Psychological determinants of financial buffer saving: the influence of financial risk tolerance and regulatory focus

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With governments redistributing more responsibilities unto citizens, individuals have an increasing need for financial resources acting as a buffer against life’s setbacks and unexpected expenditures. The purpose of this study was to examine psychological determinants of saving for a financial buffer, for which a theoretical model was formulated based on the theory of planned behaviour with three new, domain-specific psychological constructs: financial risk tolerance, regulatory focus and perceived saving barriers. Data were collected with an online questionnaire that utilised convenience and snowball sampling to target both students and working individuals (\textit{N} = 272). Regression analyses offered support for the proposed model, showing that participants’ financial risk tolerance (i.e. an individual’s attitude towards financial risk taking) was significantly associated with their subjective financial knowledge and regulatory focus. Furthermore, perceived financial self-efficacy and financial risk tolerance both predicted participants’ intention to save for a financial buffer. In turn, perceived financial self-efficacy and saving intention predicted self-reported saving behaviour. Importantly, perceived saving barriers mediated the relationship between saving intention and self-reported saving behaviour. In line with the proposed model, results also showed that a specific attitude-based construct (financial risk tolerance) is a considerably better predictor of saving intention than general measures of attitude towards saving. This study is also the first to demonstrate that regulatory focus influences financial risk tolerance. Implications of these findings for stimulating saving behaviour are discussed.

\textbf{Keywords:} Theory of Planned Behaviour; emergency savings; regulatory focus; financial risk tolerance; self-reliance

\section*{Introduction}

A recent movement towards individual responsibility for managing risks, which increasingly encourages individuals to take self-protective measures against calamities (Veldheer et al. 2012), has been observed in countries such as Australia and Britain (Hamilton 2012) and the Netherlands (Veldheer et al. 2012). This shift, inspired by both ideological and monetary reasons (Veldheer et al. 2012), is visible in areas ranging from flood management (Kievik and Gutteling 2011) to crime prevention (van Steden, van Caem, and Boutellier 2011). While people are capable of taking protective measures (see Martin, Bender, and Raish 2007), and such

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investments can reduce damage by calamities considerably (Kreibich et al. 2005), an essential prerequisite remains an individual’s financial resources.

Unsurprisingly, governmental risk-mitigation strategies have already been criticized for increasing individual risks during economic downturns (see Chan 2006). One particular critique is that incomes have dropped in recent years while individual responsibilities have increased (Chan 2006), reducing individuals’ financial resources. But resources like a financial buffer serve as a personal risk management strategy against financial setbacks, which range from unemployment and unexpected medical costs to necessary expenditures on a home or vehicle (Babiarz and Robb 2013). Furthermore, a financial buffer also provides psychological benefits: individuals with less than $500 in emergency savings, compared to those who have more than this, are more likely to frequently worry, lose sleep, suffer from health problems and have a lower work productivity (Brobeck 2008). Conversely, positive financial behaviours (including saving) predict improved subjective well-being (Shim, Serido, and Tang 2012).

However, many individuals have insufficient financial resources, with even 15% of Dutch (NIBUD 2012) and 22% of non-retired American households (Fisher and Anong 2012) having no savings at all. Accordingly, 25% of Americans report they cannot come up with $2000 in 30 days, while an additional 19% would only be able to after selling or pawning possessions or taking payday loans (Lusardi, Schneider, and Tufano 2011). These findings are alarming, especially given the unknown timing of many expenditures related to adverse events (e.g. job loss, medical costs) (Babiarz and Robb 2013). This questions how self-reliant individuals can be when financial resources are scarce or simply not available.

This study aims to explain self-reported saving behaviour for a financial buffer with a model derived from the Theory of Planned Behaviour (TPB), extended with constructs we consider particularly relevant to the domain of financial buffer saving: financial risk tolerance and regulatory focus. The model may help to inform and guide individual risk management strategies to improve saving for a financial buffer.

