained variance in the linear slope (est. .108, $p < .01$), quadratic slope (est. .005, $p < .01$), but minimal in the cubic slope (est. .000, $p < .01$). Overall, Model 5 explained approximately 14.2% of the total variance, and AIC improved slightly (AIC Model 5 = 2673.969; AIC Model 4 = 2674.122). Model 5 is the final model as it offers best theoretical explanation to the hypotheses (Hoffman, 2015; Singer & Willett, 2003).

Discussion

The current study investigates individual development in work engagement over time, and what characterizes this development in terms of functional form. It also investigates the longitudinal relationship between organizational change magnitude and work engagement. The longitudinal data was collected from a variety of Norwegian organizations, and includes ten measurements of both change magnitude and work engagement. Although no common trend of development on average was found in work engagement, results still imply that work engagement changes at a monthly level. Results showed mixed support for the two hypotheses. Change magnitude significantly predicts the development in work engagement at a between-person level, but not at a within-person level.

Theoretical and Empirical Contributions

The present study has three important contributions to the change literature and work engagement literature. Findings both replicate and extend existing body of knowledge. First, the longitudinal design enhances understandings about degree of stability and dynamism in work engagement over time. The study underpins that work engagement posits stable and dynamic qualities over time – which extends existing knowledge (Bakker, 2014; Mäkikangas et al., 2016; Xanthopoulou & Bakker, 2013).

The study advances existing knowledge, by exploring functional form of work engagement development. Previously, characteristics of individual development in work engagement have been poorly understood, albeit some recent progress has been made (e.g., de Wind et al., 2017; Saks & Gruman, 2018). Yet, these studies have relied upon relatively few measurements with infrequent spacing. Despite that no common trend of development was found on average in RCM, exploratory analyses clearly show that work engagement can develop nonlinearly. Hence, individuals are not equally engaged at all times. The study offers valuable contributions for future theorizing and research. Understanding *how* work engagement develop over time, allows to investigate proximal predictors of such development. In addition, future research can look closer into how work engagement as a time-varying variable predicts important individual and organizational outcomes differently over time (Bakker, 2014).

By extension, the present study generates knowledge of how work engagement develops at a monthly level, which is a less studied time frame based on (Bakker, 2014; Mäkikangas et al., 2016). Based on exploratory analyses the current study indicates that work engagement is expected to *change* at a monthly level. Most cases coincide with a nonlinear development (e.g., quadratic or cubic). This underpins the importance of continuing to explore work engagement within shorter time frames. Work engagement has been explored within shorter time frames in the past, but typically within hours, days or weeks. Studies applying very short time frames have often been able to find work engagement *fluctuation* (Bakker, 2014), which is more undirected variation (Hoffman, 2015). Findings amplify some existing research, as work engagement development posits different qualities depending on *when* it is measured (Christian et al., 2011; Dalal et al., 2008; Seppälä et al., 2015).

The second contribution of the study involves the dynamic relationship between change magnitude and work engagement. This relationship has never explicitly been investigated, albeit much attention has been devoted to the relationship between change experiences and employee motivation. Yet, most research has been cross-sectional, whereby

change experiences are assumed to consistently influence employee motivation (see Oreg et al., 2011). The present findings advance existing knowledge by showing that change magnitude predicts a nonlinear development in work engagement over time. The longitudinal multi-wave design lends increased support for a causal relationship (Hoffman, 2015; Ployhart & MacKenzie, 2014). This has important implications for how test and theorize the relationship in the future. Findings highlight the fallacy of merely including time-invariant predictors as main effects. Researchers should be cautious about theoretical and empirical assumptions about a consistent linear relationship, as this may not be the case.

The third contribution of the present study extends to theory development. The work engagement literature has frequently requested new theoretical perspectives on how to explain and predict work engagement development (Bakker, Albrecht, & Leiter, 2011). Theory development has stagnated, as only a handful theories are being used (Bailey et al., 2017; Bakker et al., 2011). Similarly, there has been a lack of theoretical framework within the change literature that can account for how dynamic experiences of change unfold, and how they predict organizational outcomes (Gover et al., 2016; Pettigrew et al., 2001 Vakola, 2016).

Previous theories that have been used within the change literature and work engagement literature are often aimed at explaining cross-sectional findings (Bakker et al., 2011; Pettigrew et al., 2001). The capability to explain longitudinal relationships are questioned, given their theoretical inability to specify *when* and *how* relationships unfold dynamically over time (Pitariu & Ployhart, 2002; Schalk et al., 2011). EST opens a new door to future research, and addresses many of the theoretical challenges faced by organizational science. EST allows for making more precise predictions about the nature of relationships, and what is it about change experiences that make them impactful over time. It compellingly explains *how* change magnitude develops over time, and *why*, *how* and *when* change magnitude is likely to influence work engagement development (Morgeson et al., 2015). This is key when seeking to explain longitudinal relationships (Pitariu & Ployhart, 2002).

