



# Mindfulness and financial well-being: multiple mediation of intrinsic career goals and work need satisfaction

Xuan Wu<sup>1,2,4</sup> · Shi-Zheng Huang<sup>3,4</sup> · Pankeawta Lakkanawanit<sup>4</sup>

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## Abstract

The goal of the current study is to investigate the relationship between mindfulness and financial well-being, for which the multiple mediating influences of intrinsic career goals and work need satisfaction are considered in combination with the self-determination theory. To verify the claimed association, a questionnaire study was conducted to gather information from 358 working adults in three under-developed regions of China. The results show that mindfulness positively influenced financial well-being. At the same time, intrinsic career goals and work need satisfaction act as parallel mediators between mindfulness and financial well-being. Nevertheless, the results don't support the chained mediation from intrinsic career goals to work need satisfaction between mindfulness and financial well-being. Such findings offer insightful recommendations for enhancing financial well-being in the workplace through self-regulation of behaviours.

**Keywords** Financial well-being · Mindfulness · Self-determine theory · Working adults · Parallel mediation effect

## Introduction

Financial well-being (FWB) has recently attracted significant attention in public policy research such as the World Bank and the Organization for Economic Co-operation and Development (OCED) as a topic of interest. The Global Findex Database 2021 survey from the World Bank revealed that adults' FWB data were unsatisfactory in both developing economies and developed economies,

with the situation of developing economies being particularly dire. The Employee Financial Wellness Survey conducted by Pcw (2022) indicated that 56% employees feel financial stress in the workplace. The promotion of employees' FWB is a corporate social responsibility and is beneficial in improving the company image. On an individual level, FWB is closely associated with employees' mental health, happiness and life satisfaction (Netemeyer et al., 2018). However, a considerable number of employees feel embarrassed to seek financial assistance and guidance when encountering financial stress (Pcw, 2022). As such, using self-regulation behavior to improve FWB is a significant workplace function for employees. Mindfulness has been identified as an influential factor in enhancing employees' health and well-being by enabling advanced self-regulation of workplace behavior (Monzani et al., 2021). Despite such findings, there is a scarcity of research in which the effect of mindfulness on FWB has been explored.

The self-determination theory (SDT) framework was applied to FWB in this research. Since SDT can be employed to investigate self-motivation or self-determination of individual behavior and has been used to reveal how people improve their well-being through mental health self-management. Additionally, Diener (1984) indicated that an individual's financial situation was an inevitable dimension of subject well-being, while Netemeyer et al. (2018)

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✉ Shi-Zheng Huang  
szhuang06@gmail.com

Xuan Wu  
sherry.wuxuan@foxmail.com

Pankeawta Lakkanawanit  
lpankaew@mail.wu.ac.th

<sup>1</sup> Guangxi Vocational University of Agriculture,  
Nanning 530007, China

<sup>2</sup> College of Graduate Studies, Walailak University,  
Nakhon Si Thammarat 80160, Thailand

<sup>3</sup> School of Economics and Management, Nanning Normal  
University, Nanning 530001, China

<sup>4</sup> Logistics and Business Analytics Center of Excellence  
(LOGBIZ), Walailak University,  
Nakhon Si Thammarat 80160, Thailand

considered FWB to be the financial domain of subjective well-being. In SDT, mindfulness is posited as essential to well-being, since mindfulness indicates that the individual is open, relaxed and attentive to their social and physical surroundings. Mindfulness also helps individuals experience insight, self-regulate effectively, and experience more choice, vitality and volition (Ryan & Deci, 2017). Through a variety of empirical studies in the workplace, education, athletic training and so on, SDT scholars have confirmed that mindfulness positive affects well-being (Brown & Ryan, 2003; Ryan & Deci, 2017). Moreover, a second-order meta-analysis conducted by Monzani et al. (2021) involving 13 meta-analytic studies revealed that both mindfulness interventions and mindfulness traits could improve employee well-being. One significant pathway in which mindfulness increases well-being is by reducing automatic behavior, such as increasing individual awareness of potential cognitive-behavioral processes (Ryan & Deci, 2017). In respect of finances, mindfulness enables individuals to become aware of the unconscious mental processes that shape consumer preferences due to advertising, and it helps to break the automatic impulse consumption trap in consumerism. Such approach is generally acknowledged as an antidote for consumerism (Rosenberg, 2004). Thus, mindfulness has been identified to enhance FWB (Sinha et al., 2021).

With the abundance of research that supports the positive influence of mindfulness on well-being, recent research has moved attention from investigating whether mindfulness promotes well-being to examining how and why its transformation occurs. SDT scholars have proposed that there are three basic psychological needs, namely autonomy, competence, and relatedness. The satisfaction of such needs can mediate the association between subjective well-being and various activities, goals, and attitudes that promote well-being. In other words, basic psychological needs satisfaction serves as a crucial explanation for why particular behaviors and perspectives frequently result in subjective well-being (Martela & Sheldon, 2019; Ryan & Deci, 2017). Additionally, intrinsic goal and mindfulness are essential factors that promote well-being and conscious quality in SDT. According to SDT, goals are not equal and intrinsic goals lead to subjective well-being by directly promoting basic needs satisfaction (Kasser & Ryan, 1996). For instance, in a large longitudinal study, Hope et al. (2019) demonstrated that intrinsic goals improve well-being by elevating the satisfaction of psychological needs. Further, open awareness is particularly valuable in fostering choice and engaging behaviors that align with values, interests, and basic needs of humans (Ryan & Deci, 2017). In consideration of such context, mindfulness facilitates the pursuit of intrinsic goals, leading to autonomy, competence, and

relatedness needs satisfaction. This, in turn, promotes well-being (Ryan & Deci, 2017). Therefore, intrinsic goals and the psychological needs satisfaction were predicted to act as a chained mediating role between mindfulness and well-being in the current study.

