



## Review

# Work engagement or burnout: Which comes first? A meta-analysis of longitudinal evidence



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## ABSTRACT

Currently, burnout (BU) and work engagement (WE) are considered different forms of workplace well-being, negatively related that might even co-occur, or as direct opposites and mutually exclusive. These contrasting views generate difficulties regarding the true nature of the relationship between the two concepts. In the present paper, we aim at clarifying this issue by testing the cross-lagged effects between BU and WE. We conducted systematic database searches using keywords relevant for WE, BU and design type (e.g., longitudinal), and we found 25 eligible research studies ( $N_{\text{total}} = 13271$  participants). The selected papers a) reported a longitudinal research study; b) included measures of BU and WE, and c) reported the correlation matrix between BU and WE at all measurement moments. First, we used meta-analytical formulas to compute the averaged correlations between BU and WE. Second, we used the averaged effects to complete a correlation matrix, which was used to test the cross-lagged effects between BU and WE, using structural equations modeling. On the entire sample of studies, we found insignificant cross-lagged effects between BU and WE. However, when the time-lag between the two measurement moments was used as a moderator, significant reciprocal cross-lagged effects were found between exhaustion and WE, at 12-month time lag. Notably, it appears that the validity of causal perspective depends on the size of the time lag.

## 1. Introduction

Burnout (BU) and work engagement (WE) have significant implications for employee health and organizational performance (e.g., [Taris, 2006](#); [Christian, Garza, & Slaughter, 2011](#)), therefore they represent high-interest topics for researchers and practitioners. However, because the two concepts are rather highly correlated ([Halbesleben, 2010](#)), the relationship between BU and WE has generated debates in the literature. Initially, researchers considered that WE is the opposite of BU ([Maslach & Leiter, 1997](#); [Cole, Walter, Bedeian, & O'Boyle, 2012](#)), and that both concepts can be assessed using the same questionnaire. In response to this perspective, other research studies showed that BU and WE have different correlation patterns with variables of interest (e.g., job characteristics) ([Schaufeli, Taris, & van Rhenen, 2008](#)); that WE has incremental effects over BU in longitudinal studies (e.g., [Hakanen & Schaufeli, 2012](#)); or that BU and WE have different correlation patterns with personality variables such as neuroticism or extraversion ([Langelaan, Bakker, Van Doornen, & Schaufeli, 2006](#)). Based on these findings, researchers concluded that BU and WE are constructs that describe connected, yet distinct forms of well-being ([Schaufeli & Salanova, 2014](#)).

In the present review, we start from the assumption that BU and WE are distinct and yet correlated forms of well-being. Following this conceptualization, some researchers suggested that the strong correlation between them (i.e., values ranging between 0.30 and 0.50, according to [Halbesleben, 2010](#)) could be the result of a causal relationship between the two forms of well-being. For example, [Van Beek, Kranenburg, Taris, and Schaufeli \(2013\)](#) suggested that highly engaged students are less vulnerable to exhaustion (a BU component), as compared with students with low engagement. Consequently, [Van Beek et al. \(2013\)](#) considered that WE is an antecedent of low exhaustion. Nonetheless, based on longitudinal designs, other researchers reported that rather BU is a significant predictor of (low) WE ([Salmela-Aro & Upadyaya, 2014](#)). To the best of our knowledge, these divergent perspectives were not previously addressed in a systematic manner. Moreover, most studies addressed the relationship between the two concepts based on a cross-sectional methodology, which makes it impossible to investigate causal relationships. Except for [Salmela-Aro and Upadyaya \(2014\)](#), longitudinal research studies focus their analyses on understanding causal relationships between well-being (BU and WE) and various outcomes (e.g., performance), and not on the reciprocal relationships between BU and WE. Therefore, we aim to clarify the

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relationship between BU and WE, using the data reported by longitudinal studies. To achieve this goal, we integrated meta-analytical calculations to combine results from different longitudinal studies and structural equation modeling procedures to test different cross-lagged models of the possible temporal order of BU and WE.

### 1.1. Burnout

Burnout is characterized by three dimensions (Maslach & Leiter, 1997), namely exhaustion, cynicism (or depersonalization), and inefficacy (or reduced personal accomplishment). Specifically, exhaustion refers to the feeling of being drained, emotionally and physically, having low levels of energy; cynicism is conceptualized as a detached attitude towards work or people at work. Importantly, Bresó, Salanova, and Schaufeli (2007) draw attention to the problem of the third dimension of BU, initially called personal accomplishment, due to its positively worded items, and proposed an alternative dimension, named professional inefficacy, with negatively worded items, that should be used to measure burnout. Previous meta-analyses (e.g., Lee & Ashforth, 1996) indicated that inefficacy (measured as personal accomplishment) is relatively weakly correlated with exhaustion and cynicism (correlation values around 0.35, after reliability corrections). Consequently, researchers suggested that exhaustion and cynicism constitute a general factor, called *core burnout* (Green, Walkey, & Taylor, 1991).

To summarize, burnout is a multi-dimensional construct consisting of three dimensions that are not very strongly correlated. Therefore, in the present review, we will compute separate correlation values for the relations of each BU dimension and WE.