Development in Work Engagement

The present study argues that there is individual development in work engagement. Based on exploratory analyses, individuals are not equally engaged at all times. Most cases display considerable within-person variation over time and correspond to a nonlinear development (e.g., quadratic or cubic), and merely a few cases display stability. From a methodological point of view, there is reason to question the accuracy of cases advocating

stability. Stability assumptions are based on few measurements – as little as two waves. This insufficiently captures development (Ployhart & MacKenzie, 2014). Rather than reflecting the true nature of work engagement, the number of measurements constrains the understanding of the relative differences between two time points. On the other hand, cases reflecting a nonlinear development ranged between three and ten measurement waves. A high number of waves offer a more accurate understanding of development trajectories (Hoffman, 2015; Singer & Willett, 2003). These results point in the direction of a nonlinear work engagement development over time. This amplifies some recent studies that have identified nonlinear development tendencies (de Wind et al., 2017; Roe & Inceoglu, 2016; Saks & Gruman, 2018).

While the exploratory analyses clearly argue in favor of dynamism, one needs to reflect why results from RCM are less obvious. The study was unable to find a common trend of development across all participants. This challenges assumptions of dynamism, because it implies that on average there is no change (Singer & Willett, 2003). Based on previous studies, this may be interpreted as arguments of stability (e.g., Mauno et al., 2007; Seppälä et al., 2015; Schaufeli et al., 2006). However, one should be cautious about assuming that the development in work engagement is merely reflected by stability. In this study, ICC found 61% of the variance in work engagement to be attributed to between-person variability, whereas 39% were accounted for by within-person variability. The percentage of within-person variability is similar to previous studies that have argued in favor of dynamism (Xanthopoulou & Bakker, 2013). Based on Sonnentag et al. (2010), this is substantial and should not be viewed as measurement error. Overall, it is unlikely that an individual's work engagement stays the same across months.

The fact that individuals do not conform to the same form of change does not mean that there is no change at all. Variance estimates from RCM question the extent to which the expected average trajectory is able to capture all participants. Although some variance estimates are quite small, there is still significant variance in intercepts and slopes. This suggests that individuals vary around the sample mean average (Hoffman, 2015; Singer & Willett, 2003). Although average change trajectories are expected to be flat, individual trajectories are not. The significant variance estimates imply that individuals differ in initial status and rate of linear, quadratic and cubic change. Some participants may have higher intercepts, whereas others have lower ones. Similarly, some participants may display a steeper or perhaps less steep trajectory, whereby accelerating differently over time. This corresponds

to propositions made by exploratory analyses, and support assumptions of individual development in work engagement at a monthly level.

Continuing the discussion above, an important question relates to why exploratory analyses and RCM offer somewhat inconsistent evidence in terms of degree of stability and dynamism. There may be several plausible reasons for this. For instance, exploratory analyses uncovered a large diversity in sample. Variation was found in rate, form and direction of change within persons and across persons. This may not be surprising, given that participants stem from a variety of organizations, occupations and departments. However, the great diversity of trajectories makes it increasingly difficult to find a common trend of development. Average trends may have been canceled out, inaccurately supporting assumptions of stability in work engagement (Hoffman, 2015; Roe & Inceoglu, 2016; Singer & Willett, 2003). In addition, if the time interval is not aligned with individuals' actual development, the statistical analyses may have converged forms of development that does not necessarily reflect reality (Hoffman, 2015). From this perspective, there is reason to question the extent to which the sample mean average in the present study reflects the true nature of individual development.

The Relationship Between Organizational Change Magnitude and Work Engagement

Between-person relationship. Hypothesis 1a was supported, as average levels of change magnitude predict average work engagement development over time. This is in line with initial expectations, and corresponds with EST (Morgeson et al., 2015). However, no main effect of between-person change magnitude was found, and the relationship is only significant in interaction with time. This simply means that the two variables are not equally associated at all time points, predicting differences in terms of a nonlinear development in work engagement (Hoffman, 2015). At first, change magnitude predicts a decelerating negative trajectory whereby levels of work engagement start to decline, but the rate of decline slows down per unit increase in time, yet the trajectory eventually starts accelerating negatively once more. Generally, employees with higher levels of change magnitude on average compared to others tend to have averagely lower levels of work engagement *over time*. Nevertheless, how the between-person effect varies as a function of time is more counterintuitive based on previous research.

