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Affective States and the Notion of Happiness:

A Preliminary Analysis

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Abstract

Large-scale social surveys typically elicit levels of happiness and/or life satisfaction. This paper studies how such reports of happiness and life satisfaction are related to measures of positive affect (PA) and negative affect (NA). Major findings are the following: (1) PA and NA levels jointly predict *happiness* better than they predict *life satisfaction.* (2) PA levels predict *happiness* better than do NA levels. (3) NA levels predict *life satisfaction* better than do PA levels. (4) The PA items that predict *happiness* <u>include</u> those that predict *life satisfaction* (but not vice versa). (5) The NA items that predict *happiness* are <u>distinct</u> from those that predict *life satisfaction*. The study contributes to the literature by characterizing reported happiness and life satisfaction in terms of the specific positive and negative affects involved, thus clarifying their respective affective state content. Finding (4) is consistent with the mediator model of affective and cognitive well-being, according to which people in part directly rely on the affective component to judge life satisfaction. Our results are robust to several methodological strategies, but preliminary with regard to the small sample size (N = 144).

Keywords: happiness; life satisfaction; positive affect; negative affect; social welfare

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1. Introduction

Happiness, understood as a popular label for subjective well-being (SWB), is increasingly recognized as a measure of social welfare in both the social sciences and in public policy. With respect to the use of happiness data in (one) social science, Frey (2008) speaks of "A Revolution in Economics". With regards to the design and evaluation of public policy, using subjective measures of well-being has recently been advocated by a group of renowned economists in a report to the French president (Stiglitz et al. 2009).

Consistent with this trend, SWB questions are included in practically all large-scale social surveys around the world. These questions usually take the form of simple single-item life satisfaction questions ("How satisfied are you with your life?") and/or happiness questions ("How happy are you?"). These types of question correspond to the SWB components cognitive well-being (CWB) and affective well-being (AWB), which are based on subjective evaluation theories of well-being and on hedonic theories of well-being, respectively (Sumner 1996).

The relation between CWB and AWB (and likewise their empirical counterparts, reported life satisfaction and reported happiness) is of considerable importance for the scientific study of well-being and for the use of well-being for public policy purposes. In particular, if AWB and CWB are distinct types of well-being, it is unclear which one might be (more) relevant for public policy (Schimmack et al. 2008).

Despite its importance, the evidence concerning the relation between cognitive and affective well-being is limited. While they correlate positively with each other, their determinants seem to differ (Schimmack 2007). Specifically, AWB is better predicted by personality (e.g. neuroticism) than is CWB, whereas CWB is better explained by external factors (e.g. unemployment) than is AWB (Schimmack et al. 2008). There is also evidence that people in part rely on the affective component to judge life satisfaction, as is maintained

by the mediator model of the CWB-AWB relationship (Suh et al. 1998, Schimmack et al 2002).

In addition to the relation between CWB and AWB, an important issue relates to the widespread practice of measuring AWB in terms of a simple single-item question. While this practice, which is common in general purpose social surveys, may be defended by considerations of parsimony, it has been vigorously criticized for the vagueness and ambiguity involved in asking people how happy they are (Haybron 2013).[1]

One way of addressing this issue is to ask people about their definition of "happiness". Following such an approach, Delle Fave et al. (2011) found in a multi-country study that people's definition of happiness most frequently fell into the category of psychological balance and harmony, followed by the category of positive feelings and emotions. The latter is broadly consistent with an "affective state theory of happiness" (Haybron 2000), which emphasizes "non-trivial" emotions (as opposed to mere pleasure) as the defining ingredient of the notion of happiness.

The present paper addresses both of the issues discussed above: (a) the meaning of *happiness*, operationalized as the answer to the question "Taking all things together, how happy are you in general?" and (b) the relation of *happiness* (operationalized this way) to *life satisfaction*, operationalized as the answer to the question "Taking all things together, how satisfied are you with your life in general?" Motivated by the affective state conception of happiness (Haybron 2000), it does so by studying how the two variables are related to common measures of affective state from the Positive and Negative Affect Schedule (Watson et al. 1988). Specific research questions addressed this way are the following:

- What are the contributions of positive affect (PA) and negative affect (NA) to *happiness* and *life satisfaction*, respectively?

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[1] In contrast to an unspecific notion of "happiness", Haybron (2013) deems "satisfaction with life", elicited in an analogous fashion, to be a meaningful concept.

- What are the specific affective states involved in *happiness* and *life satisfaction*?

- What are the implications (if any) for theories of the CWB-AWB relationship?

To address these questions we used data collected among undergraduate students in Germany (N = 144) to determine the sign, significance and strength of the association between *happiness*/*life satisfaction* and affective states, using both correlation and regression analysis. Our main findings can be summarized as follows: (1) PA and NA levels jointly predict *happiness* better than they predict *life satisfaction.* (2) PA levels predict *happiness* better than do NA levels. (3) NA levels predict *life satisfaction* better than do PA levels. (4) The PA items that predict *happiness* <u>include</u> those that predict *life satisfaction* (but not vice versa). (5) The NA items that predict *happiness* are <u>distinct</u> from those that predict *life satisfaction*.