### 1.2. Work engagement

WE is defined as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002). In brief, the authors characterize the three dimensions as follows: vigor is defined by an increased energy, mental resilience, and effort invested in one’s work; dedication is experienced when the individual takes pride in his or her work, perceives it as significant and feels enthusiastic about it; and absorption is defined by being deeply immersed in one’s work when the individual finds it difficult to detach of what he is working. WE is mainly measured with the UWES, a three-dimension questionnaire which encompasses 17 items referring to work or studies (Schaufeli, Salanova et al., 2002; Schaufeli, Martínez, Marques-Pinto, Salanova, & Bakker, 2002) or 9 items (Schaufeli, Bakker, & Salanova, 2006). Vigor and dedication are considered the core dimensions WE (Schaufeli & Salanova, 2011), considering that in some cases the third dimension (absorption) might not be a unique dimension of WE (e.g., Schaufeli et al., 2008).

Unlike BU, the correlations between WE dimensions are positive and have large values (e.g., 0.62, 0.67, Schaufeli & Bakker, 2004), therefore most researchers usually compute an overall score of WE (e.g., Mauno, 2010). Because of the large covariance between WE facets, in the present review, we use WE as an overall concept, and we will aggregate all correlations reported on the WE scales into a single correlation value.

### 1.3. Work engagement and burnout: conceptual, methodological and relational issues

Maslach and Leiter (1997) considered that BU occurs when WE deteriorates, and vigor, dedication, and absorption transform into exhaustion, cynicism and inefficacy, respectively. Therefore, this perspective considers that WE can be measured by using reversed scores of Maslach Burnout Inventory (MBI, MBI-GS; 1981, 1996). These ideas were supported by the results of a meta-analysis of cross-sectional studies that

summarized the correlations between BU and WE (Cole et al., 2012). However, subsequent research and analyses demonstrated that BU and WE are distinct concepts, and cannot be measured with the same instrument, even if they are opposed to one another. Moreover, core burnout and WE components are considered opposites of each other placed on two distinct bipolar dimensions (i.e., energy —vigor and exhaustion and identification —dedication and cynicism) (González-Romá, Schaufeli, Bakker, & Lloret, 2006; Schaufeli & Salanova, 2007).

Schaufeli and Salanova (2011) argue that when an employee does not feel burned-out, it does not automatically imply that he or she is engaged in his or her work. Moreover, the correlations between the two forms of well-being are small enough to allow for the co-occurrence of BU and WE (i.e., average uncorrected values of  $-0.38$  between overall WE and exhaustion, Halbesleben, 2010). Therefore, WE needs to be measured in its own right, and not with BU instruments. This is important because the relationships between the two forms of well-being can be analyzed only if the WE and BU are measured independently (Schaufeli & Salanova, 2011). Even if the correlations between WE and BU seem to be placed in a range of  $-0.40$  and  $-0.60$ , Schaufeli and Bakker (2010) reported that, in some cases, we could find weaker correlations for the relationship between absorption and MBI scales, and in other cases higher correlations between UWES and inefficacy.

### 1.4. Engagement as an antecedent of burnout

The classical theoretical perspectives consider that, at first, people feel secure and also engaged in their jobs— when certain conditions are provided — and burnout appears when work engagement erodes mainly due to unfavorable circumstances (e.g., unfairness) (Maslach & Leiter, 1997) or experiences disillusionment and loss of significance (Pines, 1993). Importantly, previous studies showed that well-being levels could fluctuate over time (Mäkikangas, Kinnunen, Feldt, & Schaufeli, 2016), therefore it is possible to move from one work-related well-being form to another. For example, an employee can move from feeling engaged to feeling *merely* satisfied or even burned-out, and also the other way around, from ill-being to well-being. Specifically, it is possible to anticipate that, depending on certain organizational conditions, WE can be an antecedent of BU (e.g., due to impaired social exchange processes, Schaufeli & Salanova, 2011).

However, recent research suggested that lack of study engagement (i.e., not enjoying one’s study activities) makes students vulnerable to exhaustion, whereas, at the opposite pole, students who experience positive and activating emotions regarding own work (i.e., high study engagement) are less prone to develop study burnout (Van Beek et al., 2013). These results indicate that the experience of well-being might prevent the individual from experiencing ill-being. We can also understand this perspective of the broaden-and-build theory (Fredrickson, 1998) which argues that the when experiencing positive emotions, as engagement entails, the individual might have available more options to create resources and therefore less likely to experience ill-being (e.g., burnout).

Therefore, based on these ideas, we formulated the study’s main hypothesis.

**H1.** Work engagement is a significant predictor of future low burnout, incremental to the auto-correlation effect of burnout.

