



Do the happy-go-lucky?

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Abstract

While popular aphorisms and etymologies across diverse languages suggest an intrinsic association between happiness and luck beliefs, empirically testing the existence of any potential link has historically been constrained by varying and unclear conceptualizations of luck beliefs and by their sub-optimally valid measurement. Employing the Thompson and Prendergast *Personality and Individual Differences*, 54(4), 501–506, (2013) bi-dimensional refinement of trait luck beliefs into, respectively, ‘Belief in Luck’ and ‘Belief in Personal Luckiness’, we explore the relationship between luck beliefs and a range of trait happiness measures. Our analyses ($N = 844$) find broadly that happiness is negatively associated with Belief in Luck, but positively associated with Belief in Personal Luckiness, although results differ somewhat depending on which measure of happiness is used. We further explore interrelationships between luck beliefs and the five-factor model of personality, finding this latter fully accounts for Belief in Luck’s negative association with happiness, with additional analyses indicating this is wholly attributable to Neuroticism alone: Neuroticism appears to be a possible mediator of Belief in Luck’s negative association with happiness. We additionally find that the five-factor model only partially attenuates Belief in Personal Luckiness’ positive association with happiness, suggesting that Belief in Personal Luckiness may be either a discrete facet of trait happiness or a personality trait in and of itself.

Keywords Happiness · Belief in luck · Belief in personal luckiness · Five-factor personality model · Irrational beliefs

Introduction

That luck beliefs and happiness may be associated is suggested by more than just the familiar aphorism ‘happy-go-lucky’. Across diverse and unrelated languages, dictionaries of both etymology and idioms support a possible association between luck beliefs and happiness (Bojanowska and Zaleska 2016; Wierzbicka 2004). This fact has not been lost on psychology and happiness scholars who have noted that ‘across cultures and time, happiness [is] most frequently

defined as good luck’ (Oishi et al. 2013, p. 559). In English, for instance, *Webster’s Dictionary* (1991, p. 608) defines happy-go-lucky as ‘trusting cheerfully to luck’, and the *Oxford Dictionary* (1989) affirms the common root of happiness and luckiness, the former deriving from ‘hap’, meaning luck or fortune, an origin evident in such words as ‘happenstance’ (a product of luck or twist of fate), ‘hapless’ (unlucky or unfortunate), and ‘haphazard’ (ordered by chance or luck).

Research on the association between happiness and other personality traits has been extensive. For example, sufficient research has been done on subjective well-being and the personality construct of emotional intelligence alone to enable a meta-analysis of the relationship (Sanchez-Alvarez et al. 2016). Moreover, the effect on *state* happiness of luck as an external and chance event, such as a lottery win or debilitating accident, has, additionally, long been a subject of scholarly interest (Brickman et al. 1978; Diener et al. 2006; Lucas 2007; Luhmann and Eid 2009; Jackson 2017). However, the systematic and direct investigation of any association between *trait* happiness and *trait* luck beliefs has hitherto been absent.

One reason for this absence may historically have stemmed from conceptualizations of luck beliefs as being either non-discrete facets of other constructs, such as locus of control (Ray 1980), or indistinguishable from chance (Wagenaar and

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Keren 1988). Another reason has been ad hoc definitions and measures of luck beliefs that have, until recently, tended to exhibit incongruous dimensionality, be conceptually diverse, and sub-optimally validated.

To help shed light on whether or not the happy might indeed go lucky, we explore the extent to which the facets of Thompson and Prendergast's (2013) relatively new and systematically conceptualized bi-dimensional model of trait luck beliefs, are associated with four discrete measures indicative of trait happiness. Furthermore, in light of well-established links between trait affect and personality (DeNeve and Cooper 1998; Steel et al. 2008), we try to tease out whether or not any association of trait luck beliefs and trait happiness may be mediated or confounded by the five-factor model of personality.

Trait Luck Beliefs

While trait happiness has for several decades seen extensive conceptualization and the development of systematically validated and extensively used measures (Lyubomirsky and Lepper 1999; Scheier et al. 1994; Watson et al. 1988), trait luck beliefs have only received substantive attention from psychology researchers in the past decade or so. Darke and Freedman (1997) initiated this stream of research by conceptualizing and developing a unidimensional Belief in Good Luck Scale. Their theorization of irrational belief in good luck proposed a continuum with, at one end, an irrational belief in good luck being a determinative force, and, at the other, the view that luck is straightforwardly random chance. In practice, Darke and Freedman (1997) found their scale could not distinguish between those believing themselves to be, respectively, either lucky or unlucky, or believing or disbelieving in luck in the first place. Moreover, while Darke and Freedman (1997, p. 493, fn. 3) intended conceptually to measure belief in good luck as a unidimensional construct, empirically they, like subsequent researchers using their measure (Öner-Özkan 2003; Prendergast and Thompson 2008; André 2009), found it to suggest trait luck beliefs constitute a multidimensional construct.