Theory

The Theory of Planned Behaviour

The TPB postulates that behaviours over which people have incomplete volitional control are predictable with measures like intention, perceived behavioural control (PBC) and attitude (Ajzen 1991, 2002; Armitage and Conner 2001; Conner and Armitage 1998). In short, it assumes first that behavioural, normative and control beliefs predict the extent to which a more favourable attitude, positive subjective norm towards a specific behaviour, and a greater PBC over the behaviour exist in the individual, respectively (Ajzen 1991, 2002; Armitage and Conner 2001). In turn, a more favourable attitude, positive subjective norm and greater PBC predict a stronger intention to perform the behaviour in question (Ajzen 1991). Finally, the behavioural intention is seen as a key predictor of actual behaviour (Ajzen 1991, 2002; Armitage and Conner 2001). The TPB has been validated in a wide range of domains (Ajzen 1991; Armitage and Conner 2001; Conner and Armitage 1998), including financial behaviours like budget keeping (Kidwell and Turrisi 2004), retirement saving (Croy, Gerrans, and Speelman 2010), saving habits (Loibl, Kraybill, and DeMay 2011), negative financial behaviours like not paying bills
(Xiao et al. 2011) and even future financial behaviours such as saving (Shim, Serido, and Tang 2012). However, it has not yet been applied to financial buffer saving. To generate a TPB-based model for that behaviour, we added several novel constructs (like financial risk tolerance and regulatory focus) to the existing framework, which resulting in the following model we elaborate on below (Figure 1).

**Financial risk tolerance as a specific operationalisation of attitude**

The TPB asserts that attitude towards a behaviour influences the intention to perform the behaviour and reflects an individual’s global evaluation of the behaviour (Ajzen 1991; Armitage and Conner 2001). TPB-based research into financial behaviour, like budget keeping (Davis and Hustvedt 2012; Kidwell and Turrisi 2004), saving (Croy, Gerrans, and Speelman 2010) and positive financial behaviours (Shim, Serido, and Tang 2012), indeed show that attitude influences intention. But the magnitude of this influence also varies considerably, even with the same financial behaviour (e.g. budget keeping: $\beta = .10$, Davis and Hustvedt 2012; $\beta = .44$, Kidwell and Turrisi 2004). There are several possible explanations for this. First, a broad attitude might not be a good predictor of behaviour. Attitude can, after all, measure general knowledge instead of predicting a particular, personal intention (Ajzen et al. 2011). Second, risks are approached differently per domain (Nicholson et al. 2005; Weber, Blais, and Betz 2002), with for example investment risk propensity unrelated to recreational risk propensity but correlating positively with social risk propensity (Markiewicz and Weber 2013), implying that attitude towards risk affects different domain-specific intentions.

Those explanations suggest that behaviour is better measured with a specific, instead of a general, attitude. One possible specific measure of attitude is financial risk tolerance, which is defined as the willingness to engage in financial behaviours with uncertain outcomes that have an identifiable negative outcome, and thereby indicates the amount of financial uncertainty someone is willing to accept (Grable 2000; Grable and Lytton 1999, 2003; Grable, Lytton, and O’Neill 2004; Grable et al. 2009). While financial risk tolerance seems unexamined in relation to saving intention, it does predict actual risk taking and risk avoiding behaviour (Gilliam,

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![Figure 1. Proposed model.](image-url)
Chatterjee, and Grable 2010; Grable, Britt, and Webb 2008). We included this construct in our model to see whether it can predict saving intention with the assumption that individuals less tolerant of financial risks exhibit a stronger saving intention.

**Subjective financial knowledge**

We further extend the TPB with subjective financial knowledge (i.e. the perception of one’s financial knowledge) as a predictor of financial risk tolerance. While objective (i.e. accurate) financial knowledge relates to more saving (Babiarz and Robb 2013; Mahdzan and Tabiani 2013), it only explains modest amounts of variance in self-reported financial behaviours (Lusardi 2008; Lusardi and Mitchell 2005). Furthermore, knowledge about behaviour has little to do with actually performing it (Ajzen et al. 2011). Subjective knowledge, however, has a greater impact on behaviour (Lusardi, Keller, and Keller 2009; Wang 2009; Xiao et al. 2011). Since several TPB-based studies found that subjective financial knowledge predicts financial attitude (Croy, Gerrans, and Speelman 2010; Kidwell and Turrisi 2004; Xiao et al. 2011), our model assumes that individuals with more subjective financial knowledge have a greater tolerance of financial risks.