In response to the suggestion of Brügger et al. (2017), the underlying mechanism through which mindfulness influences FWB within specific social contexts, specifically the work setting, was explored in the present study. SDT, which explores the utility of motivation, autonomy, and environmental autonomy support and how to encourage internalization and development by assisting with supporting basic psychological needs and awareness, has been applied in the areas of psychotherapy, sport, exercise, physical education, health care, video games, and the workplace. Specially, the workplace is a significant application setting for SDT, and the contribution of intrinsic goals and satisfaction of needs to well-being, as well as the mediating effect of satisfying needs in the association between intrinsic goals and well-being, have been demonstrated in the workplace (Deci et al., 2017; Ryan, 2023; Vansteenkiste et al., 2007). Intrinsic goals and the psychological needs satisfaction were set as intrinsic career goals and work needs satisfaction in this study, so as to distinguish work and non-work aspects. Moreover, SDT was applied to FWB, since primary working goals of most employees is to earn a livelihood and to receive just and adequate rewards, money can be regarded as the common goal orientation of employees. As such, career goals, especially their intrinsic and extrinsic attributes, may be crucial factor in FWB. Moreover, Hoang et al. (2022) identified that psychological needs satisfaction was positively associate with FWB. Combined with the chained mediation inference of SDT, the suggestion of the present study is that intrinsic career goals and work need satisfaction have a chained mediating effect between mindfulness and FWB. However, such effects have yet to be explored and examined.

In summary, a double chained mediation model between mindfulness and FWB was constructed based on SDT, so as to determine how mindfulness, motivation, and satisfaction of needs affect FWB, and examine how mental health self-management behaviors such as mindfulness improve FWB in the work setting. The present study extends the implementation of SDT in the financial industry and enriches Brügger et al. (2017)' FWB framework. Additionally, the findings offer insights into potential strategies to alleviate financial stress among employees and its detrimental impact in the workplace.

## Literature review and hypotheses

### The influence of mindfulness on FWB

FWB is an emerging concept involving multiple disciplines such as psychology, finance, management, sociology, and philosophy. In early studies, several researchers used the objective financial conditions such as income, assets and debts to represent FWB (Nanda & Banerjee, 2021). Meanwhile, other researchers argued that both objective and subjective dimensions should be considered when measuring FWB (Shim et al., 2009). Nevertheless, two individuals with comparable salaries or debt loads may interpret their own FWB in considerably different ways (Nanda & Banerjee, 2021). As such, given the intricate nature of the concept of FWB, which involves multifaceted non-financial issues that may not be fully captured by objective measures, an increasing number of researchers are employing solely subjective dimensions to define FWB (Brüggen et al., 2017). The present study is in agreement with Brüggen et al. (2017) in defining FWB as people's capacity to make financial decisions freely when maintaining a current and expected desired standard of living, using a subjective perspective.

Since financial issues have physical, emotional, mental, and social impacts on employees, identification of FWB predictors is essential. Many scholars have previously attempted to enhance FWB through financial education, as financial literacy has been extensively examined. Despite such efforts, a meta-analytic review from Hwang and Park (2023) discovered objective financial knowledge was non-significant correlated with FWB. Besides, Brüggen et al. (2017) suggested that other perspectives such as personality and motivation should be considered in FWB research in the future. In response to Brüggen, recent studies have discovered that some personality factors act as a significant role on FWB in terms of deliberative thinking, optimism and subjective self-control (Strömbäck et al., 2020) and the time perspective (Ponchio et al., 2019), as well as other aspects. Coincidentally, all of the aforementioned constructs above were demonstrated to be related to mindfulness (Giluk, 2009; Hafenbrack et al., 2014; Stolarski et al., 2016). Therefore, mindfulness could be inferred to be a significant predictor of FWB.

The concept of mindfulness originates from Eastern Buddhism and refers to a non-judgmental way to internal and external stimuli which exists in bodily experiences, ideals and emotions (Williams & Kabat-Zinn, 2013). To be specific, mindfulness is a state of open, receptive attention to current occurrence and experiences (Brown & Ryan, 2003). Meanwhile, while an individual's mindfulness can vary from moment to moment, many studies have also presented consistent individual differences in mindfulness. To

illustrate, those with a higher mindfulness trait are more often attentive and conscious of their internal feelings and behaviors, and are more capable or ready to observe interior and exterior reality openly and unbiasedly (Brown & Ryan, 2003). Based on such, mindfulness was considered as a relatively stable personality trait in the present study.