Our paper seems to be the first that investigates the differential relation between positive and negative affect and commonly used measures of happiness and life satisfaction within a single study. It is similar and complementary to studies which measure the relationship between internal (personality) and external (environmental) factors on the one hand and affective and cognitive well-being on the other (Schimmack et al. 2002, Schimmack et al. 2008). The study contributes to the literature by characterizing *happiness* and *life satisfaction* in terms of the specific positive and negative affects involved, thus clarifying their respective affective state content. Our findings regarding positive affect are broadly consistent with the mediator model of affective and cognitive well-being, in the sense that the positive affective states that are relevant for the former *include* those that are relevant for the latter. By contrast, the negative affective states that are relevant for affective well-being are distinct from those that are relevant for cognitive well-being.

The rest of the paper is structured as follows. Section 2 discusses the related literature. Section 3 describes the methodology. Sections 4 and 5 report and discuss the results. Section 6 concludes.

2. Related Literature

2.1 Philosophical Accounts of Happiness

With the rise of empirical happiness research over the past decades there has been a renewed interest in philosophical theories or conceptions of happiness. The main distinction in this literature is between objectivist accounts in the Eudaimonic tradition, which discuss criteria for the meaningfulness of life, and subjectivist (psychological) accounts, which are concerned with psychological happiness (Delle Fave et al. 2011, Haybron 2013).

With regards to psychological happiness, the question as to its nature and significance is controversial. In an influential, article Haybron (2000) proposed an "affective state theory of happiness", which characterizes happiness in terms of "non-trivial" affective or emotional conditions.[2] Haybron (2013) differentiates this conception from a conception that focuses on a favorable attitude toward one's life – the life satisfaction theory. This differentiation arguably corresponds to the one between affective well-being and cognitive well-being common in psychology.[3]

The affective state and life satisfaction conceptions differ not only in terms of content, but also with respect to measurement. With regards to the measurement of happiness as an emotional state, Haybron (2013) harshly criticizes the practice, common in social surveys, of asking people a simple, single-item happiness question: "… asking people how happy they

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[2] Haybron changed the labels of his conception from "affective state theory" (Haybron 2000) to "emotional state theory" (Haybron 2013). We use the terms interchangeably unless stated otherwise.

[3] A third category in Haybron's classification is hedonism, which focuses on pleasure and which he differentiates from his affective state view on the grounds of hedonism's reliance on emotions that are (a) trivial or "peripheral" and (b) conscious (Haybron 2013). Other conceptions abound, such as "preference satisfaction theory" (Gauthier 1967, Davis 1981), "objective happiness" (Kahneman 2000) and "attitudinal hedonism" (Feldman 2012).

are is a nonstarter" because of the vagueness and ambiguity involved. This is different with life satisfaction: "Seeking reports of life satisfaction in unambiguous language is a way to let people judge their lives by their own standards. But handling people a question of obscure meaning and letting them sort out before answering whatever they guessed the query to be is a rather different project …" (Haybron 2013).

One way of addressing the vagueness and ambiguity of simple happiness questions is by directly asking people about their definitions of "happiness" (see subsection 2.2). Another approach, pursued in the present study, is by exploring the empirical relationship between simple scores of people's reported happiness and their affective (emotional) states.

2.2 Folk Definitions of Happiness

Delle Fave et al. (2011) asked 666 individuals in Australia, Croatia, Germany, Italy, Portugal, Spain and South Africa to define happiness in their own words. Responses referred to specific life domains (e.g. describing happiness as job stability or being healthy), but also to psychological conditions. Responses relating to life domains and to psychological conditions occurred in similar percentages. The life domains most frequently mentioned were Family (29 percent) and Interpersonal Relations (26.9 percent). The psychological components of happiness were grouped into the following categories, listed by descending frequency: Harmony/Balance, Emotions/Feelings, Well-Being, Achievement, Satisfaction, Optimism, Fulfilment, Engagement, Freedom/Autonomy, Awareness, and Meaning. The most prominent category, Harmony/Balance, accounted for 25.4 percent of the responses. It comprised items such as "harmony", "balance", "inner peace", "positive relationship with oneself", "contentment", and "serenity". The category Emotions/Feelings followed, accounting for 16.6 percent. It comprised items such as "positive emotion", "joy", "temporary happiness", "cheerfulness", "being merry", "euphoria", "feeling of comfort", and "moments of pleasure".

The category Well-Being accounted for 11.8 percent, comprising general answers such as "well-being" and "psychological/mental well-being".

2.3 Cognitive and Affective Well-Being

The main distinction in the psychology of subjective well-being is between cognitive well-being (CWB) and affective well-being (AWB), the former typically being operationalized as life satisfaction (Schimmack 2007). CWB and AWB correlate positively with each other, at magnitudes varying between 0.1 and 0.8. A theoretical explanation of the relationship between CWB and AWB is the mediator model according to which people in part directly rely on the affective component to judge life satisfaction (Suh et al. 1998, Schimmack et al. 2002).

Determinants of both CWB and AWB can be differentiated into internal factors (personality traits) and external factors at both the individual and the societal level (e.g., being unemployed on the one hand, and the degree of inequality in one's society on the other).[4] Consistent with the mediator model of the AWB-CWB relationship (Suh et al. 1998), Schimmack et al. (2002) proposed that personality traits, especially extraversion and neuroticism, primarily influence the affective component, having an effect on the cognitive component only indirectly to the extent that AWB influences CWB. Schimmack et al. (2008) found that neuroticism was a stronger predictor of AWB than CWB, whereas being unemployed was a stronger predictor of CWB than AWB.

