Respondent mood and the instability of survey network measurements

Valentina Hlebec*, Anuška Ferligoj

Faculty of Social Sciences, University of Ljubljana, Kardeljeva pl. 5, 1001 Ljubljana, Slovenia

Abstract

The affect infusion model [Forgas, 1999, Handbook of Cognition and Emotion. Wiley, Chichester, p. 591] was used to hypothesize and explain relations between respondents’ moods and the instability of survey measurements of social support ties in social networks of high school students. Two relative measures of network measurement instability were defined. The sensitivity of these to the change in respondent mood was observed by repeated measurements. Four types of social support were measured twice, under different conditions using both recognition and free recall data collection techniques. Changes in respondent mood and the data collection technique were the best two predictors of measurement instability among several survey design variables included in the survey.

Keywords: Stability; Social support; Data collection technique; Affect

1. Introduction

Affect infusion (Forgas, 1999, pp. 598–599) is defined as the process by which affective information influences social judgment and becomes incorporated into people’s constructive processing. Affect can selectively influence learning, memory, attention, associative processes, and evaluation in the process of social judgment. Affect can therefore color social judgment in an affect-congruent direction when social support exchange in a complete network is evaluated. Affect functions as one variable in determining both, which processing strategy is adopted in judgment as well as how the information is dealt with once a particular processing strategy is used (Forgas, 1991b, p. 266).

* Corresponding author. Tel.: +386-1-5805-284; fax: +386-1-5805-101.
E-mail addresses: valentina.hlebec@guest.arnes.si (V. Hlebec), anuska.ferligoj@uni-lj.si (A. Ferligoj).
Emotions, on the one hand, are intense, short-lived affective states that have a definite cause and a clear cognitive context. When involved in the cognitive process, emotions are treated equally with all other cognitive inputs (Forgas, 1991a, p. 5). Moods, on the other hand, are generally defined as low-intensity, relatively enduring affective states (Guerrero et al., 1998, pp. 5–7) with no immediately salient antecedent cause and little cognitive content (Forgas, 1991a, pp. 5–6). They are supposed to be relatively constant and should have a non-specific and additive effect on social judgment (Kaplan, 1991).

However, empirical research (Clark and Watson, 1988) has shown that there exists a complex inter-relatedness between the events in daily life and the finding of positive or negative moods, despite the assumption that moods have no immediate antecedents. Social events in particular (i.e. events including an explicit mention of another person) have the strongest relationship with mood. This effect was almost entirely limited to positive moods. Little variation due to the day of the week was found.

In contrast, Larsen and Kasimatis (1990) found, using spectral analysis, that daily fluctuations in mood exhibit a 7-day cycle. They also found reliable individual differences. Their analysis showed that both extroverts and introverts follow a weekly cycle. However, extroversion scores were related to higher levels of positive affect. The mood of extroverts varied considerably more strongly than the mood of introverts. These results suggest that individual differences may be expected in stability of mood and stability of reported social support exchange when test–retest stability of measurement is examined. When a group of complete network members consists of more extroverts, higher variability in mood would be expected. Therefore, estimated test–retest stability of network measurement would be expected to decrease in this group.

Social support in relation to depressed mood has quite often been studied, but analyses of the effects of mood on perception and the measurement of social support interactions and relations are rare. Procidano and Heller (1983) found that a negative mood induced by Velten’s procedure1 lowered the levels of perceived social support from friends, whereas levels of perceived social support from family were unaffected. Perceived support was distinguished from received social support (Procidano and Heller, 1983, p. 2), since received social support generally refers to the actual provision of material, informational or emotional support, whereas perceived social support refers to the impact that social networks have on individuals. It can be defined as the extent to which an individual believes that her/his needs for support are fulfilled. Cohen and Towbes (1988) studied the effect of induced mood on both variables: reported received social support and perceived social support. They found no effect on the levels of received social support, but lower levels of perceived social support in subjects with an induced negative mood.