Psychology researchers have subsequently built on Darke and Freedman's (1997) measure to develop multifaceted conceptions and measures of luck beliefs (Young et al. 2009). For example, André (2006) proposed a 6-dimensional measure of positive and negative luck beliefs, and Maltby et al. (2008) developed a 4-dimensional measure of luck beliefs, two addressing belief in luck as an agentic external phenomenon, and two addressing beliefs about good and bad luck as outcomes. However, Maltby et al. (2008) cautioned that their measure's four dimensions might constitute products of method variance 'attributable to an artifact of [item] scoring' (p. 659).

Extending Maltby et al.'s (2008) work, Thompson and Prendergast (2013) elaborated a bi-dimensional conception of luck beliefs. They systematically developed and validated a measure of trait luck beliefs that distinguishes between, on one hand, a general belief or disbelief in luck as an external and determinative phenomenon (Belief in Luck), and, on the other, a belief in being personally lucky or unlucky (Belief in Personal Luckiness). Thompson and Prendergast (2013) found Belief in Luck and Belief in Personal Luckiness to be discrete, unidimensional and uncorrelated components of trait luck beliefs, applicable to both luck believers and disbelievers alike.

Belief in Luck and Happiness

The Belief in Luck dimension of Thompson and Prendergast's (2013) bidimensional model distinguishes between, on one hand, luck believers who irrationally consider luck is a deterministic and external phenomenon with agentic qualities capable of influencing outcomes and, on the other, luck disbelievers who consider luck to be merely the product of purely stochastic and uninfluenceable chance. Thompson and Prendergast (2013) found belief or disbelief in luck is not binary, but rather exists on a unidimensional continuum, substantiating Maltby et al.'s (2008) suspicion that the apparently discrete beliefs they found in, respectively, good and bad luck are the product of scoring artifacts rather than separate underlying constructs.

Research to date on Belief in Luck specifically has been scant and limited to inter-item correlations without controls for possible confounding variables. Nonetheless, such correlations hint that believing in luck may be negatively correlated with affect-related measures. For example, Maltby et al. (2008) find belief in luck correlates positively with a range of irrational beliefs and negative traits such as awfulizing and problem avoidance, and Thompson and Prendergast (2013) find it correlates negatively with well-being. Considerable research has demonstrated more generally that irrational beliefs are linked to negative affect (Bridges and Harnish 2010; David and Cramer 2010; David et al. 2002; Kassinove and Eckhardt 1994; Rohsenow and Smith 1982; Smith 1982). Maltby et al. (2008) also find that belief in luck correlates negatively with internal locus of control, while Thompson and Prendergast (2013) find it correlates positively with the powerful others dimension of Levenson's (1981) locus of control measure. External locus of control, with which belief in luck is commensurate, has long been empirically associated with negative affect (Abramowitz 1969; Buddelmeyer and Powdthavee 2016; Houston 1972; Johnson and Sarason 1978; Yu and Fan 2016). Taken together, these findings are consonant with Maltby et al.'s (2008) suggestion that belief in luck is a facet of irrationality linked to low personal agency,

maladaptivity and the negative affect found to be linked with these. Hence it would seem reasonable to suggest that Belief in Luck may be negatively linked with positive dimensions of affect:

H1. Belief in Luck will be negatively associated with happiness.

Belief in Personal Luckiness and Happiness

Thompson and Prendergast (2013) find both luck believers and disbelievers alike make a subconscious semantic differentiation between luck conceived as a deterministic external phenomenon affecting future events, and luck as a descriptive metaphor for how fortunately past events and current circumstances are believed to have turned out for them personally. Like Maltby et al. (2008), Thompson and Prendergast (2013) find belief in being personally lucky is discrete from and uncorrelated with belief in luck as a deterministic phenomenon. Maltby et al. (2008) find belief in being personally lucky correlates negatively with discomfort-anxiety and with awfulizing, but positively with hope, self-acceptance, positive relations, environmental mastery, and other personality traits associated with positive affect. Similar positive associations between belief in being personally lucky and favorable affective outcomes are reported by Day and Maltby (2003), André (2009), and Jiang et al. (2009). Further mirroring some of Maltby et al.'s (2008) findings, Thompson and Prendergast's (2013) efforts to establish the nomological validity of the Belief in Personal Luckiness construct find it correlates positively with some affect-related measures, and they speculate it might perhaps constitute a facet of overall well-being. Hence:

H2. Belief in Personal Luckiness will be positively associated with happiness.