Based on existing research, average levels of change magnitude should have predicted a linear development in work engagement. Between-person predictors of work engagement are usually thought of as equally impactful over time (Bailey et al., 2017). Likewise, meta-

analytic evidence claims a negative linear relationship between the level of change impact and employee motivation (Oreg et al., 2011). Although most studies are cross-sectional, they implicitly generalize relationships as consistent over time (Pitariu & Ployhart, 2002; Schalk et al., 2011). From this point of view, every unit increase in change magnitude should have the same impact on work engagement development across the entire range of the predictor (Hoffman, 2015). From this point of view, it is difficult to explain why no main effect was found, or why change magnitude is inconsistently linked to the development of work engagement over time.

On the other hand, the fact that the between-person effect of change magnitude is contingent on its interaction effects, in turn highlights why no main effect was found (Singer & Willett, 1993). Main effects are assumed unconditional where the effect is equally impactful across the entire sample (Hoffman, 2015). Evidently, this cannot be the case in the present study as the between-person effect of change magnitude is contingent on its interaction with time. Findings are interesting and highlight a potential pitfall. By solely including between-person change magnitude as a main effect, one would erroneously conclude that no relationship existed at all.

In light of existing research, one needs to discuss why the present study offers a more complex understanding of the between-person relationship. Conclusions of linear relationships often stem from cross-sectional designs (see Oreg et al., 2011 for a review). However, simply arguing that two variables associate at one point in time does not guarantee that they are equally associated over time. As cross-sectional research does not emphasize *development*, and the relationship cannot be framed as anything other than linear (Pitariu & Ployhart, 2002; Ployhart & MacKenzie, 2014). Conversely, one should not assume that a predictor consistently impact an outcome variable across time, because this is often not the case (Hoffman, 2015; Pettigrew et al., 2001; Schalk et al., 2011; Singer & Willett, 1993, 2003). For instance, a unit increase in change magnitude is not necessarily given the same qualitative meaning or value at different points in time (Piderit, 2000; Gover et al., 2016; Kim et al., 2011; Vakola, 2016), which in turn can explain why change magnitude inconsistently impact work engagement development. The legitimacy of generalizing linear relationships across time is thus questionable. By comparison, the present study's longitudinal multi-wave approach increases support for a causal nonlinear relationship over time (Hoffman, 2015; Singer & Willett, 2003).

Within-person relationship. Findings question the accuracy of prediction in Hypothesis 1b, as it was not supported. Hence, occasions characterized by *more* change

magnitude than usual do not predict experiences of *less* work engagement than usual. In such, there can be other predictors that do a better job explaining within-person variability in work engagement – for instance other kinds of job related experiences (Breevart et al., 2014; Christian et al., 2015). It is important to remember that a significant relationship at the between-person level does not guarantee a significant relationship at the within-person level (Hoffman, 2015). The reasons why individuals *differ from each other* are not necessarily aligned with reasons for *individual variation over time* (Hoffman & Stawski, 2009).

However, one needs to reflect about the accuracy of findings in the present study, and the study's ability to capture the whole story. First, one should address the accuracy of treating change magnitude as a time-varying variable. If change magnitude is better captured as time-invariant, it explains why the relationship only exists at a between-person level. Time-invariant predictors are constant, as it is reflected by person mean averages (Hoffman, 2015). Without within-person variation one cannot have a within-person effect (Hoffman, 2015; Hoffman & Stawski, 2009).

On the other side, based on theoretical, empirical and methodological considerations, it is unlikely that the relationship between change magnitude and work engagement merely exists at the between-person level. First of all, based on EST and empirical evidence, experiences of change magnitude are highly dynamic across time (e.g., Fugate et al., 2002; Löwstedt & Räisänen; Morgeson et al., 2015; Pettigrew et al., 2001). Also, exploratory analyses conducted in the present study clearly support a time-varying nature. Experiences of change magnitude were found to vary within individuals and between individuals over time. In line with Hoffman (2015), additional calculations of ICC found 43% of the variance in change magnitude to be accounted for by within-person variability.

In turn, the time-varying nature of change magnitude makes it unlikely that change magnitude is only a between-person predictor of development. As suggested by EST, if experiences of change magnitude vary, so will the associated impact on work engagement over time (Morgeson et al., 2015). Likewise, one cannot generalize that experiences of change statically influence employees over time, as change experiences vary over time (Pettigrew et al., 2001). The extent to which the present study was able to capture the whole story is questioned, as a dynamic relationship is theoretically and empirically supported.

