AN APPLICATION OF BELIEF-IMPORTANCE THEORY WITH REFERENCE TO THE BIG FIVE AND TRAIT EMOTIONAL INTELLIGENCE

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In this article the basic principles of belief-importance (belimp) theory are described, according to which it is hypothesized that personality traits confer a propensity to perceive convergences and divergences between an individual's belief that he/she can attain certain goals and the importance that he/she places on these goals. Belief and importance are conceptualized as 2 coordinates, together defining the belimp plane. Within the belimp plane 4 distinct quadrants can be identified (hubris, motivation, depression, and apathy) and in the present study (*N* = 532) the hypothesis is tested that these broadly correspond to the personality dimensions of trait emotional intelligence, conscientiousness, neuroticism, and introversion. Twelve specific hypotheses were advanced, of which 10 were fully borne out by the data and 2 partially. The results are interpreted with emphasis on the theoretical and practical advantages of belimp theory.

Keywords: belimp theory, Big Five, trait emotional self-efficacy, expectancy-value models, Trait Emotional Intelligence Questionnaire-Short Form.

According to belief-importance (belimp) theory personality traits confer on individuals a propensity to perceive convergences and divergences between their belief that they can attain goals and the importance that they place on these goals (see also Petrides, 2010). In this article an introduction to belimp theory is presented and it is tested in relation to numerous personality traits.

Belief and importance are conceptualized as two coordinates that define the belimp plane. Although they are depicted as orthogonal, in practice the two

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This article is dedicated to the memory of Hans J. Eysenck.
Appreciation is due to anonymous reviewers.
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coordinates will often be correlated because people tend to invest more in goals that they value. Aspects of, mainly, conscientiousness and introversion confer a tendency to move towards the belimp axis of symmetry (see Figure 1), while aspects of, mainly, neuroticism and trait emotional intelligence (trait EI) confer a tendency to move away from the axis. Divergence from the axis creates residuals that can be either positive (belief > importance) or negative (belief < importance). It is postulated that personality traits determine both the individual's location on the axis of symmetry (high or low) and the direction of the residuals (positive or negative).

The two belimp coordinates are individually, as well as jointly, exposed to the effects of personality traits. Despite pronounced differences in value hierarchies, this author believes that certain traits (e.g., aspects of conscientiousness) predispose those people who possess these traits towards taking life more seriously than others and, thus, placing relatively high importance on multiple life domains (attractiveness, family, security, work, etc.). Contrary to the view that confidence is essentially task dependent (Bandura, 1997), this author believes that certain personality traits (e.g., aspects of trait EI) predispose those who possess these traits towards being generally confident.

EXPLANATION OF THE BELIMP PLANE

Four quadrants are conceptualized within the belimp plane and, for heuristic purposes, labeled in terms of affect and motivation (see Figure 1). Clockwise from top left, are the quadrants of hubris (excessive pride or presumption), motivation, depression, and apathy, loosely corresponding to the personality dimensions of trait emotional intelligence, conscientiousness, neuroticism, and introversion. The hubris quadrant is an indicator of unconventionality (because it is unusual not to be interested in major life domains, even when the individual believes he/she can excel in them), the motivation quadrant suggests conventionality (because people generally are socialized to achieve in major life domains), the depression quadrant suggests humility (because it requires modesty to admit low confidence in life domains that the individual accepts as important), and the apathy quadrant suggests detachment (because it requires a certain degree of lack of interest to have low confidence and be indifferent to major life domains). The labels are heuristic and are intended to highlight connections between belimp processes and established dimensions of personality. These connections relate to specific facets of the dimensions, and not necessarily to their global scores, which often represent an amalgamation of rather disparate constructs.

A belimp quadrant assumes focal status when it becomes the most relevant theoretically in a particular analysis. When the criterion concerns self-confidence, the focal quadrant is hubris, when it concerns achievement, the focal quadrant is

motivation, when it concerns indifference, the focal quadrant is apathy, and when it concerns negative affect, the focal quadrant is depression.

Two different types of belimp plane can be identified: the conditional belimp plane, of which there are many, and the master belimp plane, of which there is only one. The former are planes specified in relation to a particular life domain and, therefore, conditional upon it. The latter is a hypothetical plane arising from averaging conditional planes over multiple life domains. An individual's position in the master belimp plane represents that person's typical belimp position.