Five-Factor Personality Model, Happiness and Luck

The relationship between the facets of the five-factor personality model and happiness has been extensively demonstrated in individual studies and meta-analyses (DeNeve and Cooper 1998). One meta-analysis by Steel et al. (2008), for instance, reported that 40% to 60% of variance in subjective well-being is accounted for by personality alone. Using a range of affect-related measures, this literature has concluded that happiness is generally negatively associated with Neuroticism, but positively associated with Conscientiousness, Extraversion and Agreeableness, and either mildly positively or insignificantly associated with Openness to Experience (Hayes and Joseph 2003).

Precisely how luck beliefs and the five-factor model in combination might influence happiness is open to question. To date, no research has sought to establish whether or not luck beliefs are simply manifestations of more fundamental underlying personality traits as embodied in the five-factor model, or are in fact distinct facets of personality that may, therefore, have a discrete effect on happiness additional to, and independent of, fundamental personality traits like the five-factor model's dimensions.

The relationship between discrete luck beliefs and the five-factor personality model is unstudied beyond Maltby et al.'s (2008) and Thompson and Prendergast's (2013) initial work to establish their respective luck belief components' nomological validities. Although confined solely to uncontrolled correlations, Thompson and Prendergast (2013) do find a significant positive correlation between Neuroticism and Belief in Luck. This is consonant with Sava (2009) and Samar et al. (2013) who find that a range of irrational beliefs is also predicted by Neuroticism. These authors also find significant relationships between the other four components of the five-factor model and irrational beliefs while including controls. This, combined with consistent findings in meta-analyses that the five-factor model is associated with happiness (Steel et al. 2008), suggests that if Belief in Luck is indeed linked to happiness, this effect might actually be confounded in some way by the five factor personality model. As the five-factor model is generally regarded as a fundamental model of personality (Costa and McCrae 1992; O'Connor 2002), we speculate that Belief in Luck is more likely to be an element of the five-factor model than the other way around; that the five-factor model dimensions are an element of Belief in Luck. Hence using the conventional terminology of stating hypotheses positively, but without seeking to suggest causality, we posit:

H3. Belief in Luck will 'mediate' the relationship between the five-factor model of personality and happiness.

The broad pattern found by Maltby et al. (2008) and Thompson and Prendergast (2013) of Belief in Personal Luckiness correlating positively with Extraversion, Agreeableness, Conscientiousness and Openness, but negatively with Neuroticism, is consonant with the possibility that Belief in Personal Luckiness may perhaps be a direct manifestation of fundamental personality. That the five-factor model of personality might be an element of Belief in Personal Luckiness would seem implausible. Given the consistent and relatively strong association between the five-factor model's facets and happiness, it would seem more reasonable to speculate that this relationship could perhaps be due to Belief in Personal Luckiness being an element of the five-factor model.

Hence again using conventional terminology of stating hypotheses positively, but without seeking to suggest causality, we posit:

H4. Belief in Personal Luckiness will 'mediate' the relationship between the five-factor model of personality and happiness.

Methods

Participants

Because happiness is influenced by cultural (Oishi and Gilbert 2016) and socio-economic differences (Veenhoven 2015), we sought to use a relatively culturally and socio-economically homogenous sample to help reduce such potential effects and to avoid the difficulties of measuring (and thence controlling) cultural and socio-economic differences (Alesina et al. 2004; Ferrer-i-Carbonell 2005; Frey and Stutzer 2000). Hence, our participants comprised 844 (219 male) volunteer under- and post-graduate full-time students at an English-language university in Hong Kong. Some 59% were aged 20–24, 10% 18–19, 10% 25–29, 20% >30. All were ethnically Chinese but fluent English speakers, enabling all our measures used to be administered in their original English versions. Informed consent was obtained from all individual participants included in the study. Instruments did not ask for identifying information, hence our data are anonymous. All data from the current study are available from the corresponding author on reasonable request.

Measures

Happiness

We selected four well-known affect-related measures used either as direct measures or proxies of happiness, the respective validities and reliabilities of which have been demonstrated in each case by their successful use in hundreds, and in some cases thousands, of happiness-related studies.

As a direct measure of happiness we used Lyubomirsky and Lepper's (1999) Subjective Happiness Scale, the reported Cronbach's alphas of internal consistency reliability of which are in the range of .79 to .94. This 4-item scale comprises statements and/or questions with responses made on a 7-point interval measure, the labels of which vary according to item wording. An example item is "Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?"

