

Autobiographical Memory and Suicidal Behavior in Bipolar Disorder

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Abstract

Title of thesis: Autobiographical memory and suicidal behavior in Bipolar Disorder

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The “cry of pain” model for suicidal behavior has received empirical support in studies of several mental disorders. As the first of its kind this study aims at investigating the association between overgeneral autobiographical memory, a vital aspect in the “cry of pain” model, and suicidal behavior in Bipolar Disorder. Further, this study seeks to explore the association between overgeneral autobiographical memory and hopelessness and exposure to trauma.

Individuals with previous suicidal behavior ($n=8$) and without suicidal behavior ($n=28$) were compared on ability to produce specific memories in response to the Autobiographical Memory Test (Williams & Broadbent, 1986). Subjects were recruited from Diakonhjemmet Hospital ($n=26$) and Sørlandet Hospital, Arendal ($n=10$). The present study does not find an association between overgeneral autobiographical memory and suicidal behavior. However, the study finds that the suicidal group tends to produce fewer total autobiographical memories. In relation to trauma, no associations are found either for suicidal behavior or overgeneral autobiographical memory. A significant and systematic association is found between specific autobiographical memory and recent life events.

To conclude, the findings of the current study does not confirm an association between suicidal behavior and autobiographical memory in Bipolar Disorder. Still, due to limited statistical power and a low prevalence of suicidal behavior in this study, one cannot discard the existence of such an association as findings reveal a tendency towards less specific autobiographical memory in the suicidal group. As such, the current study does at best present an inconsistent picture in respect to the “cry of pain” model’s applicability to Bipolar Disorder. Neither trauma nor hopelessness was found to be associated with autobiographical memory or suicidal behavior. Finally, an association between autobiographical memory and recent life events was found.

Preface

In this process it has been inspiring for me to investigate a hypothesis that has not previously been investigated. To be able to conduct independent research has been interesting and educational. However, it has been time-consuming and at times frustrating. As such, it has given me insight regarding both the challenges and charms of research. Numerous applications have been written, and several meetings attended at the acute ward, intermediate ward and the district psychiatric center. Furthermore, to gather data in the hectic environment of a large psychiatric ward has presented itself a challenge. Then again, it has been interesting to meet and interview patients admitted to inpatient treatment, some of which have been highly symptomatic, and to have contact with the clinicians at the wards.

The process from the application to the Regional Committee for Medical Research Ethics (REK) to the finished product has been a long and extensive one. Still, as mentioned above, it has been a highly educational and stimulating process, which has given me a lot at both a personal and academic level.

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1. Introduction

With nearly 900 000 deaths from suicide every year, suicide take more lives than homicide and war combined (World Health Organization, 2003), making suicide the thirteenth leading cause of death worldwide (World Health Organization, 2002). Counting family and friends of the deceased this adds up to a staggering total of people affected. Just above 500 deaths are reported as suicides in Norway annually (Statistics Norway, 2007). Research findings place Bipolar Disorder as the leading psychiatric disorder when it comes to death by suicide, with rates of suicide in this group appearing to be 15 times of that it in the general population (Harris & Barraclough, 1997). Studies report that as many as 10 % to 15 % of individuals with Bipolar Disorder complete suicide (Goodwin & Jamison, 2007). It is estimated that 25% to 50% attempt suicide at least once (Jamison, 2000).

On the basis that most of those who complete suicide have a psychiatric disorder, and most of individuals with a psychiatric disorder still do not commit suicide, one can conclude that a psychiatric disorder is not a sufficient condition for completed suicide (Mann, Waternaux, Haas & Malone, 1999). From accumulating findings it is evident that suicidal behavior is a consequence of an interaction of several components of a social, psychological and biological nature (Van Heeringen, Hawton & Williams, 2000), consequently suicidal behavior can be studied at multiple levels. This study will focus on a model of suicidal behavior within the psychological approach to suicidal behavior, the “cry of pain” model. A thesis of this scale necessitates constraints, and this study will therefore limit its focus to whether a principal process in this model, overgeneral autobiographical memory, is associated with suicidal behavior in Bipolar Disorder.

The backdrop of this study includes a previous study conducted by Pettersen and Rydningen (2006; Pettersen, Rydningen, Christensen & Walby, submitted 2007). They examined the relationship between overgeneral autobiographical memory and suicidal behavior in a sample with Schizophrenia. Their findings indicated an association between the two, thus supporting the validity of the “cry of pain” model in Schizophrenia. The study in question will, as the first of its kind, investigate whether the same finding pertains to individuals with Bipolar Disorder. Furthermore, I will expand the approach by studying the relationship between autobiographical memory and trauma, also an association not previously investigated. The rationale for this is presented at a later point in this paper. To my

knowledge, neither autobiographical memory deficits nor trauma in relation to suicidal behavior, have previously been studied in Bipolar Disorder.