There are several plausible reasons why the present study was unable to detect a within-person relationship. As opposed to reflecting the true story, insignificant findings can be a consequence of inadequate methodological underpinnings. For instance, the choice of time and spacing imposes restrictions on how the relationship can unfold (Hoffman, 2015;

Singer & Willett, 2003). Findings in the current study merely imply that no within-person relationship exists at a *monthly* level. It does not mean that no within-person relationship exist at all. Perhaps a monthly time frame is too narrow or too wide to capture true dynamics of the relationship, and that the relationship is better captured within other time frames (Ployhart & MacKenzie, 2014). However, the adequacy of a monthly time frame is difficult to evaluate, as research and theory offer little guidance. The relationship has not explicitly been addressed in previous cross-sectional or longitudinal research (Oreg et al., 2011). Some have stated the need to pay more attention to appropriate time perspectives when exploring the dynamic interplay between change and organizational outcomes (Pettigrew et al., 2001). Yet, time is abstract, and what constitutes appropriate time perspectives remains uncertain.

How change magnitude was operationalized and measured might have caused problems for detecting a within-person relationship. Albeit change magnitude captures the degree to which changes have an impact on work processes, procedures or routines (Caldwell et al., 2004), it does not capture the subjective *valence* (i.e. value) individuals assign to change experiences. This is an important consideration, because the overall valence of experiences is key to understand *how* a predictor impacts work engagement development (Sonnentag, 2015). On the contrary, merely quantifying the level of change impact does not necessarily align with *how* change is actually perceived (Loretto, Platt, & Popham, 2010). For instance, employees often base their overall evaluation of change impact in terms of whether qualities of the work or work life have changed for the better or worse (Gover & Duxbury, 2018; Gover et al., 2016; Kim et al., 2011; Piderit, 2000; Vakola, 2016). In this case, problems arise as one cannot be certain whether or not experiences of *more* or *less* change magnitude than usual are consistently valued by the employee over time. As an example, occasions characterized by *more* change magnitude than usual can result in experiences of both *more and less* work engagement than usual – depending on the valence assigned to the experience (i.e. whether the change was for the better or worse). The fact that the same experience of change magnitude can influence work engagement development in opposite directions is problematic from a methodological point of view. We do not know whether a relative increase or decrease in change magnitude represents the same, implying that within-person variability in change magnitude can inconsistently influence within-person variability in work engagement. It would therefore be difficult to identify a systematic relationship, as the within-person relationship may have been concealed (Hoffman, 2015).

Continuing the discussion above, the within-person relationship between change magnitude and work engagement may depend on the type of change or change circumstances.

Petrou et al. (2012) found work engagement to vary differently depending on the type of change experienced. Changes forced by the organization are likely to influence motivation more negatively, compared to changes initiated by the employees or changes where employees are empowered (Oreg, 2003; Oreg & Sverdlik, 2011; Oreg et al., 2011). Different types of changes could therefore impact work engagement development in different directions.

Limitations and Future Research

The present study is not without limitations. The study contributes to the understanding of the longitudinal relationship between change magnitude and work engagement, but more longitudinal studies are needed. The present longitudinal multi-wave study lends increased support to a causal relationship between change magnitude and work engagement, however, one cannot rule out confounding variables completely (Hoffman, 2015). Also, as both change magnitude and work engagement were measured simultaneously on all ten occasions, the direction of causality can be questioned. Future longitudinal research can address this more deliberately by using a lagged design (Hoffman, 2015; Singer & Willett, 2003).

The monthly time frame made retrospective biases a potential problem. Participants were instructed to refer to the last month when evaluating experiences of change magnitude. However, if the measurement of the time-varying variable is misaligned with the time of event occurrence, it is difficult to interpret their effect (Singer & Willett, 2003). Moreover, it is difficult to say whether experiences of change magnitude were the same at the time of measurement as they were at the point in time when the change actually occurred. Previous research has identified large discrepancies between change experiences at change occurrence, and the retrospective accounts for the same change experience later on (Gover & Duxbury, 2018). Still, little practical guidance is offered by existing literature (Pettigrew et al., 2001). Future research should continue to explore suitable time frames.

The results may be biased due to common method bias. Self-report measurements could have inflated the data yielding artificially high correlation among variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Despite being a common approach, Ohly et al. (2010) suggest combining self-reports and external measurements to reduce biases. External raters could be key personnel such as supervisors or colleagues. Caution is advised if leaders provide external measurements – particularly in times of change. Leaders are primed to interpret employee reactions and behavior negatively, as they expect negative employee

reactions (Ford, Ford, & D'Amelio, 2008; Furst & Cable, 2008). Future studies should continue to explore alternative measurement approaches.