We further used two affect measures that are often used as proxies in happiness research, positive affect and negative affect (Haase et al. 2012; Ifcher and Zarghamee 2011; Lucas et al. 2008; Lyubomirsky et al. 2005; Mroczek and Kolarz 1998). We assessed these with a brief version of Watson et al.'s (1988) lexical positive and negative affect schedule, the International Positive and Negative Affect Schedule Short Form (I-PANAS-SF, Thompson 2007). The I-PANAS-SF was designed specifically for use with non-US and non-native English speakers. Like Watson et al.'s (1988) schedule, the I-PANAS-SF was developed to capture the two discrete and largely uncorrelated positive and negative dimensions of affect. Example items for negative affect are Upset, Hostile and Ashamed, and for positive affect example items are Alert, Inspired and Active. The stem question asks the extent to which respondents habitually feel the respective items which is indicated on a 5-point interval measure anchored with Never and Always. Reported Cronbach's alphas for internal consistency reliability range from .73 to .78 for positive affect, and from .72 to .76 for negative affect.

The fourth measure we used was Scheier et al.'s (1994) revised Life Orientation Test (LOT-R). This 6-item measure of dispositional optimism is often used as a proxy for happiness (Babinčák 2018; Dambrun et al. 2012; Ford et al. 2016; Oleś and Jankowski 2017; Wickramasinghe and Ahmad 2017), and comprises a balance of positively and negatively valenced statements such as "In uncertain times, I usually expect the best" and "If something can go wrong for me, it will". The measure contains distractor items to improve response diligence and measurement fidelity. Responses are on a 5-point strongly agree/strongly disagree interval measure, with Cronbach's alphas of internal consistency of .82 reported.

Luck Beliefs

We used the Belief in Luck and Luckiness Scale (Thompson and Prendergast 2013), whose Belief in Luck and Belief in Personal Luckiness subscales are conceptually and psychometrically discrete and uncorrelated. Unlike many earlier trait luck belief measures, the scale was systematically developed and extensively psychometrically validated, with its two subscales each exhibiting strong content validity, unidimensionality, temporal stability and convergent validity. The scale comprises 16 items, 4 of which are distractor items (e.g. I try hard to be nice), incorporated to improve response diligence and measurement fidelity. The two sub-scales each comprise 6 items, half positively and half negatively valenced, a design stated to reduce method variance (Baumgartner and Steenkamp 2001). The Belief in Luck sub-scale comprises items such as "Good and bad luck really do exist" and "Luck only exists in people's minds", and has reported Cronbach's alphas of internal consistency reliabilities ranging between α .79 and α .85. Example Belief in Personal

Luckiness items are “I generally have good luck” and “Bad luck happens to me often”, with Cronbach’s alphas of between $\alpha .88$ and $\alpha .89$ reported. Items are scored on a 5-point agree/disagree interval measure.

Five-Factor Personality Model

We used a refinement of Saucier’s (1994) 40-item lexical Big-Five measure, the International English Big-Five Mini-Markers (Thompson 2008). This was developed for use with all English-speaking populations - native and non-native English speakers - from both inside and outside North America, so is usefully applicable to our sample, as well as being relatively short compared to operationalizations that incorporate sub-dimensions and thereby large numbers of items that can deter respondents from full and diligent completion (DeYoung et al. 2007). Respondents are asked to score themselves compared to others of similar age and sex against 8 items for each of the five-factor personality model’s components. Example items are, for Extraversion, “Shy” and “Outgoing” ($\alpha .85-.92$); for Openness, “Intellectual” and “Unimaginative” ($\alpha .84-.85$); for Neuroticism, “Envious” and “Unworried” ($\alpha .77-.84$); for Conscientiousness, “Careless” and “Disorganized” ($\alpha .86-.90$); and for Agreeableness, “Sympathetic” and “Rude” ($\alpha .80-.86$). Items are scored on a 5-point semantic differential scale anchored Inaccurate and Accurate.

Controls

Research has found happiness determinants differ between males and females (Kanazawa and Li 2015), hence we controlled sex. Other research finds age influences happiness (Kozma et al. 1992), so we controlled age.

Analyses

Table 1 shows scale reliabilities and correlations. We examined variance inflation factors and found none above 2.9, well below the standardly acceptable threshold of 10, suggesting multicollinearity not to be a problem (Hair et al. 1995).

Analytical Approach

We use hierarchical regression analyses to test main and mediation effects, following widely accepted procedures outlined in Baron and Kenny (1986) and subsequently developed by others (MacKinnon et al. 2007; Zhao et al. 2010). Such procedures have been extensively used by psychology and happiness scholars with cross-sectional data like ours (Demir 2019; Oshio 2017; Rucker et al. 2011). Table 2 shows hierarchical regressions for each happiness-related measure. Model 1 in each case shows the association of luck beliefs

alone with the respective happiness measures, Model 2s show the association of the five-factor model alone with happiness measures, with Model 3s showing the association with each happiness measure of both the luck beliefs’ and the five-factor model’s dimensions combined.

