

Assessment of health related issues in individuals', couples', and families' daily life

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Abstract. Most research in health psychology is based on retrospective self reports, which are distorted by recall biases and have low ecological validity. To overcome such limitations we developed computer assisted diary approaches to assess health related behaviours in individuals', couples' and families' daily life. The event- and time-sampling-based instruments serve to assess appraisals of the current situation, feelings of physical discomfort, current emotional states, conflict and emotion regulation in daily life. They have proved sufficient reliability and validity in the context of individual, couple and family research with respect to issues like emotion regulation and health. As examples: Regarding symptom reporting curvilinear pattern of frequencies over the day could be identified by parents and adolescents; or psychological well-being is associated with lower variability in basic affect dimensions. In addition, we report on preventive studies to improve parental skills and enhance their empathic competences towards their baby, and towards their partner.

Key words: ambulatory assessment, ecological momentary assessment, electronic diary, health, family, stress, coping, emotion regulation, new media prevention

Since its early days, Health Psychology has been preoccupied with a fundamental methodic question: how to assess the key variables for the study of health behaviour with sufficient validity and reliability?

Such variables include “smoking behaviour”, “coping with stress modalities”, “emotional and somatic subjective well-being” etc. A quick search in the relevant journals (e.g., Health Psychology) reveals that such variables are almost exclusively measured by questionnaires or interview: Subjects are asked for self-assessments of the frequency or the mean of specific behaviours or experiences. However, questionnaires and interviews are inadequate tools for research if actual cognitive, social, psychomotor health-related behaviour or emotional experience is at stake, rather than their subjective representation (Fahren-

berg, Myrtek, Pawlik, & Perrez, 2007). This issue is especially relevant for the following domains: (a) hypotheses on situation-specific behaviour or experience, (b) sequence-specific questions (like spill or cross over), (c) courses of mood or well-being over time, (d) antecedents of health behaviour, or (e) social interactions. The need for alternative or more adequate assessment approaches has been discussed in recent comprehensive publications (Fahrenberg & Myrtek, 2001; Bolger, Davis, & Rafaeli, 2003 or Stone, Shiffman, Atienza, & Nebeling, 2007).

The Fribourg research group works on such alternative methodological approaches, especially in the development of computer-assisted assessment tools for health relevant experience and behaviour in everyday life settings. The group devises and evaluates innovative ambulatory assessment procedures for assessing emotional states and emotion regulation processes in individuals, couples and families. These assessments are grounded in theoretical concepts focusing on the connection between coping with stress and health variables as well as on the connection of health and both individual and interpersonal emotion regulation as modalities of intrapsychic and interpersonal coping. In addition, the group works on the question if dysfunctional emotion regulation modalities can be influenced by preventive interventions in the family setting.

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Ambulatory assessment devices for individuals

Twenty years ago, we developed a computer-assisted diary system to assess coping with daily life stressors (COMES; Perrez & Reicherts, 1987, 1992, 2008). The system uses an event-sampling approach, in which the subject is asked to record every stressful event, its subjective perception (appraisal), and the coping modalities in a given situation. COMES has also been applied to assess stress and coping in intensive care units (Perrez & Matathia, 1993; Malacrida, Bomio, Matathia, Suter, & Perrez, 1991), experienced social support in stressful situations (Perkonigg, Baumann, Reicherts, & Perrez, 1993), or the impact of functional coping at the workplace (Reicherts & Pihet, 2000). Results show that health-related outcomes are associated with specific features of situational appraisals and situation-specific coping reactions (Perrez & Matathia, 1993). Depression is associated with more negative valence, higher expectation of reoccurrence of the stressful event, more evasion, and with passivity in stressful daily situations (Perrez & Reicherts, 1996; Reicherts, 1999). Currently, we are conducting further validity studies. In addition, we are working on norms for central constructs of the COMES. *Recent developments* focus on the measurement of mood and other affective states in daily life, which are relevant for health research. Wilhelm and Schoebi (2007) evaluated the factorial structure, reliability and change sensitivity of a six-item mood scale for time-sampling based momentary assessment in daily life. The results show that three factors, Calmness, Valence, and Energetic Arousal represent fluctuations within persons over time.

The *Learning Affect Monitor* (LAM; Reicherts, Salamin, Maggiori, & Pauls, 2007) combines basic affect dimensions (e. g., valence and activation; cf. Russel, Weiss, & Mendelsohn, 1989) and discrete emotion descriptors (e. g., Izard, 1991). It adapts to users' affective spaces by learning their combinations of dimensional ("core affect") and discrete components of experiencing affect. Self-monitoring using the LAM is very fast, reliable and user-friendly. Results reveal new evidence of daily life affectivity: Psychological well-being is associated with lower variability in basic affect dimensions, and older people are experiencing more positive affectivity (Maggiori, in prep.); Somatoform disorders are associated with less differentiation in affect descriptors (Salamin, in prep.).

LAM is further applied by the research group of M. Reicherts in a study on "Dimensions of Openness to Emotions", a health-relevant multidimensional model of affect processing (DOE; Reicherts, 2007; Reicherts, Casellini, Duc, & Genoud, 2007; Genoud & Reicherts, under review).

