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Structure and functions of internal working models of attachment and their role for emotion regulation

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ABSTRACT The concept of organization in the service of adaptation has been applied to attachment theory (Sroufe & Waters, 1977) as well as to a variety of life sciences (Ryan, Kuhl & Deci, 1997). Internal working models (IWMs) are postulated as providing organizing structure to the attachment behavior system controlling attachment behaviors toward caregivers and, with increasing age, autonomous individual adaptation. While many theoretical specifications have been suggested on that topic (e.g. Bretherton, 1987, 1990; Bretherton & Munholland, 1999; Main, Kaplan & Cassidy, 1985; Sroufe & Fleeson, 1986), empirical studies focusing directly on the structure or functions of internal working models are rare. Knowledge about the structure and functioning of IWMs could add to the understanding of the developmental influences of the attachment organization across the life-span. In this paper two topics will be addressed shortly and related to an empirical investigation concerning the relationship between attachment representations during late adolescence and emotion regulation patterns: (1) structure and functions of IWMs in terms of information-processing and emotion and behavior regulation; and (2) the transfer from IWMs of self-with-attachment figures to adaptive personality structures based on autonomous self-regulation.

KEYWORDS: internal working models – emotion-regulation – procedural ego-resiliency – declarative organization

Bowlby introduced the topic of working models in the first volume of his attachment trilogy (1969) suggesting that, in order to understand human behavior, the existence of internal working models (IWMs) as higher-order control processes in the service of effective adaptation has to be assumed. For successful adaptation within a given environment an organism should develop at least two working models: one of the environment and one about its own abilities. Bowlby here referred to the working models concept with the focus on adaptation and not yet on the specific aspect of working models of attachment *per se*. He emphasized that, in order to make effective use of

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them, working models should be tolerably accurate reflections of one's actual past and current experiences, while also extendable to novel (potential) situations. Bowlby went on to specify working models of attachment as parts of more general working models of the environment and the self with the purpose of regulating the attachment behavior system.

The attachment system is a behavioral safety-regulation system that, if activated, leads a person to seek or maintain proximity of confidants. Basic structures of such behavioral or motivational systems are a sensory subsystem (for perception of sensory input) and a behavior subsystem (providing a variety of possibilities for action) connected within a control system (Dörner, 1996). Working models might then be seen as functioning to regulate the perceptual input and its connection to specific actions in the service of adaptation to the specific attachment figure. The attachment system has accordingly been seen as continuously monitoring relevant internal and external events (Bretherton, 1987) and appraising them, regarding potential danger or stress, and judging the availability of attachment figures (Bowlby, 1980). If the appraisals of such events are experienced as feelings of uneasiness or insecurity, behavior-patterns of proximity-seeking or contact-maintaining to an attachment figure are normally activated as a primary attachment strategy (Main, 1990). However, depending on the individual's caregiving history with his or her attachment figures secondary strategies as (avoidant or resistant) behaviours may be activated instead. The decision to utilize specific actions (approach, avoidance or resistance) is seen as an indicator of the functioning of IWMs. Notably, once IWMs become established, the response of the infant to a danger signal is frequently not the result of the immediate reaction of the caregiver but is the result of the history of reactions of the caregiver, and the emerging pattern of self-regulated actions of the infant.

Following Bowlby (1973) the *content* of working models of attachment figures includes perceptual details of who they are, procedural information concerning how they could be accessed, and beliefs about how they probably will react. For the regulation of the attachment system an important information regarding the content of the internal working models is the evaluation whether the attachment figures are emotionally available, because this influences the expression and communication of attachment needs (i.e. attachment behavior). Regarding the *structure*, Bretherton (1990) has pointed out that there might be different working models for each caregiver, as the attachment patterns can be independent and also different models of the self might exist within each relationship (Bowlby, 1980).

Internal working models have been compared with the schema or script concept as organized representations of former experiences guiding behavior (Bretherton, 1987). They consist of declarative as well as procedural knowledge about interactions, so that they influence the appraisal as well as the behavior reactions. Moreover Main *et al.* (1985) emphasized that working models of attachment have an existence outside of awareness where they permit or limit access to attachment-relevant memories and feelings about the

self and the attachment figures. Thus IWMs of attachment regulate emotional communication within individuals (i.e. access to one's feelings, appraisals and memories) as well as between individuals and attachment figures (i.e. attachment behaviors) (Bretherton, 1990).

