

A systematic review on well-being and ill-being in working contexts: contributions of self-determination theory

Well-being and
ill-being in
working
contexts

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Abstract

Purpose – No systematic review has previously been dedicated to comprehensively investigate predictors of well-being and ill-being in working contexts. Empirical studies have vastly associated well-being as the result of autonomous motivation and basic psychological needs satisfaction, while frustration results in ill-being. The purpose of this study is to integrate the variables identified in empirical studies associated with the occurrence of the phenomena, individual/organizational features and consequences associated with workers' well-being/ill-being.

Design/methodology/approach – This systematic review includes 44 empirical studies published up to February 2021. Findings are summarized based on quantitative analysis of the evidence.

Findings – Results reinforce the role of self-determined motivation and needs satisfaction in promoting well-being, while amotivation and needs frustration led to ill-being. Besides, they indicate that ill-being can both lead to negative consequences and diminish positive work outcomes. Findings also revealed that: integrated motivation does not seem to be empirically distinct from intrinsic and identified motivation in promoting well-being; introjected motivated behaviors may be less harmful to psychological health than externally oriented ones; the relationship between external motivation and well-being/ill-being requires prospective investigations; and amotivation seems to have a detrimental effect in workers' psychological health.

Practical implications – Results provide practical information for HRM practitioners to design work environments and practices that promote employees' psychological health.

Originality/value – An unprecedented framework that aggregates empirical findings regarding the antecedents, predictors and consequences of ill-being/well-being in working contexts is presented.

Keywords Well-being, Ill-being, Self-determination theory, Work, Motivation, Basic psychological needs

Paper type General review

Introduction

The experience of happiness has puzzled philosophers, psychologists and other scholars for centuries (Diener, 1994). Numerous theoretical and empirical studies have been conducted to understand the nature and origins of this universally pursued feeling; while others have endeavored to create instruments to measure and predict the occurrence of such experience in the most diverse contexts and domains of human experience.

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Although the terms “happiness” and “well-being” are usually employed synonymously in scientific literature (Diener and Ryan, 2009; Fisher, 2010; Jayawickreme *et al.*, 2012; Ryan and Deci, 2001), happiness is a concept that designates the preponderance of pleasure over negative emotions (Diener *et al.*, 2018; Diener and Ryan, 2009; Ryan and Deci, 2001), while well-being is conceptually broader and encompasses both the ideas of short-term pleasure (i.e. happiness) and long-term personal growth (Ryan and Deci, 2001). In this sense, due to the ambiguity associated with the terms, Diener (2009) has advocated the use of “subjective well-being” in scientific literature to refer to the positive aspect of human functioning. On the other hand, the term ill-being is usually associated with negative emotions and can be inappropriately considered a phenomenon inversely proportional to well-being (Ryff and Singer, 2006).

The concept of well-being and ill-being as opposing phenomena was initially questioned by Bradburn and Caplovitz (1965), who suggested that positive and negative feelings are independent, making it possible for a person to feel “very happy” and “very depressed” simultaneously; these findings were supported by Diener and Emmons (1984), who demonstrated that such events are also independent in terms of how much people feel in their lives over longer time periods.

For Headey *et al.* (1984), well-being and ill-being present themselves as separate constructs and have different correlates and causes. The authors went further by constructing a model to integrate variables that were found to influence such experiences (Headey *et al.*, 1985), indicating that measures to prevent or mitigate ill-being should be different from those that seek to enhance well-being.

In a more psychological approach, Huta and Hawley (2008) found that well-being and ill-being can be influenced by one’s psychological strengths and vulnerabilities, respectively. By showing that strengths can prevent harmful effects of vulnerabilities, while vulnerabilities do not diminish the benefits of strengths, the authors reinforce the idea of different causes for well-being and ill-being.

From the early studies of Bradburn and Caplovitz (1965) to date, numerous studies with distinct approaches and theoretical frameworks have been conducted to deepen the understanding about the determinants that underlie and differentiate both the positive and negative aspects of human functioning, that is the experience of well-being and ill-being. However, Diener *et al.* (1999) argue that most studies addressing the topic were limited to investigating individual resources and demographic factors associated with the experience. Meanwhile, in order to investigate and analyze the underlying psychological processes through which these factors act on individuals to induce the experience of well-being and/or ill-being, an increasing number of researchers have successfully resorted to self-determination theory (SDT) and the concepts of basic needs and motivation.

Theoretical background: self-determination theory

SDT has been developed gradually over the last four decades and is now considered a universal macro-theory that investigates human motivation, personality development and well-being with a continuing concern regarding the conditions that promote or frustrate human competencies and self-determined behaviors in multiple contexts and domains of life (Gagné and Deci, 2014; Ryan, 2009; Ryan and Deci, 2000b).

According to SDT, individuals have three universal and inherent basic psychological needs (BPN): autonomy (i.e. a full sense of willingness and freedom), competence (i.e. a sense of being efficacious) and relatedness (i.e. a sense of being effectively connected with others) (Ryan and Deci, 2019; Van den Broeck *et al.*, 2010). Although the strength of each need may vary individually, when BPN are adequately satisfied by environmental conditions, individuals experience psychological growth, internalization and well-being (Deci and Ryan, 2000; Deci and Ryan, 2008b; Ryan, 2009; Van den Broeck *et al.*, 2016).

Given the importance and popularity of BPN in organizational studies, much of Ryan and Deci's current research has focused on the association between BPN satisfaction (SBPN) and well-being, through intrinsic motivation - inherent willingness to perform an activity despite the possibility of rewards (Deci *et al.*, 2017; Deci and Ryan, 1985; Ryan and Deci, 2000b). It is also known that autonomous motivated behaviors, rather than controlled ones – oriented by external factors – have a positive effect on well-being, due to greater SBPN (Deci and Ryan, 2000).

In working contexts, the positive association between SBPN and employees' well-being has been well established empirically (La Guardia *et al.*, 2000; Nie *et al.*, 2015; Reis *et al.*, 2000; Sheldon and Elliot, 1999; Sheldon *et al.*, 1996; Williams *et al.*, 2014), indicating that adequate working conditions can lead to SBPN and consequently promote motivation and well-being. Measures of well-being in SDT research are usually operationalized based on hedonic and eudemonic perspectives (Deci and Ryan, 2008a; Huta, 2017): while the hedonic approach focuses on the experience of short-term happiness and pleasure (Lent, 2004; Ryan and Deci, 2001), eudemonic perspective highlights the long-term pursue of virtue and self-actualization (Ryan and Deci, 2001).

Meanwhile, if the experience of well-being is the result of favorable working conditions and SBPN, when the working environment fails to provide satisfaction or promotes the frustration of BNP (FBPN) (i.e. when individuals are prevented to satisfy basic needs), employees may suffer a decrease in well-being, or even experience a state of ill-being (Fernet *et al.*, 2012b; Gillet *et al.*, 2012; Olafsen *et al.*, 2016; Trépanier *et al.*, 2013), which is briefly defined as “subjective vitality, emotional and physical exhaustion” (Adie *et al.*, 2012, p. 52).

SDT researchers have approached ill-being phenomenon in the form of work related stress (Olafsen *et al.*, 2016), somatic symptom burden (Olafsen *et al.*, 2016; Williams *et al.*, 2014), burnout (Bartholomew *et al.*, 2011; Cresswell and Eklund, 2005; Fernet *et al.*, 2010, 2012a; Huyghebaert *et al.*, 2018; Lonsdale *et al.*, 2009; Trépanier *et al.*, 2013), emotional exhaustion (Richer *et al.*, 2002), eating disorder, depression, negative affect and physical symptoms (Bartholomew *et al.*, 2011). However, it is noteworthy that the negative manifestations associated with FBPN have received less attention from researchers than the benefits associated with SBPN (Deci *et al.*, 2017; Van den Broeck *et al.*, 2021).

As noted previously, SDT argues that the concept of BPN can account for both the occurrence of well-being and ill-being, through the mechanisms of SBPN/FBPN, respectively (Ryan and Deci, 2000a). However, only recent studies have empirically demonstrated that SBPN and FBPN are not inverse, but separate and distinct constructs with different consequences: FBPN does not equate to low levels of SBPN, instead, individuals experience FBPNs when, due to adverse environmental conditions, they are prevented from satisfying each of one the three basic needs; in addition, while SBPN can predict well-being, FBPN has been empirically associated with negative subjective outcomes in different contexts of human experience (Bartholomew *et al.*, 2011; Cordeiro *et al.*, 2016; Longo *et al.*, 2016, 2018; Van den Broeck *et al.*, 2016). Nevertheless, due to the scarcity of research examining unsuccessful motivational processes and their consequences on employees and organizations (Deci *et al.*, 2017), FBPN has only gained some prominence in recent years among SDT researchers.

In this sense, given recent empirical evidence concerning the effect of FBPN on ill-being and despite SDT's continuous progress in uncovering and differentiating the underlying mechanisms that result in well-being and ill-being among employees, this paper is the first review to summarize and systematize the results of empirical studies on the subject conducted in working contexts. Therefore, the main purpose of this study is to review and integrate variables identified in empirical studies associated with the occurrence of well-being and ill-being in the workplace. Furthermore, this review aims to expand the analysis regarding the occurrence of such phenomena by identifying individual/organizational features and consequences empirically associated with workers' psychological health,

providing recommendations and future research directions to address gaps identified in the literature.

Method

To attain the purpose of the study, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to standardize, review and report empirical results systematically (Moher *et al.*, 2009). Based on a guideline checklist, PRISMA constitutes a powerful tool for carrying out literature reviews, since they contribute both to the methodological quality of the review process and to its subsequent replicability (Arya *et al.*, 2021; Pussegoda *et al.*, 2017).

PRISMA guidelines outline four sequential processes - identification, screening, eligibility and inclusion - which were strictly followed in this review (see Figure 1).

Data collection

A systematic literature search was conducted in February 2021 of the electronic databases SCOPUS and Web of Science. These databases were used in this review for presenting several advantages such as quality control of articles, multidisciplinary focus and the number of publishers indexed.

To explore and obtain the largest possible number of studies that investigated well-being and ill-being in the workplace using the SDT theoretical framework, no time frame was defined during the search process.

Finally, the following search terms were used: “ill-being’ OR ‘well-being” AND “self-determination theory” AND “work OR experiment” in titles, keywords and abstracts. Keywords “work” and “experiment” were included to refine the studies conducted in the work environment or experimental studies whose results could be generalized for this context.