Mindfulness has been recognized for its universal promotion potential to enhance well-being. Meta-analytic reviews conducted in various fields and with diverse subjects have demonstrated that both mindfulness therapy and mindfulness as a trait have a positive impact on well-being (Monzani et al., 2021). Mindfulness was also discovered that positive impacted on one's financial situation. Physiologically, fMRI research has discovered that individuals who received mindfulness meditation training exhibit reduced sensitivity to monetary rewards (Kirk et al., 2015). Cognitively, this quality of consciousness can facilitate contemplation of an individual's consumption activities, accelerate selectivity in the marketplace (Rosenberg, 2004), influence consumers' attitudes towards money (Pereira & Coelho, 2018), and aid in reducing the discrepancy between an individual's current and aspirant financial status (Brown et al., 2009). Behaviorally, mindfulness significantly influences consumer credit intentions (Pereira & Coelho, 2018), promotes prudent financial decisions (Smith et al., 2016), and mitigates financial vulnerability, which is the capacity to handle unforeseen future financial setbacks (Bayuk et al., 2022). In consideration of the described factors, H1 is developed:

**H1** There is a positive relationship between mindfulness and FWB.

### Mediating role of intrinsic career goals

Well-being is the primary outcome of mindfulness in work setting and the main driver of the integration of mindfulness with corporate life. Consequently, how mindfulness affects workplace well-being outcomes is the current focus. In SDT, the belief is that intrinsic motivation is a central variable in predicting workplace well-being (Deci et al., 2017; Deci & Ryan, 2000) and mindfulness enhances well-being through intrinsic motivation (Ryan & Deci, 2017). In contrast to the quantity, level, or amount of motivation, SDT scholars have concentrated on the quality of motivation, which means the type and nature of motivation. Two classifications have been made in respect of the quality of motivation, the first answering "why" and being divided into intrinsic and extrinsic motivation, which mainly focuses on the degree of autonomy or control of motivation (Ryan & Deci, 2017). The other classification answers "what", which

considers the content and value of the goal and is divided into intrinsic and extrinsic goals (Kasser & Ryan, 1996). In the present study, focusing on the content and value of motivation in the workplace, intrinsic career goals were defined as the degree to which a person's job objectives satisfy his or her own needs and contain intrinsic motivational attributes, such as the consistent acquisition of new knowledge and skills, engaging in interesting and challenging work, and choosing jobs that contribute to society (Seibert et al., 2013). Contrastingly, extrinsic career goals are defined as the inclination to concentrate on external indicators of value in one's career goals, which do not straight satisfy basic psychological needs, but are considered as a means to an end or substitutes to needs, such as apparent success, status in the company or society, and strong economic advantages (Seibert et al., 2013; Vansteenkiste et al., 2007).

Kasser and Ryan (1996) identified that the pursuit of intrinsic goals enhanced individual well-being, while the pursuit of extrinsic goals impaired well-being. Subsequently, researchers found different results between extrinsic goals and well-being. Bradshaw et al. (2023) concluded that the degree to which extrinsic goal scores are positively or negatively related to wellbeing, in particular, seems to depend on the different methodologies employed to assess them. Accordingly, in order to compare goals across individuals, researchers commonly use "relative intrinsic goal orientation" scores, which are derived by subtracting extrinsic goal mean scores from intrinsic goal mean scores (Bradshaw et al., 2023; Brown & Kasser, 2005; Hope et al., 2019). Research on the workplace has suggested that people take a relative intrinsic goal orientation tend to autonomously engage in work they enjoy and internalize their work as part of their self-identity. Such tendency produces positive outcomes and feelings of well-being (Deci et al., 2017; Zhang et al., 2018). Topics related to extrinsic goals are explored with regard to materialism (Ryan & Deci, 2017), which is negatively related to FWB (Helm et al., 2019). However, the association between relative intrinsic goal orientation and FWB has not been explored yet. Further evidence is required to determine whether the association between relative intrinsic goal orientation and well-being can be extended to FWB.

Mindfulness facilitates greater insight and necessary self-reflection. When individuals are less distorted in their perception of what is happening, they can better recognize their most sincere desires, and their behavior becomes more inclined towards curiosity and interest (Brown & Kasser, 2005). As a result, individuals with a higher mindfulness trait will tend to pursue intrinsic career goals consistent with interest and development at work. Individuals, in turn, understand and recognize the value of work through the re-perception of these inner experiences, which can facilitate

well-being (Ryan & Deci, 2017). Through a survey of adults in different countries with different lifestyles, Brown and Kasser (2005) discovered that higher degree of mindfulness increased well-being by focusing more on intrinsic goals and less on extrinsic goals. Nonetheless, whether the mediating effect of intrinsic goals between mindfulness and well-being can be applied to intrinsic career goals and FWB remains unclear. Therefore, H2 is developed:

**H2** The relationship between mindfulness and FWB is mediated by intrinsic career goals.

### Mediating role of work need satisfaction

In addition to personal goals, another variable that has repeatedly been demonstrated to positively impact on well-being is basic psychological needs satisfaction. Ryan and Deci (2017) posited that autonomy, competence, and relatedness were experiential needs that all people must have in order to maximize their potential, in the same way that plants need critical nutrients (that is, soil, sunlight and water) to thrive. In the workplace, the autonomy need is satisfied when employees experience freedom and selection in their work (Deci & Ryan, 2000). The competence need in the workplace is fulfilled when employees handle challenging projects that allow them to utilize their talents, and when their effort is appreciated, leading to a sense of effectiveness at work (Autin et al., 2019). When employees develop a caring relationship with their colleagues at work, the relatedness work need is satisfied (Autin et al., 2019). In addition to being assessed as independent scores, the three psychological needs can also be used as a composite (Campbell et al., 2015; Nunes et al., 2023; Van den Broeck et al., 2016). Such needs are the core of SDT and are crucial for promoting positive work outcomes (Nunes et al., 2023; Van den Broeck et al., 2016). They are also closely related to one's financial situation; for example, savings decisions are driven by psychological needs, and financial strain is influenced by the basic psychological needs composite (Campbell et al., 2015). Brügger et al. (2017) suggested that all of the aforementioned financial behaviors and financial strain directly affect FWB, while a recent empirical study confirmed that the psychology need satisfaction is positively connect to FWB (Hoang et al., 2022).