Luck Beliefs and Happiness

Looking at the Model 1s, it can be seen that luck beliefs alone are significantly associated with each happiness measure, although this association varies by happiness measure, and the amount of variance explained is modest, with adjusted *R*-squares ranging between .06 and .37.

Belief in Luck has a significant and negative small beta in association with Happiness, and Optimism, and a significant small positive beta in association with Negative Affect, but an insignificant beta for Positive Affect. With the exception of this latter finding, these results lend support to our *Hypothesis 1*, that believing in luck is negatively associated with happiness.

Belief in Personal Luckiness has significant moderate-sized positive betas in association with Happiness, Positive Affect, and Optimism, and has a significant moderate-sized negative beta in association with Negative Affect, fully supporting our *Hypothesis 2*, that believing oneself to be personally lucky is positively associated with happiness.

Accounting for the Five-Factor Model

Model 2 for each happiness measure confirms the usually found relationship between the five factor model and happiness: Extraversion, Conscientiousness and Agreeableness are significantly positively associated with each happiness measure with the singular exception of Agreeableness on Positive Affect; Openness is either significantly but very modestly or insignificantly related to happiness; and Neuroticism is significantly negatively related to happiness. The amount of variance explained in happiness is modest to moderate, with adjusted *R*-squares ranging between .28 and .46, significantly more than the variance explained by luck beliefs alone for each happiness measure, with the exception of Optimism which shares significantly more variance with luck beliefs than the five-factor model.

Model 3 under each happiness measure shows that when luck beliefs and the five-factor model are entered together they share, combined, significantly more variance in each happiness measure than, respectively, they do separately. This suggests that both luck beliefs and the five factor model each share unique variance with happiness. However, under each of the happiness measures, the betas for both of the luck beliefs is reduced. For Belief in Luck, where it had a significant beta, the addition of the five-factor model makes these betas

Table 1 Inter-item correlations

	1	2	3	4	5	6	7	8	9	10	11	12	
1 Sex													
2 Age	.14**												
3 Belief in luck	-.03	-.06	.76										
4 Belief in personal luckiness	-.12**	.01	-.02	.89									
5 Extraversion	-.08*	-.02	-.04	.24**	.88								
6 Openness	.03	.01	-.05	.20**	.34**	.83							
7 Neuroticism	-.14**	-.14*	.20**	-.25**	-.18**	-.09*	.80						
8 Conscientiousness	.00	.16*	-.01	.21**	.16**	.21**	-.21**	.85					
9 Agreeableness	-.06*	.07*	-.01	.22**	.16**	.20**	-.27**	.25**	.80				
10 Happiness	-.04	.04	-.13**	.54**	.43**	.21**	-.49**	.26**	.34**	.85			
11 Positive affect	.02	.08*	-.02	.22**	.37**	.33**	-.06	.40**	.18**	.29**	.71		
12 Negative affect	-.01	-.13**	.12**	-.41**	-.35**	-.20**	.61**	-.28**	-.29**	-.61**	-.11**	.77	
13 Optimism	.01	.08*	-.09*	.60**	.33**	.26**	-.44**	.29**	.33**	.68**	.31**	-.53**	.79

Scale Cronbach’s alphas in italics on diagonal. Male coded 1. * $p < .05$, ** $p < .01$

Per Cohen (1992), for simple correlations, the effect size is the absolute value of the r-value, with those under 0.30 being regarded as small (or trivial if 0.10 or less)

insignificant. For Belief in Personal Luckiness, while it still retains a significant beta under each happiness measure when the five-factor model is added, all its betas are reduced, with decreases ranging between .14 and .21. By contrast, the components of the five-factor personality model each retain whatever significant betas they had, with changes in beta magnitude very small, ranging from decreases of .09 to increases of .02.

These findings lend no support to *Hypotheses 3 and 4*, that, respectively, Belief in Luck and Belief in Personal Luckiness will mediate the relationship between the five-factor model and happiness. To the contrary, these findings imply either that luck beliefs and the five-factor model confound each other’s association with happiness, or that the five-factor model in fact mediates the association of luck beliefs with happiness.

