A functional measurement inquiry on the contribution of different life domains to overall subjective well-being

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Subjective well-being (SWB) consists of a subjective evaluation of both cognitive and affective reactions to one's life as a whole and of specific areas of life (Diener & Suh, 1997). This implies that a person is happy about specific areas such as marriage, health, and work to the extent that she thinks well of and feels good about these areas. Consequently, global SWB and satisfaction in specific domains of life are expected to correlate.

Several measures of SWB have been developed that reflect different views on the concept. In some approaches SWB is assessed as a global judgment, often with a single item rating scale or a visual analogue scale (Bernheim, 1999; Inglehart, 2004). Other approaches consider that life satisfaction can be broken down into satisfaction with distinct domains of life (Cummins, 1996; Veenhoven, 1996), which vary in relative importance to one another depending upon the individual (Diener, 1994; Andrews & Withey, 1976).

People's feelings about various life domains have been found to be more or less good predictors of overall life satisfaction with correlations ranging from about 0.10 to 0.70 depending on the specific life domains (Andrews & Whithey, 1976). Andrews and Whithey (1976) found that 50-62 percent of the variation in people's scores on overall life satisfaction measures could be explained by scores on satisfaction with life domains. In a study relating satisfaction in specific domains of life (health, financial situation, job, housing, leisure, and environment) to overall satisfaction, Van Praag, Frijters, & Ferrer-i-Carbonell (2003) state that satisfaction with life as a whole can be conceived as an aggregate concept, which can be broken down into its domain components. The relation between overall life satisfaction and a person's condition in some domain(s) of life has been the main theme in several studies (Clark & Oswald, 1994; Van Praag et al., 2003).

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In the literature several lists of relevant life domains can be found, differing in kinds and number of domains (Chen et al., 2004; Headey & Wearing, 1992). The Comprehensive Quality of Life Scale (ComQol) comprises seven life domains: *Material well-being*, *Health*, *Productivity*, *Intimacy*, *Safety*, *Place in community*, and *Emotional well-being* (Cummins, 1997). Moreover, in specific groups some domains may have a particular importance for general well-being: for example sexuality (McCabe & Cummins, 1998) and social relationships (Chen et al., 2004) in young adults.

Past work thus suggests that several life domains contribute to overall SWB. However, how these several life domains are integrated into overall SWB remains unclear. Work by Rojas (2006) suggests that weighted averaging is not applicable. The present study investigates this issue more closely.

If SWB can be predicted from satisfaction in separate life domains, then information integration theory (Anderson, 1981, 1982, 1996) may provide an effective framework to study the integration processes that combine domain satisfactions into global SWB. Recently, several studies have successfully adopted Anderson's approach in various contexts (Hofmans, Mairesse, & Theuns, 2007; Hofmans, Theuns, & Mairesse, in press; Mairesse, Hofmans, De Valck, Cluydts, & Theuns, 2007). Studies in the FM framework have found that the integration of different stimuli usually occurs according to rather simple heuristics, being an "additive model", an "averaging model" or a "multiplicative model" (Anderson, 1981, 1996; Weiss, 2006). Which one of these models applies can be inferred from a factorial graph and consequent analyses of variance. Each model yields a typical configuration of curves in the factorial graph, readily assessed with analysis of variance. With an additive model, for example, the factorial graph shows parallel lines. An averaging model (with equal weights) shows similar parallelism, but, unlike the additive model, if one stimulus is removed from the stimulus combination, then a steeper slope or even crossover will be found (as in Figure 1). Finally, a multiplicative model results in a "fan" of linear curves in the factorial plot (Anderson, 1981, 1982; Weiss, 2006).

Method

In partial fulfillment of the requirements for a methodology course, fifty-six undergraduate students from the Vrije Universiteit Brussel participated in one of three consecutive experiments in which combinations of levels of satisfaction in three life domains were manipulated.

In Experiments 1, 2, and 3 there were 19 (12 females, 7 males; mean age 19.4 years), 16 (12 females, 4 males; mean age 19.4 years), and 21 students (16 females, 5 males; mean age 20.4 years), respectively.