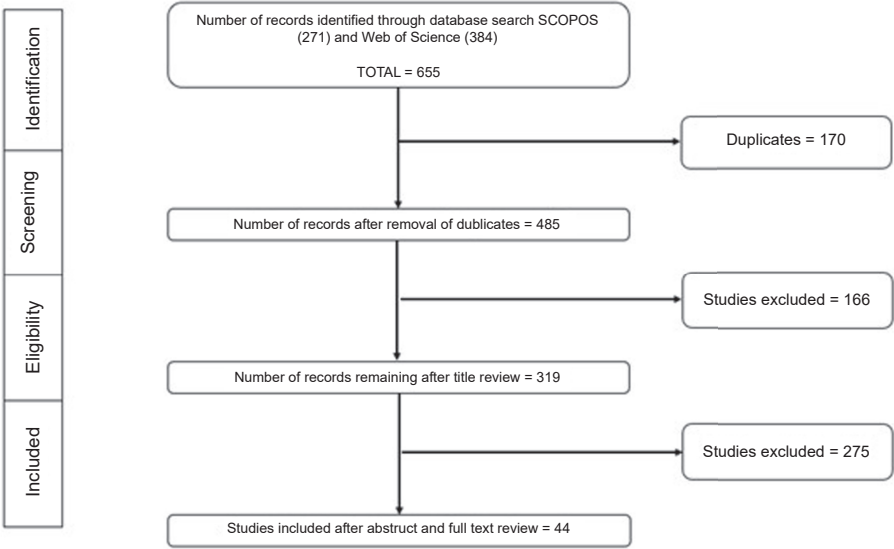


Figure 1.
PRISMA flow diagram
of study selection
process

Inclusion/exclusion criteria

To be included in the review, all studies were assessed based on the inclusion/exclusion criteria displayed in [Table 1](#). This review has aimed to analyze empirical results arising from working contexts, or that could be generalized to the working population. Therefore, empirical research conducted with samples composed of children, adolescents, elderly, or entirely with people with a previous diagnosis were excluded, since the settings were very specific and distinct from the focus of this review.

Furthermore, the inclusion criterion for validated measures was considered to allow comparability and standardization between variables, mainly due to the proliferation of concepts and measures of well-being and BPN in current scientific research ([Martela and Ryan, 2021](#)).

A total of 44 studies were included in this review. The initial search retrieved 655 articles. Exclusion of duplicates ($n = 170$) reduced this number by 485 and a further 166 studies were excluded if inclusion criteria were not met in title or abstract. A review of the full text resulted in 275 studies being excluded. All references retrieved from the database were added to reference management software (Endnote X9).

All 44 articles included in this review were published in English, between the years of 1993 and 2020.

Finally, despite the claim that ill-being has received far less attention from empirical researchers than well-being ([Deci et al., 2017](#); [Van den Broeck et al., 2021](#)), this asymmetry was not observed in this systematic review. In fact, as can be observed in [Table 2](#), ill-being has been explored in a greater number of samples than well-being when investigating the effect of intrinsic motivation (30 samples for ill-being and 24 samples for well-being) and amotivation (09 samples for ill-being and 03 samples for well-being). In addition, when considering the BPN, the asymmetry depends on the psychological mechanism under study: well-being has been explored in association with SBPN in a greater number of samples (a total of 216 for well-being and 90 for ill-being), while ill-being is more studied when associated with FBPN (a total of 43 for ill-being and 25 for well-being).

Data coding and analyses

Studies characteristics and empirical results regarding well-being/ill-being predictors, contextual antecedents and consequences were summarized in tables. Evidence regarding each SDT construct – motivation, SBPN and FBPN – was calculated based on the percentage of independent samples supporting each association with well-being/ill-being indicators, with a significance level set at 0.05 for both bivariate (BA) and multivariate analysis (MA). A system was adopted to classify the associations between SDT constructs and well-being/ill-

Inclusion criteria	Exclusion criteria
1. Empirical studies based on STD framework	1. Empirical studies that report research with children, adolescents, elderly people, or an entire sample with a prior diagnosis of any specific physical or mental condition
2. Empirical studies set in working context, or experimental studies – to generalize results to working population	
3. Empirical studies that employed a validated measure for SBPN/FBPN, motivation, well-being and ill-being	
4. Empirical studies that report research on adults, over the age of 18 years	2. Theoretical or review studies
5. Papers available in English and Portuguese up to February 2021	

Table 1.
Review inclusion and exclusion criteria

Table 2.
Summary of
associations between
SDT predictors and
well-being/ill-being
outcomes

Motivation	N	+	Well-being	0	=	N	+	Ill-being	0	=
Intrinsic	6(18)	72.3(100)	0(0)	27.7(0)	+	13(17)	7.5(6)	38.5(70.5)	54(23.5)	0/-
Integrated	0(4)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Identified	5(15)	100(100)	0(0)	0(0)	++	8(12)	12.5(8.5)	25(75)	75(16.5)	0/-
Introjected	2(13)	50(46)	0(0)	50(54)	0	3(12)	33(41.5)	0(25)	67(33.5)	?
External	2(13)	0(31)	50(7.5)	50(61.5)	0	3(12)	33(58)	0(0)	67(42)	0/+
Autonomous	14(12)	79(100)	7(0)	14(0)	++	4(7)	25(43)	25(57)	50(0)	0/-
Controlled	11(11)	0(27)	27.5(55)	63.5(18)	0/-	4(7)	25(71)	0(0)	75(29)	0/+
Amotivation	1(2)	0(0)	100(0)	0(100)	?	2(7)	100(57)	0(28.5)	0(14.5)	+
SBPN	N	+	-	0		N	+	-	0	=
Autonomy	29(35)	72.5(91.5)	0(0)	27.5(8.5)	+	11(19)	0(5.3)	72.6(89.4)	27.4(5.3)	-
Competence	29(34)	65.5(91)	3.5(0)	31(9)	+	11(18)	0(5.5)	81.8(77.8)	18.2(16.7)	-
Relatedness	30(36)	66.7(89)	0(0)	33.3(11)	+	9(19)	0(5.3)	77.8(89.4)	22.2(5.3)	-
Composite score	10(13)	100(100)	0(0)	0(0)	++	1(2)	0(0)	100(100)	0(0)	-
FBPN	N	+	-	0	=	N	+	-	0	=
Autonomy	3(5)	0(0)	100(100)	0(0)	--	5(7)	100(100)	0(0)	0(0)	++
Competence	3(5)	0(0)	67.7(75)	33(35)	-	5(7)	100(100)	0(0)	0(0)	++
Relatedness	3(4)	0(0)	100(75)	0(25)	--	5(6)	100(100)	0(0)	0(0)	++
Composite score	0(2)	0(0)	0(100)	0(0)	?	3(5)	100(80)	0(20)	0(0)	++
Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown										

being (Teixeira *et al.*, 2012): positive (++) or negative (--) for percentage $\geq 75\%$ and (+) or (–) for percentage between 50 and 75 % showing associations in both BA and MA; 0/+ or 0/– when the evidence was split between no association (0) and positive/negative associations, respectively; and (?) for results indicating inconsistent or indeterminate/unknown results due to the small number of studies available.

Results

A total of 44 articles were included in this review and comprised 53 independent samples (see Appendix 1). The number of samples was higher than the number of studies because seven studies analyzed data from more than one sample or reported results concerning more than one SDT construct (Gillet *et al.*, 2012, 2018; Graves and Luciano, 2013; Huyghebaert *et al.*, 2018; Kibler *et al.*, 2019; Lok and Dunn, 2020; Olafsen and Bentzen, 2020; Olafsen and Frølund, 2018; Osin *et al.*, 2018). The samples' main characteristics are displayed in Figure 2.



Figure 2.
Summary of samples
characteristics

Contribution of motivation to well-being/ill-being

To assess the impact of motivation on workers' psychological health, reviewed studies employed a total of 13 different measures of well-being and 13 different indicators of ill-being. While work engagement is the most used indicator for well-being (used in seven samples), emotional exhaustion is the most employed measure of ill-being (also employed in seven samples). In addition, when addressing well-being experiences, seven samples relied solely on hedonic manifestations ([Graves and Luciano, 2013](#); [Kibler et al., 2019](#); [Nie et al., 2015](#); [Olafsen and Bentzen, 2020](#); [Olafsen and Frølund, 2018](#); [Tóth-Király et al., 2020](#)), five samples relied solely on eudaimonic measures ([Chambel et al., 2015](#); [Dagenais-Desmarais et al., 2018](#); [Gillet et al., 2018](#); [Lopes and Chambel, 2017](#); [Lopes et al., 2019](#)) and five samples combined measures of both perspectives ([Chambel and Sobral, 2019](#); [Gillet et al., 2018](#); [Olafsen and Bentzen, 2020](#); [Osin et al., 2018](#)). When comparing the effect of motivation on hedonic and eudaimonic perspectives of well-being ([Table 3](#)), it is observed that associations follow the same pattern across the different types of motivation, except for introjected (which presented positive association with hedonic indicators and no association with eudaimonic manifestations) and external motivation (which presented a lack of relationship with eudaimonic indications and inconsistent associations with hedonic manifestations).

In addition, self-determined forms of motivation (i.e. intrinsic, integrated, identified and autonomous) demonstrate a consistent pattern of positive association with well-being indicators in the samples considered in the analysis. Regarding ill-being, evidence is not conclusive since results are split between negative and the lack of association. It is noteworthy, however, that integrated motivation was addressed in a small number of samples and the associations with both well-being and ill-being were investigated only in BA.

The evidence on the other side of the motivational spectrum is not that consistent: introjected and external motivation has no significant association with well-being in most samples, while evidence regarding controlled motivation is divided between positive association and non-existent. Concerning ill-being, most samples indicate that both external and controlled motivation either have a positive or no association with the phenomena, while findings regarding introjected motivation are inconclusive.

Finally, only three studies explored the relationship between amotivation and well-being and evidence was split between negative and lack of association. For ill-being, the situation differs greatly: studies suggest a consistent positive relationship between the variables.

Contribution of BPN to well-being/ill-being

To assess the contribution of BPN on workers' psychological health, reviewed studies employed a total of 20 different measures of well-being and 16 different indicators of ill-being. While job (work) satisfaction is the most used indicator for well-being (used in nine samples), emotional exhaustion is the most employed measure of ill-being (employed in six samples). In addition, when specifically addressing well-being phenomena, 14 samples relied solely on hedonic manifestations ([Ebersold et al., 2019](#); [Eriksson and Boman, 2018](#); [Giebe and Rigotti, 2020](#); [Graves and Luciano, 2013](#); [Kang and Yoo, 2019](#); [Rayburn, 2014](#); [Rouse et al., 2019](#), [van Hooff and De Pater, 2019](#)), five samples relied on eudaimonic measures ([Collie et al., 2015](#); [Domenech-Betoret et al., 2015](#); [Dose et al., 2019](#); [Robijn et al., 2020](#); [Elst et al., 2012](#)) and 11 samples combined measures of both perspectives ([Babenko, 2018](#); [Chen et al., 2020](#); [Desrumaux et al., 2015](#); [Gatt and Jiang, 2020](#); [Gillet et al., 2012, 2019](#); [Ilardi et al., 1993](#); [Meng, 2020](#); [Shir et al., 2019](#); [Slemp and Vella-Brodrick, 2013](#)). When comparing the effect of BPN on hedonic and eudaimonic perspectives of well-being, the same pattern of associations was

Well-being indicators	Intrinsic			Integrated			Identified			Autonomous										
	N	+	-	0	=	N	+	-	0	=	N	+	-	0	=					
Eudaimonia	2 (9)	50 (100)	0 (0)	50 (0)	+	0 (3)	0 (100)	0 (0)	0 (0)	?	2 (9)	100 (100)	0 (0)	0 (0)	++					
Hedonia	4 (9)	83.5 (100)	0 (0)	16.5 (0)	++	0 (1)	0 (100)	0 (0)	0 (0)	?	3 (6)	100 (100)	0 (0)	0 (0)	++					
=	6 (18)	72.3 (100)	0 (0)	27.7 (0)	+	0 (4)	0 (100)	0 (0)	0 (0)	?	5 (15)	100 (100)	0 (0)	0 (0)	++					
Well-Being indicators	N	+	-	0	=	N	+	-	0	=	N	+	-	0	=					
	Introjected			External			Controlled			Amotivation										
	1 (9)	44.5 (0)	0 (0)	100 (55.5)	0	1 (9)	0 (33.5)	0 (11)	100 (55.5)	0	7 (9)	0 (33.5)	28.5 (44.5)	71.5 (22)	-0	0 (0)	0 (0)	?		
	1 (4)	100 (50)	0 (0)	0 (50)	+	1 (4)	0 (25)	100 (0)	0 (75)	-0	4 (2)	0 (0)	50 (0)	50 (0)	-0	1 (2)	0 (0)	100 (0)	0 (100)	-0
=	2 (13)	50 (46)	0 (0)	50 (54)	0	2 (13)	0 (31)	50 (7.5)	50 (61.5)	0	11 (11)	0 (27)	27.5 (55)	63.5 (18)	0/-	1 (2)	0 (0)	100 (0)	0 (100)	?

Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis), N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results

Table 3.
Summary of
associations between
motivation with
hedonic/eudaimonic
perspectives of well-
being outcomes

observed when taking into consideration the composite score for SBPN and FBPN (Table 4) and for each basic need (both satisfaction and frustration) (Table 5). However, while competence satisfaction is strongly and positively associated with eudaimonic indications, its association with hedonic manifestations is split between positive and absent.

In nine studies, a composite score was created to represent in a single measure satisfaction/frustration of autonomy, competence and relatedness. In general, unanimous evidence shows that SBPN is positively associated with well-being indicators and negatively associated with ill-being.

FBPN follows a similar but inverse pattern, despite the smaller number of studies that used the measure: there is a negative relationship with well-being and a positive relationship with ill-being. However, this last evidence is not unanimous since one sample presented a negative association with ill-being, measured in the form of emotional exhaustion.

When considering each need separately, the satisfaction of all three basic needs demonstrates a consistent and positive association with well-being indicators in most samples under analysis. Regarding ill-being, evidence consistently indicates a negative association for all three needs considered. It is important to mention that evidence suggesting the absence of association between SBPN and both well-being and ill-being was also present in a small number of samples, specifically in results derived from MA.

Results regarding the frustration of each need have been very consistent in indicating a negative association with well-being and a positive relationship with ill-being, especially when considering the needs for autonomy and relatedness. Evidence regarding the association between competence, frustration and well-being was mostly negative, but the absence of association was also observed. Results for ill-being are more consistent, indicating unanimously a positive association.

Individual/workplace contribution to well-being/ill-being

Besides studying the contribution of SDT variables for the occurrence of well-being/ill-being in working contexts, 34 studies were also dedicated to investigating the influence of individual and workplace variables for the occurrence of the phenomena (see Appendix 2).

Individual variables. For individual measures (Table 6), evidence suggests positive association between well-being and active engagement in entrepreneurship, creative thinking, hardiness, optimism, self-efficacy, self-esteem, tenure in temporary agency work and tolerance for ambiguity. Concerning prosocial motivation, evidence was split between positive and the absence of association between the variables for samples studied (i.e. employees and entrepreneurs) (Kibler *et al.*, 2019).

Table 4.
Summary of
associations between
composite overall BPN
satisfaction/frustration
with hedonic/
eudaimonic
perspectives of well-
being outcomes

	N	+	-	0	=
<i>Overall BPN satisfaction</i>					
Hedonia	5 (9)	100 (100)	0 (0)	0 (0)	++
Eudaimonia	4 (2)	100 (100)	0 (0)	0 (0)	++
Combined	1 (2)	100 (100)	0 (0)	0 (0)	++
=	10 (13)	100 (100)	0 (0)	0 (0)	++
<i>Overall BPN Frustration</i>					
Hedonia	0 (2)	0 (0)	0 (100)	0 (0)	?
=	0 (2)	0 (0)	0 (100)	0 (0)	?
Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results					

Well-being indicators	Autonomy			Competence			Relatedness		
	N	+	-	0	=	N	+	-	0
<i>BNP satisfaction</i>									
Eudaimonia	12 (12)	75 (75)	0 (0)	25 (25)	++	12 (12)	83.5 (100)	0 (0)	16.5 (0)
Hedonia	14 (19)	79 (100)	0 (0)	21 (0)	++	14 (18)	43 (83.5)	7 (0)	50 (21.5)
Combined	3 (4)	67 (100)	0 (0)	33 (0)	++	3 (4)	100 (100)	0 (0)	0 (0)
=	29 (35)	72.5 (91.5)	0 (0)	27.5 (8.5)	+	29 (34)	65.5 (91)	3.5 (0)	31 (9)
<i>BNP Frustration</i>									
Hedonia	2 (4)	0 (0)	100 (100)	0 (0)	--	2 (4)	0 (0)	50 (50)	50 (50)
Eudaimonia	1 (1)	0 (0)	100 (100)	0 (0)	--	1 (1)	0 (0)	100 (100)	0 (0)
=	3 (5)	0 (0)	100 (100)	0 (0)	--	3 (5)	0 (0)	67.7 (75)	33 (35)

Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results

Table 5.
Summary of
associations between
composite BPN
satisfaction/frustration
of each need with
hedonic/eudaimonic
perspectives of well-
being outcomes

Table 6.
Summary of
associations between
individual variables
and well-being/ill-
being outcomes

Individual variables	Well-being					Ill-being				
	N	+	-	0	=	N	+	-	0	=
Active engagement in entrepreneurship	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Age	0(0)	0(0)	0(0)	0(0)	?	0(1)	0(0)	0(33)	0(67)	?
Creative thinking	0(1)	0(100)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Emotional stability	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(0)	100(100)	0(0)	--
Gender	0(0)	0(0)	0(0)	0(0)	?	0(1)	0(33)	0(0)	0(67)	?
Hardiness	1(0)	100(0)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Hours worked per week	0(0)	0(0)	0(0)	0(0)	?	0(1)	0(33)	0(33)	0(33)	?
Met expectations	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(0)	100(100)	0(0)	--
Neuroticism	0(0)	0(0)	0(0)	0(0)	?	1(1)	100(100)	0(0)	0(0)	++
Optimism	2(1)	100(100)	0(0)	0(0)	++	1(1)	0(0)	100(100)	0(0)	--
Prosocial motivation	2(2)	0(100)	0(0)	100(0)	0/+	2(2)	50(0)	0(50)	50(50)	0
Self-efficacy	1(0)	100(0)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Self-esteem	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Tenure in temporary agency work	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(0)	0(100)	?
Tolerance for ambiguity	1(0)	100(0)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?

Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown

Concerning ill-being, evidence suggests that neuroticism has a positive association, while emotional stability, met expectations and optimism have a negative association with the phenomenon studied, meaning that individuals with neuroticism traits are more likely to experience ill-being, while those with emotional stability, met expectations and optimism are less susceptible to negative experiences. Moreover, age and gender seem to have no association with ill-being, while evidence regarding hours worked per week and tenure in temporary agency work present inconclusive findings.

Workplace variables. Thirty-three workplace variables and their relationship with well-being and ill-being, were investigated and classified in three categories: (a) organization environment and practices ($n = 15$); (b) relationship between employee and leader/supervisor ($n = 7$); and (c) job/task content or execution ($n = 11$).

For organization environment and practices (Table 7), findings indicate that empowerment, investiture and serial socialization and procedural justice have a positive impact on well-being and a negative association with ill-being. Besides, perception of organizational support – from administration, colleagues, family and friends and psycho-pedagogical – positively impacts well-being, while perceived organizational support from administration, colleagues and family and friends diminishes ill-being. Additionally, psychosocial safety climate, that is, when an organization implements practices to protect workers' psychological health, has a negative association with ill-being.

Non-territorial working (or unassigned desks) and remote work were found to have no association with the variables investigated. For job climate, material and psycho-pedagogical support resources, evidence was inconclusive.

Regarding the relationship between employee and leader/supervisor (Table 8), leader-member exchange, managerial need support and open conflict norms are shown to positively impact well-being, but only leader-member exchange tends to diminish ill-being. Inconclusive evidence was found regarding perceived supervisor autonomy support and perceptions of supervisor controlling behaviors. Finally, while engaging leadership does not

Organization environment and practices	Well-being					Ill-being				
	N	+	-	0	=	N	+	-	0	=
Empowerment	0(1)	0(100)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Investiture socialization	0(1)	0(100)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Job climate	1(1)	0(100)	0(0)	100(0)	0/+	1(1)	0(0)	0(100)	100(0)	0/-
Non-territorial working	0(1)	0(0)	0(0)	0(100)	?	0(1)	0(0)	0(0)	0(100)	?
Organizational support	4(5)	75(100)	0(0)	25(0)	++	2(2)	0(0)	67(100)	33(0)	--
Organizational autonomy support	3(5)	100(100)	0(0)	0(0)	++	3(5)	0(0)	67(60)	33(40)	-
Procedural justice	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	100(100)	0(0)	--
Psychosocial safety climate	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(0)	100(100)	0(0)	--
Remote work	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(67)	0(0)	100(33)	?
Serial socialization	0(1)	0(100)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Support resources: administration	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Support resources: colleagues	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Support resources: family and friends	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Support resources: material	0(1)	0(50)	0(50)	0(0)	?	0(1)	0(0)	0(50)	0(50)	?
Support resources: psycho-pedagogical	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(50)	0(50)	?

Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown

Table 7.
Summary of
associations between
variables regarding
organization
environment and
practices and well-
being/ill-being
outcomes

Relationship between employee and leader/supervisor	Well-being					Ill-being				
	N	+	-	0	=	N	+	-	0	=
Engaging leadership	0(1)	0(0)	0(0)	0(100)	?	0(0)	0(0)	0(0)	0(0)	?
Leader-member exchange	3(3)	100(67)	0(0)	0(33)	+	1(1)	0(0)	100(100)	0(0)	--
Manager appreciation	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(0)	0(100)	100(0)	0/-
Managerial overall need support	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(0)	0(100)	?
Open conflict norms	0(1)	0(100)	0(0)	0(0)	?	0(0)	0(0)	0(0)	0(0)	?
Perceived autonomy support from supervisor	1(2)	0(100)	0(0)	100(0)	0/+	0(0)	0(0)	0(0)	0(0)	?
Perceptions of supervisor controlling behaviors	1(1)	0(0)	0(100)	100(0)	0/-	0(0)	0(0)	0(0)	0(0)	?

Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown

Table 8.
Summary of
associations between
variables regarding the
relationship between
employee and leader/
supervisor and well-
being/ill-being
outcomes

seem to promote well-being, manager appreciation and managerial need support did not present significant influence on ill-being.

Among the variables concerning job/task content or execution (Table 9), job crafting (cognitive, relational and task) seems to enhance well-being. However, well-being seems to decrease as job demands and job insecurity increase, while job complexity has no significant association.

Table 9.
Summary of
associations between
variables regarding
job/task content or
execution and well-
being/ill-being
outcomes

Job/task content or execution	Well-being					Ill-being				
	N	+	-	0	=	N	+	-	0	=
Cognitive crafting	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Job challenges: workload and cognitive demands	1(1)	0(100)	0(0)	100(0)	0/+	0(0)	0(0)	0(0)	0(0)	?
Job complexity	1(1)	0(0)	0(0)	100(100)	0	1(1)	0(0)	0(0)	100(100)	0
Job demands	1(1)	0(0)	100(100)	0(0)	--	1(1)	0(100)	100(0)	0(0)	?
Job hindrances: work- home interference and worry	1(1)	0(0)	0(100)	100(0)	0/-	0(0)	0(0)	0(0)	0(0)	?
Job insecurity	1(1)	0(0)	100(100)	0(0)	--	1(1)	100(100)	0(0)	0(0)	++
Perceived fit	0(0)	0(0)	0(0)	0(0)	?	1(1)	0(0)	33(67)	67(33)	?
Relational crafting	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Role ambiguity	0(0)	0(0)	0(0)	0(0)	?	1(1)	33(67)	0(0)	67(33)	?
Task crafting	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Time pressure	1(1)	0(0)	100(0)	0(100)	0/-	1(1)	100(100)	0(0)	0(0)	++
Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown										

Besides, evidence indicates that job insecurity and time pressure is conditions that increase ill-being, while job complexity, again, has no significant association with the phenomenon.