**Situational economic trust**

While it seems that situational trust (i.e. trust in a specific situation or action; Viljanen 2005) is unresearched in relation to financial behaviours, there is hardly any economic decision that does not involve some degree of trust (Olsen 2012). Furthermore, several situational factors affect saving, ranging from recessions (Crossley, Low, and O’Dea 2013) and financial crises (O’Neill and Xiao 2012) to the risk of divorce (González and Özcan 2013; Pericoli and Ventura 2011), health deterioration (Macé 2012) and the unemployment of relatives (Tokuoka 2013). Generally speaking, income uncertainty has a positive impact on saving behaviour (Alessie and Teppa 2009; Fisher 2010). We therefore added a measure of economic trust to the model, with the assumption that high situational trust (i.e. displaying optimism about one’s financial situation) predicts a greater financial risk tolerance.

**Regulatory focus**

Regulatory focus theory distinguishes between two motivational states: promotion and prevention focus (Halamish et al. 2008). Promotion-focused individuals are concerned with advancement, growth, potential gains and accomplishment, while prevention-focused individuals concern themselves with safety, potential losses, impediments to goal achievement and responsibility (Crowe and Higgins 1997; Freitas et al. 2002; Halamish et al. 2008; Higgins et al. 2001; Lockwood, Jordan, and Kunda 2002). In the context of financial behaviour, regulatory focus moderates the asymmetry people typically experience between financial losses and gains (i.e. losses are experienced stronger than gains of the same magnitude; Tversky and Kahneman 1992). That is, individuals with a prevention focus experience this asymmetry stronger than those with a promotion focus (Halamish et al. 2008; Idson, Liberman, and Higgins 2000). To examine whether regulatory focus influences financial risk tolerance and saving intention, we added this construct to the model.
with the assumptions that prevention-focused individuals display a lower tolerance for financial risks and exhibit a stronger saving intention.

**Subjective saving norms**

Subjective norms refer to an individual’s perceptions of general social pressure to perform, or not perform, a specific behaviour (Ajzen 1991; Armitage and Conner 2001). Empirically, social norms influence financial behaviours like retirement saving (Croy, Gerrans, and Speelman 2010) and money management (Cude et al. 2006). Furthermore, positive parental norms predict students’ intention to perform financial behaviours like saving (Shim, Serido, and Tang 2012; Xiao et al. 2011) and positive subjective norms also predict a stronger retirement saving intention (Davis and Hustvedt 2012). As such, subjective saving norms were added to the model as a predictor of saving intention: positive subjective saving norms are expected to predict a stronger saving intention.

**Perceived financial self-efficacy**

The TPB’s PBC is the individual’s perception of the extent to which performing the behaviour is easy or difficult (Ajzen 1991). This concept can be considered interchangeable with self-efficacy (see Ajzen 1991; Conner and Armitage 1998), with this latter having a similar correlation strength as PBC has with intention (Armitage and Conner 2001) while being more clearly defined (see Ajzen 2002; Armitage and Conner 2001; Conner and Armitage 1998), making self-efficacy the preferred measure of PBC (Armitage and Conner 2001).

Self-efficacy is an individual’s perception of one’s ability to perform a certain behaviour in dealing with a threat or challenge (Bandura 1977), and, when applied to the financial domain, the amount of control and ability one feels when dealing with money issues (Dietz, Carrozza, and Neal Ritchey 2003). Empirically, stimulating self-efficacy with an easy-to-follow saving plan increases saving behaviour considerably (Lusardi, Keller, and Keller 2009) and, in terms of TPB research, financial self-efficacy is a positive predictor of saving (Xiao et al. 2011). The model therefore assumes that perceived financial self-efficacy influences saving intention and self-reported saving behaviour: individuals with a high financial self-efficacy are expected to have both a stronger saving intention and to report more saving behaviour.