The life domains manipulated in the experiments were based on the seven domains in the ComQol-A5 (Cummins, 1997): *Material Well-Being*, *Health*, *Productivity*, *Intimacy*, *Safety*, *Place in Community*, and *Emotional Well-Being*. However, the *Intimacy* domain was divided into *Family Intimacy*, *Acquaintance Intimacy*, and *Love (Sexual) Intimacy* as it is expected that these areas are of particular importance for participants in their early twenties (McCabe & Cummins, 1998; Chen et al., 2004). So, a set of nine life domains was considered in this study. Three life domains were manipulated in each experiment since more than three would have resulted in an infeasible large number of trials:

Family Intimacy (F), *Health* (H), and *Material Well-Being* (M) made up Experiment 1;

Love (Sexual) Intimacy (L), *Productivity* (P), and *Safety* (S) were the factors in Experiment 2;

and Experiment 3 comprised *Acquaintance Intimacy* (A), *Place in Community* (C), and *Emotional Well-Being* (E).

In all experiments participants were instructed to assess their imagined overall subjective well-being using the Anamnestic Comparative Self-Assessment (ACSA) (Bernheim, 1999), which is a single item self-anchoring scale. The ACSA scale was preferred to the "conventional question on subjective well-being" (referred to as "single item" in International Well-being Group, 2006), as it was found to be more sensitive (Bernheim et al., 2006). The ACSA scale requires participants to judge their subjective well-being relative to the best and worst periods in their personal past experience on a -5 to +5 scale. Prior to the experiment, participants were familiarized with the ACSA scale.

The experiments were run in a $3 \times 3 \times 3$ within subjects design in which the participants were presented with a series of textual descriptions of life situations. These descriptions consisted of three sentences, each of which covered some specific level of one particular life domain. For example, in Experiment 1 one such description was the following (translated from Dutch):

You usually stay in a comfortable living room, your loan is average and you own about as much as your peers. Besides, you regularly talk to your family, you can count on their support and sometimes you do things together with them. Moreover, your health condition hinders you from time to time (e.g., epilepsy, asthma, migraine …) and you take 1 medicine daily.

In this description each consecutive sentence corresponds to one level in the domains *Material Well-Being* (M), *Family Intimacy* (F), and *Health* (H), respectively. For the described situation, participants rated their imagined subjective well-being on the ACSA scale. Each description was presented twice, and additionally all 3 × 3 sub-designs were also included. Each participant completed 108 assessments. In Experiments 2 and 3 similar triples and doubles of stimuli were used, corresponding to the other domains covered.

For the analysis, two kinds of analyses of variance were carried out: one for the 3 × 3 × 3 conditions with information on all three life domains, and three separate analyses of variance for the 3 × 3 conditions with information on only two life domains (the third life domain being nil).

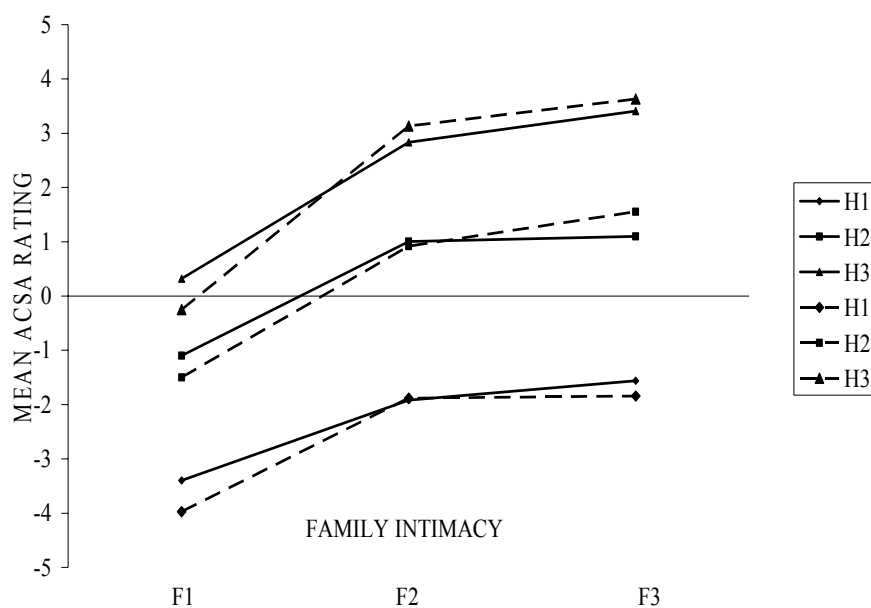The experiments were run on 15 personal computers in a psychological lab with individual cubicles.