### 1.5. Burnout as an antecedent of work engagement

A recent study showed that student engagement was negatively predicted by student BU: one year later students’ engagement was negatively affected by the BU the students previously experienced (Salmela-Aro & Upadyaya, 2014). In their 2012 study, Hakanen and Schaufeli found that work-related well-being impacts general well-being over time and also that exhaustion and depersonalization at time 1 are negatively related to vigor and dedication at time 2 (after three

years) and time 3 (after four years from time 2). The experience of BU might deplete employees of resources and therefore hamper their energized involvement in the work activity. Also, Llorens-Gumbau and Salanova-Soria found in their two-waves longitudinal study (8 months) that exhaustion and cynicism negatively predict vigor and dedication over time.

Exhaustion appears when demands exceed resources over time, whereas cynicism is rather predicted by lack of fairness (Leiter et al., 2013). Therefore depleted employees become less energized when it comes to their work and the experience of cynicism is likely to affect individual's perception of the significance of his or her work, therefore becoming less dedicated.

These results are in line with the Conservation of resources theory (Hobföll, 1989) which argues that when valued resources are lost (e.g., energy, significance in the case of burnout) individuals aim at minimizing the potential of losing more. Hence, such a protective attitude might hinder employees' possibility to invest in their work and becoming more involved.

However, the very limited number of longitudinal studies on the temporal order between forms of well-being hampers drawing clear conclusions related to the relationship between burnout and work engagement over time. Therefore, we formulate our alternative hypothesis:

**H2.** Burnout is a significant predictor of low future work engagement, incremental to the auto-correlation effect of work engagement.

### 1.6. Time lag as a moderator of temporal effects

Generally, in the field of occupational health psychology, the results provided by the longitudinal perspective are still somewhat unclear, especially due to time lags. Taris and Kompier (2014) emphasize that using too short or too long time lags can have two consequences a) the effects do not have enough time to occur, or b) the effects might vanish as a result of individual adaptation. In a similar vein, Dorman and Griffin (2015) concluded that “over time, a continuous causal process produces both increasing and declining effect sizes” (p.499).

At this moment, there is no general recommendation regarding the optimal time lags for a study. However, Taris and Kompier (2014) suggest that, when choosing a time lag, one should take into account the context and the specific of the variables. In addition, researchers should also consider the various effects that can occur in a longitudinal research: *normal effects* — when certain predictors (e.g., job characteristics) account for the outcomes (e.g., well-being); *reversed effects* — when what is considered outcome affect predictors, and *reciprocal effects* — when a research finds both normal and reversed effects simultaneously (Taris & Kompier, 2014).

Taking this into consideration, in this review, we expect the time lag to be a moderator of the relationships between WE and BU, measured at different moments.

## 2. The present review

This study is based on the assumption that BU and WE are related and distinct concepts. To date, there is no clear evidence on the nature of the relationship between the time lag and the cross-lagged correlations. Also, previous research studies either assumed that WE is a predictor of BU (Van Beek et al., 2013), or reported that BU has a significant cross-lagged effect on engagement (Salmela-Aro & Upadhyaya, 2014).

Furthermore, as mentioned in the introduction, the time lag between the measurement moments is an important issue when analyzing cross-lagged relationships using longitudinal designs (Taris & Kompier, 2014). In brief, this research aims at investigating whether we can establish a temporal order between BU and WE by grouping in a data-driven manner the independent studies.

## 3. Method

### 3.1. Literature search and inclusion criteria

We conducted a systematic search of online databases (*PsychInfo*, *PubMed*, *Scopus*, *Academic Search Premier*, *EconLit*, and *Web of Science*), in February 2017. We used a search phrase that included keywords relevant for BU (“burnout”, “exhaustion”, “depersonalization”, “cynicism”, “personal accomplishment”, “inefficacy”), and keywords relevant for WE (“work engagement”; “vigor”; “dedication”; “absorption”). In order to filter results with a specific research design we included two additional search terms (“longitudinal”; “multi-wave”); and we searched for these terms only in the abstracts. The final search phrase used in our queries was

“burnout” OR “exhaustion” OR “depersonalization” OR “cynicism” OR “personal accomplishment” OR “inefficacy”) AND (“work engagement” OR “vigor” OR “dedication” OR “absorption”) AND (Abstract(“longitudinal” OR “multi-wave”)).

The online search yielded 51 unique results (and 5 duplicates). We analyzed the full-text versions of these articles, and we selected 28 eligible papers that a) reported a longitudinal research study; b) included measures of WE and all BU scales, and c) reported the correlation matrix between WE and BU dimensions, at all measurement moments. The rejected papers reported overall BU scores (5 papers), had a cross-sectional research design (9 papers), did not include measures of BU or WE (6 papers), or did not report an empirical research study (3 papers). In addition, we excluded another 5 research papers that did not report the correlation matrix. In the case of these papers, we contacted the authors requesting the full correlation matrix, but we did not receive a response.

The final sample of studies consists of 882 correlation coefficients from 25 independent datasets, and the entire process of study analysis is presented in Fig. 1.