In the following, a clarification of terminology used in the current study is presented, before presenting the “cry of pain” model and relevant literature. Subsequently, Bipolar Disorder and the matter of suicidal behavior, trauma and cognitive deficits in this clinical population will be explored. Finally, the aims of this study will be elucidated.

1.1 Suicidal Behavior

In the suicidological literature one will find that several definitions are frequently applied to the same terms. With this backdrop the following section will elucidate the key terms that will be used in this study.

1.1.1 Suicide

This study bases itself on a renowned definition of suicide:

“Suicide is a conscious and deliberate act a person has performed to injure himself or herself and where the inflicted injury has led to death” (Retterstøl, Ekeberg & Mehlum, 2002, p. 12, authors translation).

1.1.2 Suicide Attempt

There are several terms used in relation to non-fatal suicidal acts. One definition of attempted suicide provided by The Worlds Health Organization is as follows:

“An act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behavior that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage.” (Kerkhof, 2000, p. 51).

The current study will use a definition by Retterstøl et al. (2002):

“A conscious and deliberate act a person has performed to injure himself or herself, where the individual could not be certain to survive, but where the inflicted injury has not led to death, and where an intention to die, even if weak, has been present” (Retterstøl et al., 2002, p.13, authors translation).

It is difficult to differentiate acts of self-harm. The suicidal intent is crucial in some definitions presented on attempted suicide, yet not in others. The ICD-10 (1993) uses the term “deliberate self-harm”, which includes acts of self-harm with both suicidal and non-suicidal intent, thus not distinguishing between the two. The intent to die is nor included in the definition of suicide attempt by the WHO presented in the above. Still, this definition entails the presence of “non-habitual behavior”, which is not the case in self-mutilation, where the destructive behavior is a habitual response to adverse life events (Van Heeringen, 2001b). Consequently, the definition of attempted suicide used by WHO does not include habitual self-harm, unlike the definition “deliberate self-harm” by ICD-10 (1993). The same is true for the definition provided by Retterstøl et al. (2002), were we additionally find an emphasis on the aspect of suicidal intent.

1.1.3 Suicidal Ideation

Suicidal ideation is understood as thoughts of the individual concerning taking his/her own life, that either occur spontaneously or when questioned (Retterstøl et al., 2002).

1.1.4 The Relation Between Suicidal Ideation, Attempted Suicide and Completed Suicide

In the following, the reader will be given a short introduction to the relationship between suicidal ideation, attempted suicide and completed suicide, all being vital concepts in the complicated suicidal process.

A core characteristic of suicidal ideation is its ambivalence and fluidity, making it a poor short-term predictor for completed suicide. Long-term, on the other hand, an individual’s peak intensity of suicidal ideation appears to better predict completed suicide (Kerkhof & Arensman, 2001). A previous suicide attempt is a robust predictor of a subsequent suicide attempt or completed suicide (Hawton, Sutton, Haw, Sinclair & Harriss, 2005), illustrating

that repetition is one of the primary characteristics of suicidal behavior. Eventually 10 % to 15 % of individuals with a history of suicide attempts die by suicide (Maris, 1992). However, an attempted suicide should not be viewed as a failed suicide (Kerkhof & Arensman, 2001); the reason for this being that the epidemiology of suicide attempts differs markedly from that of completed suicide (Simon, Hunkeler, Fireman, Lee & Savarino, 2007). The most evident discrepancy being that those who attempt suicide tend to be young and female, while those who complete suicide tend to be older and male (Simon et al., 2007). Then again there are several areas where attempted suicide and completed suicide converge (Williams, 1997), and many share the understanding that there is an overemphasis on the discrepancies between suicide attempts and completed suicide (Pettersen & Rydningen, 2006).

According to the “cry of pain” model, which will be explained in greater detail shortly, less serious suicidal behavior is an attempt to re-establish escape routes following defeat or rejection. Similarly, lethal suicide attempts and completed suicide represent the “cry of pain” from a person who feels completely defeated, with no escape routes and no possibility of rescue. From this viewpoint suicide attempts and completed suicide can both be understood as responses to internal and external circumstances, occurring at different points in a downward spiral of hopelessness. Thus, the “cry of pain” model does not perceive suicide attempts and completed suicide as qualitatively distinct.

1.2 The “Cry of Pain” Model

There are several important current theories of suicidal behavior (e.g. Mann et al., 1999; Shneidman, 1987; Van Heeringen, 2001a) giving different weight to psychological, biological and social factors related to suicide. Among the psychological models, Mark Williams’ “cry of pain” model is often seen as the most influential theory at present. This paper seeks to further expand parts of the “cry of pain” model, and in the following the model will be presented in its entirety to give a complete backdrop for the hypotheses investigated and discussed.