Further, it is a limitation that the study does not distinguish between different kinds of changes. By not taking into account how different types of changes can predict work engagement differently, the study generalizes the relationship across all types of changes. As previously noted, the type of change experienced can be an important factor in terms of *how* changes impact employee motivation (e.g., Oreg, 2003; Oreg et al., 2011; Petrou et al., 2012). This is something future research should consider. It can be particularly interesting to look into technological changes (e.g. Petrou et al., 2012). For instance, artificial intelligence, gamification, robotizing and 'big data' are rapidly transforming the way people work, and such changes will be more profound in the future. There is a growing concern that very little is known about how technological changes could influence work engagement in the future (Bakker & Albrecht, 2018).

Overall, future research should investigate the within-person relationship between change magnitude and work engagement within other time frames. Although the current study did not find a significant within-person relationship at a monthly level, this does not preclude that a within-person relationship exists within other time frames (Hoffman, 2015; Ployhart & MacKenzie, 2014). More research is needed, as exiting theory and research offer little practical guidance also in this case. Time frames could for instance be shorter (e.g. days or weeks) or longer (e.g. several months).

Practical Implications

The current study has important implications for organizational and managerial practice. The study highlights the fallacy of assuming employees to be consistently engaged at all times. Managers should recognize the dynamic nature of work engagement and strive for a managerial practice aimed at enhancing employees' engagement. This effort should be continuous, as the present study suggests that changes can occur at a monthly level. Ignoring the dynamic properties of work engagement may result in managerial practices that deteriorates rather than enhances work engagement. This can be costly, given the importance of outcomes associated with work engagement at the individual and organizational level (Bailey et al., 2017; Christian et al., 2011).

Individuals are shown to display different types of development in work engagement. Hence, mangers should reconsider the appropriateness of popular work engagement interventions, commonly referred to as best practice. Best practice is assumed universal, but it

is questionable whether such practices are able to account for the diversity of work engagement development. Ultimately, managers risk using a lot of resources on expensive and time-consuming initiatives that do not lead to desired outcomes. The short-term solutions offered by interventions programs (e.g. Knight, Patterson, & Dawson, 2017) are also incompatible with the present study's emphasis on sustained effort. Managers are advised to embrace the importance of individual differences so that initiatives are able to address the needs of employees.

Understanding how change magnitude predicts a nonlinear development in work engagement, is perhaps more important than ever. Change is the norm rather than the exception in contemporary organizations (Bouckenooghe et al., 2009; Caldwell et al., 2004). Employee motivation is vital to succeeding with change, and for reaching valued change goals (Kim et al., 2011). Managers are encouraged to look into ways of mitigating the negative influence of change, ultimately aimed at enhancing work engagement. The importance of good HRM practice and change management is not to be underrated.

Conclusion

This longitudinal study underpins the importance of recognizing the dynamic nature of work engagement. Individual development in work engagement is not easily captured by one functional form, as individuals differ in shape and rate of change.

Being the first study to investigate the dynamic relationship between change magnitude and work engagement, the study can explain differences in work engagement development over time. Change magnitude is a between-person predictor of work engagement, ultimately predicting a nonlinear development over time. Previous research has not been able to capture this level of complexity. Findings highlight the fallacy of assuming that between-person predictors consistently influence the development of work engagement over time.

The present study failed to capture a within-person relationship between change magnitude and work engagement. Still, the lack of significant within-person relationship should not be interpreted as if no within-person relationship exists at all. There are potentially many plausible reasons for this, and more research is needed. Future research should continue to thoroughly test a dynamic relationship within other time frames.

References

Albrecht, S., Breidahl, E., & Marty, A. (2018). Organizational resources, organizational engagement climate, and employee engagement. *Career Development International*, *23*(1), 67-85. doi:10.1108/CDI-04-2017-0064

Bailey, C., Madden, A., Alfes, K., & Fletcher, L. (2017). The Meaning, Antecedents and Outcomes of Employee Engagement: A Narrative Synthesis. *International Journal of Management Reviews*, *19*(1), 31-53. doi:10.1111/ijmr.12077

Bakker, A. B. (2014). Daily Fluctuations in Work Engagement An Overview and Current Directions. *European Psychologist*, *19*(4), 227-236. doi:10.1027/1016-9040/a000160

Bakker, A. B., & Albrecht, S. (2018). Work engagement: current trends. *Career Development International*, *23*(1), 4-11. doi:10.1108/CDI-11-2017-0207

Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology*, *20*(1), 4-28. doi:10.1080/1359432X.2010.485352

Bakker, A. B., & Bal, M. P. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*(1), 189-206. doi:10.1348/096317909X402596

Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: building, testing, and illustrations. *Organizational Research Methods*, *5*(4), 362-387. doi:10.1177/109442802237116

Bouckenooghe, D., De Vos, G., & Van den Broeck, H. (2009). Organizational Change Questionnaire – Climate of change, process, and readiness: Development of a new instrument. *The Journal of Psychology*, *143*(6), 559-599. doi:10.1080/00223980903218216