Conditional belimp planes can be either concordant or discordant in relation to the master belimp plane and, more implicatively, in relation to a criterion. The degree of concordance between a conditional plane and the master plane can only be determined empirically (depending largely on the individual's value hierarchy), whereas the degree of concordance between a conditional plane and a particular criterion can be determined conceptually.

Mapping Personality Dimensions onto Belimp Quadrants

Positions on belimp quadrants cannot be mapped injectively onto broad bandwidth personality dimensions because the latter often lack the necessary psychological coherence. In the quest for comprehensiveness, personality dimensions have been expanded hugely to incorporate heterogeneous concepts (e.g., sociability, activity, and impulsivity within extraversion; depression, hostility, and self-consciousness within neuroticism). What is more, their strictly empirical construction (Block, 1995) probably rules out the discovery of explicit processes underpinning the entire spectra of these dimensions.

Since the mapping between belimp quadrants and personality dimensions is noninjective, no single dimension can be conceived of as the preserve of any one quadrant. It is important to remember this, especially when using the ANOVA approach to testing the theory. For example, it should not be presumed that an individual's scores on conscientiousness-related variables will be significantly higher in the motivation quadrant than in the other three quadrants in every life domain, since aspects of conscientiousness may well be implicated in all four quadrants. Nevertheless, it could be expected that over a number of randomly drawn life domains, an individual's pooled scores in the motivation quadrant will at least be numerically higher than in the other quadrants.

Dominant Personality Traits

Central in belimp theory is the hypothesis that a person's position in a conditional plane will be a function of his/her personality, the life domain under consideration, and other undetermined factors that are probably of minor influence. Averaging an individual's scores over multiple conditional planes

will cause all effects to cancel out, except those of that individual's dominant personality traits. These are expected to act as determinants of this person's typical position in the master plane (from which positions in conditional planes will deviate to varying extents).

Because of the hypothesized role of personality traits in determining conditional plane positions, it was predicted in this study that the classification of individuals into belimp quadrants, particularly their outer regions (see Figure 1), would show statistically significant evidence of stability. The fact that both personality and life domains will affect an individual's position in conditional planes means that according to this theory there is allowance for a simultaneous consideration of traits and contexts. A corollary of this advantage is quadrant migration, whereby an individual can be classified away from their typical quadrant as a part function of the life domain, with the effects of personality acting as stabilizers across classifications.
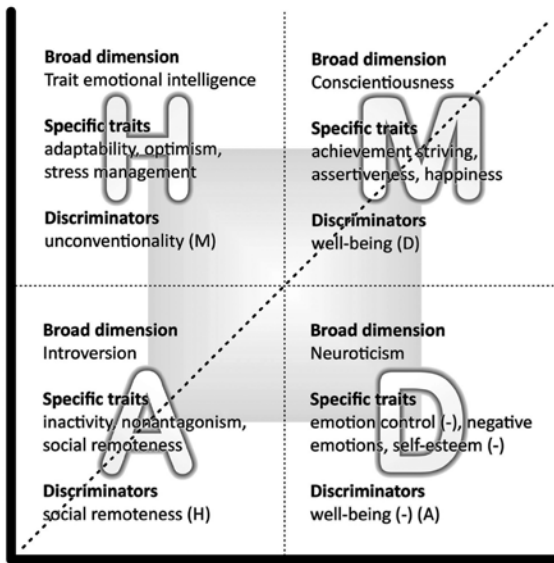

Figure 1. The four belimp quadrants (hubris, motivation, depression, and apathy), and the personality dimensions and specific traits that may underpin them are shown. Because dimensions and traits will often cut across quadrants, a discriminating trait for each quadrant is presented that helps distinguish it from adjacent quadrants. The axis of symmetry (diagonal line) and the inner and outer belimp plane regions (shaded and unshaded, respectively) are also depicted in the figure.

STRATEGIES FOR TESTING BELIMP THEORY

Three complementary statistical procedures can be used to test belimp theory. The first entails one-way ANOVAs, followed by post hoc tests. This approach

has the advantages of simplicity and comparatively smaller sample size requirements. Four groups can be derived from a 2x2 table combining high and low scores on the two coordinates of belief and importance. For an analysis of the whole belimp plane, the classification can be done based on mean or median splits (median values will often be higher owing to likely negative skewness). For an analysis of the outer regions, a type of partile- or *SD*-based classification is possible. In practice, the process will vary across studies as a function of the distributions of the belimp coordinates (with complications potentially arising from leptokurtosis). Splits based on theoretical means should be avoided because they could be severely misaligned in relation to empirical means. In due course, it may be desirable to develop standardized belimp instruments to aid the classification process.