### 3.2. Study coding

From each eligible research study, we selected the information from the Method section of each article and the statistical information from the correlation matrix. Table 1 summarizes the main study characteristics obtained from the Method section of the articles included in the final analyses. From each correlation matrix, we extracted the results for each pair of variables, measured in each two waves included in the

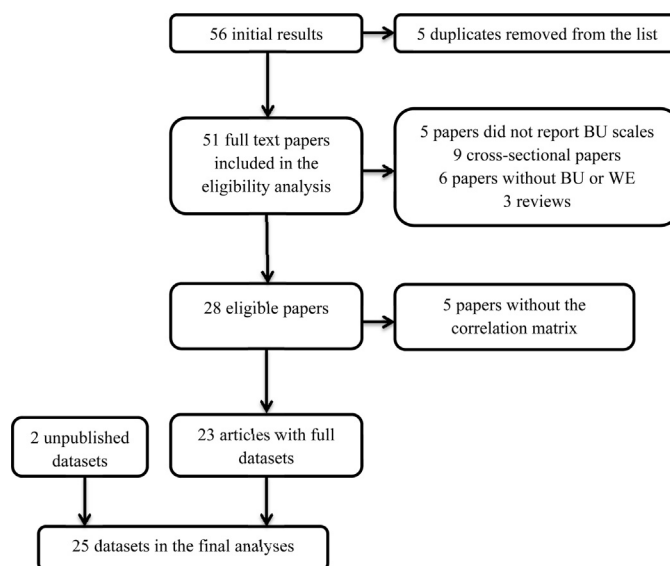


Fig. 1. The flow diagram of the research papers.

**Table 1**  
Characteristics of the research studies included in the review.

Study	N	Participants	Waves	Time lag	BU measure	WE measure
Alkermans et al. (2013)	643	Mixed occupations	2	12 months	Exh (UBOS)	Ded (UWES)
Ángelo and Chambel (2013)	651	Firefighters	2	12 months	Exh, Dep (MBI-GS)	Vi, Ded (UWES)
Barbier et al. (2013)	473	Public administration	3	12 months	Exh (OLBI)	General WE (composite score of Vi, Ded, & Abs – UWES)
Chambel and Oliveira-Cruz (2010)	387	Soldiers	3	4 months, 2.5 months and 6.5 months	Exh & Dep (MBI-GS)	Vi & Ded (UWES)
Chambel et al. (2016)	187	Temporary agency workers	2	9 months	Exh & Dep (MBI-GS)	General WE (composite score of Vi, Ded, & Abs – UWES)
Dollar and Bakker (2010)	209	Teachers and administrators	2	12 months	Exh (MBI)	General WE (composite score of Vi, Ded, & Abs – UWES)
Frins et al. (2016)	2897	Mixed occupations	2	12 months	Exh (Utrecht Burnout Scale)	Ded (UWES)
Gan and Gan (2013)	160	IT employees	3	2 months	Exh, Dep, Paec (MBI-GS)	Vi, Ded, & Abs (UWES)
Hakanen and Schaufeli (2012)	1964	Dentists	3	36 months 48 months	Exh, Dep (MBI)	Vi, Ded, & Abs (UWES)
Kinnunen et al. (2014)	848	University employees	3	12 months	Exh (MBI-GS)	Vi (UWES)
Kirves et al. (2014)	926	University employees	3	12 months	Exh (MBI-GS)	Vi (UWES)
Llorens-Gumbau and Salanova-Soria (2014)	274	Teachers	2	8 months	Exh & Dep (MBI-GS)	Vi & De (UWES)
Mäkikangas et al. (2012)	433	Managers	2	24 months	Exh, Dep (BBI-15)	Vi & De (UWES)
Mäkikangas et al. (2014)	256	Health care workers	2	1 day	Exh (MBI-GS)	Vi (UWES)
Mauno (2010)	409	Health care workers	2	24 months	Exh (MBI)	General WE (composite score of Vi, Ded, & Abs – UWES)
Mauno et al. (2016)	926	University employees	3	12 months	Exh (MBI-GS)	Vi (UWES-9)
Pałoş and Maricuțoiu (2016)	162	Students	2	2 months	Exh, Dep, Paec (MBI-GS)	Vi, Ded, & Abs (UWES)
Perko et al. (2016)	262	Mixed occupations	2	14 months	Exh (MBI-GS)	Vi (UWES)
Peters et al. (2016)	247	Nurses	2	10 months	Exh (MBI-GS)	General WE (composite score of Vi, Ded, & Abs – UWES-9)
Philipp and Schüpbach (2010)	102	Teachers	2	10 months	Exh (MBI)	Ded (UWES-6)
Salmela-Aro et al., 2011	171	Students	2	48 months	Exh, Dep, Paec (MBI-GS)	Vi, Ded, & Abs (UWES)
Schaufeli et al. (2009)	201	Managers and executives	2	12 months	Exh & Dep (MBI-GS)	Vi & Ded (UWES)
Sonntag et al. (2010)	309	People with special needs	2	12 months	Exh (OLBI)	General WE (composite score of Vi, Ded, & Abs – UWES)
Sulea and Maricuțoiu (2016)	77	Students	5	1 month	Exh, Dep, Paec (MBI-GS)	Vi, Ded, & Abs (UWES)
Wirtz et al. (2017)	67	Leaders	2	8 months	Exh (MBI)	Core WE (composite score of Vi & Ded – UWES-6)