Therefore, mood as one characteristic of respondents on the one hand (see Forgas, 1991a; Andersen and Querrer, 1998; Dalgleish and Power, 1999), together with the characteristics of survey measurement instruments on the other (see Schuman and Presser, 1996; Lyberg et al., 1997; Ferligoj and Hlebec, 1999) mediate the method of evaluating and reporting of social support relations in which one is involved. The focus of this paper is to observe relations between affective states, characteristics of the survey measurement instrument,

---
1 Subjects read a series of self-evaluative and somatic statements that are designed to induce positive, negative, or neutral affective states (see Velten, 1968).
and the measurement (in)stability of survey data about social support relations in social networks within high school classes.

2. Theoretical background

In the affect infusion model proposed by Forgas (1991b, 1999), four processing strategies are defined and described. The direct access strategy is possible whenever pre-existing and crystallized judgments are available. It is based on strongly cued retrieval of previously stored cognitive material. There is little opportunity or need for constructive thinking, a fact which makes this processing strategy robust and resistant to affect infusion. The direct access strategy will be selected when a judgment task is familiar and when there is little or no personal involvement.

The motivated processing strategy is adopted when there is no previously stored crystallized judgment, and there exists a strong motivational pressure for a particular outcome to be achieved. Therefore, information processing is guided by a strong motivational objective which allows little room for constructive processing to occur. The possibility of affect infusion is thus reduced.

The heuristic processing strategy is used when no crystallized response exists, when a task is relatively simple or typical and there is a lack of a strong motivational goal, personal involvement or sufficient processing resources. When using the heuristic processing strategy, response is computed with the least amount of effort, limited information, and by using shortcuts. Affect plays an important role in heuristic processing. Mood can be mistakenly interpreted as a source of heuristic information about the target and used in the process of evaluation.

The substantive processing strategy is adopted when no preformed judgment is available and subjects need to select, interpret, and integrate new information about the judgment target and compute a judgment. This is the most constructive information processing strategy, and one that induces the greatest likelihood of affect infusions occurring. The substantive processing strategy is most likely to occur when the task is atypical, complex, and personally relevant, but where no specific motivational goal exists.

Direct access and motivated processing are two processing strategies that use closed, directed information search processes that limit the opportunity for affect infusion. Heuristic and substantive processing strategies are more constructive, and thus open to multiple possibilities for affect infusion. The valence of the affect is also important in mediating the selection of a processing strategy. People in a positive mood are faster at making judgments; they make simpler judgments and use more flexible and superficial processing strategies. People in a negative mood are slower and more systematic. They also use more vigilant processing strategies.

The perception of interactive behavior and the effects of moods on interpersonal choices are especially important when studying survey reports about social support behavior. Forgas (1991b) (pp. 274–276) studied the effects of moods on people’s perception and interpretation of their own social behaviors and the behaviors of others. Sad or happy subjects were asked to identify and score positive, skilled and negative, unskilled behavior of their interaction partners and themselves as they observed it on videotape. Happy subjects identified far more
positive skilled behaviors than negative unskilled behaviors in both their interaction partners and themselves than did sad subjects. Sad subjects were also more critical of themselves than of their interaction partners. In another study 2 (Forgas, 1991b, pp. 283–284), sad and happy subjects were asked to select a partner for an anticipated cooperative task from a number of potential partners. The candidates were described in terms of their interpersonal skills and personality, intelligence, and task competence. Happy subjects reached a decision faster; they were more efficient in dealing with information and irrelevant details, focused more on task-related qualities, and made choices that preferred competent over rewarding partners. Sad subjects were slower and less efficient. Their decisions were based more on the personality and social skills of a potential partner than on task competence. In this case, happy subjects used heuristic processing strategies, whereas sad subjects preferred motivated processing strategies. 3

In this paper, we examine whether the affect infusion model can be successfully applied to predict and explain relations between respondents’ mood and the (in)stability of social support evaluation in social networks of high school classes. In Section 3, characteristics of the study are presented and discussed with regard to the affect infusion model.

3. Study design

Mood and social support were measured on two occasions. Mood was measured by four positive and four negative mood adjectives using an 11-point scale designed by Rholes et al. (1987). The design of the scale as constructed is described in detail later. Mood was not experimentally induced. Thus, the natural variability across individuals and experimental groups could be studied.