The second procedure for testing belimp theory is moderated multiple regression (MMR) with belief, importance, and their multiplicative interaction as the regressors. This complements the ANOVA approach by shedding light on how belimp positions relate to the dependent variables. It is not recommended as the sole testing approach owing to its greater demands with regard to sample size.

The third approach to testing belimp theory is via latent variable (LV) modeling. This takes into account measurement error in the variables. However, it requires a sample even larger than MMR. Conventional LV models are not suitable owing to the nonlinearity of the interaction terms and, thus, numerical integration methods must be used instead (Klein & Moosbrugger, 2000).

All three data analytic procedures can be applied to both whole plane and outer region data. Clearer results are expected in the latter case because outer regions ought to be less affected by quadrant migration. The three approaches vary in their focus and should be thought of as complementary (the main contrast being between the group differences approach of the ANOVA and the interaction approach of MMR and LV modeling). The order of the four groups in the ANOVA and the sign of the interaction terms in the two other approaches are of interest, in addition to formal tests of statistical significance. In this study the expectation was that the focal quadrant would emerge with the highest (or lowest) score and that the sign of the interaction would be in the hypothesized direction. Thus, the order of the group means in the ANOVA and the signs of the interaction terms in the MMR and LV modeling approaches carry empirical weight and can be interpreted over and above any statistically significant results.

THE NATURE AND CONSEQUENCES OF LIFE DOMAINS

Life domains can be construed *as intelligible regions of life experience* (Campbell, Converse, & Rodgers, 1976). Because life domains are partial mediators or moderators of personality traits, a life domain taxonomy along the

lines proposed by Cummins (1996), would help to predict positions in conditional places with greater precision. However, use of such a taxonomy would also involve the mapping of life domains onto meaningful dimensions, so that their differences may be quantified (competitive versus cooperative, individualistic versus collectivist, etc.).

In belimp theory, life domains must be relatively broad. Such stability as belimp classifications may exhibit will be the result of cross-contextual consistency in the effects of personality traits. Consequently, it is necessary that life domains be sufficiently general to allow mental aggregation over multiple narrow facets, each of which will be far less susceptible to the influence of personality than the domain as a whole. For example, personality is a stronger predictor of overall work performance than of specific job task performance that is affected by a multitude of variables and random factors (Motowidlo & Van Scotter, 1994). Belimp theory, then, is aligned to the trait self-efficacy perspective on confidence (Petrides, Pita, & Kokkinaki, 2007) and is fundamentally different from Bandurian self-efficacy (Bandura, 1997), which concerns highly specific tasks that may, or may not, be psychologically important.

Life domains must also be conducive to the elicitation of individual differences in belief and importance. Restrictive domains that constrain individual differences and lead to leptokurtic distributions with reduced variance in either coordinate are less suitable for testing the theory. Variance restriction may also result from the use of homogeneous samples, whose members share common goals and perspectives (adherents of a religion, a group of patients, pupils at a college, voters of a particular persuasion, etc.).

Finally, it is evident that life domains should be potentially appealing and within the individual's control. It is not sensible to use domains focusing on failure ("It is important to me to be poor"), not least because ratings on the belief coordinate would then be paradoxical ("I really believe I can be poor"). Domains that are far removed from the individual's personal sphere of influence ("It is important to me to live in an ethical society") may also be problematic for the belief coordinate ("I really believe I can live in an ethical society").

AN EMPIRICAL TEST OF BELIMP THEORY

The current study was designed to test central hypotheses of belimp theory and was predicated on the life domain of appearance. In terms of dependent variables, the study focused on the Big Five and some of their facets as well as on trait emotional intelligence (trait EI or trait emotional self-efficacy). The Big Five are adjective-driven and do not require an introduction, while *trait EI* essentially concerns confidence in one's emotional abilities and is formally defined as *a constellation of emotional self-perceptions located at the lower levels of personality hierarchies* (Petrides et al., 2007).