Figure 1. Factorial plot of mean ACSA ratings for levels of *Family Intimacy* (F) and *Heatlh* (H) (solid line: three-factor design; dashed line: two-factor design).

Results

Experiment 1

The data for Experiment 1 show patterns of near-parallelism for each pair of variables, as shown in Figures 1, 2, and 3, for the three subgroups of three variables. The solid curves in each figure represent the data from the full three-variable design; the dashed curves represent the data from the corresponding two-variable design. Note that the dashed curves have steeper slope and tend to cross over the solid curves; which is exactly the patterning predicted by the averaging model.

The analysis of variance showed significant interactions for both two-way interactions involving the *Health* variable. Inspection of Figure 1 shows that this deviation from parallelism reflects a lesser vertical difference between the curves for the lowest level of *Health*. This pattern is just what is predicted by the averaging model if the lowest level of *Health* has greater weight (Anderson, 1981, pp. 273-276). This result is accordingly interpreted
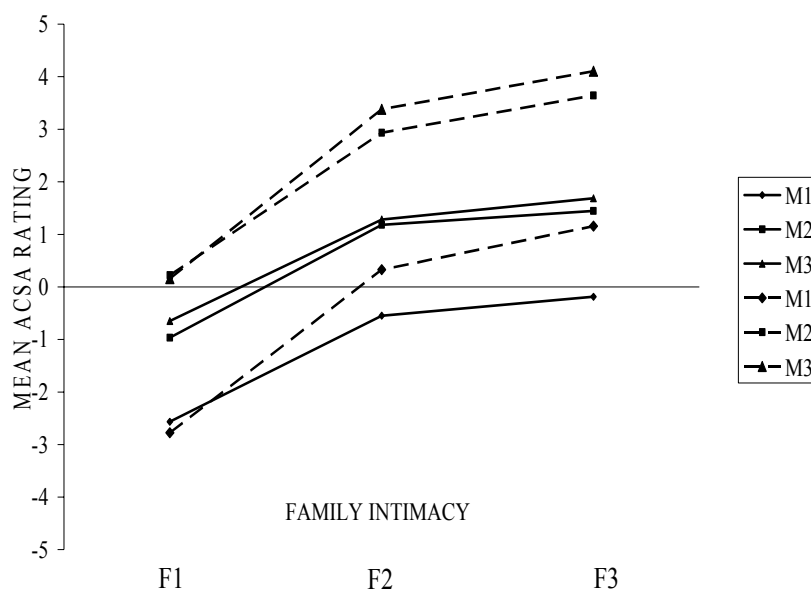

Figure 2. Factorial plot of mean ACSA ratings for levels of *Family Intimacy* (F) and *Material Well-Being* (M) (solid line: three-factor design; dashed line: two-factor design).

as an instance of the not uncommon negativity effect, which has been found in many other domains. Intuitively, it is as though the other variable is less important when *Health* is poor.