As has been suggested by previous research evidence (see Procidano and Heller, 1983; Cohen and Towbes, 1988), where the effects of an induced negative mood on perceived social support were found, mood effects could be expected only when a full range of affective states was present. However, when a negative mood was not present at all, the effect of mood on perceived social support as described was less likely to occur.

Apart from the range of states, change of mood was also taken into account. As mood was measured on two different occasions, natural variability should have been clearly displayed. The natural variability in mood across individuals and experimental groups can be attributed to various personality characteristics of the subjects included in the experiment, or to external factors such as everyday events or the day of the week. In order to control the effects of daily events and the weekly cycle, the two successive interviews were conducted exactly 7 days apart in all research groups; the time and day of the interviews were fixed at a 7-day interval. The composition of the particular group being studied can vary in two personality characteristics which are known to influence mood change: extroversion and introversion (Larsen and Kasimatis, 1990). Since these characteristics were not included in the experimental design because of the small number of cases in each of the four high school classes (25–31), their presence and role are studied implicitly. Groups composed of

---

2 In both studies, subjects were induced to feel sad or happy.
3 Further examples can be found in Forgas (1991a, 2000).
Table 1
Research designa

<table>
<thead>
<tr>
<th>Class</th>
<th>Label</th>
<th>Length of interview (min)</th>
<th>Measurement</th>
<th>Data collection technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Yes</td>
<td>20</td>
<td>First</td>
<td>Recognition</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>45</td>
<td>Repeated</td>
<td>Recognition</td>
</tr>
<tr>
<td>Class 2</td>
<td>Yes</td>
<td>45</td>
<td>Repeated</td>
<td>Recognition</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>20</td>
<td>First</td>
<td>Recognition</td>
</tr>
<tr>
<td>Class 3</td>
<td>Yes</td>
<td>45</td>
<td>First</td>
<td>Free recall</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>20</td>
<td>Repeated</td>
<td>Free recall</td>
</tr>
<tr>
<td>Class 4</td>
<td>Yes</td>
<td>20</td>
<td>Repeated</td>
<td>Free recall</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>45</td>
<td>First</td>
<td>Free recall</td>
</tr>
</tbody>
</table>

a Labels: yes, ordinal scale with labels; no, ordinal scale without labels.

more extroverts should display a higher change of mood at two time points, whereas groups composed of more introverts should display a smaller change of mood. Variables included in the research design are described below and presented in Table 1.

Two almost identical five-point ordinal scales4 were used to measure the strength of social support ties. The ordinal scale with labels included labels for all five values, whereas the ordinal scale without labels included only descriptions of the two extreme values. The ordinal scale with labels is thus better defined. Individual values have unambiguous meaning, so little is left for respondents to infer. On the other hand, the ordinal scale without labels is less fixed. The interpretation of intermediate values is left to respondents. Nevertheless, since the two response scales are almost identical, the use of labels should not interfere with other predictor variables included in the study design.

The order of presentation is an important factor that can have a strong relation to measurement quality. When the social network generator is presented for the first time, then respondents’ processing strategies vary according to the novelty of the question asked. If a particular dimension of social support and the providers of social support are well known to the respondent, the judgment task is easy as the judgment already exists. In this case, it is probably the direct access strategy which is used to produce the answer. If an individual does not commonly use a particular dimension of social support or a particular provider of social support, then the judgment target is new to the respondent. This leaves room for other processing strategies, depending on other relevant variables. Little room is left for a creative answer at the second interview.

There were two interviews conducted with 1 week in between. One of the interviews was rather short (approximately 20 min), whereas the second interview was rather long (approximately 45 min). Social support questions were positioned at the end of both the interviews. When the presentation of social support questions is included at the end of a longer interview, then time pressure may affect the evaluation of stimuli and reporting. In this case, time constraints should be taken into account as one of the factors that determine the selection of a processing strategy. The selected processing strategy under the situation of cognitive overload is likely to be the heuristic processing strategy.