**Saving intention, saving barriers and saving behaviour**

Intention is a central factor in the TPB and assumed to directly influence behaviour due to its indication of how much effort people are willing to exert to perform a specific behaviour (Ajzen 1991; Armitage and Conner 2001). Ergo, the stronger the intention to engage in behaviour, the more likely its performance should be (Ajzen 1991). But for behaviours not under complete volitional control, the availability of resources and opportunities (e.g. time, money) is likely to influence the ability to perform the behaviour as well (Ajzen 1991). Consequently, TPB’s intention alone explains little variance in self-reported saving behaviour (e.g. $R^2 = .08$; Davis and Hustvedt 2012), while economic variables, like disposable income, explain much more (e.g. $R^2 = .48$ with self-reported recurring saving; Lunt and Livingstone 1991).
Two psychological mechanisms, both seemingly not yet addressed in the literature, might explain this discrepancy. First, saving barriers, such as economic conditions (see Fisher 2010; Lunt and Livingstone 1991) and the complexity of saving (e.g. tax-deferred retirement saving; see Davis and Hustvedt 2012), might govern the relationship between intention and saving behaviour. Even though people with more income are also likely to save more (e.g. Hershey et al. 2008; Lunt and Livingstone 1991; Lusardi 2008), perceived barriers, like a felt shortage of knowledge or a perceived insufficient income, do limit saving behaviour (Lusardi, Keller, and Keller 2009). As such, we expect saving barriers to have a mediating influence on the relationship between saving intention and saving behaviour: individuals who perceive stronger saving barriers are expected to have more difficulty translating intention into behaviour. And with intention assumed to capture the motivational factors influencing behaviour (Ajzen 1991), we expect that individuals with weaker intentions perceive more subjective barriers to saving which in turn predicts weaker saving behaviour.

Second, the low variance explained by saving intention could be caused by conflicting intentions towards saving. Interestingly, the TPB does not differentiate between intentions but assumes a single, presumably aggregated, intention (see Ajzen 1991; Armitage and Conner 2001). To address this possible limitation, we expand saving intention by also taking potentially conflicting intentions into account. The model assumes that such measure of saving intention predicts both perceived saving barriers and self-reported saving behaviour: individuals with a stronger saving intention are expected to perceive less saving barriers and to report more saving behaviour.

Method

Data were collected with a SurveyMonkey online questionnaire and analysed with RStudio (.98.493) and R (3.0.2). Participants were recruited through the University of Twente students participants pool and working individuals through email (snowball sampling) and online message boards (convenience sampling). This sampling approach was chosen to increase heterogeneity by including people with a potentially unclear financial situation (i.e. students) together with those who had a more stable, and potentially full-time, income. The students were given research credits for participating while other participants were included in a raffle of seven gift certificates from a Dutch online retailer worth 20 euros each. Before starting the questionnaire, participants were presented with an accompanying letter that included the research description and privacy assurances. By randomising statements and page order, we prevented order-effect bias (Perreault 1975), though the page with demographic variables was always included at the end.

Participants

A total of 340 participants partook in the questionnaire, of which 272 (80%) completed it. Since excluding participants a posteriori would increase the odds of non-random, biased exclusion, no incomplete questionnaires were removed. As a result, the sample size for each construct varies.

The majority of participants was female (60%) while 69% had attended higher education at some point (college or university; see Table 1). On average the
participants were young ($M = 26.81$, $SD = 9.51$, $n = 272$), ranging 15 to 73 years. Accordingly, half of participants were students although a large minority (40%) were employed. In terms of monthly net income, 22% reported no income, 33% less than 1500 euros, 31% between 1500 and 3000 euros, and a small group (6%) reported more than 3000 euros.

**Questionnaire**

Participants’ level of agreement with statements was assessed with a five-point Likert scale ranging from 1 (*fully disagree*) to 5 (*fully agree*), and statements were formulated income-neutral to prevent bias. Construct scales were refined with both exploratory and confirmatory principal components analysis (oblique rotation) followed by evaluating internal consistency.
Financial risk tolerance was measured with adapted statements from Grable and Lytton’s (1999) Financial Risk Tolerance Scale. The 10 items were combined such that high scores signalled a high tolerance for financial risks while low scores displayed a financial risk intolerance (Cronbach’s $\alpha = .82$, $M = 2.25$, $SD = .74$, $n = 287$).

Subjective financial knowledge assessed subjective estimates of knowledge and practical knowledge statements adapted from Flynn and Goldsmith (1999) and Xiao et al. (2011). The 14 statements were combined such that high scores indicated more financial knowledge (Cronbach’s $\alpha = .91$; $M = 3.07$, $SD = .89$, $n = 290$).

The seven situational economic trust statements were derived from Statistics Netherlands (CBS (Centraal Bureau voor de Statistiek) n.d.) to measure trust in one’s current and future economic situation. The scores were computed such that high scores indicated a higher amount of situational economic trust (Cronbach’s $\alpha = .77$; $M = 3.23$, $SD = .79$, $n = 296$).