study and, resulting 6 correlation coefficients (BU1–WE1, BU1–BU2, WE1–WE2, BU1–WE2, WE1–BU2, BU2–WE2). When research studies included more than 2 waves, we extracted these 6 correlation coefficients for each combination of two waves (e.g., wave 1–wave 2, wave 2–wave 3, and wave 1–wave 3 resulting in 18 correlation coefficients for each pair of BU and WE variables). The final database contained 882 correlation coefficients, retrieved by the third author. To ensure that no errors were made in the extraction phase, the first author verified all correlation coefficients from each research study. Following this verification, we corrected 35 correlation coefficients (about 4% of the entire dataset). In most cases, we corrected the second decimal of the correlation value. In addition, we performed an additional verification on all outlier correlation values. The purpose of the verification was to investigate potential errors that might have occurred when we analyzed the study correlation matrices. If an outlier correlation value was correctly extracted from the study, we included it in the analysis.

### 3.3. Data analyses

We combined the meta-analysis procedures and the structural equation modeling using the recommendations provided by Viswesvaran and Ones (1995). Data from the correlation matrixes were first analyzed using Comprehensive Meta-Analysis v.2 (Borenstein, Hedges, Higgins, & Rothstein, 2005), to estimate the average correlation value for the relationship between each pair of variables. We used two indices (the Q-test and the  $I^2$ ) to assess between-study heterogeneity (Borenstein, Hedges, Higgins, & Rothstein, 2009). The Q-test is a statistical chi-square test, and a significant result indicates that the studies are more heterogeneous as one would normally expect. The  $I^2$  index is a heterogeneity index derived from the Q-test, and its values reflect the percentage or between-study variance that can be attributed to unknown moderator variables. Following the recommendations of Borenstein, Hedges, Higgins, and Rothstein (2009, pp. 225–238), we averaged the multiple correlations reported by research studies that had more than two waves. These computations were performed automatically by Comprehensive Meta-analysis (Borenstein et al., 2005).

Then, we completed a 4 by 4 correlation matrix with the averaged correlation values. We used this correlation matrix to analyze the cross-lagged effects between BU and WE. We used Lisrel 9.2 (Jöreskog & Sörbom, 2015) to estimate all models. Our approach to the cross-lagged analysis is based on the analyses conducted by Hakanen, Schaufeli and Ahola (2008). Similar to Hakanen et al. (2008), we estimated the fit of several structural models, as follows: the stability model (Mstabil), the BU as cause model (Mbu), the WE as cause model (Mwe), and the reciprocal model (Mre). All models are summarized in Fig. 2.

We assessed model fit using the goodness of fit index (GFI), the comparative fit index (CFI) and the normative fit index (NFI). We did

not use the r root mean square error of approximation (RMSEA) to assess model fit because of its tendency to provide false negative results for models with very few degrees of freedom (Kenny, Kaniskan, & McCoach, 2015). Because our models are nested, we used the  $\Delta c^2$  statistical test to conduct model comparisons.

## 4. Results

The main characteristics of the research studies included in this meta-analysis are presented in Table 2. Most research studies investigated white-collar workers (e.g., university employees, managers), and had two measurement moments. BU was measured using mainly versions of the Maslach Burnout Inventory (MBI-GS, Schaufeli, Leiter, Maslach, & Jackson, 1996); (MBI-SS, Schaufeli, Martínez et al., 2002), and all studies used the UWES (Schaufeli, Salanova et al., 2002) to assess WE.

Using structural equation models, we tested four alternative models, summarized in Fig. 2: the stability model (Mstabil – auto-regression relationships for BU and WE), the BU as cause model (Mbu – the relationships from Mstabil and a prediction from BU at moment 1 to WE at moment 2), the WE as cause model (Mwe – the relationships from Mstabil and a prediction from WE at moment 1 to BU at moment 2), and the reciprocal model (Mre – all predictions from the variables of moment 1 towards the variables of moment 2).

### 4.1. Relationships between exhaustion and WE

Exhaustion is the most important dimension of the BU model (Maslach, Leiter, & Schaufeli, 2008), and its relationship with WE was reported by 25 independent research studies ( $N_{total} = 13271$  participants,  $m_{harmonic} = 302$ ). The averaged correlations between exhaustion and WE are presented in Table 2. Comparisons between the models indicated that the independence model is not significantly inferior to any of the models that assumed cross-lagged effects between exhaustion and WE. For example, the discrepancy between the stability model (Mstabil) and the reciprocal model (Mre) had the largest value and was not statically significant ( $\Delta\chi^2(1) = 4.71$ ,  $p = 0.095$ ). Results of the SEM analyses on all studies indicated insignificant cross-lagged effects. Exhaustion at time 1 did not have a significant incremental effect on WE at time 2 ( $B = -0.086$ ,  $SE = 0.048$ ,  $p = 0.072$ ), and WE at time 1 did not predict exhaustion at time 2 ( $B = -0.060$ ,  $SE = 0.049$ ,  $p = 0.222$ ).