Breevaart, K., Bakker, A. B., Demerouti, E., & Hetland, J. (2012). The Measurement of State Work Engagement A Multilevel Factor Analytic Study. *European Journal of Psychological Assessment*, *28*(4), 305-312. doi:10.1027/1015-5759/a000111

Breevaart, K., Bakker, A. B., Hetland, J., Demerouti, E., Olsen, O. K., & Espevik, R. (2014). Daily transactional and transformational leadership and daily employee engagement. *Journal of Occupational and Organizational Psychology*, *87*(1), 138-157. doi:10.1111/joop.12041

Caldwell, S. D., Herold, D. M., & Fedor, D. B. (2004). Toward an Understanding of the

Relationships Among Organizational Change, Individual Differences, and Changes in Person-Environment Fit: A Cross-Level Study. *Journal of Applied Psychology*, *89*(5), 862-882. doi:10.1037/0021-9010.89.5.868

Christian, M. S., Eisenkraft, N., & Kapadia, C. (2015). Dynamic associations among somatic complaints, human energy, and discretionary behaviors: Experiences with pain fluctuations at work. *Administrative Science Quarterly*, *60*(1), 66-102. doi:10.1177/0001839214553655

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, *64*(1), 89-136. doi:10.1111/j.1744-6570.2010.01203.x

Dalal, R. S., Brummel, B. J., Wee, S., & Thomas, L. L. (2008). Defining Employee Engagement for Productive Research and Practice. *Industrial and Organizational Psychology*, *1*, 52-55. doi:10.1111/j.1754-9434.2007.00008.x

Demerouti, E., Bakker, A. B., & Halbesleben, J. R. B. (2015). Productive and counterproductive job crafting: A daily diary study. *Journal of Occupational Health Psychology*, *20*(4), 457-469. doi:10.1037/a0039002

de Wind, A., Lejten, F. R., Hoekstra, T., Geuskens, G. A., Burdorf, A., & Van Der Beek, A. J. (2017). "Mental retirement?" Trajectories of work engagement preceding retirement among older workers. *Scandinavian Journal of Work, Environment & Health*, *43*(1), 34-41. doi:10.5271/sjweh.3604

Fedor, A. B., Caldwell, S., & Herold, D. M. (2006). The effects of organizational changes on employee commitment: a multilevel investigation. *Personnel Psychology*, *59*(1), 1-29. doi:10.1111/j.1744-6570.2006.00852.x

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. (4.ed). London: Sage Publications.

Ford, J. F., Ford, L. W., & D'Amelio, A. (2008). Resistance to change: The rest of the story. *The Academy of Management Review*, *33*(2), 362-377. doi:10.5465/AMR.2008.31193235

Fugate, M., Kinicki, A. J., & Scheck, C. L. (2002). Coping with an organizational merger over four stages. *Personnel Psychology*, *55*(4), 905-928. doi:10.1111/j.1744-6570.2002.tb00134.x

Furst, S., & Cable, D. (2008). Employee resistance to organizational change: managerial influence tactics and leader-member exchange. *Journal of Applied Psychology*, *93*(2), 453-462. doi:10.1037/0021-9010.93.2.453

Gersick, C. J. G., & Hackman, J. R. (1990). Habitual routines in task-performing groups. *Organizational Behavior and Human Decision Processes*, *47*(1), 65-97. doi:10.1016/0749-5978(90)90047-D

Gover, L., & Duxbury, L. (2018). Making sense of organizational change: Is hindsight really 20/20? *Journal of Organizational Behavior*, *39*(1), 39-51. doi:10.1002/job.2208

Gover, L., Halinski, M., & Duxbury, L. (2016). Is it Just Me? Exploring Perceptions of Organizational Culture Change. *British Academy of* Management, *27*(3), 567-582. doi:10.1111/1467-8551.12117

Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A meta-analysis of antecedent and correlates of employee turnover: update, moderator tests, and research implications for the next millennium. *Journal of Management*, *26*(3), 463-488. doi:10.1016/S0149-2063(00)00043-X

Hoffman, L. (2015). *Longitudinal Analysis Modeling Within-Person Fluctuation and Change*. New York: Routledge.

Hoffman, L., & Stawski, R. S. (2009). Persons as Contexts: Evaluating Between-Person and Within-person Effects in Longitudinal Analysis. *Research in Human Development*, *6(*2-3), 97-120. doi:10.1080/15427600902911189

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications* (2 ed.). New York: Routledge.