Participants’ regulatory focus was measured with 9 statements from the General Regulatory Focus Measure (Lockwood, Jordan, and Kunda 2002) and divided into two subscales: promotion focus (Cronbach’s $\alpha = .65$, $M = 3.60$, $SD = .69$, $n = 291$) and prevention focus (Cronbach’s $\alpha = .66$, $M = 2.98$, $SD = .75$, $n = 291$). Both were calculated such that higher scores denoted a stronger focus.

Subjective saving norms were measured with statements adapted from Croy, Gerra, and Speelman (2010). The six items were combined such that high scores signalled a stronger perceived saving norm (Cronbach’s $\alpha = .81$; $M = 3.53$, $SD = .69$, $n = 289$).

Perceived financial self-efficacy was measured with eight items adapted from Danes and Haberman (2007), Dietz, Carrozza, and Neal Ritchey (2003), and Shim, Serido, and Tang (2012), and aggregated such that high scores indicated high perceived financial self-efficacy (Cronbach’s $\alpha = .84$; $M = 3.80$, $SD = .75$, $n = 295$).

To address the possibility of conflicting intentions, saving intention (13 items) consisted out of a general saving intention (adapted from Davis and Hustvedt 2012; Kidwell and Turrisi 2004; Xiao et al. 2011) and intention-based statements derived from instrumental and stimulating risk taking. Instrumental risk taking is thoughtfully taking financial risks to achieve relatively distant goals (Rogers, Viding, and Chamorro-Premuzic 2013; Zaleskiewicz 2001) while stimulating risk taking is risk taking due to the liking of risks with a strong emotional excitement (Vong 2007; Zaleskiewicz 2001) combined with poor risk and reward estimates (Rogers, Viding, and Chamorro-Premuzic 2013). Empirically, instrumental risk taking is associated with more self-reported savings, while stimulating risk taking correlates negatively with saving (Rogers, Viding, and Chamorro-Premuzic 2013). The saving intention scale was constructed such that high scores indicated a stronger intention to save for a financial buffer (Cronbach’s $\alpha = .76$; $M = 3.77$, $SD = .55$, $n = 287$).

Perceived barriers to saving included statements about informational and financial barriers that were adapted from Lunt and Livingstone (1991), Lusardi, Keller, and Keller (2009), and Madern and Van Gaalen (2011). The seven statements were combined with high values indicating more perceived obstacles (Cronbach’s $\alpha = .80$; $M = 2.21$, $SD = .78$, $n = 301$).

The five self-reported saving behaviour statements were adapted from Davis and Hustvedt (2012) and Shim, Serido, and Tang (2012). This scale was constructed such that high scores indicated a higher amount of self-reported saving behaviour (Cronbach’s $\alpha = .84$; $M = 3.88$, $SD = 1.02$, $n = 303$).
Findings
The model was tested with hierarchical linear regression analyses, all of which adhered to the assumptions of linear regression analysis (see Field, Miles, and Field 2012). These three regression analyses, each predicting one of the model’s key variables (financial risk tolerance, saving intention and self-reported saving behaviour), coupled with the mediation analysis generated the following results:

Regression Analyses
Situational economic trust, subjective financial knowledge and regulatory focus were assumed to predict financial risk tolerance. The regression model, see Table 2, confirmed that both subjective financial knowledge ($\beta = .40$, $p < .001$) and prevention focus ($\beta = -.18$, $p < .01$) were significant predictors of financial risk tolerance ($R^2 = .25$); unexpectedly, however, situational economic trust and participants’ promotion focus were not. Thus, as expected, more subjective financial knowledge predicted a higher tolerance for financial risks while participants who indicated a stronger prevention focus reported lower levels of financial risk tolerance.

The model also proposed that financial risk tolerance, regulatory focus, subjective saving norms and perceived financial self-efficacy would forecast saving intention. Indeed, financial risk tolerance ($\beta = -.56$, $p < .001$) and perceived financial self-efficacy ($\beta = .50$, $p < .001$) significantly predicted saving intention ($R^2 = .46$). Therefore less tolerance for financial risks and more perceived financial self-efficacy both independently predicted a stronger intention to save for a financial buffer. Contrary to expectations, neither regulatory focus (promotion and prevention focus) nor subjective saving norms predicted saving intention (see Table 2).