We considered the time lag as a potential moderator of our cross-lagged correlations and therefore grouped the studies into three categories. Because previous studies did not provide clear guidelines regarding the optimal time lag, we grouped the studies in three contrasting categories: studies with time lag less than 6 months (5 studies), studies with 12 months time lag (11 studies), and studies with a time lag larger than two years (6 studies). Regarding the cross-lagged correlations, the largest values (around  $-0.40$ ) are reported by research studies that used a time lag of 12 months. Therefore, we conducted additional SEM analyses using the correlation matrix resulted only from these 11 studies ( $N_{total} = 8330$ ,  $m_{harmonic} = 424$ ). Between-models comparisons indicated significant improvements of fit in the case of Mbu ( $\Delta\chi^2(1) = 11.13$ ,  $p < 0.001$ ) and marginally significant for Mwe ( $\Delta\chi^2(1) = 5.61$ ,  $p = 0.018$ ), when we compared them with the stability model (Mstabil). Interestingly, the model that assumed BU as an antecedent of WE was significantly better than the model that assumed WE as an antecedent of BU ( $\Delta\chi^2(1) = 5.52$ ,  $p = 0.019$ ). We found significant incremental effects in both directions: exhaustion at time 1 significantly predicted WE at time 2 ( $B = -0.154$ ,  $SE = 0.046$ ,  $p < 0.001$ ), and WE at time 1 also predicted exhaustion at time 2 ( $B = -0.110$ ,  $SE = 0.046$ ,  $p = 0.017$ ). Taken together, these results suggested that exhaustion can be seen as an antecedent of WE, while previous levels of WE had a marginal effect on the later levels of exhaustions when the time lag is 12 months (Table 3).

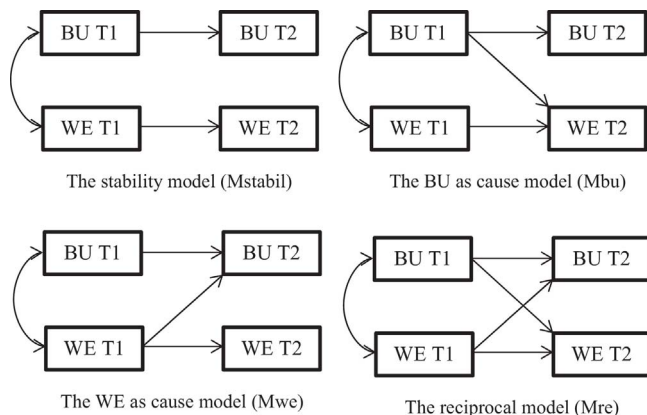


Fig. 2. The models used for the cross-lagged analysis.

**Table 2**  
The correlation matrix used in the SEM analyses for the exhaustion–work engagement relationship.

Relationship	k	r (SE)	95% confidence interval		Q(df)	I <sup>2</sup>	Time lag between assessments					
			Min	Max			< 6 months (k = 5)	I <sup>2</sup>	12 months (k = 11)	I <sup>2</sup>	> 23 months (k = 6)	I <sup>2</sup>
exhaustion– exhaustion 2	25	0.64* (0.03)	0.60	0.68	276.57* (24)	91.32	0.69*(0.06)	87.32	0.65*(.04)	93.62	0.60*(0.05)	91.61
WE1–WE2	25	0.66* (0.03)	0.62	0.70	368.667* (24)	93.49	0.72*(0.08)	89.46	0.65*(0.05)	96.02	0.63*(0.05)	93.26
exhaustion 1–WE1	25	-0.44* (0.05)	-0.52	-0.36	790.105* (24)	96.96	-0.34*(0.10)	89.88	-0.51*(0.08)	98.16	-0.45*(0.13)	98.77
exhaustion 2–WE2	25	-0.45*(0.05)	-0.54	-0.36	916.81* (24)	97.38	-0.32*(0.10)	88.49	-0.53*(0.08)	98.37	-0.52*(0.14)	99.07
exhaustion 1–WE2	25	-0.36* (0.05)	-0.44	-0.27	732.70* (24)	96.72	-0.28*(0.06)	70.81	-0.45*(0.08)	98.16	-0.40*(0.14)	98.83
WE1– exhaustion 2	25	-0.33* (0.05)	-0.42	-0.24	689.97* (24)	96.52	-0.25*(0.06)	70.01	-0.41*(0.08)	98.11	-0.37*(0.13)	98.66

Note: WE = work engagement, k = number of independent samples included in the analysis, r = averaged correlation values across studies, SE = standard error of the averaged correlation value, Q = heterogeneity test, df = degrees of freedom of the Q test, I<sup>2</sup> = the percentage of between-studies variance that can be attributed to moderator variables.