The psychological needs satisfaction is influenced by an individual's external environment, while also depending on the active application of the individual internal organizational inclinations that one possesses (Ryan & Deci, 2017). Williams and Kabat-Zinn (2013) considered mindfulness as an internal support mechanism that facilitates the active participation of individuals in the internal and external world,

which satisfies basic needs. Such findings were confirmed by the empirical studies of Brown and Ryan (2003) and meta-analysis of Van den Broeck et al. (2016). To be specific, individuals who are more focused and concentrated have better insight into their experiences, allowing them to deal with events in a more profound way rather than reacting passively or engaging in controlled responses. This can lead to autonomy need satisfaction (Ryan & Deci, 2017). When individuals are more open and accepting at work, they will feel respected, valued and accepted from their colleagues and leaders, which will satisfy their relatedness needs. The attention to the present moment makes people to feel they are able to control their present workflow and discover a future with additional challenges and responsibilities, thereby satisfying their competence needs. However, the association between mindfulness and the needs satisfaction may be mixed. Some scholars found empirical support for the idea that need satisfaction is constructed prior to mindfulness (Olafsen, 2017). Support was provided for SDT (Ryan & Deci, 2017) by constructing mindfulness before need satisfaction.

Brown and Ryan (2003) proposed that mindfulness enhances awareness of cues related to basic needs, leading individuals to regulate their behavior in ways that satisfy those needs. In other words, mindfulness can facilitate well-being through the three basic psychological needs (Ryan & Deci, 2017). As an example, Chang et al. (2018) demonstrated basic needs satisfaction as a composite played as a mediator between mindfulness and psychological well-being in an empirical research on student athletes. However, this mediation has yet to be explored in the workplace context and financial domain. Considering the aforementioned factors, H3 is developed:

**H3** The relationship between mindfulness and FWB is mediated by work need satisfaction plays.

### Chained mediating role of intrinsic career goals and work need satisfaction

Ryan and Deci (2017) asserted the relationship between various motivations and activities that promote happiness and subjective well-being is mediated by needs, with intrinsic goals being more beneficial to happiness than extrinsic goals since they are related to basic psychological needs. Through empirical research, Hope et al. (2019) demonstrated that needs satisfaction mediated the relationship between intrinsic goals and well-being, while Vansteenkiste et al. (2007) found the same results in the workplace. Ryan (2023) regarded goals as a tool for facilitating the

fundamental psychological needs satisfaction, which are key variables in psychological well-being for individuals.

Ryan and Deci (2017) believed that individuals had the inherent capacity to act for their own self-determination and needs satisfaction, and internal personal process could advocate self-regulation even when environmental factors were not ideal. The trait of mindfulness, characterized by an open and receptive state of consciousness, can heighten individuals' awareness of current events, enabling them to deliberately select behaviors that align with their motivations and interests (Brown & Ryan, 2003). Such behaviors bring the experience of autonomy (violation and choice), competence (self-efficiency) and relatedness (affiliation) needs satisfaction (Hope et al., 2019) and, in turn, facilitate well-being (Hope et al., 2019; Van den Broeck et al., 2016). However, since this chained mediation has not been explored in empirical studies, H4 is developed:

**H4:** The relationship between mindfulness and FWB is continuous mediated by intrinsic career goals and work need satisfaction.

In the present study, an integrated model was developed based on SDT through four perspectives: mindfulness, intrinsic career goals, work need satisfaction, and FWB, so as to fill the described research gaps. Figure 1 illustrates the research model and hypotheses.

## Method

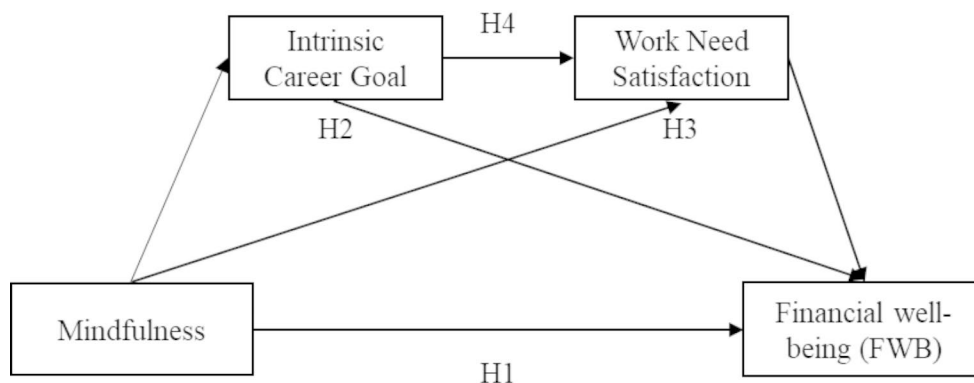
### Measures

Four variables were measured in the present study. The dependent variable was FWB, the independent variable was mindfulness, and the mediating variables were intrinsic career goals and work need satisfaction. All variables used the 7-point Likert scale, where “1” represents “completely inconsistent” and “7” represents “very consistent.”

### Financial well-being

FWB was measured by the perceived financial well-being scale (PFWB) (Netemeyer et al., 2018). The scale comprises ten items that assess two variables: expected future financial security (EFFS) and current money management stress (CMMS). Items from the original PFWB scale were translated into Chinese by a Native Chinese psychology teacher. Subsequently, back-translation (into English) was performed by an English teacher. The internal consistencies of the scale (Cronbach's  $\alpha$  for EFFS and CMMS) were 0.910 and 0.764, respectively. Referring to Strömbäck et al. (2020), reversed CMMS scores and EFFS scores were added together to represent the responders' perceived FWB.