Table 2 Hierarchical regressions

Model	Happiness			Positive affect			Negative affect			Optimism		
	1	2	3	1	2	3	1	2	3	1	2	3
Controls												
Sex	.02	-.05	.00	.03	.04	.06	-.04	.05	.03	.07*	-.02	.04
Age	.02	-.03	-.02	.07*	.03	.03	-.11**	-.04	-.04	.06*	.01	.02
Luck												
Belief in luck	-.11**	–	-.05	-.01	–	-.02	.11**	–	.01	-.07*	–	-.02
Belief in personal luckiness	.54**		.37**	.23**		.09**	-.41**		-.20**	.61**		.46**
Personality												
Extraversion	–	.31**	.26**	–	.27**	.26**	–	-.21**	-.18**	–	.19**	.13**
Openness	–	.02	-.02	–	.17**	.16**	–	-.05	-.03	–	.11**	.06*
Neuroticism	–	-.38**	-.30**	–	-.09**	-.11**	–	.53**	.49**	–	-.33**	-.24**
Conscientiousness	–	.10**	.06*	–	.32**	.31**	–	-.10**	-.08**	–	.12**	.07**
Agreeableness	–	.15**	.12**	–	.05	.04	–	-.07**	-.05*	–	.15**	.11**
Adjusted R ²	.31	.39	.51	.06	.28	.30	.19	.46	.50	.37	.32	.50
ΔR ²		.08	.12**		.22**	.02**		.27**	.04**		-.05**	.18**
F statistic	93.84**	79.67**	97.94**	12.70**	48.30**	38.74**	49.87**	102.99**	91.12**	125.08**	56.61**	91.98**

* $p < .05$, ** $p < .01$. Standardized β is shown unless otherwise indicated. ΔR^2 from prior model

To examine this latter possibility we ran mediation analyses to explore which, if any, of the components of the five-factor model mediate, respectively, Belief in Luck and Belief in Personal Luckiness. We found that the only mediator of Belief in Luck’s association with happiness is Neuroticism. Table 3 shows that the significant betas of Belief in Luck for Happiness, Negative Affect and Optimism, shown in the Model 2s, become in each case insignificant when Neuroticism is added in the Model 3s.

However, separate mediation analyses for each component of the five-factor model found that the betas and significances of Belief in Personal Luckiness’ association each of the happiness measures remained essentially unchanged, suggesting none of the components of the five-factor model act as mediators.

To tease out how Belief in Personal Luckiness is related to happiness we examined the extent of variance they share, discrete from the five-factor model. Table 4 shows hierarchical regression analyses that demonstrate Belief in Personal Luckiness, unlike Belief in Luck, shares unique variance with each happiness measure that is not confounded by the five-factor model. While Belief in Luck adds no significant additional shared variance in any happiness measure beyond that of the five-factor model (Model 2s), Belief in Personal Luckiness adds additional significant variance (Model 3s).

Discussion

Luck Beliefs and Happiness

Our finding that Belief in Luck is broadly negatively associated with happiness is consonant with Maltby et al.’s (2008) suggestion that Belief in Luck is perhaps a maladaptive trait. Consequently, any notion of happy-go-lucky individuals cheerfully trusting to luck would seem to be inaccurate, at least if those individuals believe in luck as a non-random, deterministic and external phenomenon. Indeed, insofar as such individuals may irrationally trust to luck as a deterministic phenomenon, they would seem to do so unhappily not happily.

However, our finding that Belief in Personal Luckiness is positively associated with happiness tends to suggest the happy may indeed go lucky, in the sense that happiness and believing oneself to be lucky are associated. Of course, the relatively large size of associations we find here suggests that Belief in Personal Luckiness might in fact be a facet of an overall happiness construct. A possible implication of this is that Belief in Personal Luckiness’ association with any particular happiness measure could, perhaps, be fully accounted for by controlling other happiness measures. To investigate this possibility, we separately regressed each of the four measures of happiness on Belief in Personal Luckiness while simultaneously controlling for the three remaining happiness measures in each respective case, to see if Belief in Personal

Table 3 Mediation analyses for belief in luck and neuroticism

Model	Happiness			Positive affect			Negative affect			Optimism		
	1	2	3	1	2	3	1	2	3	1	2	3
Controls												
Sex	.05	.05	.00	.04	.04	.06	−.06	−.06	.03	.08**	.08**	.04
Age	.01	.00	−.02	.02	.02	.03	−.08**	−.08**	−.04	.04	.04	.02
Extraversion	.30**	.30**	.26*	.25**	.25**	.26**	−.24**	−.24**	−.18*	.16**	.16**	.13**
Openness	−.03	−.04	−.02	.16**	.16**	.16**	.00	.00	−.03	.05	.05	.06*
Conscientiousness	.08**	.09**	.06*	.30**	.30**	.31**	−.13**	−.13**	−.08**	.10**	.10**	.07**
Agreeableness	.18**	.18**	.12**	.02	.02	.04	−.15**	−.15**	−.05*	.16**	.16**	.11**
Belief in personal luckiness	.42*	.42**	.37**	.07*	.07*	.09**	−.29**	−.29**	−.20*	.51**	.50**	.46**
Mediated variable												
Belief in luck	−	−.10**	−.05	−	.00	−.02	−	.10**	.01	−	−.06*	−.02
Mediator												
Neuroticism	−	−	−.30**	−	−	−.11**	−	−	.49**	−	−	−.24**
Adjusted R ²	.43	.44	.51	.28	.28	.30	.29	.30	.50	.45	.45	.50
ΔR ²		.01**	.18**		.00	.02**		.01**	.21**		.00	.05**
F statistic	91.89**	83.76**	97.94**	47.67**	41.66**	38.74**	50.16**	45.85**	91.12**	97.60**	86.48**	91.98**