Finally, results regarding job challenges, job hindrances, perceived fit, role ambiguity and time pressure are not conclusive regarding the association with well-being or ill-being.

Consequences of well-being/ill-being

Among six studies investigating the consequences of well-being/ill-being (see [Appendix 3](#)), evidence indicates that well-being promotes positive outcomes for organizations and workers: well-being tends to enhance employees' absorptive capacity, affective commitment, goal attainment, job satisfaction, positive attitudes towards digital workplace transformation and opportunity recognition capability ([Table 10](#)).

Table 10.
Summary of
associations between
well-being/ill-being
and variables of
organizational/
individual
consequences

Consequences	Well-Being					Ill-Being				
	N	+	-	0	=	N	+	-	0	=
Absorptive capacity	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Affective commitment	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Attitudes towards digital workplace transformation	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Goal attainment	0(1)	0(100)	0(0)	0(0)	?	0(1)	0(0)	0(100)	0(0)	?
Intent to leave profession	0(0)	0(0)	0(0)	0(0)	?	1(0)	100(0)	0(0)	0(0)	?
Intent to leave school	0(0)	0(0)	0(0)	0(0)	?	1(0)	100(0)	0(0)	0(0)	?
Job satisfaction	1(1)	50(100)	0(0)	50(0)	+	0(0)	0(0)	0(0)	0(0)	?
Opportunity recognition capability	1(1)	100(100)	0(0)	0(0)	++	0(0)	0(0)	0(0)	0(0)	?
Organizational commitment	1(1)	0(100)	0(0)	100(0)	0/+	0(0)	0(0)	0(0)	0(0)	?
Note(s): Results derived from multivariate analyses and bivariate analyses (in parenthesis). N, number of samples; (+), positive association; (-), negative association; (0), association not significant; (?), inconsistent findings or indeterminate results or unknown										

Results also indicate that affective commitment and goal attainment are reduced in the presence of ill-being. On the other hand, ill-being is found to increase the intention to leave profession and school.

Discussion

The aim of this systematic review has been to provide a comprehensive analysis regarding the relationship between SDT and well-being/ill-being in working contexts, based on empirical research on the subject. In this study, two electronic databases, Web of Science and Scopus, were used to identify studies that were published in English and Portuguese up to February 2021, however only publications in English met all the inclusion criteria for this review. In addition, only studies with validated scales were included, for reasons of reliability and comparability between measures, but a wide range of measurement tools were identified in the reviewed studies. Moreover, studies included in this review were characterized by distinct methodological designs, different working contexts and countries.

- (1) *Motivation.* When addressing motivation, there is a preponderance of samples that relied solely on hedonic measures to empirically operationalize well-being phenomena in the workplace. While the hedonic perspective of well-being refers to short term happiness and pleasure, the eudaimonic approach concerns self-realization and personal growth (Ryan and Deci, 2001). In this regard, despite their differences, Huta (2015) argues that both approaches are complementary, since people who experience both hedonia and eudaimonia display higher levels of subjective well-being. Therefore, to comprehensively assess well-being experiences, it is important that studies include measures of both perspectives, which happened in only five samples. This situation may result in a limited comprehension of well-being phenomena in the workplace. Additionally, the reviewed studies also reinforce associations already well-established within SDT: (a) self-determined forms of motivation tend to promote well-being among workers. Moreover, evidence indicates that when workers engage in behaviors for enjoyment, identity, or personal values, negative feelings decrease (Deci et al., 2017; Deci and Ryan, 2000; Ryan and Deci, 2000b); and (b) extrinsically motivated behaviors, as well as amotivation, have a detrimental effect on well-being, while promoting ill-being among workers (Deci et al., 2017; Deci and Ryan, 2000; Ryan and Deci, 2000b). However, it is worth mentioning that, among self-determined types of motivation, fewer studies were dedicated to investigating integrated motivation (i.e. pursuing a behavior because it is part of one's identity) (Deci and Ryan, 1985). Indeed, previous studies have already questioned the distinctiveness of this type of regulation in relation to intrinsic and identified motivations, which possibly explains the reason it has not been included in most scales and empirical research (Gagné et al., 2015; Howard et al., 2017; Van den Broeck et al., 2021). In fact, in this review, integrated, intrinsic and identified motivations followed the same pattern of association with well-being. A possible explanation is that individuals themselves could not distinguish the actual reasons driving their behavior, constituting a consistency bias (Van den Broeck et al., 2021), or that existing scales were not capable of capturing the essence of integrated motivation, in opposition to other types of self-determined motivation. In addition, results regarding the relationship between ill-being and integrated regulation are supported by only one sample, which prevents any generalization.

Introjected regulation occurs when people engage in activities for ego-involvement and self-administered rewards or punishments (Deci and Ryan, 1985). Although reviewed evidence concerning the effect of this type of motivation on workers' psychological health is not

conclusive, a considerable amount of evidence indicates positive associations with both well-being and ill-being indicators. Similar results were found by [Van den Broeck et al. \(2021\)](#) in a meta-analytical study, suggesting that, in work contexts, contingent self-esteem is less detrimental to psychological health than financial rewards to orient desired behaviors. In addition, when considering hedonic and eudaimonic perspectives of well-being, results indicated that introjected regulation is positively associated with hedonic well-being while it has no association with the eudaimonic approach, suggesting that behaviors driven by self-administered rewards or punishments may lead to short-term pleasant emotions but do not lead to subjective feelings of personal growth or self-realization.

Regarding external motivation, SDT establishes that this form of regulation, based on material rewards, can have a powerful effect in motivating desired behaviors, but it brings long-term decreases in well-being ([Deci et al., 2017](#)). In this review, results suggest a lack of relationship between external motivation and well-being, challenging SDT assumptions; however, this relationship was investigated mostly in cross-sectional studies, which do not take into account the long-term effect mentioned by [Deci et al. \(2017\)](#), only one study employed a 6-month prospective design to investigate external regulation and still found no association with psychological health at work over time ([Dagenais-Desmarais et al., 2018](#)). Moreover, a similar result regarding external motivation was identified among the elderly population ([Tang et al., 2020](#)), with the authors hypothesizing that this situation may be due to the diversity of scales used, specificities of the population studied, or even that external motivation can be associated only with specific indicators of well-being. In this regard, taking into consideration the effect of external motivation on both perspectives of well-being (i.e. hedonic and eudaimonic), results have demonstrated the absence of effect on eudaimonic indicators, indicating that external rewards do not lead to positive feelings of personal growth; on the other hand, evidence regarding the association between this type of regulation and hedonic manifestations is inconclusive, requiring further investigations to explore the potential effects of material rewards on workers' short happiness.

In this review, evidence regarding autonomous and controlled motivation were in accordance with SDT principles, especially regarding the association with well-being: autonomous regulated behaviors are consistently associated with the experience of well-being, while controlled motivation has a negative or no effect on well-being ([Deci et al., 2017](#); [Deci and Ryan, 1985](#)). On the other hand, the role of autonomous and controlled motivation in ill-being was the subject of fewer studies. In addition, it is worth mentioning that, for controlled regulation, consistent evidence indicates that behaviors oriented for extrinsic reasons do not have the power to mitigate negative feelings on workers.

Evidence about the effects of amotivation on well-being are inconclusive, possibly due to the small number of samples that investigated this association. However, the lack of motivation is positively associated with ill-being. This result finds support in meta-analytical ([Van den Broeck et al., 2021](#)) and empirical studies with other populations ([Baker, 2004](#); [Cresswell and Eklund, 2005](#)). Amotivation is a state where the absence of motivation leads to purposeless and non-intentional behaviors, resulting in feelings of incompetence and uncontrollability towards an activity ([Baker, 2004](#); [Deci and Ryan, 1985](#)); if self-determined types of regulation are associated with well-being because of SBPN, the relationship between amotivation and ill-being may occur because non-regulated behaviors involve FBPN.

- (2) *SBPN/FBPN*. Similar to motivation, studies that addressed BPN (both SBPN and FBPN) employed preponderantly hedonic measures to empirically operationalize well-being phenomena in the workplace. Again, this limitation may result in a limited comprehension of how the satisfaction or frustration of BPN may impact both perspectives of positive psychological functioning in the workplace. However, the difference of associations between competence satisfaction and hedonic and

eudaimonic perspectives of well-being observed in the reviewed samples suggests that the feeling of efficacy promoted among workers is not necessarily associated with short-term pleasure but has impacts on long-term perception of personal growth and self-actualization. In addition, the results condensed in this review are strongly congruent with SDT principles, indicating that BPN is an important mechanism to explain both “the bright and dark side” of psychological functioning in the workplace: while SBPN leads to well-being, FBPN is associated with ill-being (Deci *et al.*, 2017; Longo *et al.*, 2016, 2018). In addition, while Martela and Ryan (2021) argue that, to comprehensively assess well-being in individuals, SBPN indicators are essential measures, this review suggests that the same logic applies to indicators of FBPN and ill-being, at least in working contexts. However, in a meta-analytic study, Van den Broeck *et al.* (2016) argue that BPN is a more powerful mechanism in predicting well-being than ill-being; this result may be due to the fact that FBPN measures were not included in the meta-analysis, as even the authors suggest. Indeed, the way FBPN is measured in the studies included in this review seems a fundamental aspect in this discussion: SBPN and FBPN are independent but related constructs with different effects on psychological health (Longo *et al.*, 2016, 2018), which means that not being able to do things (i.e. low or no satisfaction of needs) is different from being prevented from doing things (i.e. frustration of needs). Among the four scales used to measure FBPN, W-BNS (Van den Broeck *et al.*, 2010) was developed to assess specifically SBPN, but items were reverse-scored to measure need frustration (Elst *et al.*, 2012); besides, BPNSFS (Chen *et al.*, 2015), used in three studies, included ambiguous items such as “I feel insecure about my abilities” and “I feel disappointed with much of my performance”, which seem conceptually closer to not satisfying competence need than being frustrated by not satisfying such necessity, for example. It is possible that these conceptual fragilities regarding frustration assessment may have led to inaccurate measurements of the constructs, possibly affecting associations with workers’ psychological health outcomes. In fact, such methodological fragilities regarding the scales employed to measure FBPN, combined with the scarcity of studies that included measures of FBPN, prevent generalizations concerning the independence between the constructs of SBPN and FBPN in working context, which have already been empirically identified in other contexts of human experience (Bartholomew *et al.*, 2011; Cordeiro *et al.*, 2016; Longo *et al.*, 2016, 2018; Van den Broeck *et al.*, 2016). In addition, studies included in this review relied on samples of workers from different industries, countries and cultures, a fact that may have some influence on the subjective importance of each basic need to attain well-being (Deci *et al.*, 2001).