4 Exact wording can be found in Appendix A.
The two data collection techniques differ in many respects. First, when recognition data collection is used, respondents are provided with a roster. This can substantially ease their reporting task. On the other hand, the recognition data collection technique requires evaluation of every member of a group. A large number of evaluations are required in a short time. Furthermore, when recognition data collection is used, respondents are challenged by two different types of targets. The usual providers of social support are known in advance and their evaluation requires little cognitive effort. Thus, direct access is likely to be used. All other members of the group represent atypical targets in their role as providers of social support. When there is enough time, respondents may adopt a motivated processing strategy or a substantive processing strategy. Under conditions of time constraint, the heuristic processing strategy is more likely to occur. The free recall data collection technique, on the other hand, faces respondents with a more complex task. Respondents are asked to elicit and evaluate the providers of social support without the help of the roster. Subjects are thus more likely to list only the most important providers of social support, i.e. they are most likely to use the direct access processing strategy. However, for hypothetical situations or unusual dimensions of social support, there is still room for other processing strategies.

Four social support dimensions were measured: material (exchange of study materials), informational (exchange of information in the case of long-term illness), emotional (discussion of important personal matters) support, and social companionship (invitation to a birthday party). The content of the four network generators was adjusted to age and to other specifics of the research groups. Two network generators — informational support and social companionship — include hypothetical situations and are thus more susceptible to mood effects. Owing to the content of network generators, two dimensions of social support are likely to be provided by a small number of close, well-known providers, i.e. the informational and emotional dimensions of social support (see Ferligoj and Hlebec, 1999). Taking the characteristics of network generators (hypothetical versus actual) and of the providers of social support (few and very important versus many and less important) into account, respondents’ moods are most likely to be associated with measurement instability in the case of material support and social companionship. This relation between respondent mood and measurement instability is unlikely to occur in the case of emotional support, and less likely for informational support independently of other design variables. However, the mediating role of the social support dimension is likely to be confounded with other variables such as time constraint, data collection technique, and presentation ordering.

Two dimensions of social support were measured: giving (the reversed dimension) and receiving (the original dimension) of material, informational or emotional support, and social companionship. However, both dimensions were reported by the same respondent. Therefore, each respondent reported about help (s)he is receiving from others as well as about help (s)he is expected to give to others. These two dimensions differ to a great extent because of the fact that the perception of self is substantially different from the perception of others (Lanyon, 1984; Sherman et al., 1989; Prentice, 1990; Sande et al., 1988; Skowronska et al., 1991). As there are essential differences in the perception of self and others, these differences are probably also reflected in the perception of both dimensions of social support. Social support received from others is probably seen as a self-related trait, whereas the social

---

5 Exact wording can be found in Appendix A.
support asked for by others is probably seen as an other-related trait. If this is the case, then evaluation of received social support represents a more complex and elaborate task than the perception of support rendered. Therefore, the effects of mood are more likely to occur for self-judgments (the original dimension) than for other judgments (the reversed dimension).

Interviewing was conducted in a situation of low personal involvement, as no personal consequences were likely to occur. This should enhance the use of the heuristic processing strategy or direct access. Additionally, no special external factor was present to increase motivation. The role of both factors is likely to increase on the occasion of the second measurement. Only when two presentations of network generators are given within one interview, can cognitive ability be reduced owing to the time pressure. As for cognitive capacities, the respondents included in this study are intellectually superior in comparison to other students of their age. They are from a high school — Gimnazija Bežigrad — which is the most exclusive in Slovenia. The interplay of different factors affecting the selection of processing strategy is summarized in Fig. 1.

Fig. 1. Affect infusion model in the case of social support perception.
Interviews were conducted in January 1998 in four third grade\(^6\) classes consisting of 30 students on average. Paper and pencil data collection mode was used. Data were collected using self-administered questionnaires.