**Fig. 1** Theoretical framework between mindfulness and FWB



## Mindfulness

Mindfulness was measured by a revised cognitive and affective mindfulness scale (CAMS-R) (Feldman et al., 2006). Chinese version CAMS-R was translated by Chan et al. (2015), which was demonstrated a comparable factor structure (that is, attention, present focus, awareness, acceptance, and total mindfulness) to the original CAMS-R. As recommended by Feldman et al. (2006), the total mindfulness score was used to represent responders' mindfulness. The internal consistency of this scale (Cronbach's  $\alpha$ ) was 0.809.

## Intrinsic career goals

The career goals scale developed by Seibert et al. (2013) was applied for the measurement of intrinsic career goals and extrinsic career goals. Miao (2015) translated this scale into Chinese. The internal consistencies of the intrinsic career goals sub-scale and the extrinsic career goals sub-scale (Cronbach's  $\alpha$ ) were 0.942 and 0.883, respectively. Consistent with the theoretical framework and in line with the views of other SDT researchers (Brown & Kasser, 2005; Hope et al., 2019), the difference between the intrinsic career goals score and the extrinsic career goal score was used to measure relative intrinsic career goals.

## Work need satisfaction

Autin et al. (2019) developed the work need satisfaction scales (WNSS), including survival needs, social contribution needs, and the three psychological needs of SDT (competence, relatedness, and autonomy). Xu et al. (2021) translated WNSS into Chinese. The three SDT needs from WNSS-C were used to measure work need satisfaction, which is consistent with SDT. According to the theoretical argument, the three SDT needs was calculated as a composite. The internal consistency of WNSS-C (Cronbach's  $\alpha$ ) was 0.961.

## Control variables

Consistent with Netemeyer et al. (2018), demographic variables were controlled, including education, income and age which have been demonstrated to be correlate to financial outcomes.

## Sampling and data collation

The sample of the present research included Chinese working adults in different professions from the provinces of Anhui, Hebei and Guangxi. Representative provinces from the central, eastern and southern of China were selected, respectively. In addition to considering geographical location, GDP rankings and happiness index were also taken into account. According to the latest data from Chinese National Bureau of Statistics, the three Chinese provinces ranked 10th, 12th, and 19th, respectively, out of 31 provinces in China, were selected to represent underdeveloped regions in the country. The decision was based on findings from the Global Findex Database 2021 survey from the World Bank survey, which indicated that adults' FWB from developing regions was lower than those from developed regions. Further, the happiness index of the three selected provinces was considered, which were ranked 7th, 15th, and 19th, respectively, out of 31 provinces in China, as per the latest public report on Chinese province happiness index ranking (H+Lab, 2017). The rankings represented the high, middle, and low levels of happiness index among the provinces.

Participants in the study were recruited by means of convenient and snowball sampling. Data were collected in July 2022, via online platforms Tencent's QQ and WeChat. Ultimately, 410 original participants answered the questionnaire, and 358 valid responses were kept after eliminating invalid data.

Valid data (see Table 1) was obtained from 184 males and 174 females. The age range of the participants was 18 to 53 ( $M=28.4$ ,  $SD=6.342$ ). The study sample included

**Table 1** Profiles of participants

Dimension	N = 358	Frequency (%)
<b>Education</b>		
Middle School and below	14	3.90
High School	45	12.60
Junior college	122	34.10
Undergraduate	158	44.10
Master degree and above	19	5.30
<b>Gender</b>		
Male	184	51.40
Female	174	48.60
<b>Location</b>		
East China	151	42.20
Central China	133	37.20
West China	74	20.70
<b>Profession</b>		
Manager	74	20.70
Professionals	60	16.80
Legislators and administrators	48	13.40
Service staff	61	17.0
Agriculture, Farming, Animal husbandry and fishery	22	6.10
Production, Transport and Equipment operators	18	5.00
Military	3	0.80
Other	72	20.10

participants with various levels of education background, with 3.90% having completed middle school or below, 12.60% having completed high school, 34.10% having completed junior college, 44.10% having completed undergraduate education, and 5.30% having completed graduate-level education or higher. The average annual income of the participants was 86,000 yuan (SD=48,800). Participants from the east, central and west of China accounted for 42.20%, 37.20% and 20.70%, respectively. The participants were distributed across various occupations, with 20.70% being managers, 16.80% being professionals, 13.40% being legislators and administrators, 17% being service staff, 6.10% being engaged in agriculture, farming, animal husbandry,

and fishery, 5% being involved in production, transport, and equipment operations, 0.80% being in the military, and 20.10% being classified as other.

## Results

### Descriptive statistics and correlation analysis

Descriptive statistics were calculated by SPSS 23.0 and shown in Table 2. The correlations between mindfulness, relative intrinsic career goals, work need satisfaction, and FWB were significant and ranged from 0.360 to 0.873. FWB and mindfulness also significantly correlated with income ( $r=0.233, p<0.001$ ;  $r=0.217, p<0.001$ ), age ( $r=0.203, p<0.001$ ;  $r=0.246, p<0.001$ ) and education level of participants, respectively ( $r=0.114, p<0.05$ ;  $r=0.158, p<0.01$ ).