Following the theory as outlined above, 12 hypotheses were advanced. The first and last were based on trait EI (TEIQue-SF; Petrides, 2009; Petrides & Furnham, 2006), whilst the others were based on the Big Five and their facets (Costa & McCrae's 1992 NEO-FFI and Saucier's 1998 item clusters).

H1a: The hubris quadrant will have the highest score on global trait EI
H1b: The hubris quadrant will have the highest score on positive affect
H2a: The motivation quadrant will have the highest score on conscientiousness
H2b: The motivation quadrant will have the highest score on goal-striving
H2c: The motivation quadrant will have the highest score on orderliness
H3a: The depression quadrant will have the highest score on neuroticism
H3b: The depression quadrant will have the highest score on negative affect
H3c: The depression quadrant will have the highest score on self-reproach
H4a: The apathy quadrant will have the lowest score on extraversion
H4b: The apathy quadrant will have the lowest score on activity
H4c: The apathy quadrant will have the lowest score on Big Five sociability
H4d: The apathy quadrant will have the lowest score on trait EI sociability

METHOD

PARTICIPANTS

Five hundred and thirty-two individuals, of whom 300 were male, participated in the study. The mean age of the sample was 30.27 years (SD = 11.28 years). The participants were highly educated, with 61.7% of participants having a university degree. With respect to marital status, 32.4% of participants were single, 37.9% were married, 1.2% were widowed, 5.5% divorced, and 23% cohabiting.

MEASURES
Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF; Petrides, 2009; Petrides & Furnham, 2006). This is a 30-item questionnaire designed to measure global trait EI. Two items from each of the 15 facets of the full form of the TEIQue were selected for inclusion, based primarily on their correlations with the corresponding total facet scores. This procedure was followed in order to ensure adequate internal consistencies and broad coverage of the sampling domain of the construct. The study was focused on global trait EI and its well-being and sociability factors, the internal consistencies of which are reported in Table 1.
Neuroticism Extraversion Openness – Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). The NEO-FFI is a shortened version of the NEO Personality Inventory-Revised. It is composed of 60 items, 12 for each of the five dimensions of adult personality: neuroticism, extraversion, openness to

experience, agreeableness, and conscientiousness. In addition to scores on the five higher order factors, facet (item cluster) scores were also derived following the procedures outlined in Saucier (1998). The internal consistencies of the five factors and item clusters are given in Table 1.

Belimp instrument   A single life domain was assessed with five questions concerning the belief that certain goals relating to one's appearance can be attained ("I really believe I can be attractive") and five matching questions concerning the importance placed on those goals ("It is important to me to be attractive"). The alphas for the two scales were .82 and .87 respectively.

RESULTS

ANALYSIS OF VARIANCE APPROACH: FULL BELIMP PLANE

Detailed results from the ANOVA approach, including Tukey post hoc tests, are given in Table 1, and a broad qualitative summary of the main findings is presented in the text. The four groups in Figure 1 were derived by combining high and low scores on belief and importance using mean splits. Seventy-six participants were classified into the hubris quadrant, 195 into the motivation quadrant, 86 into the depression quadrant, and 175 into the apathy quadrant.

In order to test the study hypotheses, 12 one-way ANOVAs were performed, all of which reached statistical significance (see Table 1). H1a and H1b were fully supported, with the hubris quadrant showing the highest scores on global trait EI and positive affect. Multiple post hoc comparisons reached significance (see Table 1). H2a was only partially supported, since motivation had the second highest score, after hubris, on conscientiousness. H2b and H2c were fully supported, with motivation scoring highest on goal striving and orderliness. Multiple post hoc comparisons reached significance. H3a-H3c were fully supported, with depression having the highest scores on neuroticism, negative affect, and self-reproach. Multiple post hoc comparisons reached significance. H4a-H4c were fully supported, with apathy scoring lowest on extraversion, activity, and sociability (NEO-FFI). However, H4d was only partially supported, since apathy had the second lowest score, after depression, on TEIQue-SF sociability.

A set of comparisons that are important for belimp theory, but which were not included in the hypotheses, concerned the discriminators in Figure 1. In every case, these worked as expected, with hubris scoring higher than motivation on unconventionality, motivation scoring higher than depression on trait EI well-being, depression scoring lower than apathy on trait EI well-being, and apathy scoring lower on sociability (both NEO and TEIQue-SF) than hubris.