The general aim of IWMs has been stated clearly by Bowlby (1973, 1980) as controlling the attachment system and with growing age increasingly influencing the autonomous adaptation of the individual. Based on the assumption that the attachment system is a motivational system the structure of IWMs can be conceptualized as consisting of an information-processing component (rooted in the sensory systems) and an emotion and behavior regulation component (see Table 1). The *functions* of the information-processing component of working models are the perception of internal and external cues and the interpretation or appraisal of these perceptions by comparing them with the data base of one's prior individual attachment experiences of acceptance and regulation of negative emotions. Based on this information-processing, the individual can make predictions about the possible reactions of the attachment figures or possible outcomes of one's own behavior. The emotion and behavior regulation component becomes activated when (negative) emotions arise out of the appraisal process and lead to specific forms of attachment behavior or coping behaviors. Based on the experiences an infant or a child has with his or her caregiver, specific connections between input (e.g. feeling afraid) and specific behaviors for regulation (e.g. proximity-seeking or avoiding caregiver) become established. Empirical evidence for stable long-term individual differences in working models of attachment have been shown for information-processing and interpretation of emotions (Steele, Steele, Croft & Fonagy, 1999), social perception (Suess, Grossmann & Sroufe, 1992), and attention and memory in children (Kirsh & Cassidy, 1997). With respect to emotion and behavior regulation, evidence can be seen in the behavior of infants in the Strange Situation or in reunion situations at older ages (Cassidy, 1994) as well as in a range

Table 1 Functions of internal working models

Function	*Evaluative-declarative organization*	*Implicit-procedural organization*
Perception	What am I aware of?	What do I intuitively recognize?
Interpretation and prediction (in comparison with the data base in memory)	What do I consciously appraise and expect regarding self/others? (Cognition)	What do I appraise and expect regarding self/others? (Feeling)
Regulation of emotion and behavior	What possible solutions can I think of in challenging/stressful situations?	What to do and how to behave when feeling insecure?

of emotionally challenging situations across the childhood years and beyond (Grossmann & Grossmann, 1993; Grossmann, Grossmann & Zimmermann, 1999).

Beside the distinction between an information-processing and an emotion and behavior regulation component, working models can be differentiated between a more conscious evaluative-declarative organization and an automated implicit-procedural organization.

Theoretically this distinction is based on attachment theorists' emphasis that working models of the attachment figures might differ in origin, dominance and conscious access (Bowlby, 1980; Main, 1991). Moreover children until about 5 years of age need relatively direct (behavioral) access to the attachment figures (i.e. procedural organization) whereas later on they rely more on explicit expectations and evaluations regarding their caregivers' availability (evaluative-declarative organization). So working models of attachment as a structure for self-regulation within the person develop from a primarily behavior-regulating function into a more evaluative and predictive function. With growing cognitive development working models develop from procedural, sensorimotor schemata (Crittenden, 1990; Case, 1996) as 'pre-conscious' interaction rules into social scripts and explicit knowledge concerning context-specific emotional states and their causes (Halford, 1993; Harris, 1989; Fischer & Lamborn, 1989). Empirically the differentiation is corroborated by results of the Bielefeld longitudinal study on attachment development showing different levels of continuity for these levels of organization. Attachment quality in infancy, as procedural organization, is related to reported attachment behavior when feeling distressed at age 10 but neither to the evaluation of the parental availability at age 10 nor to the evaluation of the attachment history in the AAI at age 16. The declarative evaluation of the relationship at age 10 was significantly associated with the AAI six years later if divorce was controlled (Zimmermann, 1995; Zimmermann, Fremmer-Bombik, Spangler & Grossmann, 1997). So continuity of working models of attachment may depend on the level of attachment organization assessed.