2.4 Positive and Negative Affect

Following Bradburn (1969), affective well-being can be differentiated into positive affect (PA) and negative affect (NA). PA items exhibit positive correlations with each other, as do NA items, whereas correlations between PA and NA are close to zero (Schimmack 2007).

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[4] For a review of external factors see Dolan et al. (2008).

Correlations close to zero are referred to as structural independence of PA and NA. In addition, PA and NA tend to be characterized by causal independence, that is, they are influenced by different causes.

Watson et al. (1988) proposed the Positive and Negative Affect Schedule (PANAS) as a brief measure of PA and NA. PANAS is widely used because it exhibits the structural relations between PA and NA mentioned above while measuring PA and NA in a parsimonious way, in terms of as few as 10 items each. The PA items are: *attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong* and *active*. The NA items are: *distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous* and *jittery*. The intensity of each affect is measured on a five-step scale, reaching from "very slightly or not at all" to "extremely". The overall PA and NA scores thus have a range from 10 to 50.

PANAS can be administered with different temporal instructions, including "at the present moment", "today", "during the past few days", "during the past week", "during the past few weeks", "during the past year", and "generally, on the average".

3. Method

3.1 General Approach

The aim of this study was to investigate the relation between reported happiness and life satisfaction, as typically elicited in large-scale social surveys, and measures of affective state, differentiated into positive and negative affect. This required that happiness questions and life satisfaction questions have a common format and that measures of positive and negative affect are available alongside measures of happiness and life satisfaction. Since such data are unavailable in common social surveys, we collected appropriate data among undergraduate students at the University of Oldenburg, Germany (see subsection 3.2). As suggested by

Haybron (2013), the assessment of the respondents' affective states used the Positive and Negative Affect Schedule (Watson et al. 1988).

The data were used to determine the sign, significance and strength of the association between happiness/life satisfaction and affective states, using both correlation and regression analysis. By eliminating redundant regressors, we were able to identify those positive and negative affective states that characterize happiness and life satisfaction (see subsection 3.3). This contrasts with and is complementary to asking people about their definitions of happiness (see subsection 2.2).

3.2 Data Collection

The data were gathered in May 2014 from undergraduates enrolled in a microeconomics course at the University of Oldenburg, Germany. A total of 144 participants aged 18 to 39 completed a questionnaire handed out within the course. Two otherwise identical versions of the questionnaire were used, of which one included a single-item "happiness" question, whereas the other included a single-item "life satisfaction" question. The two versions were allocated to respondents on a random basis, yielding a "happiness" subsample (N = 73) and a "life satisfaction" subsample (N = 71).

The "happiness" questionnaire begins with the question "Taking all things together, how happy are you in general?" An 11-point scale is offered, ranging from 0 = extremely unhappy to 10 = extremely happy. The "life satisfaction" questionnaire begins with the question "Taking all things together, how satisfied are you with your life in general?" An 11-point scale is offered, ranging from 0 = extremely dissatisfied to 10 = extremely satisfied. These formulations are in line with those used, e.g., in the European Social Surveys.

The happiness or life satisfaction questions are followed by questions assessing positive and negative affect and by questions concerning age, sex, the amount of monthly wage income (if any) and the amount of monthly non-wage income, such as scholarships or

support by family (if any). Assessment of positive and negative affect uses a German version of the Positive and Negative Affect Schedule (Krohne et al. 1996). As in the original version (Watson et al. 1988), respondents are offered a 5-point scale of affect intensities for each of the 10 PA and NA items, comprising 1 = very slightly or not at all, 2 = a little, 3 = moderately, 4 = quite a bit, and 5 = extremely. Consistent with the formulations of the happiness and life satisfaction questions, the temporal instruction is "Indicate to what extent you generally feel this way, that is, how you feel on the average." Affect items are listed in the following order: *active, distressed, interested, enthusiastic, upset, strong, guilty, scared, hostile, inspired, proud, irritable, excited, ashamed, alert, nervous, determined, attentive, jittery, afraid*. PA and NA levels were computed by adding across the individual PA and NA items, respectively; they can take values between 10 and 50.

3.3 Properties of the Data

Table 1 reports the descriptive statistics of our data. Mean happiness and life satisfaction levels are 7.5 and 7.8, respectively. Mean PA levels in the "happiness" and "life satisfaction" subsamples are 33.4 and 34.4, respectively. They are not statistically different from each other at conventional significance levels. Mean NA levels in the "happiness" and "life satisfaction" subsamples are 17.6 and 17.7, respectively. They are also not statistically different from each other, as are age, sex, wage income and non-wage income.

Mean PA is significantly greater than mean NA in both subsamples, and their levels are similar as in Watson et al (1988) and Krohne et al. (1996).[5] Concerning internal consistency, Cronbach's Alpha for PA is 0.78. All PA items are positively correlated with each other. Correlations greater than 0.4 (but not greater than 0.5) exist between the pairs excited-enthusiastic, strong-proud, strong-determined, proud-enthusiastic, and proud-

[5] In Watson et al. (1988) mean PA and mean NA are 35.0 and 18.1 for the temporal instruction "generally". In Krohne et al. (1996) the respective values are 32.9 and 18.4.

determined. Cronbach's Alpha for NA is 0.83. All NA items are positively correlated with each other. Correlations greater than 0.4 (but not greater than 0.5) exist between the pairs upset-irritable, guilty-jittery, scared-ashamed, hostile-irritable, irritable-nervous, irritable-jittery, guilty-nervous, and scared-afraid. The PA and NA levels are insignificantly correlated with each other (r = -0.12).