**Table 3**  
The model fit on the exhaustion–WE relationship.

EXH–WE	Model	χ <sup>2</sup> (df)	GFI	CFI	NFI
All studies (k = 25)	Mstabil	39.60 (3)	0.94	0.92	0.91
	Mbu	36.38 (2)	0.95	0.92	0.92
	Mwe	38.11 (2)	0.94	0.92	0.91
	Mre	34.89 (1)	0.95	0.92	0.92
Studies with 12 months time lag (k = 11)	Mstabil	63.87 (3)	0.93	0.89	0.89
	Mbu	52.74 (2)	0.94	0.91	0.91
	Mwe	58.26 (2)	0.93	0.90	0.90
	Mre	47.13 (1)	0.94	0.92	0.92

4.2. Relations between cynicism and WE

The correlations between cynicism and WE were reported by 11 articles (N<sub>total</sub> = 4667 participants, m<sub>harmonic</sub> = 211). Comparisons between our alternative models did not yield significant results, suggesting that causal models (Mbu, Mwe, Mre) are not superior or inferior to the stability model (Mstabil). Cross-lagged effects between the two variables were not statistically significant (B = -0.056, SE = 0.062, p = 0.362) for WE as a predictor for cynicism, and B = -0.086, SE = 0.058, p = 0.137 for cynicism as a predictor for WE. As a result of the limited number of the research studies that used time lags between 6 and 12 months, we could not investigate whether a replication of the significant result found in the case of exhaustion is possible (Tables 4 and 5).

4.3. Relationships between personal accomplishment and WE

Personal accomplishment (Pacc) was the least frequently used scale of the MBI, and only 4 research studies (N<sub>total</sub> = 570 participants, m<sub>harmonic</sub> = 128) reported correlations relevant for our meta-analysis.

**Table 4**  
The correlation matrix used in the SEM analyses for the cynicism–WE relationship.

Relationship	k	r (SE)	min	max	Q	I <sup>2</sup>
cynicism1–cynicism2	11	0.58* (0.06)	0.48	0.67	195.23* (10)	94.88
WE1–WE2	11	0.64* (0.06)	0.55	0.71	165.39* (10)	93.95
cynicism1–WE1	11	-0.42* (0.06)	-0.52	-0.30	175.59* (10)	94.31
cynicism2–WE2	11	-0.43* (0.06)	-0.52	-0.32	153.39* (10)	93.48
cynicism1–WE2	11	-0.27* (0.03)	-0.34	-0.21	45.14* (10)	77.84
WE1–cynicism2	11	-0.29* (0.04)	-0.36	-0.22	56.54* (10)	82.31

Note: WE = work engagement, k = number of independent samples included in the analysis, r = averaged correlation value across studies, SE = standard error of the averaged correlation value, Q = heterogeneity test, df = degrees of freedom of the Q test, I<sup>2</sup> = the percentage of between-studies variance that can be attributed to moderator variables.

**Table 5**  
The model fit on the DEP–WE relationship.

DEP – WE	Model	χ <sup>2</sup> (df)	GFI	CFI	NFI
All studies (k = 8)	Mstabil	27.17 (3)	0.94	0.91	0.90
	Mbu	24.97 (2)	0.95	0.91	0.91
	Mwe	26.34 (2)	0.94	0.91	0.90
	Mre	24.14 (1)	0.95	0.91	0.91

Results of SEM analyses revealed insignificant cross-lagged effects between Pacc and WE: Pacc in time 1 is not a significant predictor of WE in time 2 (B = 0.039, SE = 0.070, p = 0.574), and WE in time 1 is not a significant predictor of Pacc in time 2 (B = 0.039, SE = 0.071, p = 0.588). Similar with cynicism, comparisons between alternative models did not provide any statistically significant results, suggesting that models that assumed causality between personal accomplishment and WE are not different from the model that did not assume causality (Mstabil). These results are not surprising because 3 of the studies included in the analysis used time lags smaller than 3 months. However, in consequence of the small number of research studies, we could not perform any additional moderator analyses (Tables 6 and 7).

5. Discussion

In the current study, we started from the assumption that BU and WE are distinct forms of well-being and we aimed at identifying a potential temporal order between them. To achieve this goal, we conducted a systematic literature review, we combined the results of the longitudinal studies using meta-analytical procedures, and we tested different cross-lagged models using pathanalysis. Overall results showed no significant temporal order between BU and WE when all studies and time intervals were taken into account. However, when the focus was on a certain timeframe — a 12-month time lag— the results indicated a reciprocal, negative relationship between exhaustion and WE. However, this reciprocal relation was not equivalent, as the path

**Table 6**  
The correlation matrix used in the SEM analyses for the PACC–WE relationship.

Relationship	k	r (SE)	Q	I <sup>2</sup>
PACC1–PACC2	4	0.74* (0.08)	5.88* (3)	42.85
WE1–WE2	4	0.75* (0.09)	20.26* (3)	85.19
PACC1–WE1	4	0.55* (0.09)	33.59* (3)	91.07
PACC2–WE2	4	0.52* (0.08)	34.41* (3)	91.28
PACC 1–WE2	4	0.44* (0.09)	26.29* (3)	88.59
WE1– PACC2	4	0.38* (0.09)	14.51* (3)	79.32

Note: WE = work engagement, k = number of independent samples included in the analysis, r = averaged correlation value across studies, SE = standard error of the averaged correlation value, Q = heterogeneity test, df = degrees of freedom of the Q test, I<sup>2</sup> = the percentage of between-studies variance that can be attributed to moderator variables.