At the implicit-procedural level, information-processing and regulation of emotion and behavior works by means of automated well-learned patterns where intuitive perception, feelings and appraisals lead to behavioral (attachment) patterns (e.g. seeking-proximity vs. avoidance). Empirical evidence has shown that perception, interpretation and behavior regulation can work well without conscious control (Bargh & Barndollar, 1996; Perrig & Wippich, 1995). This is in line with Bowlby's (1980) and Main's (1991) notion that unconscious effects of internal working models are based on automation of day-to-day interactions with caregivers. Conscious evaluation of relationships and experiences, the construction of plans and problem-solving strategies, becomes possible after the development of an evaluative-declarative organization (closely tied to the emergence of productive language skills). This is the level of the AAI where the explicit perception and evaluation of attachment experiences and their coherence is assessed by comparing the discourse and the general evaluation of the availability of the caregivers (semantic memory) with specific events (episodic memory).

The perspective offered above on the distinction between two distinct levels or modes of organization (an early yet persisting pre-verbal one and a later developing language-driven mode) offers a concept for specific research on the information-processing and emotion/behavior regulation component of IWMs. The main purpose of IWMs remains the adaptive regulation of negative arousal when feeling insecure. Thus, beside generalized expectations (Sroufe & Fleeson, 1986) the regulation of emotional security (Cummings & Davies, 1996) might be the basis for the transfer of IWMs of the attachment figures to IWMs guiding autonomous adaptation or maladaptation. This type of theorizing stems from a developmental attachment perspective informed by contemporary cognitive psychology and ideas concerning social-cognitive information-processing that guide personality functioning and adaptation as proposed in the developmental literature on social cognition (Mischel & Shoda, 1995; Crick & Dodge, 1994).

Emotion and behavior regulation patterns as organized systems of self-regulation imply at least three basic processes which have been widely used in studies of coping or emotion and behavior regulation (Lazarus, 1996; Thompson, 1994; Dörner, Schaub, Stäudel & Strohschneider, 1988). These are: (1), appraisal and emotional reaction elicited by external or internal input; (2) activation of action or of the cognitive production of possible coping-strategies depending on the quality and the extent of the emotional reaction; and (3) possible goal-corrected self-regulation regarding emotional reaction, activation of action, and performed actions (Zimmermann, 1999).

Resilient personality functioning implies that these processes show flexibility in order to allow adaptation to the situation. Such flexibility in regulation of emotions and behavior appropriate to the situation has been operationalized by Block and Block (1980) in their concept of ego-resiliency. It describes the ability to modulate the control of one's desires, feelings and action tendencies appropriate to the situation. Differences in IWMs represent differences in emotion regulation and thus lead to either an appropriate regulation or dysregulation of emotion and behavior. Dysregulation can be the consequence of a rigid appraisal of situations and quick intense emotions, rigid behavior patterns as a consequence of these appraisals, and poor access to and integration of feelings and consequences of own actions. Adaptive emotion regulation which is expected in subjects with secure IWMs is characterized by a flexible use of a variety of cues for interpretation of situations leading to more appropriate appraisals and emotions. As a consequence there might be a broader array of possible coping strategies to deal with the situation or one's emotions and the ability to change the strategy according to the current demands. The third characteristic of adaptive emotion regulation then is the ability to have coherent access to one's own behavior and feelings in order to use them during the regulation process. Access to personal

experiences and feelings becomes obvious in the AAI and is a major characteristic of secure IWMs (Bretherton, 1990). Many empirical studies have shown that attachment organization is related to adaptive personality functioning, social perception, and positive self-concept (Sroufe, 1989; Suess *et al.*, 1992; Kobak & Sceery, 1988; Zimmermann, Gliwitzky & Becker-Stoll, 1996; Zimmermann & Grossmann, 1997; Allen, Moore, Kuperminc & Bell, 1998). However, the specific processes of how attachment security may be related to adaptation, and emotion-regulation as defined above, was not the focus of these studies. If the effect of working models of attachment on adaptive personality functioning is mediated by emotion regulation patterns, the differences between secure and insecure working models of attachment should be found for all three processes of emotion regulation. For the information-processing part of appraisal and feelings a secure working model should be related to more flexible appraisals, appropriate (functional) emotional arousal and, in social perception, a realistic or even more pro-social interpretation of situations (see Suess *et al.*, 1992). Insecure working models should be related to more rigid, quickly negative appraisal, and more inappropriate emotional arousal. At the level of activation of action a secure internal working model should be associated with more flexible constructive and less avoiding coping strategies compared with an insecure working model. The goal-corrected self-regulation should be enhanced in subjects with a secure IWM because of a better ability to access their own feelings and their origin. This leads to an effective feedback in action regulation.