4. The effect of change of mood on the instability of social support measurements

Considering the variables included in the described survey design, there are only a few variables that play important roles in explaining the test–retest stability of social support measurements. Since two interviews were conducted, the majority of factors remained constant. In this study, the following predictor variables were varied: the use of labels, the length of the interview, and the respondents’ moods. The two ordinal scales vary only with regard to labels and are thus unlikely to produce instability of measurement. The most important predictor variable in explaining the instability of measurement would thus be time limitation in long interviews. The relationship between respondents’ moods and measurement is magnified when the measurement instrument is presented at the end of a long interview. The second most important predictor variable is change in mood. For respondents with stable mood, more stable measurements are predicted. For respondents with highly unstable mood, reduced test–retest stability is expected. The relations between mood states and measurements of social support are most likely to occur only when a full range of affective states is present in the research group. With regard to the described factors, several hypotheses can be formulated.

1. Test–retest stability is unlikely to be reduced by changes in either the respondents’ affective states or the characteristics of the research design when the free-recall data collection technique is used. Therefore, in classes 3 and 4, test–retest stability should be independent of changes in respondents’ mood and research design.

2. Test–retest stability is likely to be jeopardized by changes in respondents’ mood and the research design when the recognition data collection technique is applied. Therefore, the relations between respondents’ mood and measurement instability\(^7\) described below can be expected in classes 1 and 2.

3. Change in mood should be related to substantially reduced test–retest stability when self-evaluations are made, i.e. when the original dimension of social support is evaluated. This relation will be less pronounced for the evaluations of others, i.e. evaluation of the reversed dimension of social support.

4. Test–retest stability should be lower primarily in the case of provision of material support and social companionship. The test–retest stability of provision of emotional support is unlikely to be related to change in mood or other relevant design variables.

5. Variations in affective states will likely mediate the association between change in respondents’ mood, other survey design variables, and test–retest stability. Greater variations in affective states should result in increased variations in test–retest (in)stability.

---

\(^6\) Grade 3 in a Slovenian gymnasium is roughly equivalent to American grade 11.

\(^7\) Severe variations in respondents’ mood can on one hand cause a change in the processing strategy, but also produce a lowered or increased perception of social support. However, there is no way to observe these multiple effects separately or allow for causality owing to the correlational nature of the research design.
6. The range of reported affective states should also mediate the relation between respondents’ mood and test–retest (in)stability. In the light of previous research, one can expect that negative mood may assume special importance.

5. Relative measures of instability

A respondent can make at least two types of errors when estimating the members of his/her personal support network. A respondent can change the number of listed ties, network members, or can evaluate existing ties at differing strengths. Therefore, we distinguished two types of relative measures of instability. Generally, relative difference in network size (RDS) as reported by a respondent can be defined as

\[ RDS = \frac{2|\text{network size } 1 - \text{network size } 2|}{\text{network size } 1 + \text{network size } 2} \]

The “relative total instability” (RTI) measure is defined as the sum of two types of errors, i.e. a change in the listed number of support providers, and a change in the strength of ties. Generally, the RTI for a respondent can be defined as

\[ RTI = \frac{2\sum_{i=1,...,n}|x_{i1} - x_{i2}|}{\text{network size } 1 + \text{network size } 2} \]

where \( x_{ij} \) represents an answer given by a respondent for the \( i \)th alter \( j \)th time. The number of alters is \( n \), which is equal to the number of members of the observed group.

Both types of relative errors were calculated for the four interviewed classes. When comparing descriptive statistics for relative measures of instability across classes, several findings were noted. All classes were similar with regard to the mean values of the relative measures of instability. The variability was higher for the relative difference in size in all the four classes.

6. Mood scale

Mood was measured by a scale developed by Rholes et al. (1987). The questionnaire included four positive mood adjectives (elated, cheerful, happy, and good mood) and four negative mood adjectives (sad, discouraged, depressed, and bad mood). Subjects indicated how elated, cheerful, sad, and so forth they were on an 11-point scale. A mood score was obtained by subtracting the sum of a subject’s responses to the negative adjectives from the sum of his or her responses to the positive adjectives.

In order to estimate change of mood, we needed complete information about mood at both time points for each respondent. There were some missing values that were corrected when

---

8 This study was carried out in the context of social networks of high school students. However, the analysis is focused on respondents’ personal networks.