TABLE 1
DESCRIPTIVE STATISTICS AND ONE-WAY ANOVA RESULTS

Variable	Hubris (h)	Motivation (m)	Depression (d)	Apathy (a)	F	Tukey post-hoc tests
Global trait EI (.88)	5.32	5.03	4.62	4.85	16.06	h> a, d, m; a, m> d
	(.65)	(.68)	(.71)	(.73)		
Trait EI Sociability (.64)	5.30	5.01	4.48	4.71	16.25	h> a, d, m*; m> a, d
	(.88)	(.81)	(.93)	(.85)		
Trait EI Well-being (.80)	5.72	5.43	4.88	5.16	11.77	h> a, d, m> a*
	(.86)	(.99)	(1.04)	(1.05)		
Neuroticism (.82)	17.52	21.65	26.72	21.55	17.99	d> h, m, a; a, m> h
	(8.24)	(7.90)	(7.61)	(8.25)		
Negative affect (.64)	9.05	10.59	12.44	10.37	11.30	d> h, m, a; a*, m> h
	(4.38)	(3.84)	(3.12)	(3.69)		
Self-reproach (.78)	8.47	11.07	14.27	11.18	16.21	d> h, m, a; a, m> h
	(5.09)	(5.16)	(5.42)	(5.54)		
Extraversion (.72)	30.46	30.30	28.25	27.45	8.07	h, m> a; m> d*
	(6.05)	(5.85)	(7.08)	(6.44)		
Positive affect (.65)	11.21	10.62	9.51	9.70	7.06	h, m> a, d
	(2.65)	(2.87)	(3.19)	(3.28)		
Sociability	9.24	9.44	9.26	8.79	16.25	-
(NEO-FFI; .49)	(2.86)	(2.62)	(2.96)	(2.87)		
Activity (.56)	10.00	10.24	9.47	8.97	7.76	m, h> a
	(2.76)	(2.55)	(2.96)	(2.50)		
Conscientiousness (.84)	32.44	32.04	28.65	31.03	4.71	h, m, a*> d
	(6.83)	(7.53)	(7.60)	(7.96)		
Goal striving (.68)	8.44	8.46	7.67	7.75	4.25	m> a, d*
	(2.17)	(2.33)	(2.41)	(2.40)		
Orderliness (.68)	12.17	12.48	10.54	12.21	5.15	m, a> d
	(3.69)	(3.85)	(3.77)	(4.20)		
Unconventionality (.53)	12.40	11.96	12.14	11.64	1.01ns	-
	(3.52)	(3.60)	(2.95)	(3.31)		

Note: All statistical tests were significant at either $p < .05$ or $p < .01$, except where marked with asterisks indicating significance at $p < .05$, one-tailed. Degrees of freedom for all ANOVA numerators were 3 and for denominators ranged between 524-528, depending on missing data. *ns* = non-significant.

MODERATED MULTIPLE REGRESSION: FULL BELIMP PLANE AND OUTER REGIONS

This analysis allows for a complementary understanding of the link between belimp discrepancies and affect, mood, and action. It is more challenging methodologically than the ANOVA approach in terms of both sample size requirements and the reliability demands it imposes on all variables, especially the criteria. An application is illustrated here with reference to the personality dimension of neuroticism.

The interaction between importance and belief approached significance levels ($R^2_{adj} = 0.14$; $F_{(3, 524)} = 29.62$, $p < .05$; $t_{belimp} = 1.85$, $p < .07$), with increasingly negative belimp residuals linked to increasingly higher scores on neuroticism. The same analysis was conducted on the subsample from the outer regions of the belimp plane ($SD \approx +/- 0.5$; see Figure 1). As hypothesized, this led to a somewhat stronger interaction effect ($R^2_{adj} = 0.16$; $F_{(3, 257)} = 18.86$, $p < .01$; $t_{belimp} = 1.93$, $p < .06$) confirming that the theory is likely to receive even clearer support in the outer regions of the plane, where classifications tend to be more stable.

LATENT VARIABLE MODELING: FULL BELIMP PLANE

In this analysis measurement error in the exogenous and endogenous variables could be taken into account, although it requires still larger sample sizes than the MMR approach and cannot be handled by conventional structural equation modeling owing to the nonlinearity of the interaction terms (Klein & Moosbrugger, 2000). Once again, an application is illustrated here with reference to neuroticism, which was modeled as an endogenous variable with *negative affect* and *self-reproach* as its indicators and with the two belimp coordinates as the exogenous variables, each comprising five items. Numerical integration methods based on full information maximum likelihood estimation (Muthén & Asparouhov, 2003) were applied and yielded a statistically significant interaction term ($b_{belimp} = .00062$, $p < .05$). Purely from a data analytic perspective, it is interesting to note that this interaction was not significant when the data were analyzed via MMR.