In sum, the two subsamples are not statistically different with respect to PA, NA, age, sex, wage income and non-wage income. Life satisfaction is somewhat greater than happiness, and PA is significantly greater than NA (in both subsamples). The psychometric properties of the PA and NA data correspond to those in larger American and German samples (Watson et al. 1988, Krohne et al. 1996) both qualitatively (internal consistency and independence of PA and NA) and quantitatively (mean levels of PA and NA).

3.4 Empirical Strategy

Our empirical analysis involved several steps. We first investigated the relationship between happiness and life satisfaction on the one hand and levels of PA and NA on the other hand, using correlation and (multivariate) regression analysis. Second, we investigated the relationship between happiness/life satisfaction and the individual PA and NA items. This involved correlations between happiness/life satisfaction and these items, and multivariate regressions.

With regards to the latter, we addressed the problem of collinearity by applying Klein's Rule of Thumb (Gujarati 2003). This amounts to eliminating those regressors as redundant which are better explained by all other regressors than the dependent variable of interest is explained by the entire set of regressors. Technically, auxiliary regressions are run with each explanatory variable of the main regression being regressed on the set of all other explanatory variables. A candidate explanatory variable for the main regression is excluded if the goodness of fit (explained variance) of the respective auxiliary regression is greater than the

goodness of fit of the main regression with all candidate explanatory variables included. This way, only those explanatory variables are retained which make an independent contribution to the variable of interest (happiness or life satisfaction).

4. Results

4.1 Happiness, Life Satisfaction, and the Levels of Positive and Negative Affect

This subsection reports results concerning the relationship between happiness and life satisfaction on the one hand and the levels of PA and NA on the other, whereas the next subsection focuses on individual PA and NA items.

Table 2 reports the correlations of happiness and life satisfaction to positive and negative affect. Happiness and life satisfaction are significantly positively correlated with PA, the correlation being twice as strong with happiness ($r = 0.60$) as with life satisfaction ($r = 0.30$). They are significantly negatively correlated with NA, the magnitudes being similar for happiness and life satisfaction ($r = -0.36$ and $r = -0.33$, respectively). Thus, happiness is much more strongly correlated (in absolute terms) with PA than with NA, whereas life satisfaction is slightly more strongly correlated with NA than with PA. The correlations suggest that there is more "affective content" in happiness than in life satisfaction and that the difference in affective content is mainly driven by the PA rather than the NA component.

Table 3 reports regressions of happiness on PA and NA and a set of socio-demographic controls. Regression A includes PA as the only regressor, yielding a positive and highly significant coefficient ($p < 0.01$) and an explanatory power (R^2) of 14 percent. Regression B includes NA as the only regressor, yielding a negative and marginally significant coefficient ($p = 0.10$) and $R^2 = 11$ percent. Including PA and NA jointly (regression C) yields significant coefficients of the expected sign on both variables and $R^2 = 25$ percent. The explanatory power of PA and NA with respect to happiness is thus additive in the two components, consistent with the absence of a significant correlation between the two that was found in the

basic data analysis (subsection 3.3). The coefficients in the simple regressions (A and B) and the multivariate regression (C) are indistinguishable from each other. In absolute terms, the coefficient on PA is about 50 percent greater than the coefficient on NA.

Regression D augments regression C by including age, sex, wage income and non-wage income. This has a negligible effect on the coefficients of PA and NA but raises the explanatory power (from 25 percent) to 38 percent. Out of the socio-demographic controls, the income variables have positive but insignificant coefficients, as has the age variable. Being female has a significant negative coefficient, amounting to 0.74 points on the 11-point happiness scale. The difference in explanatory power between regressions C and D is thus largely due to the inclusion of sex in regression D.

Table 4 reports similar regressions as Table 3 with life satisfaction as the dependent variable. Including PA as the only regressor (regression A) yields a positive and marginally significant coefficient ($p = 0.07$) and $R^2 = 8$ percent. Regression B includes NA as the only regressor, yielding a negative and highly significant coefficient ($p < 0.01$) and $R^2 = 14$ percent. Including PA and NA jointly (regression C) yields coefficients of the expected sign on both variables (with $p = 0.10$ for PA and $p < 0.01$ for NA). The explanatory power is $R^2 = 20$ percent, which is approximately additive in PA and NA. The coefficients in the simple regressions (A and B) and the multivariate regression (C) are similar though not identical to each other. In absolute terms, the coefficient on NA is about 20 percent greater than the coefficient on PA.

Regression D augments regression C by including the socio-demographic controls. As in the case of happiness being the dependent variable (Table 3), this has little effect on the coefficients of PA and NA; it raises the explanatory power (from 20 percent) to 25 percent. However, all socio-demographic controls are insignificant.

Comparing regression C in Table 3 with regression C in Table 4, it can be concluded that positive and negative affects jointly explain happiness better than they explain life

satisfaction. Positive and negative affect explain happiness and life satisfaction in an additive fashion, but happiness is better explained by positive affect than by negative affect, whereas the opposite applies to life satisfaction. In the happiness regression, the coefficient on PA is greater than the coefficient on NA (in absolute terms), whereas the opposite is the case in the life satisfaction regression. In addition, being female (negatively) contributes to happiness, but not to life satisfaction. The results from regression analysis confirm and extend those obtained on the basis of simple correlations.