In this study the association between working models of attachment and the three emotion regulation processes specified above was analyzed with data obtained at the declarative level. The aims of the study were to test the hypothesis that differences in working models of attachment operationalized by means of the AAI should lead to differences in the flexibility of the appraisal of situations, flexibility of the action patterns that are produced, and the access to personal feelings. Moreover subscales of the AAI should be tested regarding their contribution to adaptive emotion regulation. For Bowlby the availability and support of the attachment figures (i.e. the content of the working model) was important for adaptation. The AAI classification is based on the coherence of discourse, the integration of experiences and the valuing of attachment (Main, 1991). So the association between adaptation and formal aspects of the AAI (e.g. coherence), the content (e.g. support by parents), and processing of experiences (e.g. integration of attachment experiences) should be tested.

METHOD

The study is part of the Bielefeld longitudinal project, which started at birth with newborn assessments of two cohorts in 1976 and in 1977 (Grossmann, Grossmann, Spangler, Suess and Unzner, 1985). The original sample

consisted of 49 infants (23 girls and 26 boys). The families represented a wide range of socio-economic status with 22% belonging to the upper class, 35% to the middle class, and 43% to the lower middle class, rated by the parents' educational level, father's occupation and family income. In spring 1992 and 1993, 45 (90%) of these children were visited at home within two months around of their 16th birthday. In two cases the assessment was interrupted by the subject, and could not be completed. Thus the final sample for this analysis consists of 43 adolescents (22 girls and 21 boys).

Procedure and Measures

During a four-hour home visit the adolescents were interviewed about their attachment history and their current relationship to parents and friends, and were confronted with a number of hypothetical stories about social rejection. In addition personality descriptions by means of the California Adult Q-sort (Block & Block, 1980) by themselves, their best friends, their parents and the interviewers were assessed.

Adult Attachment Interview The adolescents were interviewed with the Adult Attachment Interview (AAI; George, Kaplan & Main, 1985). The transcribed interviews were rated by means of a German version of the Adult-Attachment-Interview-Q-Sort (Kobak, 1993). This Q-sort consists of 100 items based on Main and Goldwyn's (in press) rating method covering coherency, representation of the relationships to the attachment figures, integration of experiences, valuing of attachment, and other aspects relevant for attachment representation. Each interview transcript is described by two independent raters in a fixed, nearly normal distribution. The two Q-sort ratings are combined and checked for reliability by the Spearman-Brown formula as standard with Q-sort assessments. The combined ratings are correlated with prototype ratings done by experts. The composite reliability of the prototypic Q-sorts rated by experts range from $r(100) = .92$ to $r(100) = .96$. The correlation represents the subject's score on the particular dimension of attachment representation leading to continuous scores of secure, dismissing and preoccupied attachment representation. In addition, there is a prototype for the dimension deactivation vs. hyperactivation of attachment relevant thoughts and feelings in the interview. The revised version of the AAI-Q-sort used here offers the advantage of having scores for each of the patterns of attachment representation compared with the former two-dimensional model where the two patterns of insecurity were differentiated by the deactivation vs. hyperactivation dimension. Two independent coders without knowledge of the earlier attachment status of the subjects, rated each interview, with an average reliability of .78 (Spearman-Brown) and a range from .61 to .91. The AAIs have been coded independently by a third coder according to the method by Main and Goldwyn (in press) which revealed a significant concordance of 80% between the two methods.

The single Q-sort items can be aggregated to mega-items to assess specific aspects of the AAI. This offers the opportunity for specific analysis of the content, the formal quality and the psychological processing apparent in the AAI. For this analysis items are aggregated to subscales regarding three major aspects of attachment representation. The first aspect is the content of the reported attachment relationships where subscales assess the validly reported working model of mother and father that were combined into a score for parents as supportive and available (α = .80), and the reported attachment behavior in childhood (α = .93). The second aspect is the formal discourse quality operationalized as scales for coherency (α = .94) and attachment-relevant childhood memories (α = .92). The third aspect is the psychological processing of attachment experiences manifested in integration of attachment experiences (α = .93) and an overall attitude regarding valuing of attachment (α = .94). The scores have a range on a nine-point scale.