### Reliability and validity test

As shown in Table 2, the composite reliabilities of FWB, mindfulness, relative intrinsic career goals and work need satisfaction surpassed 0.70 (Nunnally & Bernstein, 1994), thereby indicating adequate reliability. The AVE for each variable exceeded 0.50, and the factor loadings were checked, which were higher than 0.70, indicating satisfactory convergent validity (Fornell & Larcker, 1981). Further, the AVE of almost all variables was greater than the square of their correlation coefficients with other variables (Fornell & Larcker, 1981). The confidence interval of correlation parameters was also verified, and all excluded a value of 1 (Anderson & Gerbing, 1988), indicating acceptable discriminant validity.

### Confirmatory factor analysis

Confirmatory factor analysis was conducted on four factors to evaluate the quality of the scales by the Mplus 7.0 program. The single-factor, two-factor, and three-factor

**Table 2** Mean, standard deviation and correlation coefficient

Variable	Mean	SD	1	2	3	4	5	6	7
1.FWB	4.456	0.732	1						
2.Mindfulness	5.132	1.281	0.682***	1					
3. Relative Intrinsic Career goals	0.613	0.408	0.421***	0.397***	1				
4.Work need Satisfaction	4.997	1.284	0.762***	0.873***	0.360**	1			
5.Imcome	8.614	4.885	0.233***	0.217***	0.068	0.258***	1		
6.Age	28.413	6.342	0.203***	0.246***	-0.007	0.261***	0.374***	1	
7.Education	3.344	0.906	0.114*	0.158**	0.135*	0.143**	0.163**	0.022	1
CR			0.913	0.933	0.951	0.962			
AVE			0.601	0.637	0.682	0.676			

Notes: N = 358. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . CR, composite reliability; AVE, average variance extraction

**Table 3** Results of confirmatory factor analysis

Model	$\chi^2$	df	$\chi^2/df$	CFI	TLI	RMSEA	SRMR
One-factor model	1898.552	594	3.186	0.895	0.889	0.078	0.037
Two-factor model	1766.640	593	2.979	0.906	0.900	0.074	0.035
Three-factor model	1558.966	591	2.638	0.922	0.917	0.068	0.034
Four-factor model	1424.260	588	2.422	0.933	0.928	0.063	0.031

Notes: one-factor model: mindfulness + relative intrinsic career goals + work need satisfaction + FWB

Two-factor model: mindfulness + relative intrinsic career goals + work need satisfaction and FWB

Three-factor model: mindfulness + relative intrinsic career goals, work need satisfaction and FWB

Four-factor model: Mindfulness, relative intrinsic career goals, work need satisfaction and FWB.

CFI is the comparative fit index. TLI is the Tucker-Lewis index. RMSEA is the root mean squared error of approximation. SRMR is the standardized root mean squared residual.

**Table 4** Results of bootstrap (n = 5000)

Hypothesis	Effect	Path	Bootstrap		95% CI		Result
			Estimate	Standard error	Lower	Upper	
	Direct effect	Mf → FWB	0.009	0.040	-0.070	0.087	
	Indirect effect	Total indirect effect	0.370	0.045	0.280	0.456	
H2		Lnd1: Mf → RIECG → FWB	0.040	0.012	0.016	0.062	Support
H3		Lnd2: Mf → WNS → FWB	0.326	0.043	0.240	0.408	Support
		Lnd1- Lnd2	-0.286	0.046	-0.375	-0.197	
H4		Lnd3: Mf → RI from CG → WNS → FWB	0.003	0.005	-0.007	0.014	Not Support
		Lnd1- Lnd3	0.037	0.014	0.009	0.065	
		Lnd2- Lnd3	0.323	0.042	0.239	0.404	

Notes: Mf is mindfulness. FWB is financial well-being. RIECG is relative intrinsic vs. extrinsic career goals. WNS is work need satisfaction

models were identified to be not as effective as the four-factor model utilized in the present study (See Table 3). The four-factor model's fitting indices and model fitting degree were both acceptable, and the combined effect was good ( $\chi^2 = 1424.260$ ,  $df = 588$ ,  $\chi^2/df = 2.422$ ,  $CFI = 0.933$ ,  $TLI = 0.928$ ,  $RMSEA = 0.063$ ,  $SRMR = 0.031$ ).

### Common method deviation test

To evaluate the common source variance, the fit indices between the conceptual framework measurement model and one-factor model were compared. The one-factor model was a poor fit ( $\chi^2 = 1898.552$ ,  $df = 594$ ,  $\chi^2/df = 3.186$ ,  $RMSEA = 0.078$ ,  $SRMR = 0.037$ ,  $CFI = 0.895$ ), with a significantly higher  $\chi^2$  value compared with the conceptual framework measurement model ( $\Delta\chi^2 = 474.292$ ,  $\Delta df = 6$ ,  $p < 0.001$ ). As a result, the majority of the variance in the data was explained by the individual constructs, suggesting that common method variance didn't affect the study's outcomes significantly.

### Main effects analysis

The serial multiple mediation of relative intrinsic career goals and work need satisfaction in the association between mindfulness and FWB was examined using SPSS 23.0 by running Model 6 via PROCESS macro. Additionally, with

a 95% confidence interval (bootstrapping  $\frac{1}{4}$  5,000 samples), the indirect effects were tested using a resampling strategy. The table presents mindfulness had a significant total effect of on FWB ( $c = 0.662^{***}$ ,  $t = 16.302$ ) (Step 1), thereby supporting H1. There were statistically significant direct effects of mindfulness on the mediating variables of relative intrinsic career goals ( $\beta = 0.412^{***}$ ,  $t = 8.098$ ) and work need satisfaction ( $\beta = 0.844^{***}$ ,  $t = 28.649$ ). The direct effect of relative intrinsic career goals on work need satisfaction ( $\beta = 0.022$ ,  $t = 0.760$ ), was non-significant (Step 2). The effects of relative intrinsic career goals ( $\beta = 0.171^{**}$ ,  $t = 4.634$ ) and work need satisfaction ( $\beta = 0.677^{***}$ ,  $t = 9.767$ ) were statistically significant for the direct effects of mediators on FWB (Step 3).