The findings from this subsection can be summarized as follows:

Finding 1. PA and NA levels jointly predict happiness better than they predict life satisfaction.

Finding 2. PA levels predict happiness better than do NA levels.

Finding 3. NA levels predict life satisfaction better than do PA levels.

4.2 Happiness, Life Satisfaction, and Positive and Negative Affect Items

In this subsection we consider the relation between happiness, life satisfaction, and individual items from the positive and negative affect schedule.

We start with correlations, as reported in Table 5. It is seen that happiness is positively and significantly correlated with the positive affect items *active, interested, exited, strong, proud, enthusiastic, alert* and *determined*. Happiness is negatively and significantly correlated with the negative affect items *upset, scared, irritable, ashamed, nervous* and *afraid*. There is no significant correlation of happiness to *inspired, attentive, distressed, guilty, hostile* and *jittery*. Hence, 8 out of the 10 positive affect items and 6 out of the 10 negative affect items are significantly correlated with happiness, and all significant correlations have the expected sign.

Turning to life satisfaction, Table 5 shows that it is positively and significantly correlated with the positive affect items *active, exited, proud,* and *enthusiastic*. Life satisfaction is

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negatively and significantly correlated with the negative affect items *distressed*, *upset, guilty, hostile* and *jittery*. There is no significant correlation of life satisfaction to *interested, strong, inspired, alert, determined, attentive, scared, irritable, ashamed, nervous*, and *afraid*. Hence, 4 out of the 10 positive affect items and 5 out of the 10 negative affect items are significantly correlated with life satisfaction, and all significant correlations have the expected sign.

When comparing happiness with life satisfaction, it can be stated that the set of positive affect items that are significantly correlated with happiness *includes* the set of positive affect items that are significantly correlated with life satisfaction. The set of negative affect items that are significantly correlated with happiness is *distinct* from the set of negative affect items that are significantly correlated with life satisfaction except for the item *upset*.

The correlations discussed so far are a first indication of how happiness and life satisfaction are related to PA and NA items. Because of the correlations among those items (see subsection 3.3), it is not clear if and to what extent any one item makes an independent contribution to happiness/life satisfaction or rather represents influences of other items. To investigate this issue, we ran multivariate regressions of happiness and life satisfaction on the PA and NA items.

Table 6 presents initial multivariate regression results for happiness and life satisfaction as the dependent variables. The PA and NA items jointly explain 59 percent of the variance in happiness, but they are all insignificant with just two exceptions, *exited* and *alert*, which enter the regression significantly positively. In the case of life satisfaction, the explanatory power amounts to 48 percent, and all coefficients are insignificant except that on *enthusiastic*.

Given the significance of many of the correlations between happiness/life satisfaction and the PA and NA items and the correlations among the latter, insignificance of the multivariate regression coefficients seems to be the result of collinearity. Collinearity arises if some regressors implicitly capture the influence of other regressors without making an independent contribution to the dependent variable. As discussed in subsection 3.4, Klein's Rule of Thumb

aims at differentiating regressors that potentially make an independent contribution from those that do not. It amounts to eliminating from a multivariate regression those regressors that are better explained (in terms of R^2) by the respective set of all other regressors than the dependent variable of interest is explained by the set of all candidate regressors (Gujarati 2003).

By running auxiliary regressions (not shown) with the PA and NA items as dependent variables and all the respective other PA and NA items as the explanatory variables, we identified those PA and NA items that potentially make an independent contribution to happiness and life satisfaction according to Klein's Rule. To be specific, we eliminated from the happiness regression and life satisfaction regression those PA and NA items for which the R^2 of the respective auxiliary regression exceeded 59 percent and 48 percent, respectively. As a result of this procedure, we obtained 10 PA items and 4 NA items potentially contributing to happiness, and 4 PA and 2 NA items potentially contributing to life satisfaction. From these sets of potential contributors we eliminated those items that turned out insignificant when running happiness and life satisfaction regressions on these sets of potential contributors.

We ended up with happiness and life satisfaction regressions that contain only significant affective state items. They are reported in Table 7. With respect to happiness, the PA items *active*, *excited* and *alert* and the NA item *scared* together have an explanatory power of 49 percent, which is only 10 points less than when including all PA and NA items (Table 6). The largest coefficient (in absolute terms) is the one on *scared* (-0.71). The coefficients on *active* and *excited* are similar to each other (0.56 and 0.58, respectively), whereas the one on *alert* is considerably smaller (0.36).

In the case of life satisfaction, the PA items *active* and *excited* and the NA item *distressed* together have an explanatory power of 27 percent, which is 21 points less than when including all PA and NA items (Table 6). The largest coefficient is the one on *active* (0.63),

whereas the one on *excited* is considerably smaller (0.47). The magnitude of the coefficient on *distressed* (-0.56) is between that of the other two items.

In comparing the happiness and life satisfaction regressions with each other, a major result is that PA and NA items explain happiness better than they explain life satisfaction. This applies especially to the reduced set of PA and NA items (Table 7), but to a smaller extent to the complete set as well (Table 6). This is consistent with *Finding 1* from the preceding subsection, according to which *levels* of PA and NA explain happiness better than they explain life satisfaction.