The model further assumed that self-reported saving behaviour was predicted by saving intention and perceived financial self-efficacy. This was indeed the case: both a higher saving intention ($\beta = .36$, $p < .001$) and more perceived financial self-efficacy ($\beta = .51$, $p < .001$) were predictive of more self-reported saving behaviour ($R^2 = .52$).

Additional regression analyses explored how demographic variables impacted key variables. For financial risk tolerance, women were less tolerant of financial risks than men ($\beta = -.32$, $p < .001$). In addition, participants who earned more than 3000 euros displayed a higher financial risk tolerance than those who earned less than 1500 euros ($\beta = .85$, $p < .001$). Furthermore, homeowners were more tolerant of financial risks than tenants ($\beta = .18$, $p < .05$), while participants who lived with their parents (as opposed to living with a partner) were less tolerant of financial risks ($\beta = -.19$, $p < .05$).

Saving intention was also affected by demographic variables: women reported higher saving intentions than men ($\beta = .18$, $p < .01$), and participants living with their parents reported more saving intention than those living with a partner ($\beta = .26$, $p < .05$). Additionally, employees reported more saving intention than students ($\beta = .47$, $p < .001$), and unemployed participants also expressed a greater intention to save than students ($\beta = .97$, $p < .05$).

Self-reported saving behaviour was influenced by one demographic variable: employees reported more saving behaviour than students ($\beta = .46$, $p < .001$), which suggests that the influence of demographics on reported saving behaviour is minor.
Table 2. Results of the hierarchical regression analyses for the dependent variables financial risk tolerance, saving intention and self-reported saving behaviour, respectively.

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<td>Regulatory focus’ promotion focus</td>
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<td>Regulatory focus’ prevention focus</td>
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**p < .01; ***p < .001.**
To see if demographic variables impacted the proposed model, we performed a stepwise regression analysis that added all demographic variables to the model that predicted self-reported saving behaviour with saving intention and financial self-efficacy ($R^2 = .52$). This modestly increased explained variance ($R^2 = .59; F(14, 255) = 2.28, p < .01$) with just one demographic variable significant: homeowners reported more saving behaviour than renters ($\beta = .15, p < .05$). Likewise, regressing all demographic variables on self-reported saving behaviour explained considerably less variance ($R^2 = .26$) than predicting saving behaviour with saving intention and financial self-efficacy.

The impact of perceived saving barriers

We hypothesised that the positive relation between saving intention and self-reported saving behaviour is explained by perceived saving barriers. That is, a higher saving intention would predict seeing less barriers, which in turn would predict more self-reported saving behaviour. Multiple regression analyses were conducted to assess each component of this proposed mediation model. First, it was found that saving intention was positively associated with self-reported saving behaviour ($B = 1.00, t(278) = 10.60, p < .001$). Saving intention was also negatively related to perceived saving barriers ($B = -.43, t(278) = -5.30, p < .001$). Lastly, results indicated that the mediator, perceived saving barriers, was negatively associated with saving behaviour ($B = -.65, t(278) = -11.22, p < .001$).

Because both the a-path and b-path were significant, the presumed mediation effect was tested using the bootstrapping method with bias-corrected confidence intervals (Preacher and Hayes 2008). Per Preacher and Hayes (2008) recommendation, a 95% confidence interval of the indirect effect with 10,000 bootstrap resamples was obtained. The bootstrapped unstandardised indirect effect was .28 (bias-corrected CI = .15 to .42), confirming saving obstacles’ mediating effect on the relation between saving intention and self-reported saving behaviour. Furthermore, results indicated that the direct effect of saving intention on self-reported saving behaviour lessened when controlling for saving obstacles ($B = .72, t(277) = 8.76, p < .001$), thereby suggesting partial mediation. The standardised beta coefficients are displayed in Figure 2.

Discussion

This study aimed to identify potential determinants of financial buffer saving. For this, the TPB-based model assumes that financial risk tolerance is predicted by situational economic trust, subjective financial knowledge and regulatory focus. Results indicated that more subjective financial knowledge positively predicted financial risk tolerance. This is a new finding, although other studies related knowledge to an increased willingness to take financial risks (e.g. Grable and Joo 2004), presumably through its impact on confidence (Wang 2009). Ajzen et al.’s (2011) critique of general knowledge notwithstanding, subjective knowledge seems valuable in predicting attitude towards financial buffer saving.