### Mediating effects analysis

The relationship between mindfulness and FWB was found to be non-significant after the simultaneous inclusion of FWB with both mediators in the equation (step 4),  $c' = 0.009$ ,  $t = 0.013$ ,  $p = 0.900$ . The bootstrapped indirect effect of the relative intrinsic career goals and work need satisfaction was significant ( $\beta = 0.370$ ,  $CI = [0.280, 0.456]$ ). Such result indicates full mediation.

Moreover, as presented in Table 4, the bootstrapped indirect effect of mindfulness on FWB via relative intrinsic career goals alone was significant ( $\beta = 0.040$ ,  $CI =$



[0.016,0.062]), thereby supporting H2. The bootstrapped indirect effect of mindfulness on FWB via work need satisfaction alone was also significant ( $\beta=0.326$ ,  $CI = [0.240, 0.408]$ ), thereby verifying H3. However, the bootstrapped indirect effect of the mindfulness on FWB through relative intrinsic career goals and work need satisfaction was non-significant ( $\beta=0.003$ ,  $CI= [-0.007, 0.013]$ ). As such, H4 was not supported.

The overall model accounts for 47.3% of the variance in the FWB total score,  $R^2=0.473$ ,  $F=79.274$ ,  $p<0.001$ , indicating large effect size. In summary, the relationship between mindfulness and FWB was fully and parallelly mediated by relative intrinsic career goals and work need satisfaction.

Moreover, the paired contrasting findings showed in Table 4 aimed to determine the strength of the specific indirect effects of the mediators. The research produced three distinct paired contrasts. The comparison between the first model, which had a single mediation of relative intrinsic career goals, and the second model, which had a single mediation of work need satisfaction, indicated that the second model was statistically stronger. Such results could be attributed to the 95% CI of  $[-0.375, -0.197]$  did not include 0. Thus, the model in which work need satisfaction mediated alone was found to be more useful in explaining the causality, even though both mediations of relative intrinsic career goals, and work need satisfactions were significant.

## Conclusion and discussion

### Conclusion

In the present study, the SDT pathway comprising of motivation, needs satisfaction, and positive outcomes was validated for the first time in respect of the work setting. The individual and continuous mediation roles of relative intrinsic career goals and work need satisfaction were simultaneously examined by ordinary least-squares regression. The results suggest that mindfulness positive impacts on intrinsic career goals, work need satisfaction, and FWB. Additionally, the relationship between mindfulness and FWB supports and validates previous research conducted by Sinha et al. (2021). This study demonstrates the positive effect of mindfulness on intrinsic goals and psychological needs satisfaction (Brown & Kasser, 2005; Campbell et al., 2015) in work setting. At the same time, intrinsic career goals and work need satisfaction had a positive effect on FWB, in line with earlier research outcomes (Deci et al., 2017; Hoang et al., 2022). In addition, work need satisfaction mediated between mindfulness and FWB, expanding the findings of Chang et al. (2018). Further, the first validation of

a significant hypothesis of SDT was provided, which posits that intrinsic career goals mediate the association between mindfulness and FWB. However, a limitation of SDT was also identified, as intrinsic career goals and work need satisfaction did not act as chain mediators between mindfulness and FWB.

Monzani et al. (2021) discovered through second-order meta-analysis that mindfulness can increase well-being, which was extended to the financial domain in the present study, with empirical results indicating that mindfulness can improve FWB. Such results indicate that individuals with high degrees of mindfulness may achieve an open, present-focused, and clear-thinking state of consciousness, which enables them to recognize the true value of money, reduce their sensitivity and vulnerability to it (Bayuk et al., 2022; Brown & Kasser, 2005; Kirk et al., 2015). In addition, individuals with high mindfulness accept the experiences of the past and the present experience, maintain a positive attitude toward future events, and do not dwell in the failures of the past (Williams & Kabat-Zinn, 2013). Therefore, financial satisfaction and a favorable subjective evaluation of one's financial situation are also outcomes of these actions.

Moreover, validation was provided for a pathway of SDT, which states that goals and basic psychological needs act as mediators between individual differences and health and wellness (Brown & Kasser, 2005; Chang et al., 2018; Deci et al., 2017; Ryan, 2023). Such findings provide an explanation for the potential mechanisms behind the association between mindfulness and FWB. The impact of mindfulness on FWB was found to decline to insignificance after the inclusion of relative intrinsic career goals and work need satisfaction, suggesting that relative intrinsic career goals and work need satisfaction fully mediated the positive connection between mindfulness and FWB. Specifically, mindfulness enables individuals to recognize unconscious automatic behaviors and enhances behaviors that align with their intrinsic goals (for example, intrinsic values and interests). Simultaneously, it facilitates the reduction of behaviors that are linked with extrinsic goals, such as financial gain, which are disconnected from intrinsic values (Ryan, 2023; Ryan & Deci, 2017). In turn, FWB improves. Mindfulness is an important predictive factor for FWB (Sinha et al., 2021); however, mindful individuals will also be less likely to experience a state of financial satisfaction due to the inconsistency between their current career goals and their desired future life state. Thus, individuals with high mindfulness are relatively more concerned about their intrinsic goals and objectives when setting work goals, which will lead to more experience with FWB.