As regards the structure of affective states involved in happiness and life satisfaction, the set of PA items that explain happiness *includes* the set of PA items that explain life satisfaction, whereas the sets of NA items that explain happiness and life satisfaction are *distinct* from each other. Importantly, this result is robust to considering simple correlations (Table 5) and multivariate regressions (Table 7).

The findings from this subsection can be summarized as follows:

Finding 4. The PA items that predict happiness include those that predict life satisfaction (but not vice versa).

Finding 5. The NA items that predict happiness are distinct from those that predict life satisfaction.

5. Discussion

5.1 Emotional Content of Happiness

Philosophers have proposed a variety of accounts of happiness. Among the various classifications proposed, the distinction between life satisfaction accounts and affective (or emotional) state accounts (Haybron 2013) stands out for its congruence with the distinction between cognitive well-being and affective well-being common in psychology (Schimmack 2007).

Following Haybron (2013), the life satisfaction and the affective state accounts differ with respect to the need of an explicit definition: While judging how satisfied they are with their lives is a task that people can reasonably perform by applying their own standards, a statement concerning one's level of happiness is deemed to be not meaningful unless the significance of the term "happiness" is specified.

By asking people about their personal definition of happiness, Delle Fave et al. (2011) found that "emotions and feelings" are an important component of people's happiness notion, broadly consistent with an affective state account of happiness. It remains unclear, however, what precisely the relevant affective states are.

The present study has contributed to clarifying the affective states involved when people declare themselves to be "happy". The affective states that are significantly related to reported happiness include three positive affect items and one negative affect item: People report high levels of happiness if they generally feel active, excited, and alert, and they report low levels of happiness if they generally feel scared. These affective states explain about 50 percent of the variation in reported happiness. The notion of happiness implicit in simple self-reports of happiness can thus be considered to be rather well-defined with respect to its emotional content.

5.2 Affective States and Affective and Cognitive Well-Being

In this paper we investigated the relations of positive and negative affect to commonly used measures of happiness and life satisfaction. In addition to their relation to reported happiness, we found that affective states are also significantly related to reported life satisfaction. This might be dismissed as being spurious, on the grounds that "… in matters of well-being, just about everything correlates decently with everything else" (Haybron 2013). Yet explanations along such lines appear to be inadequate for two reasons. First, a small set of the affective state items (*active*, *excited*, and *distressed*) are highly significant in a multivariate life

satisfaction regression and account for no less than 27 percent of the variation in life satisfaction. Second, our findings are consistent with a theoretically and empirically attractive model of the relation between affective and cognitive well-being, the mediator model.

The mediator model of the AWB-CWB relationship maintains that people's evaluation of their lives partly relies on their prevailing affective states (Suh et al. 1998). This model implies that some factors that are related to AWB (happiness) are also − indirectly − related to CWB (life satisfaction). To be more specific, the model can be formulated as follows: *life satisfaction = f(x,h₁)* and *happiness = h₁(y) + h₂(z) = h(y,z)*, where *x* denotes factors related to life satisfaction, but not to happiness, and *z* denotes factors related to happiness, but not life satisfaction. Factors denoted by *y* are related to life satisfaction in an indirect fashion, through their relation with happiness which, in turn, is related to life satisfaction: *life satisfaction = f(x,h₁(y)) =: g(x,y)*.

Focusing on affective states as factors for happiness and life satisfaction, the functions h(*y,z*) and *g*(*x,y*) correspond to the happiness and life satisfaction regressions reported in Table 7, where *x* = distressed, *z* = (alert, scared), and *y* = (active, excited). According to this interpretation, feeling active and excited would contribute to life satisfaction by raising happiness. Feeling distressed reduces life satisfaction but is unrelated to happiness. Feeling alert/scared raises/reduces happiness without having an influence on life satisfaction. Interestingly, the affective states that − according to this interpretation − contribute to life satisfaction in an indirect fashion, through happiness, are positive ones whereas those that differentiate happiness from life satisfaction are negative ones.

Our paper seems to be the first that has investigated the differential relation between positive and negative affect and commonly used measures of happiness and life satisfaction within a single study. One important insight obtained is that happiness and life satisfaction, as measured, share common positive affect components whereas the negative affect items

involved are distinct. This finding is robust to the methodological strategy pursued (simple correlations and multivariate regressions).

We note that the wording used above (raise/reduce, influence) is not meant to indicate that PA and NA should be understood as the "cause" of happiness and life satisfaction. They should rather be taken as their affective (emotional) "content". This begs the question as to the causes of PA and NA and suggests that they may themselves be influenced by those internal (personality) and external factors that have been found to influence AWB and CWB. As discussed above (subsection 2.3), Schimmack et al. (2002) found that extraversion and neuroticism primarily influence AWB, having an effect on CWB only indirectly to the extent that AWB influences CWB. Our results suggest that these influences of personality may work through a tendency toward feeling more active and excited (extraversion) or less active and excited (neuroticism). Similarly, our finding that feeling distressed is negatively related to satisfaction with life, but not to happiness, can be linked to the finding of Schimmack et al. (2008) that being unemployed is a stronger predictor of CWB than AWB: Combining the two findings suggests that being unemployed affects life satisfaction through making people feel distressed.