Ambulatory assessment devices for couples and families

In order to assess daily life experiences of family members, we developed a *computer-assisted self-monitoring system* (FASEM-C; Perrez, Schoebi, & Wilhelm, 2000). This

handheld device alerts all family members (older than 13 years) with an acoustic signal according to a random time-sampling plan (six times per day over seven consecutive days) to record feelings of pain or physical discomfort in that moment. Additionally, current emotional state, appraisals of the situation, conflict and stress are assessed. The evaluation of FASEM-C indicates satisfactory acceptability, reactivity, reliability and some aspects of validity of this new research tool, suggesting new possibilities for health related couple and family research.

The group conducted two studies with FASEM-C in 568 individuals from 173 families (Perrez, Watzek, Michel, Schoebi, Wilhelm, & Hänggi, 2005). Regarding symptom reporting, Michel (2006a, b) showed that the report of physical complaints varied both on a daily basis and between individuals. However, symptom reports were not related between family members. Daily variations were therefore modelled as a curvilinear pattern of increased symptom reporting in the mornings and evenings and decreased reporting in the middle of the day. This pattern was similar for parents and adolescents, although adolescents reported more symptoms in the evening than their parents (Michel, 2007). In contrast to studies using retrospective questionnaires, the study did not show increased symptom reporting in individuals high in emotionality (neuroticism). Nevertheless, these individuals did not show the curvilinear daily pattern but a relatively constant symptom reporting throughout the day (Michel, 2006b).

Using the same data, Horner (2005) found that participants attributed negative emotional states three times more often to external than to internal causes. This illustrates the self-protective function of causal attributions and confirms previous findings of Perrez and Wilhelm (2000), who observed that after external attributions, prospective changes in positive mood are significantly larger than after internal causal attributions.

In a large European collaborative study, more than 500 couples in seven European countries participated in a one week diary assessment with an adapted version of the FASEM-C ("*Family and work – conflict and synergy*", see: <http://www.eu-project-famwork.org/>). A major topic of interest was the impact of intra- and interpersonal emotion regulation processes on daily well-being and distress (Schoebi, Bradbury, & Perrez, under review).

More recently, a computer-assisted ambulatory assessment tool for an array of *intra- and interpersonal emotion regulation strategies* as well as affective states and situational influences in every day life has been developed in the line of FASEM-C.

The project "*Intra- and interpersonal emotion regulation in families*" led by M. Perrez and M. Reicherts is a project of the National Center of Competence in Research (NCCR) „Affective Science“. Emotion regulation has proven to be associated with well-being and health and plays a prominent role in interpersonal processes (Gross & John, 2003). Emotion regulation can be directed on one's own

affective state, but also on the interaction with a partner's state (Rieder et al., in press). Interpersonal emotion regulation is supposed to include known intrapersonal emotion regulation strategies, which are then applied in the interaction, but also genuine interpersonal processes leading to psychological intimacy. These processes are associated with positive affect and health. The project aims at investigating actor- and partner effects of certain emotion regulation strategies (Horn et al., 2007) on the dyadic as well as the individual level. Associations with health-related variables such as relationship satisfaction, depression, subjective well-being, and self-reported physical health are assessed cross-sectionally as well as longitudinally in a 6 months follow-up.

Can interpersonal emotion regulation modalities be influenced by preventive interventions?

Prevention programs to enhance both mothers' sensitivity and marital quality have proved to be effective (De Wolff & van Ijzendoorn, 1997; Bodenmann, Pihet, Cina, Widmer, & Shantinath, 2006). There is, however, only limited evidence that these preventive interventions can also lower the incidence rate of child disorders. The NCCR-SESAM longitudinal study led by G. Bodenmann and M. Perrez will examine whether family-oriented intervention programs can improve family functioning and child development by using systematic experimental variations of parental competences in interpersonal emotion regulation (see <http://www.sesamswiss.ch/en/sesam/ueber-sesam/teilstudien/teilstudie-b/>). The parental competences program consists of a sequence of trainings according to the developmental stage of the child, starting with a sensitivity training (Juffer, Bakermans-Kranenburg, & van Ijzendoorn, 2004), and a couple training to improve dyadic coping (Bodenmann, 2000) – including interpersonal emotion regulation competence – at the point the baby's age reaches six months. Participants (planned $N = 300$) are couples awaiting their first child. The study will start during pregnancy and is planned to end when the child reaches the age of 15. The research group is currently recruiting the couples for the intervention and the control group.

Intervention by means of new media – online-training for parents

In recent years, new approaches of preventive programs for parenting have been developed and evaluated. The innovative aspect consists in the use of new interactive media technology, particularly CD-ROM, and internet (Hänggi & Perrez, 2005). The online training „coping with stress in the family“ is an example of an internet-based training for parents (www.nofamstress.com). The training provides knowledge about ways to improve coping with stress, communication skills (e. g., empathy), and problem-

solving at the individual level and at the level of family. Results of the evaluation study confirmed beneficial short- and long-term effects (Hänggi, 2006).

Conclusions

The Fribourg research groups focus on the development of computer-assisted ambulatory assessment procedures as tools for studying research questions in health and clinical psychology, and have devised potentially powerful methodological procedures. We expect dynamic future developments, which will result in a deeper understanding of the psychological processes relevant for health behaviour and their effects in daily life from these new possibilities. The advantages – and in some domains, as Fahrenberg et al. (2007) stated – necessities of ambulatory assessment include real time data capture without memory distortions, control over the recording time, the possibility of adaptive presentation of observation categories or scales depending on previous answers, along with easy and error-free data transfer.

The extensive technical possibilities for innovative applications such as portable data collection devices, or online interventions with expert systems have yet to be fully explored.

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