- (3) *Individual and workplace contribution.* Considering that a central SDT concern relates to the development of organizational environments that promote development of skills, performance and well-being (Ryan and Deci, 2000b), this systematic review also aimed at identifying contextual variables that favor well-being and prevent/mitigate ill-being among workers. Evidence suggests that positive individual resources such as active engagement in entrepreneurship, creative thinking, hardiness, optimism, self-efficacy and self-esteem present higher levels of well-being. In fact, both optimism (i.e. the belief that good things will happen) and self-efficacy (i.e. the ability to deal with unforeseen events) are regarded as important personal resources and have been empirically associated with high levels of work engagement (Bakker and Demerouti, 2017; Bakker and Sanz-Vergel, 2013; Xanthopoulou *et al.*, 2013). Conversely, ill-being is elevated when workers have neuroticism traits and is reduced in the face of emotional stability, met expectations,

optimism and support from family and friends. Regarding workplace variables, three distinct categories were identified: (a) organization environment and practices; (b) relationship between employee and leader/supervisor; and (c) job/task content or execution. Evidence indicates that work contexts that enable workers to actively engage in their activities in a fair, open and supportive environment are more favorable to workers' mental health, by increasing well-being and reducing ill-being. On the other hand, job insecurity and time pressure seem to have detrimental effects on workers. In addition, it is noteworthy that, among the 25 studies – and 26 samples – that investigated the effect of contextual variables on workers' well-being and ill-being, 19 studies relied on the mechanisms of BPN to investigate this association. However, only four studies have included measures of FBPN (Ebersold *et al.*, 2019; Giebe and Rigotti, 2020; Huyghebaert *et al.*, 2018; Elst *et al.*, 2012). The limited number of studies dedicated to investigate the effect of contextual variables on FBPN supports the claim that unsuccessful motivational processes have received less attention from SDT researchers (Deci *et al.*, 2017), which, consequently, prevents the elucidation of the contextual causes that lead to the occurrence of the phenomenon of interest. Moreover, despite the simultaneous and independent nature of the subjective mechanisms of SBPN and FBPN (Bartholomew *et al.*, 2011; Cordeiro *et al.*, 2016; Diener and Emmons, 1984; Longo *et al.*, 2016, 2018), among the studies that investigated the effect of contextual variables in the occurrence of FBPN, only two studies included measures of both SBPN and FBPN (Ebersold *et al.*, 2019; Giebe and Rigotti, 2020). As a result, while there is a consistent body of empirical literature that have contributed to the elucidation of the environmental conditions and organizational practices associated with the psychological mechanism of SBPN, the same cannot be said about the FBPN phenomenon, which has been addressed in far fewer empirical studies, as demonstrated in the review. Additionally, while SDT assumptions focus on psychological mechanisms such as SBPN/FBPN and motivation, some of the studies reviewed have benefited from the integration of SDT assumptions with other theoretical frameworks such as the Personality Potential Model (Osin *et al.*, 2018), Response Styles Theory (Kranabetter and Niessen, 2019) and Job Demand–Control Support Model (Chambel *et al.*, 2015; Chambel and Sobral, 2019; Perry *et al.*, 2018) to investigate how individual and workplace characteristics promote well-being/ill-being in employees. Most studies included in this review, however, relied on the combination of SDT with Job Demands-Resources Model (JD-R Model) (Chambel *et al.*, 2015; Chambel and Sobral, 2019; Desrumaux *et al.*, 2015; Domenech-Betoret *et al.*, 2015; Dose *et al.*, 2019; Giebe and Rigotti, 2020; Gillet *et al.*, 2018; Huyghebaert *et al.*, 2018; Olafsen and Frølund, 2018; Robijn *et al.*, 2020; Rubino *et al.*, 2009). JD-R Model distinguishes two features associated with work environments and psychological outcomes: job demands are associated with ill-being as they require employees' continuous psychological and/or physical effort, while job resources facilitate the accomplishment of tasks and lead to work engagement and other positive outcomes (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004). In general, reviewed studies provide evidence that SBPN/FBPN mechanisms mediate the link between job characteristics (i.e. job demands and resources) and employees' experience of well-being/ill-being and other work outcomes, indicating that the integration of SDT and JD-R Model is a powerful and much valued theoretical tool to comprehensively assess well-being/ill-being in working contexts.

- (4) *Consequences.* It is well established within SDT and overall managerial literature that when workers have a positive feeling towards their job, positive individual and organizational outcomes will emerge; the inverse assumption is also vastly supported

– negative psychological functioning can have detrimental effects on both workers' and organizations (Huyghebaert *et al.*, 2018; Longo *et al.*, 2016, 2018). Despite the importance of the subject, few studies have investigated the consequences of well-being and ill-being, moreover no study in this review explored potential effects that well-being can have on negative consequences. Well-being and ill-being are considered independent constructs that can occur simultaneously in individuals (Bartholomew *et al.*, 2011; Bradburn and Caplovitz, 1965; Cordeiro *et al.*, 2016; Diener and Emmons, 1984; Longo *et al.*, 2016, 2018) and empirical results suggest that ill-being can both increase negative consequences (Ford *et al.*, 2019) and reduce positive work outcomes (Gatt and Jiang, 2020; Olafsen, 2017). For well-being, however, studies were limited to investigating its effects on positive work outcomes (Chen *et al.*, 2020; Collie *et al.*, 2015; Gatt and Jiang, 2020; Meske and Junglas, 2020; Olafsen, 2017). Potential mitigating effects of well-being on negative work outcomes have not been explored in empirical research and constitute an important topic for both management academics and practitioners.

Limitations and directions for future research

This systematic review presents several limitations: (1) it included studies published only in English (no study published in Portuguese fulfilled the inclusion criteria) and important findings in other languages may have been left out of this review; and (2) in-progress or unpublished studies with potential significant results were not included in this review.

Review studies also presented some deficiencies that can be addressed in future research: (1) *study design*: experimental and prospective studies are fewer than cross-sectional and although they require more time and other resources, they can better explain the causal relationship between variables, specifically regarding the relationship between external motivation and well-being; (2) *measurement tools*: reviewed studies employed a great variety of scales to measure the variables of interest (e.g. BPN, motivation, well-being and ill-being), a fact that can lead to inconsistent findings between studies focusing on the same variables. Besides, all instruments are self-reporting, which can lead to biased measurements of constructs; (3) *scarcity of research on FBPN*: in this review, despite the claim that fewer studies have address ill-being phenomena in the workplace (Deci *et al.*, 2017; Van den Broeck *et al.*, 2021), the asymmetry was not observed in the samples studied. However, most studies relied solely on needs satisfaction measures to investigate the experience of ill-being. Given that recent empirical evidence suggests that this phenomenon is best predicted by basic needs frustration, this inaccurate approach can impair the proper understanding of ill-being in current working contexts; (4) *selection of proper scales to measure FBPN*: in this review, numerous scales were used to measure FBPN, however it is important to select measures that properly capture the construct conceptual essence (i.e. being prevented to satisfying BPN) to avoid inaccurate measurements of the construct; (5) *scarcity of studies that comprehensively assess well-being phenomena*: in this review, it was observed a preponderance of hedonic measures of well-being, to the detriment of eudaimonic indicators or the combination of both approaches, which would provide a more comprehensive assessment of well-being in the workplace; (6) *scarcity of studies on the effect of well-being/ill-being on work outcomes*: although reviewed results reinforce that well-being is associated with positive work outcomes, while ill-being is associated with negative results, few empirical studies investigated these relationships, which are of great relevance for both management academics and practitioners. In addition, it is necessary to clarify the potential effects that well-being can have on negative consequences; (7) *difficulty in delimiting ill-being indicators*: the lack of a consistent definition of what constitutes the experience of ill-being in the workplace (beyond the opposition to the concept of well-being) may have led to difficulties in defining the

indicators that were used in the reviewed studies to measure workers' negative subjective experiences; (8) *scarcity of studies on new forms and contexts of work*: in recent years, a combination of factors such as technology, economic crisis and more recently the Covid-19 pandemic, has allowed traditional forms of work to be replaced by new arrangements, in which workers have more flexibility and autonomy over their work; as work changes, resources and demands associated tend to change too, impacting workers' mental health and work outcomes. In this new scenario, an important change concerns the way individuals are being compensated for their work; the effects of distinct compensation systems on behavior regulation and SBPN/FBPN and consequently on workers' mental health, remain an underexplored but relevant topic for future research.

Theoretical and practical contributions

Regarding theoretical contributions, empirical evidence gathered in this systematic review supports SDT assumptions concerning the role of basic needs and motivation in the occurrence of both ill-being and well-being in a work context. Furthermore, this study revealed that: (1) integrated motivation does not seem to be empirically distinct from intrinsic and identified regulation in promoting well-being; (2) introjected behaviors may be less harmful to psychological health than externally oriented ones; (3) the relationship between external motivation and well-being/ill-being requires further prospective investigations to be adequately understood; and (4) amotivation seems to have a strong detrimental effect on workers' psychological health, possibly due to FBPN. Finally, this review contributes to the advancement of scientific research by presenting an unprecedented framework that aggregates empirical findings regarding the antecedents, predictors and consequences of ill-being and well-being in working contexts, which enables the identification of research gaps and deficiencies that can be addressed in future studies on the subject.

In addition, this systematic review adds to a growing body of empirical evidence that demonstrates that ill-being experiences such as burnout and stress do not simply stem from SBPN, but rather result directly from FBPN. This implies that, to prevent the occurrence of ill-being among employees, it is important that managers implement organizational practices and policies designed not only to promote SBPN, but also with the purpose to prevent or mitigate FBPN, given the independence between these phenomena.

In this regard, this systematic review provides information for human resources management practitioners to design work environments and practices that promote employees' psychological health. Given that the basic needs of autonomy, relatedness and competence are satisfied and/or frustrated by favorable and unfavorable environmental conditions, respectively (Deci and Ryan, 2000; Deci and Ryan, 2008b; Ryan, 2009; Ryan and Deci, 2019; Van den Broeck *et al.*, 2010, 2016), managerial implications can be suggested based on results obtained in this study in order to: (1) facilitate SBPN among workers and (2) prevent FBPN among workers.

Given that SBPN has been vastly addressed in SDT empirical research, this systematic review provides organizations and managers with a wide array of organizational policies and practices that have been empirically associated both to SBPN and well-being experiences among workers: autonomy over office spaces, autonomy support (from supervisor and organization), empowerment, positive job climate, job crafting, job complexity, leader-member exchange, manager appreciation, open conflict norms, socialization (investiture and serial) and support resources (from colleagues, administration, material and pedagogical).

On the other hand, in order to prevent the occurrence of FBPN – and consequently ill-being – among workers, reviewed studies have empirically demonstrated that increased autonomy support and psychosocial safety climate prevent workers' perception of FBPN, while time

pressure tends to increase the occurrence of such phenomenon among workers. In addition, it is important that organizations constantly evaluate the effectiveness of their practices and policies intended to promote SBPN to identify and change potential work conditions that prevent employees' satisfaction of needs and therefore, leads to FPN and ill-being among employees.

Conclusions

In conclusion, evidence gathered in this systematic review consistently confirms SDT tenets regarding the role of self-determined motivation and SBPN in promoting well-being and positive work outcomes, while diminishing ill-being among workers. Empirical evidence reviewed also reinforces recent empirical findings regarding the role of FBP in the occurrence of ill-being, while evidencing the need for proper measurement for the construct to be adequately investigated in future empirical studies. In fact, methodological fragilities regarding measurement tools and the scarcity of research on FBP prevent further conclusions regarding the independence between the constructs of SBPN and FBP.