Social rejection task The subjects were confronted with five hypothetical stories about social rejection or social failure (Zimmermann, 1992). The stories were read to the adolescents and covered such topics as being left by one's dancing partner at a ball, not being invited to a friend's birthday party, etc. After the presentation the adolescents were asked to repeat the story to make sure that they understood it. Afterwards they were asked specifically: (1) what they would think in such a situation and how they would explain the situation (attribution); (2) how they would react in such a situation (behavior strategy); and (3) how they would feel and why they would feel that way (access to personal feelings).

The answers were transcribed and rated on rating-scales for each story combined over all stories. The scale *Flexibility of Attribution* assesses whether the subject reports one (e.g. 'nobody likes me') or more possible reasons or explanations for the situation. *Flexibility of Behavior* assesses whether the adolescents report only one solution for the situation (e.g. 'I will never talk to them again') or more reactions from which they choose depending on the situation in order to reach the goal set in the story. The scale *Access to Personal Feelings* assesses whether subjective feelings in the situations are reported in clear quality, clear intensity, and with a rationale. As all three variables describe parts of the adaptation process (Lazarus, 1996) an overall mean score for the three z-transformed scales was computed to assess *adaptive emotion regulation.*

The transcripts were rated by an independent rater blind to other results of the study. Inter-rater reliability was high with concordance of 88%, kappa .89 for the scale flexibility of attribution, 100%, kappa .97 for the scale flexibility of behavior and 96%, kappa .80 for the scale access to personal feelings.

Ego-resiliency The subjects were rated by their best friend, their parents and two psychologists after the home visit by means of the California-Adult-Q-sort (Block & Block, 1980). In order to increase reliability a mean score of all

Q-sort ratings was calculated and correlated with the prototype for ego-resiliency. The correlations are used as raw-scores representing each subject's similarity with the prototype. Ego-resiliency is conceptualized as the ability to control one's impulses, emotions and desires appropriately to the situation and is a measure for adaptive behavior especially under stress, uncertainty or conflict.

RESULTS

Attachment representation and emotion regulation

In order to test the hypotheses that working models of one's attachment history operationalized by means of the AAI are related to adaptability of emotion regulation and by that to resilient behavior correlations between the AAI-Q-sort dimensions, the measures of emotion regulation and ego-resiliency were calculated. Table 2 shows that security of attachment representation is significantly positively correlated with all measures of emotion regulation and with ego-resiliency whereas dismissing attachment representation is significantly negatively correlated with all these measures. The dimension preoccupation is significantly negatively correlated with ego-resiliency and overall adaptive emotion regulation. This turns out most

Table 2 Correlations between adolescents' attachment representations, measures of emotion regulation of the social rejection task, and ego-resiliency at age 16

	Dimensions of the Adult Attachment Interview				
	Secure	*Dismissing*	*Preoccupied*	*Deactivation*	*Ego-resiliency*
Measures of emotion regulation					
Flexibility of attribution	.35*	−.34*	−.13	−.24	.36*
Flexibility of behavior	.35*	−.30*	−.31*	−.24	.57**
Access to personal feelings	.33*	−.39*	−.14	−.33*	.16
Adaptive emotion regulation (mean score)	.50***	−.53***	−.31*	−.43**	.57**
Ego-resiliency (Block-Q-Sort)	.37*	−.32*	−.41*	−.26+	–

Key: *** p ≤ .001; ** p ≤ .01; * p ≤ .05; + p ≤ .10; N = 43

clearly in the relation to flexibility of behavior. A deactivation of attachment-related feelings and thoughts during the AAI is paralleled by poor access to personal feelings in the social rejection task. Whereas the correlation with adaptive emotion regulation is significantly negative the correlation with ego-resiliency reveals only a statistical trend. In general the patterns of adaptive emotion regulation are externally validated by the high correlations with the ego-resiliency ratings which are not based on self-report.