Experiments 2 and 3

Very similar results were obtained from Experiment 2, which studied the three variables of *Love (Sexual) Intimacy*, *Productivity*, and *Safety*. The same holds for Experiment 3, which studied the three variables of *Acquaintance Intimacy*, *Emotional Well-being*, and *Place in Community*. Some indication of negativity weighting was also found, as in Experiment 1. These results add generality to the results of Experiment 1. Detailed discussion of these data will be presented elsewhere.
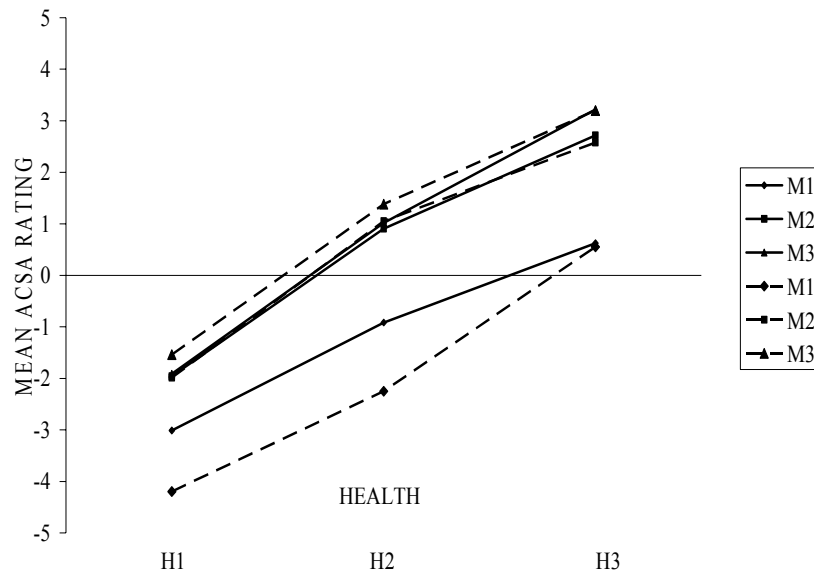

Figure 3. Factorial plot of mean ACSA ratings for levels of *Heatlh* (H) and *Material Well-Being* (M) (solid line: three-factor design; dashed line: two-factor design).

Discussion

All three experiments supported an averaging model for judgments of overall subjective well being, each experiment based on three different life domains as listed above. One main result is the near-parallelism in the integration graphs, illustrated in Figures 1–3. Critical support for the averaging model is that the curves for the two-variable design have steeper slope and even cross over the curves for the three-variable design.

Tentative evidence for negativity effects was also found. Some deviations from parallelism, although small, were statistically significant. Inspection of the integration graphs suggests that these deviations resulted from higher weighting of the lowest level of certain variables, as with the *Health* variable in Figure 1. Such negativity weighting makes intuitive sense and is similar to a variety of negativity effects that have been found in previous studies of information integration. For practical purposes, however, these small deviations from the equal-weight averaging model have minor importance.

Concerning external validity of our results, it must be noted that imagined subjective well-being, based on some verbal information on three life domains may differ significantly from what would be truly lived, experienced, well-being. However, in situations where people judge third persons, typically only partial information on the third person is available which is a situation that is quite similar to what is studied here. So, our findings may be especially relevant to social cognition. Moreover, in a different context, recent work has revealed that subjective appraisal of subjective sleepiness based on imagined textual information (time awake, hours slept the night before, etc.) and subjective sleepiness reported in sleep deprivation experiments yield very similar results (Mairesse et al., 2007) so that we may very well underestimate the worth of imagined situations in research.

It is concluded that when people judge one's well-being, information about different life domains is averaged and, consequently, information about one domain can compensate information about some other domain. Moreover, there is some evidence that the weights of life domains are not constant across all levels of the same domain, but rather correlate with satisfaction in that domain. This finding disagrees with recent work indicating that global life satisfaction should not be modeled as a weighted average of domain satisfactions (Rojas, 2006). This question will be considered further in the analysis of the full set of three experiments.

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Abstract

Subjective well-being consists of a subjective evaluation and integration of happiness about specific life domains to the extent that one thinks well of and feels good about these domains. Three functional measurement experiments investigated how information on life domains is integrated into a global rating of well-being. There is good evidence that integration of life domains obeys an averaging law. This implies that when people judge one's well-being, information about one domain can compensate information about some other domain.

Riassunto

Il benessere soggettivo è costituito da una valutazione e integrazione soggettiva della felicità riguardo ad ambiti di vita specifici fintantoché si pensa e ci si sente bene riguardo ad tali ambiti. Tre esperimenti di misurazione funzionale hanno indagato come l'informazione sugli ambiti di vita viene integrata in valutazioni globali di benessere. Ci sono buone prove che l'integrazione degli ambiti di vita obbedisca ad una legge della media. Questo implica che quando la gente giudica il proprio benessere, l'informazione circa un ambito può compensare l'informazione circa un altro ambito.

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