Moreover, this review goes beyond in providing an unprecedented comprehensive view of the role of contextual variables in favoring the experience of well-being/ill-being, as well as their potential consequences for the worker and organization, indicating that a fair, open and supportive environment tends to be more favorable to workers' mental health, increasing well-being and decreasing ill-being. Nevertheless, while ill-being can both lead to negative consequences and diminish positive outcomes, potential effects of well-being on negative consequences have not been addressed in the studies reviewed. Moreover, results reinforce the claim that SDT empirical research has focused mainly on positive aspects of human functioning, with far fewer studies investigating unsuccessful motivational processes (Deci *et al.*, 2017; Van den Broeck *et al.*, 2021).

Overall, SDT aims to contribute to the development of work environments that enable the development of workers' skills, performance and well-being (Ryan and Deci, 2000b). Therefore, the main contributions of this review are: (1) identifying and differentiating well-being and ill-being predictors in work environments; (2) indicating contextual and individual conditions that empirically are shown to promote employees' mental health; and (3) verifying the effects arising from well-being and ill-being on work outcomes. Based on this information, it is possible to identify perspectives for future research in SDT as well as useful guidelines for practitioners to design healthy work environments.

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Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
<i>Motivation</i> <i>Chambel et al.</i> (2015)	Gross- sectional	1,045	Soldiers	Portugal	Motivation at Work Scale (MAWS) (Gagné <i>et al.</i> , 2010)	BA: Autonomous (+) Controlled (-) MA: Autonomous (+) Controlled (-)	BA: Autonomous (-/-) Controlled (+/+) MA: Autonomous (-) Controlled (+)	Work engagement	Emotional exhaustion and cynicism	Bivariate correlations (BC); Structural Equation Modeling (SEM) BC
<i>Chambel and</i> <i>Sobral</i> (2019)	Gross- sectional	3,300	Temporary agency workers	Portugal	MAWS (Gagné <i>et al.</i> , 2010)	BA: Intrinsic (+/+/+/+/+) Integrated (+/+/+/+/+) Identified (+/+/+/+/+) Introjected (+/+/+/+/+) External (+/+/+/+/+ns/ns)	BA: Intrinsic (-/-/-) Integrated (-/-/-) Identified (-/-/-) Introjected (-/-/-) External (ns/ns)	Vigor, dedication and absorption; General wellbeing; Health perceptions Psychological well-being at work	Emotional exhaustion and cynicism	
<i>Dagenais-Desmarais et al.</i> (2018)	Prospective	805	General workers	Canada	MAWS (Gagné <i>et al.</i> , 2010)	BA: Intrinsic (+) Identified (+) Introjected (+) External (+) MA: Intrinsic (ns) Identified (+) Introjected (ns) External (ns)	BA: Intrinsic (-) Identified (-) Introjected (-) External (ns) MA: Intrinsic (ns) Identified (-) Introjected (ns) External (ns)		Burnout	BC, SEM
<i>Gillet et al.</i> (2018) – study 1	Gross- sectional	328	General workers	France	Multidimensional Work Motivation Scale (MWMS) (Gagné <i>et al.</i> , 2015)	BA: Intrinsic (+/+) Identified (+/+) Introjected (ns/ns) External (-/ns)	-	Work engagement; Quality of working life	-	BC
<i>Gillet et al.</i> (2018) – study 2	Gross- sectional	521	General workers	France	MWMS (Gagné <i>et al.</i> , 2015)	BA: Intrinsic (+/+/+) Identified (+/+/+) Introjected (ns/ns/ns) External (ns/ns/ns)	BA: Intrinsic (-/-/-) Identified (-/-/-) Introjected (+/+) External (ns/ns)	Work engagement; Quality of working life; Work satisfaction	Global job- anxiety; Burnout	BC
<i>Graves and</i> <i>Luciano</i> (2013)	Gross- sectional	283	General workers	USA	MAWS (Gagné <i>et al.</i> , 2010)	BA: Identified (+/+) Intrinsic (+/+) MA: Autonomous (+/+)	-	Job satisfaction; Subjective vitality	-	BC, SEM

(continued)

Table A1.
Description of
reviewed studies (SDT
predictors)

Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Kibler <i>et al.</i> (2019)	Prospective	186	Entrepreneurs	UK	Intrinsic motivation with Situational Motivation Scale (Gay <i>et al.</i>, 2000)	BA: Intrinsic (+) MA: Intrinsic (ns)	BA: Intrinsic (-) MA: Intrinsic (ns)	Life satisfaction	Stress	BC, Path model analysis
Kibler <i>et al.</i> (2019)	Prospective	544	Employees	UK	Intrinsic motivation with Situational Motivation Scale (Gay <i>et al.</i>, 2000)	BA: Intrinsic (+) MA: Intrinsic (+)	BA: Intrinsic (-) MA: Intrinsic (-)	Life satisfaction	Stress	BC, Path model analysis
Lopes and Chambel (2017)	Prospective	196	Temporary agency workers	Portugal	MAWS (Gagné <i>et al.</i>, 2010)	BA: Autonomous (+/+/+) Controlled (ns/-/ns) MA: Autonomous (+) Controlled (ns)	BA: Autonomous (-/-) Controlled (+/ns) MA: Autonomous (ns) Controlled (ns)	Vigor, dedication and absorption	Emotional exhaustion and cynicism	BC, SEM
Lopes <i>et al.</i> (2019)	Gross-sectional	3,983	Temporary agency workers	Portugal	MAWS (Gagné <i>et al.</i>, 2010)	BA: Autonomous (+/+/+) Controlled (+/+/+) MA: Autonomous (+) Controlled (ns)	BA: Autonomous (-/-) Controlled (ns/-) MA: Autonomous (-) Controlled (ns)	Vigor, dedication and absorption	Emotional exhaustion and cynicism	BC, SEM
Nie <i>et al.</i> (2015)	Gross-sectional	266	Teachers	China	Work tasks motivation scale for teachers -adapted (Fernet <i>et al.</i>, 2008)	BA: Intrinsic (+) Identified (+) Introjected (+) External (-) Amotivation (-) MA: Intrinsic (+) Identified (+) Introjected (+) External (-) Amotivation (ns)	BA: Intrinsic (-/-) Identified (-/-) Introjected (ns/ns) External (+/+) Amotivation (+/+) MA: Intrinsic (ns/-) Identified (ns/ns) Introjected (ns/+) External (+/ns) Amotivation (+/+)	Job satisfaction	Work stress; Illness symptoms	BC, Path analysis
Olafsen and Frølund (2018)	Gross-sectional	160	Entrepreneurs	-	MAWS (Gagné <i>et al.</i>, 2010)	BA: Autonomous (+) MA: Autonomous (+)	-	Subjective vitality	-	BC, SEM
Olafsen and Bentzen (2020)	Gross-sectional	239	Organization employees	Norway	MWMS (Gagné <i>et al.</i>, 2015)	MA: Identified (+/+) Intrinsic (+/+)	MA: Identified (ns/ns/-) Intrinsic (ns/ns/-)	Positive affect; Life satisfaction	Negative affect; Somatic symptom burden; Emotional exhaustion	Latent profile analysis (LPA)
<i>(continued)</i>										

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Tóth-Király et al. (2020)	Gross-sectional	955	General workers	Hungary	MWMS (Cagné et al., 2015)	BA: Intrinsic (+) Identified (+) Introjected (ns) External – material (ns) External – social (ns) Amotivation (–)	BA: Intrinsic (–/ns/+ns/–) Identified (–/+ns/–ns) Introjected (+/+ns/ns/+) External (material) (+/ns/ns/+) External (social) (+/+/+/+) Amotivation (+/–/–ns/+)	Work satisfaction	Global, Physical, Cognitive and Emotional exhaustion; Work addiction	BC
<i>Basic psychological needs</i> Babenko (2018)	Gross-sectional	57	Physicians	Canada	Basic Psychological Needs at Work (BPNWS) (Brien et al., 2012)	Satisfaction BA: Autonomy (+/ns) Competence (+/+) Relatedness (+/+) MA: Autonomy (ns/ns) Competence (ns/ns) Relatedness (+/+)	Satisfaction BA: Autonomy (ns) Competence (–) Relatedness (–) MA: Autonomy (ns) Competence (–) Relatedness (–) –	Professional life satisfaction; Work-related engagement	Exhaustion (emotional, physical and cognitive)	BC, Multivariate regression analysis
Chen et al. (2020)	Gross-sectional	234	Creative entrepreneurs	Taiwan	Work-related Basic Need Satisfaction (W-ENS) (Van den Broeck et al., 2010)	Satisfaction BA: Relatedness (+) MA: Relatedness (+)	–	Physical, psychological and social well-being	–	BC, SEM

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Collie et al. (2015)	Gross-sectional	485	Teachers	Canada	W-BNS (Van den Broeck et al., 2010)	Satisfaction BA: Autonomy (+/+) Competence (+/+) Relatedness w/colleagues (+/+) Relatedness w/students (+/+) MA: Autonomy (+/+) Competence (+/ns) Relatedness w/colleagues (+/+) Relatedness w/students (+/ns)	–	General well-being; Teacher well-being	–	BC, SEM
Desrumaux et al. (2015)	Gross-sectional	298	Teachers	France	BPNWS (Brien et al., 2012)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (ns) Competence (+) Relatedness (+) Satisfaction BA: Relatedness (+/+) Autonomy (+/+) Competence (+/+) MA: Overall (+) Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (+)	Satisfaction BA: Autonomy (–) Competence (–) Relatedness (–) MA: Autonomy (ns) Competence (–) Relatedness (–) Satisfaction BA: Relatedness (–/–) Autonomy (–/–) Competence (–/–) MA: Overall (–)	Psychological well-being	Distress	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)
Domenich-Betoret et al. (2015)	Gross-sectional	282	Teachers	Spain	Teacher psychological needs (Domenich-Betoret, 2013)	Satisfaction BA: Relatedness (+/+) Autonomy (+/+) Competence (+/+) MA: Overall (+)	–	Vigor and dedication	Emotional exhaustion and depersonalization	BC, SEM
Dose et al. (2019)	Gross-sectional	224	Professional counselors	France	Basic Psychological Needs in Sport-adapted (Gillet et al., 2008)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (+)	–	Psychological well-being at work	–	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Ebersold et al. (2019)	Gross-sectional	49	Teachers	Germany	Basic Psychological Need Satisfaction and Frustration (BPNSFS) (Chen et al., 2015)	Satisfaction BA: Overall (+/+) Autonomy (+/+) Competence (+/+) Relatedness (ns/+) Frustration BA: Overall (-/-) Autonomy (-/-) Competence (-/ns) Relatedness (-/-) Frustration BA: Overall (-/-) Autonomy (+/+) Competence (+/+) Relatedness (+/+)	Satisfaction BA: Overall (-/-) Autonomy (-/-) Competence (ns/ns) Relatedness (-/-) Frustration BA: Overall (-/-) Autonomy (+/+) Competence (+/+) Relatedness (+/+)	Life satisfaction; Positive affect	Emotional exhaustion; Negative affect	BC
Eriksson and Boman (2018)	Gross-sectional	1,200	General workers	Sweden	Basic Psychological Need Satisfaction at Work (BPNS-W) (Decl et al., 2001)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (+)	–	Psychological well-being	–	BC; Hierarchical regression analysis
Ford et al. (2019)	Gross-sectional	1,556	Teachers	USA	BPNSFS (Chen et al., 2015)	–	Satisfaction MA: Autonomy (-) Competence (-) Satisfaction BA: Relatedness (-)	–	Burnout	Multilevel path analysis
Gatt and Jang (2020)	Gross-sectional	139	Organization employees	New Zealand	Relatedness with W-BNS (Van den Broeck et al., 2010)	Satisfaction BA: Relatedness (+/+)	Satisfaction BA: Relatedness (-)	Work engagement; Job satisfaction	Emotional exhaustion	BC
Giebe and Rigotti (2020)	Prospective	308	General workers	Germany	BPNSFS (Chen et al., 2015)	Satisfaction BA: Autonomy (+) Competence (+) MA: Autonomy (ns) Competence (ns) Frustration BA: Autonomy (-) Competence (-) MA: Autonomy (-) Competence (ns)	Satisfaction BA: Autonomy (-) Competence (-) MA: Autonomy (ns) Competence (-) Frustration BA: Autonomy (+) Competence (+) MA: Autonomy (+) Competence (ns)	Job satisfaction	Emotional exhaustion	BC; Multilevel path analysis
Gillet et al. (2012) – study 1	Gross-sectional	468	General workers	France	Basic Psychological Needs in Sport (Gillet et al., 2008)	Satisfaction BA: Overall (+/+) MA: Overall (+/+)	–	Work satisfaction; Happiness; Self-realization	–	BC, SEM