Thus the results show that a secure working model of the attachment history is related to adaptive emotion regulation. However, the AAI is measuring the state of mind with regard to attachment (Main, 1991) and contains several levels of information relevant for IWMs. Security in the AAI is characterized by coherent discourse, integration of experiences, and a valuing attitude towards attachment. The evaluation and expectations regarding the emotional availability of the parents are not very relevant for classification. However, this information is included in the interview and these items are described by Bowlby as key features of working models. So in a second analysis the relation between subscales of the AAI assessing content and formal qualities of the AAI and emotion regulation will be revealed.

AAI-subscales and emotion regulation

Bowlby's hypothesis regarding adaptation is that a working model of parents as supportive and encouraging leads to a resilient personality. In order to clarify whether it is the reliable content of one's working model of the parents, the formal quality of discourse, or the psychological processing of attachment experiences that is mostly related to adaptive emotion regulation the mega-items of the AAI-Q-sort were correlated with the overall score for emotion regulation and with the ego-resiliency scores as shown in Table 3.

Table 3 shows that overall adaptive emotion regulation is significantly positively associated with all mega-items of the AAI-Q-sort. Ego-resiliency, however, was significantly associated only with a working model of parents as supportive, and the processing of attachment experiences (i.e. valuing of attachment and integration of experiences). Reported attachment behavior in childhood failed to reach statistical significance. However, there was no significant association with coherency or childhood memory. Thus adaptation as seen in ego-resilient behavior that is observed by others is strongly related to the processing of attachment experiences and a working model of parents as supportive and available but not to coherent discourse about the attachment history. The overall adaptive emotion regulation pattern as the processing schema of internal working models is related to all dimensions of the AAI.

Table 3 Correlations between AAI-Mega-Items describing content, formal quality of discourse and processing of attachment experiences in the AAI and measures of emotion regulation

AAI-Mega-Items	*Emotion Regulation*	
	Adaptive emotion regulation	*Ego-resiliency*
Reported attachment experiences and behavior (content)		
Support by parents	.37*	.44**
Proximity-seeking	.43**	.28+
Formal quality of discourse		
Coherency	.40**	.25
Childhood memory	.33*	.17
Processing of attachment experiences		
Valuing of attachment	.47**	.34*
Integration of attachment experiences	.55***	.41**

Key: *** $p < .001$; ** $p \leq .01$; * $p \leq .05$; + $p \leq .10$; $N = 43$

DISCUSSION

The present study investigated the relationship between patterns of emotion regulation in a hypothetical social rejection task with attachment representation and ego-resiliency scores. The high positive correlations between adaptive emotion regulation as a rating of statements of the subjects themselves and ego-resiliency as rated by parents, friends and interviewers show the external validity of the assessed emotion regulation patterns. This is especially true for flexibility of appraisal and behavior. So assessing not the content of the subjects' statements but the flexibility of the appraisal and reactions revealed in their answers is relevant for their attitudes and actions that can be observed from outside. Access to personal feelings was associated positively but not significantly with ego-resiliency, so that it might contribute to the overall adaptive process that is observable by friends and parents but in a less prominent way. The hypothesis that attachment representation as an operationalization of a working model of attachment is associated with adaptive emotion regulation patterns was confirmed. A secure vs. a dismissing attachment representation was especially related to all scales of emotion regulation. A secure attachment representation has its effect through appraisal (attribution), behavior, and access to feelings. Preoccupation was mostly related to rigid behavior strategies. This parallels the results when subjects with a preoccupied state of mind cannot find proper solutions during a complex problem-solving task despite high motivation (Zimmermann, Maier & Winter, 1997). Preoccupation as angry and lengthy oscillation of