An empirical investigation of these conjectures would require a data base that contains measures of AWB, CWB, PA and NA jointly with measures of personality traits and external factors of subjective well-being. Such an analysis is an obvious direction for future research. For the time being, however, the consistency of our findings with findings concerning the relation between AWB, CBW, personality and external factors lends support to the validity of our findings.

5.3 Relevance for Social Science and Public Policy

Questions on happiness and life satisfaction are included in many large-scale social surveys, and responses have been used in studying a variety of issues in the social sciences. Though

the general results obtained in these studies typically do not depend on whether happiness or life satisfaction data are used, it is desirable to be clear about the nature and significance of reported happiness and life satisfaction. In particular, objections have been raised against using happiness rather than life satisfaction data by referring to the vagueness of simple happiness questions (see subsection 5.1). Yet, some social surveys refer to happiness only.

As stated above, self-reports of happiness can be considered to incorporate a well-defined notion of well-being that includes a state of generally feeling active, excited and alert, and not feeling scared. This result may inform social scientists who use self-reports of happiness as to the nature and significance of the happiness measure.

With respect to public policy, it has been found in previous research that cognitive well-being (life satisfaction) is stronger related to external factors (such as unemployment) than is affective well-being (Schimmack et al 2008). This suggests that public policy should target life satisfaction rather than happiness, as the latter is hard to influence by factors that public policy can control. Since the present study found that life satisfaction differs from happiness by life satisfaction being related to the negative affect of feeling distressed, it appears that public policy can influence life satisfaction mainly by reducing this particular affect. The other affects relevant for life satisfaction, feeling active and excited, likely are only indirect contributors to life satisfaction (mediator model), and arguably are less accessible to public policy influence than is a feeling of distress. One affect relevant for happiness however, feeling scared, might be influenced by public policy, for instance by crime prevention.

In conclusion, by clarifying the affective state content of happiness and life satisfaction this study can inform both social scientists and policy makers with respect to the nature and significance of alternative well-being measures frequently used.

5.4 Limitations and Future Directions

The most obvious limitations of this study relate to the size (N = 144) and structure of the data base (student sample). In the light of this, the results obtained should be regarded as preliminary. It remains to be seen whether they stand up to being tested with larger, more heterogeneous samples.[6]

Ideally, such data bases would include not only information on happiness, life satisfaction, and positive and negative affect, but also on personality traits, along with information on socio-demographics (such as income and employment status). As was discussed in subsection 5.2, such a data base would permit studying structural relations among internal (personality) and external factors, affective states, and alternative measures of well-being (reported happiness and life satisfaction). One particular issue to be studied that way would be through which affective states personality and external factors influence happiness and life satisfaction and what that implies for the structural relation between affective and cognitive well-being.

6. Conclusion

Large scale social surveys typically include questions on happiness, and the levels of well-being measured this way are increasingly recognized in social science and public policy as measures of social welfare. Yet, it is largely unclear what exactly it is that is measured by a simple question such as "How happy are you?"

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[6] In contrast to the size and structure of our sample , we do not regard the use of single-item measures of life satisfaction and happiness as a limitation because it is exactly that type of measures that are included in social surveys and that are used in the social sciences as measures of social well-being. Our aim was to study the affective state content of measures actually used in social science research.

Motivated by an affective state view of happiness, this paper has investigated the relationship between self-reported happiness and levels of positive and negative affect as well as the specific positive and negative affect items involved. We found that happiness is characterized by high levels of being *active*, *excited* and *alert* and low levels of being *scared*, and that the contribution of the positive affect component dominates that of negative affect. The positive affect items that characterize happiness *include* those positive items that characterize life satisfaction, consistent with the idea that the positive affect component of happiness is one factor on which people rely when judging their lives.

In comparison with happiness, life satisfaction is more strongly related to negative affect, and the negative affect item of being *distressed* is exclusively related to life satisfaction, not to happiness. Since a state of being distressed arguably depends on social conditions (such as unemployment), whereas being active, excited and alert may be more strongly related to personality, it seems justified that public policy should focus on life satisfaction rather than happiness. Indeed, this is consistent with previous findings that cognitive well-being is more strongly influenced by external factors than is affective well-being.

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Table 1: Summary Statistics

	Happiness subsample		Life satisfaction subsample	
	Mean	SD	Mean	SD
Happiness	7.52	1.99		
Life satisfaction			7.77	1.58
Positive affect	33.41	5.18	34.42	4.83
Negative affect	17.60	5.89	17.72	5.29
Age	23.86	4.17	23.28	3.75
Female	0.56	0.50	0.53	0.50
Wage income	151.13	272.36	212.14	370.29
Non-wage income	493.08	406.48	453.08	435.57

Table 2: Correlations of main variables

	Happiness	Life satisfaction
Positive affect	0.5991*	0.3015*
Negative affect	-0.3626*	-0.3332*

*p<0.05

Table 3: Happiness regressions

	A	B	C	D
Positive affect	0.1106*** (0.039)		0.1095*** (0.038)	0.1155*** (0.036)
Negative affect		-0.0734* (0.044)	-0.0726* (0.039)	-0.0781** (0.036)
Age				0.0166 (0.067)
Female				-0.7410** (0.285)
Wage income				0.0013 (0.0010)
Non-wage income				0.0002 (0.005)
Constant	4.2254*** (1.422)	9.2717*** (0.740)	5.5353*** (1.441)	5.1729** (2.253)
Observations	55	55	55	55
R^2	0.1448	0.1116	0.2536	0.3850