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Gillet <i>et al.</i> (2012) – study 2	Cross-sectional	650	General workers	France	Psychological Need Thwarting (PNTS) (Bartholomew <i>et al.</i> , 2011)	Satisfaction BA: Overall (+/+/+) MA: Overall (+/+/+) Frustration BA: Overall (-/-/-) MA: Overall (-/-/-)	-	Work satisfaction; Happiness; Self-realization	-	BC, SEM
						Satisfaction BA: Autonomy (+/+/+/+) Competence (+/+/+/+) Relatedness (+/+/+/+) MA: Autonomy (+/+/+/+) Competence (+/+/+/+) Relatedness (ns/ns/ns)	-	Vigor, dedication and absorption; Job satisfaction	-	BC, SEM
Graves and Luciano (2013)	Cross-sectional	283	General workers	USA	BPNS-W (Deci <i>et al.</i> , 2001)	Satisfaction BA: Autonomy (+/+/+) Competence (+/+/+) Relatedness (+/+/+) MA: Autonomy (ns/ns) Competence (ns/+) Relatedness (ns/ns)	-	Job satisfaction; Subjective vitality	-	BC, SEM
						Satisfaction at work BA: Autonomy (+/+/+) Competence (+/+/+) Relatedness (+/+/+) MA: Autonomy (+) Competence (ns) Relatedness (ns) Satisfaction at home BA: Autonomy (ns/+) Competence (ns/+) Relatedness (ns/+) MA: Autonomy (+) Competence (+) Relatedness (+)	Satisfaction at work BA: Autonomy (+/+/+) Competence (+/+/+) Relatedness (-/-/-) MA: Autonomy (-) Competence (ns) Relatedness (ns) Satisfaction at home BA: Autonomy (+/+/+) Competence (+/+/+) Relatedness (ns/-/-) MA: Autonomy (-) Competence (-) Relatedness (-)	Positive affect	Negative affect	BC, Multilevel models analysis
Hewett <i>et al.</i> (2017)	Cross-sectional	416	General workers	UK, Belgium, Denmark and Germany	W-BNS (Van den Broeck <i>et al.</i> , 2010) at work and home	Competence (+/+/+) MA: Autonomy (+) Competence (ns) Relatedness (ns) Satisfaction at home BA: Autonomy (ns/+) Competence (ns/+) Relatedness (+/+/+) MA: Autonomy (+) Competence (+) Relatedness (+)				

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Huyghebaert et al. (2018) – study 1	Gross-sectional	269	Nurses	France	Psychological Need Thwarting at Work (EPFBPT) (Gillet et al. 2012)	–	Frustration BA: Overall (+/+) MA: Overall (+/+)	–	Work-family conflict; Turnover intentions Burnout	BC, SEM
Huyghebaert et al. (2018) – study 2	Prospective	393	Nurses	France	EPFBPT (Gillet et al. 2012)	–	Frustration BA: Overall (+) MA: Overall (+)	–	Burnout	BC, SEM
Ilardi et al. (1993)	Gross-sectional	117	Factory workers	USA	Work Motivation Form-Employee (Kasser et al., 1992)	Satisfaction MA: Autonomy (+/+ns) Competence (ns/ns/+) Relatedness (ns/+ns)	Satisfaction MA: Autonomy (+) Competence (ns) Relatedness (ns)	Satisfaction with the work performed and job satisfaction; Self-esteem	Presence of nonpsychotic psychiatric disorders	Regression analyses
Kang and Yoo (2019)	Gross-sectional	218	Music Teachers	USA	Music Teachers' Psychological Need Measure, modified from Psychological Need Measure (Johnston and Finney, 2010)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+)	–	Overall well-being	–	BC; Multiple regression analysis
Kranabetter and Niessen (2019)	Prospective	194	Energy branch employees	Germany	BPNSW (Deci et al., 2001)	–	Satisfaction BA: Autonomy (–/–) Competence (–/–) Relatedness (–/–) Satisfaction BA: Relatedness (–)	–	Ruminative thoughts; Depressive symptoms Negative affect	BC
Lok and Dunn (2020) – study 3	Experimental	100	Amazon MTurk workers	–	Social connection scale-revised (Lee et al., 2001)	Satisfaction BA: Relatedness (+)	–	Positive affect	–	ANOVA
Lok and Dunn (2020) – study 4	Experimental	100	Amazon MTurk workers	–	Daily Autonomy scale (Reis et al., 2000)	Satisfaction BA: Autonomy (+)	Satisfaction BA: Autonomy (–)	Positive affect	Negative affect	ANOVA
Meng (2020)	Gross-sectional	275	Teachers	China	W-BNS (Van den Broeck et al., 2010)	Satisfaction BA: Autonomy (+/+) Competence (+/+) Relatedness (+/+) MA: Autonomy (+/+) Competence (+/+) Relatedness (ns/+)	–	Self-efficacy; Job satisfaction	–	BC, SEM

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Meske and Junglas (2020)	Gross-sectional	149	Organization employees	Germany	BPNS-W (Deci <i>et al.</i> , 2001)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+)	–	Well-being	–	BC
Olafsen (2017)	Prospective	115	Health professionals	Norway	W-BNS (Van den Broeck <i>et al.</i> , 2010)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+)	Satisfaction BA: Autonomy (–) Competence (–) Relatedness (–)	Subjective well-being	Burnout	BC
Olafsen and Frolund (2018)	Gross-sectional	160	Entrepreneurs	–	W-BNS (Van den Broeck <i>et al.</i> , 2010)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (ns)	–	Subjective vitality	–	BC, SEM
Perry <i>et al.</i> (2018) – study 2	Gross-sectional	145	General employees	USA	BPNS-W (Deci <i>et al.</i> , 2001)	–	Satisfaction BA: Autonomy (–/–/–) Competence (–/–/–) Relatedness (–/–/–) MA: Autonomy (–/–/–) Competence (–/–/–) Relatedness (–/–/–)	–	Exhaustion and disengagement; Job dissatisfaction	BC, SEM
Rayburn (2014)	Gross-sectional	226	Service workers	USA	BPNS-W (Deci <i>et al.</i> , 2001)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (ns) Relatedness (+)	–	Positive affect	–	BC, SEM
Robijn <i>et al.</i> (2020)	Prospective	133	Public insurance company employees	Belgium	W-BNS (Van den Broeck <i>et al.</i> , 2010)	Satisfaction BA: Overall (+) MA: Overall (+)	–	Work engagement	–	BC, SEM

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
Rouse <i>et al.</i> (2019)	Cross-sectional	2,236	Firefighters	UK	BPNSFS (Chen <i>et al.</i> , 2015)	Satisfaction	Satisfaction	Life	Stress;	BC, Hierarchical regression analyses
						BA: Autonomy (+)	BA: Autonomy (-/-/-)	satisfaction	Depression;	
						Competence (+)	Competence (-/-/-)		Anxiety	
						Relatedness (+)	Relatedness (-/-/-)			
						MA: Autonomy (+)	MA: Autonomy (-/-/-)			
						Competence (ns)	Competence (ns/ns/-)			
						Relatedness (+)	Relatedness (ns/ns/-)			
							Frustration			
							BA: Autonomy (-)			
							Competence (-)			
Shir <i>et al.</i> (2019)	Cross-sectional	251	Entrepreneurs	Sweden	BPNS-W (Deci <i>et al.</i> , 2001)	Relatedness (-)	Competence (+/+/+)			BC
						MA: Autonomy (-)	Competence (+/+/+)			
						Competence (-)	Relatedness (+/+/+)			
						Relatedness (ns)	MA: Autonomy (+/+/+)			
							Competence (+/+/+)			
							Relatedness (+/+/+)			
						Satisfaction	-	Well-being index	-	
						BA: Overall (+/+/+/+)				
						Autonomy (+/+/+/+)				
						Competence (+/+/+/+)				
Slomp and Vella-Brodick (2013)	Cross-sectional	334	General workers	Australia	Intrinsic Need Satisfaction (Bard <i>et al.</i> , 2004)	Relatedness (+/+/+/+)	-	Positive emotions;	-	BC, SEM
						Satisfaction				
						BA: Overall (+/+)		Positive psychological functioning		
						Autonomy (+/+)				
						Competence (+/+)				
						Relatedness (+/+)				
						MA: Overall (+/+)				
						Autonomy (+/+)				
						Competence (+/+)				
						Relatedness (+/+)				

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Table A1.