9 According to the authors of the scale, the mood scale in their study was correlated with the Beck depression inventory (Beck et al., 1961 in Rholes et al., 1987) and the AACL Zuckerman inventory (Zuckerman et al., 1964 in Rholes et al., 1987) (\( r = 0.55 \) and 0.58, \( P < 0.05 \), respectively). No such comparisons were done in this experiment.
the sum of positive and the sum of negative mood adjectives were obtained. If a subject did not answer to all mood items (adjectives), then the sum was corrected in the following way:

\[
\text{Corrected sum} = \frac{\text{sum of answers} \times 4}{\text{number of measured answers}}
\]

All the results were computed on corrected values.

7. Results

Mood scale was calculated for the four interviewed classes. Figures indicating the characteristics of the mood scales (MOOD1: mood scale measured at the first interview; MOOD2: mood scale measured at the second interview) and the change in mood (MOODDIF) in each of the four selected classes are presented in Table 2.

Several features can be noted in Table 2. Firstly, the mood was considerably lower on average in classes 3 and 4 (respondents in classes 3 and 4 were on average in a worse mood than respondents in classes 1 and 2 on both occasions). Apart from the data collection technique, the mood in classes 3 and 4 could also reduce the effect of mood on the stability of social support measures. Secondly, there were no respondents in a really bad mood in class 2. The minima were $-20$ and $-16$ for MOOD1 and MOOD2, respectively. This could result in a reduced effect of negative mood on the measurement of social support in class 2. Also the change in mood in class 2 was on average the smallest compared to the mean values of MOODDIF in all four classes. The mean value of MOODDIF in class 2 was 10.97

<table>
<thead>
<tr>
<th>Class</th>
<th>MOOD1</th>
<th>MOOD2</th>
<th>MOODDIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>-26</td>
<td>-38</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>40</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>14.52</td>
<td>14.61</td>
<td>15.39</td>
</tr>
<tr>
<td></td>
<td>15.27</td>
<td>18.18</td>
<td>13.03</td>
</tr>
<tr>
<td>Class 2</td>
<td>MOOD1</td>
<td>MOOD2</td>
<td>MOODDIF</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>-20</td>
<td>-16</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>40</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>13.55</td>
<td>16.84</td>
<td>10.97</td>
</tr>
<tr>
<td></td>
<td>16.70</td>
<td>14.78</td>
<td>9.83</td>
</tr>
<tr>
<td>Class 3</td>
<td>MOOD1</td>
<td>MOOD2</td>
<td>MOODDIF</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>-32</td>
<td>-34</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>39</td>
<td>58(^a)</td>
</tr>
<tr>
<td></td>
<td>10.37</td>
<td>4.70</td>
<td>17.20</td>
</tr>
<tr>
<td></td>
<td>18.39</td>
<td>21.18</td>
<td>15.17</td>
</tr>
<tr>
<td>Class 4</td>
<td>MOOD1</td>
<td>MOOD2</td>
<td>MOODDIF</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>-36</td>
<td>-13</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>33</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>3.36</td>
<td>9.72</td>
<td>15.80</td>
</tr>
<tr>
<td></td>
<td>18.92</td>
<td>13.21</td>
<td>13.30</td>
</tr>
</tbody>
</table>

\(^a\) Only one person reported the change in mood to be 58, the next highest value was 42; mean and S.D. would thus be considerably reduced without this value (mean = 15.79; S.D. = 15.17).
and the maximum value in this class was 33, a figure which is also considerably smaller compared to those for all other classes.

The stability of mood states on two measurement occasions can be estimated by the Pearson correlation coefficient. The value of the Pearson correlation coefficient is 0.27 (n.s.) in class 1, 0.58 ($P \leq 0.01$) in class 2, 0.36 ($P \leq 0.05$) in class 3, and 0.28 (n.s.) in class 4. The stability of mood was very low in classes 1 and 4, considerably higher in class 3, and quite high in class 2. It seems that these classes were quite diverse in regard to the personal characteristics of their members, i.e. their changes in mood. In classes 1 and 4, respondents changed their mood substantially. The mood of respondents was rather stable in classes 2 and 3; therefore, the strongest relation between change in mood and the perception of social support would be expected in class 1.