DISCUSSION

Virtually all ANOVAs revealed statistically significant differences between the four groups and 10 out of 12 hypotheses were supported. In those cases where hypotheses were not corroborated, the focal quadrant was always second (instead of first) in the hypothesized order. These results strongly support the hypotheses, particularly when it is considered that the internal consistencies of some dependent variables were not as high as expected.

Certain findings are especially notable: first, the positive association between conscientiousness and the motivation quadrant because, prima facie, the life domain of appearance bears little affinity to goal striving, ambition, or determination. For the same reason, the association between extraversion (especially its activity component) and the apathy quadrant was impressive. The link between trait EI and the hubris quadrant is also noteworthy because it suggests that perceived well-being may be equally or even more closely related to confidence in achieving goals than it is to achievement per se. If replicated, this finding may be at odds with theories in which it is predicted that well-being arises predominantly as a result of setting, pursuing, and achieving challenging goals.

One hypothesis that was only partially borne out by the data concerned trait EI sociability, in that the apathy quadrant had the second lowest score after depression. Such irregularities are readily accommodated in belimp theory, since it is not expected that all of the properties of every quadrant will emerge in all conditional belimp planes. What is especially interesting in this case, however, is that this particular hypothesis was fully supported when tested in relation to NEO sociability. This demonstrates how variation in the content of scales measuring identically labeled constructs can lead to discrepancies in belimp results. More generally it highlights the importance of operational definitions in science (Bridgman, 1927).

For illustrative purposes, the data on neuroticism were analyzed through moderated multiple regressions and also through latent variable modeling. These analyses also supported the hypotheses, showing that increasingly negative residuals (belief < importance) on the conditional plane of attractiveness are associated with higher scores on neuroticism. In line with belimp theory, this result suggests that those high in neuroticism are more likely than stable individuals to perceive discrepancies between what they value and what they believe they can attain. The MMR and LV modeling results show that the greater the negative residuals are, the higher the neuroticism levels. In other words, there is a bilinear interaction between the coordinates of belief and importance, exactly as hypothesized in belimp theory. A limitation of this study is that it is based on a single life domain (appearance). Obviously, these results must be replicated with other planes.

Belimp theory has the potential to make important theoretical and practical contributions, one of which is the introduction of efficiencies, and perhaps also improvements over existing personality inventories, in our ability to predict behavior. This is expected, first, because the belimp mechanism is a more proximal determinant of behavior than is personality and, second, because position on a concordant belimp plane will reflect both one's personality traits

and also one's attitudes towards a context (life domain), thus carrying more information than either personality or context alone.

The predictive power of belimp theory in relation to a particular criterion will be progressively enhanced as life domains become more concordant, and maximized when the life domain matches the criterion (e.g., work as the life domain with job performance as the criterion). Personality is a distal determinant of behavior and the mechanisms through which it affects behavior are largely unknown. If such mechanisms were to be successfully isolated, they should prove to be significant mediators (Baron & Kenny, 1986) of personality traits. In fact, because concordant belimp planes are hypothesized as more proximal and partially contextualized determinants of behavior, there may be instances where they emerge as full mediators and perhaps even as incremental predictors.

Belimp theory could possibly also be used advantageously as a guide to developing behavior modification programs. Some scholars view personality traits as deterministic owing to their high temporal stabilities, particularly after the individual has reached the age of 30 (Terracciano, McCrae, & Costa, 2006), and the underwhelming efficacy of interventions designed to change them (Costa & McCrae, 1986). Interventions targeting the belimp mechanism could moderate the effects of personality traits without necessarily aiming to change the traits themselves. Our incomplete understanding of the determinants of personality, beyond general quantitative facts about gene-environment influences, currently renders the second option elusive.

Further work will be required to refine and, quite likely, amend aspects of belimp theory, and it is important that this work be firmly rooted in empirical research. Should belimp theory, or a version thereof, survive further empirical testing, a general mechanism for linking personality traits to affect, motivation, and action will be available to those working in related fields.

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