evaluations of the attachment experiences during the AAI is related to an inability to decide on appropriate actions. In contrast deactivation of attachment-relevant thoughts and feelings was associated significantly with a poor access to personal feelings even outside the attachment context. These results are validated again by the significant associations between attachment representation and ego-resiliency. For deactivation of attachment-relevant memories and feelings there only was a statistical trend. The results replicate earlier findings on the relationships between attachment representation and ego-resiliency especially for external ratings (Kobak & Sceery, 1988; Zimmermann *et al.*, 1996). The analysis for the subscales of the AAI revealed that all aspects of the AAI were significantly associated with the adaptive emotion regulation pattern. Ego-resiliency was associated with the represented experience of supportive parents, reported attachment behavior in childhood, a valuing of attachment, and the integration of attachment experiences. However, the formal aspects of the AAI, coherency and childhood memory showed no significant relation with ego-resiliency. So for the internal processes of emotion regulation all subscales of the AAI are influential. For adaptive behavior observable from outside as ego-resiliency, two of the criteria for a secure attachment representation could be shown as influential. According to Bowlby's hypothesis working models of parents as supportive and available when needed and the ability to seek support when subjectively necessary clearly are related to successful adaptation. The confidence in the helpfulness of the parents is related to an open-minded appraisal of social situations. The psychological processing of attachment experiences as an explicit evaluation of their relevance for one's own personality combined with a valuing attitude towards attachment offers the way for flexibility in interpretation, feeling and behavior. It might be seen as successful updating of working models, which is effective for sensitive care towards one's own children (Main *et al.*, 1985; Grossmann, Fremmer-Bombik, Rudolph & Grossmann, 1988) but also for other social situations. Incoherency and childhood memories which are important criteria for the AAI classification influence emotion regulation patterns and not significantly ego-resiliency. Incoherency is an indicator for the existence of multiple (incoherent) working models (Main, 1991) so that discrepancies between working models affect the intra-psychic flexibility. At the declarative level, like the discourse on attachment history or for statements regarding hypothetical social rejection situations, coherency plays an important role. Whether or not the pattern then will be observable at the behavioral level, the working model of parents as helpful and the processing of attachment experiences might have more impact.

The relationship between attachment representation and adaptive emotion regulation in this study is based on the reactions to a hypothetical social rejection situation. Although the association with external ratings of ego-resiliency clearly shows the validity of the task the association attachment representation and emotion regulation should be validated in other contexts.

Application of the emotion regulation model in non-social problem-solving tasks corroborates the results of this study (Zimmermann *et al.*, 1997). However, because of the sample size replications of the study would be favorable. The study of emotion regulation patterns as the mediating variable between working models of the attachment figures and adaptive personality functioning could offer insights into the self-regulation of individuals and their developmental precursors. Secure working models are related to more inner flexibility to appraise situations, to find appropriate reactions, and to know how and why one feels during social interactions.

Notably, this study assessed IWMs at the evaluative-declarative level but future studies should aim to assess both the evaluative-declarative and the automated procedural or behavioral levels of IWMs in order the better to understand the interactive, and possibly unique, influences of these developmentally distinct levels of internal regulation upon observable behavior and overall adaptation. Further work is needed to help identify how information-processing and behavior regulation mechanisms are activated and regulated in specific domains and (possibly) based on specific (prior) attachment experiences. Such work promises to yield a better understanding of how internal working models of attachment actually 'work'.

NOTE ON CONTRIBUTOR

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Individual differences in understanding emotion: the role of attachment status and psychological discourse

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ABSTRACT Recent studies have shown how children develop an understanding of emotion: pre-school children identify and talk accurately about the basic emotions and increasingly appreciate the way that desires and beliefs give rise to those emotions. However, children also display stable individual differences in their understanding. Two different interpretations of such individual differences are discussed. Caregivers show more or less sensitivity to their children's emotions. One interpretation, therefore, is that early variation in caregiver sensitivity is responsible for individual differences in children's attachment status; in turn, children's attachment status leads to enduring differences in their understanding of emotion. A second interpretation focuses on the fact that children grow up in families that vary in the manner and extent to which feelings are put into words. Accordingly, early differences in family discourse about emotion, especially on the part of the primary caregiver, may lead to variation among children in their understanding of emotion. Evidence supporting or undermining these two different interpretations is reviewed.

KEYWORDS: attachment status model – caregiver sensitivity – family environment – psychological discourse model

During the last few years, research has increasingly begun to document the existence of marked individual differences among children in their understanding of emotion. Investigators have also called attention to the possibility that children's family environment is, at least in part, responsible for that variation (Harris, 1994). In this paper, I briefly describe important developmental landmarks in the development by young children of an understanding of emotion. I then review recent studies of individual differences in such understanding, especially studies that have included a longitudinal assessment of their stability and likely antecedents. Finally, I consider two different interpretations of the way that the family might contribute to those individual differences: an 'attachment status' model in which variation in caregiver sensitivity brings about variation in the child's attachment status, which

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