Therefore, the Pearson correlation coefficients are calculated between the change in mood and both relative measures of instability. The hypothesis is that respondents who had changed their mood substantively on two occasions of measurement should name a different number of persons as providers of four types of social support. This association between change in mood and measurement instability should be shown in the relative difference in size. There should also be a substantive difference in the reported strength of ties listed on both occasions. Both types of measurement instability — a difference in the size of the reported network and a difference in the reported strength of ties — should be present in the relative total instability. Therefore, relative total instability should be positively correlated with the change in mood.

Results presented in Table 3 support several hypotheses. Firstly, there is a considerable difference across the data collection technique as suggested in hypothesis 1 and 2. There are several significant positive values of the Pearson correlation coefficient in classes 1 and 2, where the recognition data collection technique was used. There are no significant values in classes
3 and 4, where the free recall data collection technique was used. The majority of values in these two classes are close to zero. Four values are around $-0.30$, but none is significant.

As expected (hypothesis 3), there is strong evidence of mood effect on the type of answer for survey questions in class 1. Firstly, this was the class where the recognition data collection was used. Both relative measures of instability are related to the change in mood. The higher the change in mood, the higher the relative measures of instability. The relationships between the change in mood and the two relative measures of instability are, as predicted, stronger for the original questions (A) than for reversed ones (B). The relation of the change in mood and both relative measures of instability is significant for the original questions across three dimensions of social support: material (1) and informational (2) support, and social companionship (3). The strength of the relationship is similar between the change in mood and the relative difference in size, as well as between the change in mood and the relative total instability. The relationship is the strongest for material support, followed by social companionship and informational support as suggested in hypothesis 4.

In class 1, the effect relation between respondents’ mood and measurement instability was expected to be strong (hypothesis 5), as respondents’ mood changed substantially in class 1 as opposed to class 2.

As suggested in hypothesis 6, there is only one statistically significant positive value in class 2 where there were no respondents in a really bad mood, i.e. the correlation between the change in mood and the relative difference in size for material social support measured by an original question (1A). Two other values are around 0.30, both with a borderline significance of 0.10. Those values are for the relative difference in size for material support measured by a reversed question (1B), and emotional support also measured by a reversed question (4B). Other values are close to zero for both measures of instability.

8. Discussion

Summarizing the results presented, we can come to several conclusions. All proposed hypotheses were supported by the research data. Test–retest stability was associated with a change in respondents’ mood only in class 1, where the recognition technique was used. The association was absent in class 2, where the recognition data collection technique was again used but no respondents were in a really bad mood. There was no relation between respondents’ mood and measurement instability in classes where recall data collection techniques were used.

Therefore, the free recall data collection technique has an important advantage over the recognition data collection technique. The free recall data collection technique primarily produces strong ties and is quite robust in standing up to the effects of measurement procedure and respondents’ mood.

However, the recognition data collection technique produces a great variety of ties of different characteristics, an attribute which is sometimes irreplaceable. As shown in this study, the unwelcome relation between measurement procedure, respondents’ affective states, and measurement quality may be controlled to some degree. Enhancement of cognitive abilities, motivation, and personal relevance on one hand, and reduction of intrusive external factors, e.g. time constraint on the other hand should contribute to a better quality of collected data.
This superior performance of free recall data collection technique with regard to test–retest measurement instability has not been detected previously (Ferligoj and Hlebec, 1999), since mood was not included in the analysis on the level of the network as a whole. However, analysis on the individual level shows the advantage of a free recall data collection technique over the use of a roster in measuring ties within complete networks.