Kahn, W. A. (1990). Psychological Conditions of Personal Engagement and Disengagement at Work. *The Academy of Management Journal*, *33*(4), 692-724. Retrieved from http://www.jstor.org/stable/256287

Kanfer, R., Frese, M., & Johnson, R. E. (2017). Motivation related to work: A century of progress. *Journal of Applied Psychology*, *102*(3), 338-355. doi:10.1037/apl0000133

Kim, T. G., Hornung, S., & Rousseau, D. M. (2011). Change-Supportive Employee Behavior: Antecedents and the Moderating Role of Time. *Journal of Management*, *37*(6), 1664-1693. doi:10.1177/0149206310364243

Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, *38*(6), 792-812. doi:10.1002/job.2167

Kwok, O. M., Underhill, A. T., Berry, J. W., Luo, W., Elliott, T. R., Yoon, M. (2008).

Analyzing Longitudinal Data with Multilevel Models: An Example With Individuals Living With Lower Extremity Intra-Articular Fractures. *Rehabilitation Psychology*, *53*(3), 370-386. doi:10.1037/a0012765

Lau, C. M., & Woodman, R. W. (1995). Understanding Organizational Change: A Schematic Perspective. *Academy of Management Journal*, *38*(2), 537-554. doi:10.2307/256692

Loretto, W., Platt, S., & Popham, F. (2010). Workplace Change and Employee Mental Health: Results from a Longitudinal Study. *British Journal of Management*, *21*(2), 526-540. doi:10.1111/j.1467-8551.2009.00658.x

Louis, M. R., & Sutton, R. I. (1991). Switching Cognitive Gears: From Habits of Mind to Active Thinking. *Human Relations*, *44*(1), 55-76. doi:10.1177/001872679104400104

Löwstedt, M., & Räisänen, C. (2012). 'Playing back-spin balls': narrating organizational change in construction. *Construction Management and Economics*, *30*(9), 795-806. doi:10.1080/01446193.2012.693189

Maas, C. J. M., & Hox, J. J. (2005). Sufficient Sample Sizes for Multilevel Modeling. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, *1*(3), 86-92. doi:10.1027/1614-2241.1.1.3.86

Mäkikangas, A., Kinnunen, U., Feldt, T., & Schaufeli, W. (2016). The longitudinal development of employee well-being: a systematic review. *Work & Stress*, *30*(1), 46-70. doi:10.1080/02678373.2015.1126870

Mauno, S., Kinnunen, U., & Ruokolainen, M. (2007). Job demands and resources as antecedents of work engagement: A longitudinal study. *Journal of Vocational Behavior*, *70*(1), 149-171. doi:10.1016/j.jvb.2006.09.002

Morgeson, F. P. (2005). The external leadership of self-managing teams: Intervening in the context of novel and disruptive events. *Journal of Applied Psychology, 90*(3), 497-508. doi:10.1037/0021-9010.90.3.497

Morgeson, F. P., & DeRue, S. (2006). Event criticality, urgency, and duration: Understanding how events disrupt teams and influence team leader intervention. *The Leadership Quarterly*, *17*(3), 271-287. doi:10.1016/j.leaqua.2006.02.006

Morgeson, F. P., Mitchell, T. R., & Liu, D. (2015). Event System Theory: An Event-Oriented Approach to The Organizational Sciences. *Academy of Management Review*, *40*(4), 515-537. doi:10.5465/amr.2012.0099

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary Studies in Organizational Research. An Introduction and Some Practical Recommendations. *Journal of Personnel Psychology*, *9*(2), 79-93. doi:10.1027/1866-5888/a000009

Oreg, S. (2003). Resistance to change: Developing an individual differences measure. *Journal of Applied Psychology*, *88*(4), 680-693. doi:10.1037/0021-9010.88.4.680

Oreg, S., & Sverdlik, N. (2011). Ambivalence toward imposed change: The conflict between dispositional resistance to change and the orientation toward the change agent. *Journal of Applied Psychology*, *96*(2), 337-349. doi:10.1037/a0021100

Oreg, S., Vakola, M., & Armenakis, A. (2011). Change Recipients' Reactions to Organizational Change A 60-Year Review of Quantitative Studies. *Journal of Applied Behavioral Science*, *47*(4), 461-524. doi:10.1177/0021886310396550

Pettigrew, A. M., Woodman, R. W., & Cameron, K. S. (2001). Studying organizational change and development: challenges for future research. *Academy of Management Journal*, *44*(4), 697-713. doi:10.2307/3069411

Petrou, P., Demerouti, E., Peeters, M. C., Schaufeli, W. B., & Hetland, J. (2012). Crafting a job on a daily basis: Contextual correlates and the link to work engagement. *Journal of Organizational Behavior*, *33*(8), 1120-1141. doi:10.1002/job.1783