Regulatory focus also predicted financial risk tolerance, albeit only a stronger prevention focus was associated with less financial risk tolerance. While in line with the literature (Crowe and Higgins 1997; Freitas et al. 2002; Halamish et al. 2008; Lockwood, Jordan, and Kunda 2002), participants’ promotion focus unexpectedly
did not influence financial risk tolerance. This can suggest that, when it comes to financial buffer saving, promotion-focused individuals seek opportunities for accomplishments in other domains.

Contrary to expectations, situational economic trust also did not influence financial risk tolerance. While other studies found that both personal (e.g. González and Özcan 2013; Macé 2012) and macro-level circumstances (e.g. O’Neill and Xiao 2012) influence financial behaviour, this finding suggests that an individual’s opinion of their financial situation might not influence financial behaviour through attitude.

The second part of the model assumes that saving intention is predicted by financial risk tolerance, regulatory focus, perceived financial self-efficacy and subjective saving norms. Financial risk tolerance indeed predicted saving intention: intolerance for financial risks was associated with a stronger saving intention while a high financial risk tolerance forecasted less saving intention. Furthermore, this TPB-derived relationship predicts intention better ($\beta = -0.56, p < .001$) than other TPB-based studies that used general attitude (e.g. $\beta = 0.10$, Davis and Hustvedt 2012; $\beta = 0.25$, Croy, Gerrans, and Speelman 2010). This suggests that specific and fine-grained measures of attitude are a feasible line of inquiry for TPB-based studies.

Prevention and promotion focus did not influence saving intention, however. This is surprising since, theoretically speaking (e.g. Crowe and Higgins 1997; Higgins et al. 2001), especially prevention focus seems a prime candidate for influencing saving intention for a financial buffer. Even though we used the General Regulatory Focus Measure (Lockwood, Jordan, and Kunda 2002), our scales achieved a lower internal consistency, possibly due to translating them into Dutch.

As expected, perceived financial self-efficacy predicted saving intention: the higher an individual’s financial self-efficacy, the stronger their intention to save money. Individuals who feel capable of dealing with financial matters can thus be expected to display strong saving intentions, while those who feel powerless with

Figure 2. Proposed model with standardised beta values resulting from the regression analyses and mediation analysis.
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Insignificant relations are highlighted with a dotted line.
financial decisions have a commensurate lower intention to save money. This finding corroborates other studies which showed that financial self-efficacy influences saving intention and financial behaviour (Davis and Hustvedt 2012; Lusardi, Keller, and Keller 2009; Xiao et al. 2011).

Interestingly, we do not observe that subjective saving norms predict saving intention, contradicting other studies (Croy, Gerrans, and Speelman 2010; Davis and Hustvedt 2012; Shim, Serido, and Tang 2012; Xiao et al. 2011). There are two potential explanations for this. First, high educational attainment is associated with more financial knowledge and individuals with high financial knowledge are considerably less likely to consult their social environment about financial matters (van Rooij, Lusardi, and Alessie 2011). Since highly educated participants were overrepresented in our sample, this might have lessened the impact of social norms. Second, findings from Kidwell and Turrisi (2004) suggest that, when people experience a high level of control over a given behaviour, they experience a stronger effect of subjective norms, with the reverse true for people with low perceived control. After all, with a high perceived control over a given behaviour, it is hard to justify not performing the behaviour desired by one’s environment. But with a majority of participants unemployed, they might have experienced little control over saving money, in turn reducing the impact of social norms.

The third part of the model postulates that self-reported saving behaviour is predicted by perceived financial self-efficacy and saving intention, with the influence of this latter mediated by perceived barriers to saving. Results confirmed these assumptions. A higher perceived financial self-efficacy predicted more self-reported saving behaviour, suggesting that individuals who feel capable of dealing with money issues also succeed better in saving money, a finding corroborated by other studies (Davis and Hustvedt 2012; Xiao et al. 2011).

Saving intention also predicted self-reported saving behaviour such that a stronger intention was associated with more self-reported saving. This not only suggests that participants succeeded reasonably well in translating intentions into behaviour, but with intention assumed to reflect motivation (Ajzen 1991), participants were also motivated to save. Furthermore, our measures of intention and perceived financial self-efficacy seem valuable with high amount of variance explained in self-reported saving behaviour ($R^2 = .52$) compared to other studies (e.g. $R^2 = .21$, Davis and Hustvedt 2012).