* $p < .05$, ** $p < .01$. Standardized β is shown unless otherwise indicated. ΔR^2 from Model 1s

Table 4 Unique contribution of belief in luck and belief in personal luckiness to happiness

Model	Happiness			Positive affect			Negative affect			Optimism		
	1	2	3	1	2	3	1	2	3	1	2	3
Controls												
Sex	-.05	-.05	.00	.04	.04	.06	.05	-.05	.03	-.02	-.02	.04
Age	-.03	-.03	-.02	.03	.03	.03	-.04	-.04	-.04	.01	.01	.02
Extraversion	.31**	.31**	.26*	.27**	.27**	.26**	-.21**	-.21**	-.18**	.19**	.19**	.13**
Openness	.02	-.02	-.02	.17**	.16**	.16**	-.05	.05	-.03	.11**	.11**	.06*
Neuroticism	-.38**	-.37**	-.30**	-.09**	-.09**	-.11	.53**	.53**	.49**	-.33**	-.33**	-.24**
Conscientiousness	.10**	.10**	.06*	.32**	.32**	.31**	-.10**	-.10**	-.08**	.12**	.12**	.07**
Agreeableness	.15**	.16**	.12**	.05	.05	.04	-.07**	-.07**	-.05*	.15**	.15**	.11
Belief in luck	–	-.10**	–	–	-.02	–	–	.00	–	–	-.00	–
Belief in personal luckiness	–	–	.37**	–	–	.09**	–	–	-.20**	–	–	.46**
Adjusted R ²	.39	.40	.51	.28	.28	.29	.46	.46	.49	.32	.32	.49
ΔR^2		.01	.22**		.00	.01**		.00	.03**		.00	.17**
F statistic	79.67**	69.80**	109.30**	48.30**	42.26**	43.57**	102.99**	90.01**	102.60**	56.61**	56.61**	103.50**

* $p < .05$, ** $p < .01$. Standardized β is shown unless otherwise indicated. ΔR^2 from Model 1s

Luckiness maintained a significant beta. Doing so we found Belief in Personal Luckiness is not associated with either Positive or Negative Affect. However, Belief in Personal Luckiness is still significantly associated with Happiness ($\beta = .09$, $p < .01$; $\Delta R^2 = .05$, $p < .01$), and Optimism ($\beta = .09$, $p < .01$; $\Delta R^2 = .06$, $p < .01$). This would seem to support, partly at least, that Belief in Personal Luckiness may represent either a facet of happiness or a discrete personality trait positively associated with happiness.

Luck Beliefs, Five-Factor Model and Happiness

Neither Belief in Luck nor Belief in Personal Luckiness appear from our findings to be mediators of the association between the five-factor model of personality and happiness.

Indeed, our analyses, in part, suggest the contrary: that Neuroticism fully mediates Belief in Luck's association with happiness. This does not imply that Belief in Luck necessarily 'causes' Neuroticism, but it is reasonable to speculate that the underlying irrationality and the lack of both agency and self-determination that would seem to underpin Belief in Luck also to some extent underpin or are facets of Neuroticism. This would be consonant with previous research demonstrating significant relationships between Neuroticism and locus of control (Judge et al. 2002; Morelli et al. 1979), self-determination (Elliot and Sheldon 1997; Elliot et al. 1997), and irrational beliefs (Davies 2006; Sava 2009).

We do not find evidence for any component of the five-factor personality model mediating Belief in Personal Luckiness' association with happiness, nor do we find evidence of any pronounced confounding effects between Belief in Personal Luckiness and the five-factor model and

their respective associations with happiness. Hence, considering Belief in Personal Luckiness to be a trait discrete from fundamental personality models would on the basis of our findings not seem unreasonable. Nor would it seem unreasonable to suggest that Belief in Personal Luckiness might potentially be either a facet of happiness or a personality trait discrete from but associated with not just the five-factor model but also happiness.