Robust standard errors in parentheses.
*$p<0.1$
**$p<0.05$
***$p<0.001$

Table 4: Life satisfaction regressions

	A	B	C	D
Positive affect	0.0920* (0.050)		0.0815* (0.049)	0.0838* (0.048)
Negative affect		-0.1126*** (0.034)	-0.1059*** (0.034)	-0.1176*** (0.038)
Age				-0.0378 (0.048)
Female				-0.5140 (0.393)
Wage income				-0.0003 (0.0004)
Non-wage income				0.0003 (0.003)
Constant	4.5775*** (1.649)	9.7500*** (0.639)	6.8394*** (1.662)	8.0643*** (2.048)
Observations	59	59	59	59
R2	0.0771	0.1402	0.2001	0.2510

Robust standard errors in parentheses.
*p<0.1
**p<0.05
***p<0.001

Table 5: Correlations with positive and negative affect items

	Happiness			Life satisfaction		
	Coefficient	SD	N	Coefficient	SD	N
Active	0.5074***	0.0000	72	0.2679**	0.0239	71
Interested	0.3016***	0.0095	73	-0.0278	0.8182	71
Exited	0.5162***	0.000	72	0.2390**	0.0138	70
Strong	0.3791***	0.0009	71	0.1234	0.3051	71
Inspired	0.0631	0.6012	71	0.0734	0.5548	67
Proud	0.4909***	0.0000	73	0.3175***	0.0074	70
Enthusiastic	0.3292***	0.0045	73	0.2608**	0.0280	71
Alert	0.3853***	0.0008	73	0.0033	0.9782	71
Determined	0.5140***	0.000	73	0.1681	0.1610	71
Attentive	0.0968	0.4185	72	0.1482	0.2207	70
Distressed	0.1636	0.1728	71	-0.3637***	0.0020	70
Upset	-0.3742***	0.011	73	-0.3287***	0.0051	71
Guilty	0.0689	0.5652	72	-0.4427***	0.0001	71
Scared	-0.3186***	0.0068	71	-0.1050	0.3872	70
Hostile	-0.1407	0.2385	72	-0.2082*	0.0836	70
Irritable	-0.2940**	0.0116	73	0.0110	0.9287	69
Ashamed	-0.2855**	0.0144	73	-0.1759	0.1482	69
Nervous	-0.3415***	0.0031	73	0.1063	0.3777	71
Jittery	-0.1614	0.1757	72	-0.3143***	0.0076	71
Afraid	-0.4144***	0.003	72	-0.1732	0.1487	71

*p<0.10
**p<0.05
***p<0.01

Table 6: Multivariate regressions on positive and negative affect items

	Happiness			Life satisfaction		
	Coefficient	t-value	p>|t|	Coefficient	t-value	p>|t|
Active	0.2624	1.12	0.270	0.3588	1.55	0.128
Interested	-0.0719	-0.21	0.831	-0.0262	-0.07	0.947
Excited	0.4062*	1.95	0.058	0.0759	0.31	0.762
Strong	-0.0607	-0.26	0.793	-0.2479	-0.78	0.441
Inspired	-0.1477	-0.69	0.495	-0.0055	-0.03	0.978
Proud	0.3069	1.12	0.268	0.2148	0.70	0.491
Enthusiastic	0.0880	0.30	0.762	0.4584*	1.99	0.053
Alert	0.4841**	2.47	0.017	-0.0097	-0.06	0.955
Determined	0.0022	0.01	0.994	0.1448	0.64	0.527
Attentive	-0.5585	-1.61	0.114	-0.2578	-0.99	0.328
Distressed	-0.0382	-0.22	0.824	-0.3548	-1.39	0.173
Upset	0.1542	0.65	0.517	-0.2222	-0.78	0.441
Guilty	0.4732	1.65	0.106	-0.1969	-0.61	0.547
Scared	-0.4681	-1.25	0.217	0.3766	0.82	0.417
Hostile	0.2234	1.13	0.263	-0.3630	-1.15	0.256
Irritable	-0.1872	-0.67	0.505	0.3343	0.92	0.364
Ashamed	-0.2639	-0.69	0.496	-0.4608	-0.87	0.391
Nervous	0.0931	0.47	0.639	0.1600	0.68	0.499
Jittery	-0.2212	-0.98	0.333	-0.1993	-1.19	0.240
Afraid	-0.2465	-0.78	0.441	-0.2295	-0.65	0.519
Constant	6.506***	4.32	0.000	7.2520***	3.40	0.001
Observations	64			64		
R^2	0.5924			0.4836		

*p<0.10
**p<0.05
***p<0.01

Table 7: Reduced multivariate regressions on positive and negative affect items

	Happiness			Life satisfaction		
	Coefficient	t-value	p>|t|	Coefficient	t-value	p>|t|
Active	0.5641***	2.79	0.007	0.6310***	2.89	0.005
Excited	0.5819***	2.84	0.006	0.4659**	2.07	0.042
Alert	0.3630***	2.74	0.008			
Distressed				-0.5593***	2.73	0.008
Scared	-0.7064**	-2.51	0.015			
Constant	3.6803***	3.88	0.000	5.0386***	3.95	0.000
Observations	69			69		
R^2	0.4907			0.2699		

*p<0.10
**p<0.05
***p<0.01

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