As hypothesized, the test–retest stability of the four dimensions of social support was related to change in respondents’ mood to various degrees. The emotional dimension of social support was mainly unrelated to change in respondents’ mood, indicating that this type of provision of social support from close and important others is the most stable. The stability of the provision of material support and the measure of social companionship were, as predicted, strongly related to the change in respondents’ mood. The range of change in respondents’ mood mediated the power of change in respondents’ mood to reduce the test–retest stability of support measures. When change in respondents’ mood is high, then change in respondents’ mood has a stronger relation to stability. It was also shown that negative mood must particularly be considered as having a strong association with the stability of evaluation of social support provision.

The affect infusion model (Forgas, 1999) proved to be an adequate framework for explaining the relations between respondents’ mood and the mean levels of attitudinal and social network data. It served well, moreover, to predict the presence and absence of relation between the respondents’ mood and the stability of complete network measurements. However, the results obtained in this study cannot be generalized to a wider population without further tests, since the observed research groups included only high school students. The research design in use included only some of the relevant predictor variables. Mood was not experimentally varied. Personality characteristics affecting the variability of mood, such as extroversion, were not included in this research design. These and other factors would have rendered the findings of the present study more complete.

Acknowledgements

We are grateful to the anonymous reviewers for their valuable and helpful comments on an earlier version of this paper.

Appendix A. Wording of the network generators

Altogether, there were eight different forms of network generators with varying scales and data collection techniques. The questionnaire had four sections.

A.1. Network generator measuring instrumental support with an ordinal scale with labels and with the recognition data collection technique (original question)

You have known your classmates for some time now. It sometimes happens that you cannot take courses for various reasons. From which of your classmates would you borrow study materials?
Indicate your answers on the list below in the following way. For each person, use a number from 0 to 4 to indicate how likely you would be to borrow study material from her/him. Mark 4, if it is certain that you would borrow study material from her/him. Mark 3, if it is very likely that you would borrow study material from her/him. Mark 2, if it is likely that you would borrow study material from her/him. Mark 1, if it is not likely that you would borrow study material from her/him. Mark 0, if it is certain that you would not borrow study material from her/him.

Reversed question: which of your classmates would ask you to lend you study materials? (instructions for respondents were the same as for the original question).

A.2. Network generator measuring informational support with an ordinal scale without labels and with the recognition data collection technique (original question)

Suppose you were ill at the beginning of May, and you had to stay in hospital for 1 month. Which of your classmates would you ask to obtain information about important study assignments?

Indicate your answers on the list below in the following way. Select a number from 0 to 4 to indicate how likely you would be to ask your classmates for help. Mark 4 in the box next to a person’s name if you would certainly ask for help from her/him. Mark 0 in the box next to a person’s name if you would not ask for help from her/him. The more likely it is that you would ask for help from a person, the larger the number should be.

Reversed question: which of your classmates would ask you to obtain study information in the case of a long absence? (instructions for respondents were the same as for the original question).

A.3. Network generator measuring companionship with an ordinal scale with labels and with the free recall data collection technique (original question)

Suppose your birthday falls next week, and you want to give a birthday party. Which of your classmates would you invite?

Indicate your answers on the list below in the following way. List the names of any classmates that you would invite to your birthday party; for each listed person, use a number from 0 to 4 to indicate how likely you would be to invite her/him. Mark 4, if it is certain that you would invite her/him. Mark 3, if it is very likely that you would invite her/him. Mark 2, if it is likely that you would invite her/him. Mark 1, if it is not likely that you would invite her/him. Mark 0, if it is certain that you would not invite her/him.

Reversed question: which of your classmates would invite you to her/his birthday party? (instructions for respondents were the same as for the original question).

A.4. Network generator measuring emotional help with an ordinal scale without labels and with the free recall data collection technique (original question)

With which of your classmates would you discuss important things?
Indicate your answers on the list below in the following way. List the names of any classmates with whom you would discuss important matters; for each listed person, use a number from 0 to 4 to indicate how likely you would be to discuss your important personal matters with her/him. Mark 4, if certain that you would discuss personal matters with her/him. Mark 0, if certain that you would not discuss personal matters with her/him. The more likely it is that you would ask for help from a person, the larger the number should be.

Reversed question: which of your classmates would discuss important personal matters with you? (instructions for respondents were the same as for the original question).

References