Our conclusions here certainly seem to apply with greatest saliency to the most direct measure of trait happiness we used, Lyubomirsky and Lepper's (1999) Subjective Happiness Scale, and to a lesser extent to Optimism, a measure closely allied with happiness (Brebner et al. 1995; Chaplin et al. 2010; Furnham and Cheng 2000; Salary and Shaeri 2013). However, while the pattern of relationships is broadly similar for both Positive Affect and Negative Affect, the effect sizes are smaller and either less significant or insignificant. This would suggest that, while both Positive Affect and Negative Affect are often used as proxies for happiness, they might perhaps best be regarded as constructs related to, rather than directly synonyms of, happiness.

Limitations and Further Research

While our research sheds new empirical light on the relationships between luck beliefs, happiness and the five-factor personality model, a number of limitations need to be kept in mind. As with any findings based on cross-sectional data, interpreting our findings in terms of directions of causality would be imprudent and, of course, constrained by the assumption of our research that happiness, luck beliefs, and the five-factor model are all personality *traits* rather than

individual difference *states*. Personality traits may, of course, be associated in systematic patterns, but the very notion of traits being essentially innate and non-manipulable, unlike individual difference states, intrinsically excludes the possibility that one might be ‘caused’ by another. To take the five-factor model as an example, its five personality traits have a well-established systematic pattern of associations, but it would be implausible to suggest any of the five in any mechanistic sense causes another: they exist together discretely, with none generally argued to be a facet or sub-component or effect of the other. This said, an area for further research might be to examine the effects of trait luck beliefs on *state* affect that varies temporally and is manipulable, so hence susceptible to theorization and testing using either longitudinal or experimental data.

A further limitation to our study relates to necessary caution in generalizing its findings in view of the deliberately homogeneous population we used. Further research to replicate our findings amongst heterogeneous populations in terms of nationality, occupation, and socio-economic status would be useful as it has been shown across multiple domains that psychological characteristics and their relationships may vary accordingly (Becker et al. 2012; Boyce and Wood 2011; John and Thomsen 2014; Rawwas 2000; Thompson and Phua 2005a, 2005b; Winkelmann and Winkelmann 2008). Furthermore, although each of the happiness and luck measures we employ have been individually validated across internationally diverse samples including Hong Kong Chinese, underlying conceptions of both are known to exhibit nuanced cultural differences (Lu and Gilmour 2004; Lu and Shih 1997; Raphals 2003; Sommer 2007), which conceivably could modify measured associations between them.

We also note that our study, in common with most research, has limitations due to the limited selection of measures with which we operationalized our investigation. We selected just four measures commonly used in studies of trait happiness, but several others exist, although some, like the Satisfaction with Life Scale (Diener et al. 1985) can arguably be regarded as assessing state rather than trait happiness. We also selected a five-factor model measure that, while not as potentially prone to poor measurement validity as extremely short measures, is sufficiently brief as to exclude examination of possible relationships of each of the big-five elements on a sub-component basis. Certainly given our findings in relation to Neuroticism, further research using multi-component measures of this dimension of the five-factor model might prove illuminating.

In addition, research examining possible mediation and moderation effects of cognate psychology constructs such as, for example, locus of control (Pannells and Claxton 2008; Verme 2009), illusion of control (Larson 2008; Erez et al. 1995), and gratitude (Sun and Kong 2013; Toussaint and Friedman 2009) might help further the understanding of relationships between luck beliefs, happiness, and the five-factor model.

Conclusion

Our findings make novel contributions to the understanding of how luck beliefs relate to, respectively and in combination, happiness and the five-factor personality model. We find broadly that Belief in Luck is negatively associated with happiness, and that this relationship appears mediated by the Neuroticism component of the five-factor personality model. We thus find no evidence that the ‘happy’ in fact ‘go lucky’ in the sense of believing in luck. To the contrary, a belief in luck would seem to be a trait manifesting itself as an element of Neuroticism and its suite of negative and maladaptive psychology traits that are linked to unhappiness. By contrast, we find that Belief in Personal Luckiness is positively associated with measures of happiness, and that this association is not substantially confounded by the five-factor personality model. Belief in Personal Luckiness would seem perhaps, therefore, to represent a unique facet of happiness. Taken together, these findings could lend support to a more accurate, if less elegant, aphorism that, broadly: though luck believers aren’t happy, those who believe themselves lucky are.

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Compliance with Ethical Standards

Conflict of Interest The conduct, resourcing and reporting of this research neither entailed nor entails any conflicts of interest.

Ethical Treatment of Experimental Subjects (Human) All procedures performed in studies involving human participants were in accordance with the ethical standards of the following: the University of Bath’s *Code of Good Practice In Research Integrity* (<http://www.bath.ac.uk/research/governance/ethics/%20>, 2016) and University of Bath Research Ethics Committee (University of Bath, 2016, *ERIAI Approval*, 20/07/16); the Human (non-clinical) Research Ethics Panel, Hong Kong Baptist University Research Ethics Committee; and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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