**Table 7**  
The model fit on the INEF–WE relationship.

INEF–WE	Model	$\chi^2$ (df)	GFI	CFI	NFI
All studies (k = 4)	Mstabil	34.24 (3)	0.89	0.89	0.88
	Mbu	33.92 (2)	0.90	0.89	0.88
	Mwe	33.94 (2)	0.90	0.89	0.88
	Mre	33.63 (1)	0.90	0.89	0.88

from exhaustion to WE seems stronger than the reverse path (i.e. from WE to exhaustion). This conclusion is in line with a recent longitudinal perspective that reported a negative relationship between burnout and work engagement, using a one-year time lag (Salmela-Aro & Upadyaya, 2014).

Our findings suggest that a temporal order between forms of well-being can be observed only if we use a one-year time lag. These relationships can be analyzed using the broaden-and-build theory (Fredrickson, 1998) and the conservation of resources theory (COR, Hobföll, 1989). The broaden-and-build model (Fredrickson, 1998) argue that the experience of positive emotions help individuals to widen their repertoire of thoughts and actions and further building of various resources. From this perspective, having a high level of engagement can generate significant personal resources which, in time, can protect the individual against the occurrence of burnout. The time perspective confirmed in our study indicates that such developments take time to unfold. On the other hand, looking through the lens of COR (Hobföll, 1989) we notice that the experience of high burnout, associated with a depletion of resources, will most likely generate lower engagement if significant changes do not take place in the work environment. This idea is in line with Mäkikangas et al. (2016) who concluded that well-being tends to vary over time especially for younger employees and in conditions of job change and argued that an increase in resources is related to a boost in well-being and resource loss or having them at risk is responsible for a decrease in well-being.

Although our results bring additional support for these two theoretical perspectives, further evidence is still needed in the occupational health domain. First, future research studies should investigate the assumption that present levels of well-being can generate forthcoming resources in addition to the current level of resources. Second, even if the broaden-and-build perspective describes how positive emotions (part of work engagement, for example) can determine individual resources, it is still unclear how present burnout levels could (or would) lead to diminished resources in the future. To conclude, future research should investigate the role of personal variables in the relationships between current and prospective well-being level.

The results of the present review suggest that a form of well-being (i.e., exhaustion or WE) has a significant incremental contribution to the other one. In our opinion, this finding has implications for both theoretical developments and future research studies. Regarding the theoretical perspective, the fact that the independence models are significantly inferior to the causal or the reciprocal ones suggest that exhaustion and WE are not independent forms of well-being. On the other hand, the existence of the reciprocal incremental effect suggests that exhaustion and WE are not operationalizations of the same construct. To conclude, future studies could reach a better understanding of this relationship by focusing on the variables that moderate or mediate the cross-lagged relations between exhaustion and WE. Concerning the research implications, we strongly encourage researchers that analyze longitudinal data to test the cross-lagged correlations between different well-being variables, hence not limiting the analysis to the cross-lagged correlations between resources and well-being.

### 5.1. Limitations

The results of the present meta-analysis include some limitations

that should be taken into account. The most important one is the small sample of the research studies used for the testing of moderator analyses. Although this is because we only included longitudinal research studies, the analyses of the relationships between personal accomplishment and WE are based on less than 10 independent research studies. Similarly, our moderator analyses included categories in which the averaged correlations were computed from 5 independent research studies. as a result of this limitation, the generalizability of our conclusions should be treated with caution, and further research is needed to allow for more robust conclusions.

The second limitation of the present review concerns the large proportions of unexplained variance of our meta-analytical results. In all our analyses, we found highly heterogeneous results that requested additional investigations of possible moderator variables. Lower levels of heterogeneity were present even after controlling for the time lag between assessments. This limitation suggests that our findings are influenced by study differences that are still unknown. Because of the high between-studies heterogeneity, it is possible that the cross-lagged effects will not be significant in all studies included in the analyses. The insignificant cross-lagged effects are possible in research studies that reported effects smaller than the average correlation we computed in this review.

The third limitation is that we did not have the possibility to conduct moderator analyses for all the relationships between BU scales and WE. A temporal order between these scales (cynicism and inefficacy) and WE is possible, but the small number of research studies did not allow for further investigations. In addition, we conducted our moderator analyses on groups of studies that were primarily data-driven, not theory-driven. To the best of our knowledge, there is no consensus regarding the optimal time lag for analyzing cross-lagged effects. Therefore we opted for grouping research studies based on the time lag frequency.

### 5.2. Conclusions

Our study provides an important insight on the longitudinal relationship between burnout and work engagement. Even if some methodological limitations exist, particularly related to the limited number of longitudinal studies reporting results about the relationship between the two forms of well-being, this meta-analytical perspective sheds light on two important issues in the literature: the distinctiveness of BU and WE and the relevant time lag (1 year) that shape the relationship between them. The present results argue in favor of conceptual and measurement distinctiveness of BU and WE, for using separate scales of burnout (with inefficacy instead of personal accomplishment) or core burnout, and for using rather longer time lags when focusing on the relationship between well-being forms.

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