Perceived saving barriers also affected self-reported saving behaviour: the more obstacles participants perceived, the less saving behaviour reported. Saving intention, in turn, influenced perceived saving barriers: the stronger the intention, the fewer barriers seen. As it turns out, perceived saving barriers partially mediated the relationship between saving intention and self-reported saving behaviour: individuals with weaker saving intentions perceived more saving barriers and this predicted weaker saving behaviour in turn. This new finding confirms studies which showed that actual (Lunt and Livingstone 1991) and perceived (Lusardi, Keller, and Keller 2009) barriers are related to saving behaviour, and supports the TPB’s assertion that the amount of volitional control influences the extent to which intentions are translated into behaviour (Ajzen 1991).

Three variables in our model are prime candidates for interventions. The first is saving intention, which predicted self-reported saving behaviour and lead to less perceived barriers, in turn further stimulating saving behaviour. The second is financial self-efficacy, which influenced saving intention and had a direct impact on
self-reported saving behaviour. And the third (perceived saving barriers) affected how well saving intentions are translated into behaviour. These findings suggest that financial buffer saving can be stimulated with actionable information that increases financial self-efficacy (i.e. no financial jargon and small, manageable steps). Lusardi and others (2009), for instance, designed an easy-to-follow seven-step plan to increase supplemental retirement saving. Of the participants that received their brochure, 27.6% ($n = 83$) participated as opposed to 7.3% of the control group ($n = 210$). Such interventions can also address perceived saving barriers revolving around informational deficiencies and misconceptions (e.g. saving plans are difficult or require a certain amount of income). Since prevention focus predicted less financial risk tolerance, which in turn predicted more saving intention, an intervention may also be framed as a basic necessity instead of an opportunity for accomplishment. This also makes people take action sooner (see Freitas et al. 2002).

In aggregate, our model not only confirms meta-analytical findings which showed that the TPB predicts a wide range of behaviours (Armitage and Conner 2001; Conner and Armitage 1998), it also explains considerably more variance in self-reported behaviour ($R^2 = .52$) than the TPB on average does ($R^2 = .32$; Armitage and Conner 2001). And despite demographic variables predicting emergency savings in earlier research (Babiarz and Robb 2013), our demographic variables explained a modest amount of variance ($R^2 = .26$) compared to the model with just two psychological variables. Furthermore, seemingly important demographic variables like income and employment did not affect self-reported financial buffer saving. Taken together these findings suggest that adapting the TPB to domain-specific attitudes and behaviour is a viable approach, also since that addresses behaviour in a manner that cannot be deduced from demographic variables alone.

Limitations of the current study include a self-selection bias due to self-recruiting participants, although the sample was more heterogeneous than other TPB-based studies into financial behaviour (cf. Shim, Serido, and Tang 2012; Xiao et al. 2011). Furthermore, we did not examine actual behaviours but used the less privacy-invasive measure of self-reported behaviour. Suggestions for further research include relating a financial buffer size to a participant’s income category. That allows for examining how the relative size of a buffer affects constructs like financial self-efficacy, perceived saving barriers and saving intention. We did not to do this in this current study since we expected an insufficient sample size for categorising participants in income groups. Additional research can also examine other risk-mitigating financial products besides a saving account (e.g. insurance), whose relative popularity might depend on an individual’s regulatory focus or financial risk tolerance.

This study showed that psychological constructs play an important role with financial buffer saving, although this aspect of self-reliance has not received much research attention nor governmental interest, despite the latter shifting increasingly more (financial) responsibility unto its citizens (e.g. Veldheer et al. 2012). A greater focus on stimulating adequate financial buffers by considering the psychological constructs set forth in the current model is therefore needed. That not only makes individuals more self-reliant and independent, it also enables citizens to collectively reduce the financial and personal impact of calamities.

Notes
1. The questionnaire is available from the corresponding author upon request.
2. Indeed, employed participants reported significantly higher saving norms ($M = 3.68$, $SD = .62$, $n = 116$) than jobless participants ($M = 3.42$, $SD = .69$, $n = 156$; $t(261) = 3.33$, $p < .001$).

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**References**