Piderit, S. K. (2000). Rethinking Resistance and Recognizing Ambivalence: A Multidimensional View of Attitudes Toward an Organizational Change. *Academy of Management Review*, *25*(4), 783-794. doi:10.5465/AMR.2000.3707722

Pitariu, A. H., & Ployhart, R. E. (2002). Explaining Change: Theorizing and Testing Dynamic Mediated Longitudinal Relationships. *Journal of Management*, *36*(2), 405-429. doi:10.1177/0149206308331096

Ployhart, R. E., & MacKenzie, W. I. (2014). Two waves of measurement do not a longitudinal study make. In C. E. Lance & R. J. Vandenberg (Eds.), *More Statistical and Methodological Myths and Urban Legends*. pp. 85-99. New York: Routledge.

Podsakoff, P. M., MacKenzie, S. B., Lee, J-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879-903. doi:10.1037/0021-9010.88.5.879

Roe, R. A., & Inceoglu, I. (2016). Measuring states and traits in motivation. A new model illustrated in the case of work engagement. In F.T.L Leong., D. Bertram., F. M. Cheung., K.F. Geisinger & D. Iliescu (Eds.), *The ITC International Handbook of Testing and Assessment*. pp. 63-68. New York: Oxford University Press.

Saks, A. M., & Gruman, J. A. (2018). Socialization resources theory and newcomers' work engagement: A new pathway to newcomer socialization. *Career Development International*, *23*(1), 12-32. doi:10.1108/CDI-12-2016-0214

Schalk, R., van der Heijden, B., de Lange, A., & van Vedhoven, M. (2011). Long-term developments in individual work behavior: Patterns of stability and change. *Journal of Occupational and Organizational Psychology*, *84*, 215-227. doi:10.1111/j.2044-8325.2011.02031.x

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The Measurement of Work Engagement With a Short Questionnaire A Cross-National Study. *Educational and Psychological Measurement*, *66*(4), 701-716. doi:10.1177/0013164405282471

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies*, *3*(1), 71-92. doi:10.1023/A:1015630930326

Seppälä, P., Hakanen, J., Mauno, S., Perhoniemi, R., Tolvanen, A., & Schaufeli, W. (2015). Stability and change model of job resources and work engagement: A seven-year three-wave follow-up study. *European Journal of Work and Organizational Psychology*, *24*(3). doi:10.1080/1359432X.2014.910510

Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., Schaufeli, W. (2009). The Construct Validity of the Utrecht Work Engagement Scale: Multisample and Longitudinal Evidence. *Journal of Happiness Studies*, *10*(4), 459. doi:10.1007/s10902-008-9100-y

Singer, J. D., & Willett, J. B. (1993). It's About Time: Using Discrete-Time Survival Analysis to Study Duration and the Timing of Events. *Journal of Educational Statistics*, *18*(2), 155-195. doi:10.3102/10769986018002155

Singer, J. D., & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling change and event occurrence.* New York: Oxford University Press.

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, *88*(3), 518-528. doi:10.1037/0021-9010.88.3.518

Sonnentag, S. (2015). Dynamics of Well-Being. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*, 261-293. doi:10.1146/annurev-orgpsych-032414-111347

Sonnentag, S. (2017). A task-level perspective on work engagement: A new approach that helps to differentiate the concepts of engagement and burnout. *Burnout Research*, *5*, 12-20. doi:10.1016/j.burn.2017.04.001

Sonnentag, S., Dormann, C., & Demerouti, E. (2010). Not all days are created equal: The

concept of state work engagement: A handbook of essential theory and research. In A. B. Bakker & M. P. Leiter (Eds.), *Work Engagement: The essential in theory and research* (pp.25-38). New York: Psychology Press.

Vakola, M. (2016). The reasons behind change recipients' behavioral reactions: a longitudinal investigation. *Journal of Managerial Psychology*, *31*(1), 202-215. doi:10.1108/JMP-02-2013-0058

Van Steenbergen, E. F., van der Ven, C., Peeters, M. C. W., & Taris, T. W. (2017). Transitioning Towards New Ways of Working: Do Job Demands, Job Resources, Burnout, and Engagement Change? *Psychological Reports*, *0*(0), 1-31. doi:10.1177/0033294117740134

Xanthopoulou, D., & Bakker, A. B. (2013). State work engagement: The significance of within-person fluctuations. In A. B. Bakker & K. Daniels (Eds.), *Current issues in work and organizational psychology. A day in the life of a happy worker* (pp. 25-40). New York: Psychology Press.

Yurek, L. A., Vasey, J. Havens, D. S. (2008). The Use of Self-Generated Identification Codes in Longitudinal Research. *Evaluation Review*, *32*(5), 435-452. doi:10.1177/0193841X08316676