Authors	Design	Sample Size	Context	Country	Predictors Measure	Well-being	Ill-being	Indicators Well-being	Ill-being	Analysis
van Hooff and De Pater (2019)	Gross-sectional	109	Full-time working interns	–	W-BNS (Van den Broeck <i>et al.</i> , 2010)	Satisfaction BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (+)	–	Positive energy	–	BC; multi-level analyses
Elsa <i>et al.</i> (2012)	Gross-sectional	3,185	General employees	Belgium	W-BNS reverse (Van den Broeck <i>et al.</i> , 2010)	Frustration BA: Autonomy (–) Competence (–) Relatedness (–) MA: Autonomy (–) Competence (–) Relatedness (–)	Frustration BA: BA: Autonomy (+) Competence (+) Relatedness (+) MA: Autonomy (+) Competence (+) Relatedness (+)	Vigor	Emotional exhaustion	BC, Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)

Note(s): BA, bivariate analysis; MA, multivariate analysis; (+), positive association; (–), negative association; (ns), not significant

Authors	Design	Sample Size	Context	Country	Context variables	Predictors	Ill-being	Measures	Ill-being	Analysis
<i>Individual</i> Chambel and Bobral (2019)	Cross-sectional	1,045	Soldiers	Portugal	Tenure in temporary agency work	BA: +	BA: ns/ns	Work engagement	Emotional exhaustion and cynicism	BC
Chen <i>et al.</i> (2020)	Cross-sectional	234	Creative entrepreneurs	Taiwan	Creative thinking	BA: +	–	Physical, psychological and social well-being	–	BC
Desrumaux <i>et al.</i> (2015)	Cross-sectional	298	Teachers	France	Optimism	BA: + MA: +	BA: – MA: –	Psychological well-being	Distress	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)
Domenich-Betoret <i>et al.</i> (2015)	Cross-sectional	282	Teachers	Spain	Support resources: family and friends	BA: +/+	BA: –/–	Vigor and dedication	Emotional exhaustion and depersonalization	BC
Ose <i>et al.</i> (2019)	Cross-sectional	224	Professional counselors	France	Self-esteem	BA: + MA: +	–	Psychological well-being at work	–	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)
Kibbler <i>et al.</i> (2019)	Prospective	186/544	Entrepreneurs and Employees	UK	Prosocial motivation	Entrepreneurs BA: + MA: ns Employees BA: + MA: ns	Entrepreneurs BA: ns MA: + Employees BA: ns MA: –	Life satisfaction	Stress	BC; Path analysis
Qin <i>et al.</i> (2018)	Cross-sectional	4,708	Production employees	Russia	Optimism Self-efficacy Tolerance for ambiguity Hardiness	MA: +/+ +/+ +/+ +/+ +/+ +/+ MA: +/+ +/+ +/+ +/+ +/+ +/+ MA: +/+ +/+ +/+ +/+ +/+ +/+ ns/ns MA: +/+ +/+ +/+ +/+ +/+ +/+	– – – – –	Life satisfaction; Work engagement; Job satisfaction (salary, work conditions, management, colleagues and job process); Organization commitment; Work/life imbalance and life/work imbalance	–	Multiple regression analyses
Perry <i>et al.</i> (2018)	Cross-sectional	145	General employees	USA	Emotional stability	–	BA: –/–/– MA: –/–/–	–	Exhaustion and disengagement; Job dissatisfaction	BC; Hierarchical ordinary least squares regression

(continued)

Table A2.

Authors	Design	Sample Size	Sample Context	Country	Context variables	Predictors Well-being	Ill-being	Measures Well-being	Ill-being	Analysis
Rubino <i>et al.</i> (2009)	Cross-sectional	284	Self-employed individuals	–	Age Gender Neuroticism Met expectations Hours worked per week Active engagement in entrepreneurship	– – – – – BA: ± MA: +	BA: –/ns/ns BA: +/ns/ns BA: +/+/ MA: +/+/ BA: –/–/ MA: –/–/ BA: +/ns/–	–	Emotional exhaustion, cynicism and inefficacy	BC; Hierarchical regression analysis
Shir <i>et al.</i> (2019)	Cross-sectional	251	Entrepreneurs	Sweden			–	Well-being index	–	BC; SEM
Workplace Chamber <i>et al.</i> (2015)	Cross-sectional	3,300	Temporary agency workers	Portugal	Organizational support Leader-member exchange Perceived autonomy support Job demands	BA: ± MA: + BA: ± MA: + BA: +/+ BA: – MA: –	BA: –/– MA: + – BA: –/– MA: + – BA: + MA: – BA: – MA: ns	Work engagement	Emotional exhaustion and cynicism	BC; SEM
Collie <i>et al.</i> (2015)	Cross-sectional	485	Teachers	Canada			–	General well-being; Teacher well-being	–	BC
Desrumaux <i>et al.</i> (2015)	Cross-sectional	298	Teachers	France			BA: +	Psychological well-being	Distress	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)
Domench-Betoret <i>et al.</i> (2015)	Cross-sectional	282	Teachers	Spain	Organizational resources (job climate) Support resources: colleagues Support resources: administration Support resources: material Support resources: psycho-pedagogical	BA: ± MA: ns BA: +/+ BA: +/+ BA: ns/+ BA: +/+	BA: –/– BA: –/– BA: –/ns BA: –/ns	Vigor and dedication	Emotional exhaustion and depersonalization	BC

(continued)

Table A2.

Authors	Design	Sample Size	Context	Country	Context variables	Predictors Well-being	Ill-being	Measures Well-being	Ill-being	Analysis
Dose <i>et al.</i> (2019)	Cross-sectional	224	Professional counselors	France	Leader-member exchange	BA: + MA: +	-	Psychological well-being at work	-	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014) BC
Ebersold <i>et al.</i> (2019)	Cross-sectional	49	Teachers	German	Perceived autonomy support	BA: +/+	BA: -/-	Life satisfaction; Positive affect	Emotional exhaustion; Negative affect	BC; SEM
Gatt and Jiang (2020)	Cross-sectional	139	Organization employees	New Zealand	Non-territorial working	BA: ns/ns	BA: ns	Work engagement; Job satisfaction	Emotional exhaustion	BC; SEM
Giebe and Rigotti (2020)	Prospective	308	General workers	Germany	Autonomy over office spaces	BA: +/+ MA: ns/+	BA: - MA: -	Job satisfaction	Emotional exhaustion	BC; Multilevel path analysis BC; SEM
Gillet <i>et al.</i> (2012a)	Cross-sectional	468	General workers	France	Time pressure	BA: ns MA: -	BA: ns MA: ns	Work satisfaction; Happiness; Self-realization	-	
					Perceived organizational support	BA: +/+ MA: ns/ns	-			
					Perceived supervisor autonomy support	BA: -/- MA: ns/ns	-			
					Perceptions of supervisor controlling behaviors	BA: +/+ MA: ns/ns	-			
Gillet <i>et al.</i> (2018)	Cross-sectional	328	General workers	France	Perceived organizational support	BA: +/+ MA: ns/ns	BA: -/-	Work engagement; Quality of working life; Work satisfaction	Global job-anxiety; Burnout	BC
Gillet <i>et al.</i> , 2019	Prospective	294	Nurses	France	Procedural justice	BA: +/+ MA: +/+	BA: -/-	Vigor; dedication and absorption; Job satisfaction; Subjective vitality	-	BC
Graves and Luciano (2013)	Cross-sectional	283	General workers	USA	Leader-Member exchange	BA: +/+ MA: +/ns	-	Job satisfaction; Subjective vitality	-	BC
Huyghebaert <i>et al.</i> (2019)	Prospective	393	Nurses	France	Psychosocial safety climate	-	BA: -/- MA: -/-	Work-family conflict; Turnover intentions	-	BC; SEM

(continued)

Authors	Design	Sample Size	Sample Context	Country	Context variables	Predictors Well-being	Ill-being	Measures Well-being	Ill-being	Analysis
Kranabetter and Niessen (2019)	Prospective	194	Energy branch employees	Germany	Manager appreciation	–	–	BA: –/– MA: – ns/ns	Ruminative thoughts; Depressive symptoms	BC Ordinary least squares analysis BC; Path analysis BC; Path analysis BC; SEM
Kibler <i>et al.</i> (2019)	Prospective	186	Entrepreneurs	UK	Autonomy at work	BA: + MA: +	–	BA: ns MA: ns	Stress	Stress analysis BC; Path analysis
Kibler <i>et al.</i> (2019)	Prospective	544	Employees	UK	Autonomy at work	BA: + MA: +	–	BA: ns MA: ns	Stress	Stress analysis BC; Path analysis
Lopes <i>et al.</i> (2019)	Cross- sectional	3,983	Temporary agency workers	Portugal	Organizational support (agency) Organizational support (client)	BA: +/+/+ MA: + BA: + MA: +	–	BA: –/– MA: – BA: –/– MA: –	Emotional exhaustion and cynicism	Emotional exhaustion and cynicism analysis BC; SEM
Nie <i>et al.</i> (2015)	Cross- sectional	266	Teachers	China	Perceived autonomy support	BA: + MA: +	–	BA: –/– MA: –	Work stress; Illness symptoms	BC; Path analysis BC
Olafsen (2017)	Longitudinal	115	Health professionals	Norway	Managerial need	BA: +	–	BA: –/– MA: –	Burnout	BC; Path analysis
Olafsen and Frolund (2018)	Cross- sectional	160	Entrepreneurs	–	Job challenges (workload and cognitive demands) Job hindrances (work-home interference and worry)	BA: + MA: ns BA: – MA: ns	–	BA: –/– MA: –	–	BC; Path analyses
Perry <i>et al.</i> (2018)	Cross- sectional	145	General employees	USA	Remote work	BA: ns/–/– MA: ns/ns/ns	–	–	Exhaustion and disengagement; Job dissatisfaction	BC; SEM
Rayburn (2014)	Cross- sectional	226	Service workers	USA	Perceived autonomy Empowerment Serial socialization Investiture socialization Engaging leadership Open conflict norms	BA: –/–/– MA: –/–/– BA: + BA: + BA: + BA: +	–	Positive affect; Work engagement	–	BC
Robijn <i>et al.</i> (2020)	Prospective	133	Public insurance employees	Belgium	Public insurance employees	BA: ns BA: +	–	–	–	BC

(continued)

Table A2.

Table A2.

Authors	Design	Sample Size	Context	Country	Context variables	Predictors Well-being	Ill-being	Measures Well-being	Ill-being	Analysis
Rubino <i>et al.</i> (2009)	Cross-sectional	284	Self-employed individuals	–	Perceived fit	–	BA: ns/–/– MA: ns/ns/– BA: ns/+/+ MA: ns/ns/+	–	Emotional exhaustion, cynicism and inefficacy	BC; Mediation path analysis
Slomp and Vella-Brodrick (2013)	Cross-sectional	334	General workers	Australia	Task crafting Relational crafting	BA: +/+ MA: +/+ BA: +/+ MA: +/+	–	Positive emotions; Positive psychological functioning	–	BC; SEM
Els <i>et al.</i> (2012)	Cross-sectional	3,185	General employees	Belgium	Cognitive crafting Job insecurity	BA: +/+ MA: +/+ BA: – MA: –	– BA: + MA: +	Vigor	Emotional exhaustion	BC; Hayes and Preacher, 2014 macro for SPSS (Hayes and Preacher, 2014)

Note(s): BA, bivariate analysis; MA, multivariate analysis; (+), positive association; (–), negative association; (ns), not significant

Authors	Design	Sample Size	Context	Country	Consequence variables	Predictors Well-being	Ill-being	Measures Well-being	Ill-being	Analysis
Chen <i>et al.</i> (2020)	Cross-sectional	234	Creative entrepreneurs	Taiwan	Opportunity recognition capability Absorptive capacity	BA: + MA: + BA: + MA: +	-	Physical, psychological and social well-being	-	BC; SEM
Collie <i>et al.</i> (2015)	Cross-sectional	485	Teachers	Canada	Job satisfaction	BA: +/+ MA: ns/+ + BA: +/+ MA: ns/	-	General well-being; Teacher well-being	-	BC; SEM
Ford <i>et al.</i> (2019)	Cross-sectional	1,556	Teachers	USA	Intent to leave profession Intent to leave school	ns - MA: + MA: +	MA: + MA: +	-	Burnout	Multilevel path analysis
Gatt and Jang (2020)		139	Organization employees	New Zealand	Affective commitment	BA: +/+	BA: -	Work engagement; Job satisfaction	Emotional exhaustion	BC
Meske and Jungas (2020)	Cross-sectional	149	Organization employees	Germany	Attitudes towards digital workplace transformation	BA: + MA: +	-	Well-being	-	BC; SEM
Olafsen (2017)	Prospective	115	Health professionals	Norway	Goal attainment	BA: +	BA: -	Subjective well-being	Burnout	BC

Note(s): BA, bivariate analysis; MA, multivariate analysis; (+), positive association; (-), negative association; (ns), not significant

Table A3.
Description of
reviewed studies
(consequence
variables)