## Theoretical implications

Another path through which mindfulness affects FWB is through needs satisfaction, which is consistent with the path through which mindfulness affects well-being (Chang et al., 2018). That is, individuals who are more focused, concentrated, open, and accepting at work, will experience mastery at work; will feel comfortable working with their colleagues and leaders; and will feel competent for their work. The satisfaction of such needs mitigates the occurrence of irrational thoughts regarding money and diminishes the associated anxiety and suspicion that commonly arise in such situations (Hoang et al., 2022). Thus, people grow pleased with “their lot” when given the ability to mindfully reflect on and focus to the current moment. Acceptance and happiness with one’s workplace enable people to gravitate toward FWB fulfillments rather than substitute unfulfilled demands with material products and external resources (Ryan, 2023). Moreover, by comparing the two paths of relative intrinsic career goals and work need satisfaction as mediators of mindfulness and FWB, work need satisfaction was found to have the strongest mediating effect alone. Such findings indicate that work need satisfaction better explains the mechanisms behind the relationship of mindfulness and FWB compared with intrinsic career goals, which affirms the core status of autonomy, competence, and relatedness needs in SDT (Ryan, 2023; Ryan & Deci, 2017).

Notably, relative intrinsic career goals and work need satisfaction did not play as a chained mediating effect between mindfulness and FWB in the current study. Such results indicate that work need satisfaction that brings FWB is directly followed by mindfulness and is not related to career goals pursued by individuals. Additionally, individuals with high mindfulness will pursue more intrinsic goals at work, which directly increases FWB. In conclusion, relative intrinsic career goals and work need satisfaction is independent in the process of mindfulness positively influencing FWB, which is inconsistent with the theoretical assumptions of SDT (Deci et al., 2017; Kasser & Ryan, 1996), and also differ from the findings of Hope et al. (2019).

One possible explanation may be the limitation of SDT in the financial domain. This is also probably due to the “relative intrinsic goal” scoring type used in this study. Bradshaw et al. (2023) found that the different levels of scoring type moderated the results of intrinsic goals and well-being. Another possible explanation is that the interaction between intrinsic and extrinsic career goals are complex. In SDT, the argument is that pursuing and achieving intrinsic goals lead to more positive outcomes (for example, well-being and adaptability) than extrinsic goals lead to more negative outcomes (for example, ill-being) (Bradshaw et al., 2023; Ryan, 2023). However, other studies have shown that strong

intrinsic goal orientation will bolster the link between external goals and positive consequences, since it causes employees to concentrate on not only external factors (for example, money and fame) but also their job commitment or interest, which moderate the benefits of external goal orientation (Zhang et al., 2018). Therefore, given the dearth of studies applying SDT to the financial area and the fact that chained mediating link from SDT was first investigated in an empirical study, the outcome of the current study provides new ideas and directions for future research on SDT in the financial area.

## Practical implications

At the managerial level, the findings indicate that FWB can be improved by self-regulatory functions at work, such as mindfulness, pursuit of intrinsic career goals, and work need satisfaction. Such supporting factors can be intentionally cultivated at work, and a growing number of organizations (for example, Apple, Procter & Gamble and GELL) have been training and enhancing mindfulness among their employees. Combined with the findings of the current study, managers can add programs that tap into employees’ intrinsic career goals related to employees’ interests and growth, as well as experience and pursue autonomy, competence, and relatedness satisfaction in mindfulness training, to achieve better training outcomes. In addition, despite the close relationship between FWB and money, an excessive focus on extrinsic career goals, such as the pursuit of money and reputation, may not necessarily contribute to an improvement in FWB. Managers can appropriately guide employees to set up more intrinsic goals related to self-improvement and interests. At the same time, managers can provide a friendly work environment and increase employee interaction with customers and co-workers to satisfy their competencies and relatedness needs. Further, providing flexible work schedules and empowering employees with decision-making opportunities can effectively fulfill the need for autonomy among employees.

At the individual level, employees can improve FWB through self-regulation. For instance, employees can benefit from learning to relax their attention, which will allow one’s self to be highly observant and aware of what is happening at work, to assess and reflect on work goals and work need satisfaction, to select work goals that are more aligned with intrinsic interests and personal growth, to reject purely monetary goals that are not related to personal development, and to return to the most basic need satisfaction in the work process.

## Limitation and future research

The current research has some restrictions. First, since its cross-sectional structure, current research is not sufficient to draw causal inferences. Experimental research can be designed to follow-up and investigate how mindfulness can improve FWB through the process of motivation and need satisfaction. Additionally, the study was sampled in China, and mindfulness traits in Eastern culture may be different from those in Western culture. Subsequent studies could try to compare the two cultures. Finally, the direct and indirect paths in the hypothesized model of current study only explain a portion of FWB, suggesting that there are other important antecedent variables that influence FWB. Further investigations can be conducted in future research.

**Data Availability** Transcriptions are kept by the authors. Interested researchers can access them contacting the corresponding author and after complete anonymization of participants is secured.

## Declarations

**Conflict of interest** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

**Ethics approval and consent to participate an Publication** This study was carried out in accordance with the recommendations of ethics committee of Guangxi Vocational University of Agriculture with written informed consent from all subjects in accordance with the Declaration of Helsinki. The protocol was approved by the ethics committee of Guangxi Vocational University of Agriculture.

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