Williams (1997) have incorporated basic psychological mechanisms that contribute to the triggering of suicidal crises into a comprehensive model of suicidal behavior. According to the model there are three components present in a situation eliciting suicidal behavior:

Defeat, perceived entrapment and no prospect of rescue. A helpful starting point in the account of suicidal behavior, used to exemplify the “cry of pain” model, is a type of behavior found in animals discussed by Paul Gilbert (1989, in Williams & Pollock, 2001). Two birds fighting over a territory produces a winner and a loser. If the losing bird is able to move on to another territory, it will not suffer to a great extent from the loss. In contrast, if the bird is not able to escape, it becomes overwhelmed to the point of paralysis, and in some cases results in the bird’s death. According to Williams and Pollock (2001) it is the combination of defeat and perceived entrapment that evoke the response in the bird. Further, a third component is highlighted, the absence of rescue factors. If the bird is removed from the entrapped situation it will recuperate, the recovery-time reliant on the prospect of rescue. Hence, the degree of presence or absence of rescue factors governs the duration of the helplessness-response. According the “cry of pain” model an individual who experiences a situation containing all the three components of defeat, entrapment and no prospect of rescue are vulnerable to a helplessness-response similar to the one described above and further illustrated in figure 1.

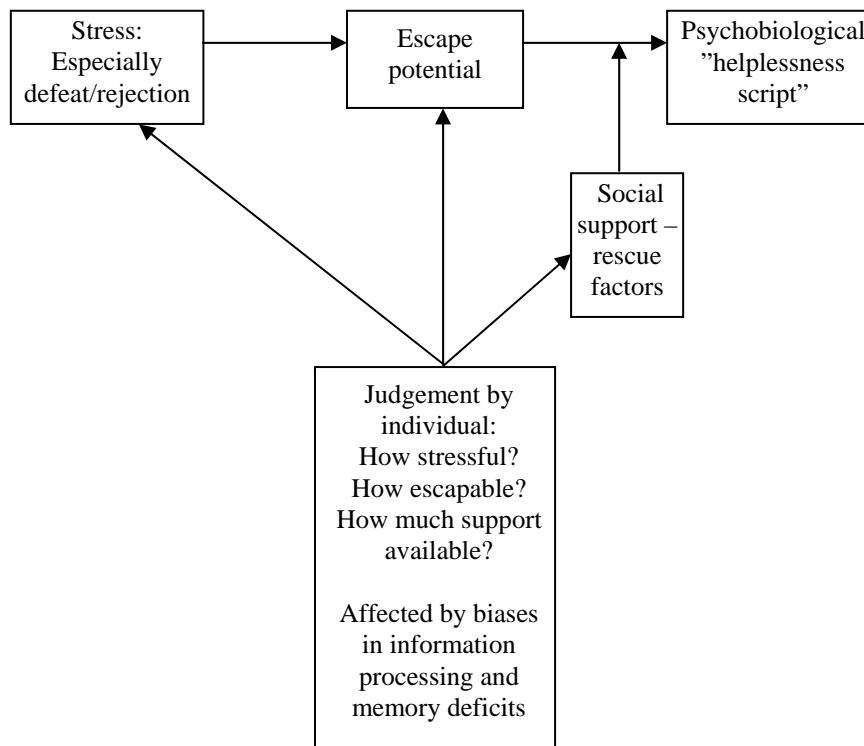


Figure 1. Internal and external stresses (especially those that signal defeat, reversal, loss or rejection) combined with differences in a person's ability to see a way of escaping or being rescued, cause the helplessness biological script to be activated. The strength of the activation of the script is moderated by information-processing biases that affect the perceived aversiveness and likelihood of escape and rescue (Williams & Pollock, 2001, p. 79)

There exist biases in information processing and memory that influence to what extent the individual perceives the situation as signaling defeat, entrapment and likelihood of rescue. According to the "cry of pain" model the result of this type of overwhelming situation will be an elevated risk of suicidal behavior. Williams (1997) emphasizes suicidal behavior as a response to the pain in the overwhelming situation, thus primarily understanding suicidal behavior as a "cry of pain" and only secondary as a "cry for help". Help may still be an important incidental consequence, although the behavior is not motivated by its consequences alone (Williams & Pollock, 2000).

As mentioned earlier Williams (1997) does not see suicide attempts and completed suicide as qualitatively distinct, and suggests that they derive from the same underlying mechanisms. Williams argues that the differences in epidemiology of suicide attempts and completed suicide, such as age and sex differences, can be explained by individuals differing at what point they take action when they perceived themselves as trapped.

In the following each of the three components described above will be examined and empirical evidence presented.

1.2.1 Defeat

In accordance with the “cry of pain” model mechanisms of attention play a vital role in sensitivity to signals of defeat. Findings demonstrate that stimuli of great importance to the individual tend to “jump out”, and this is closely related to the “cocktail party phenomenon”, referring to the ability to hear your own name in a noisy party setting (Williams & Pollock, 2001). This bias in attention will cause the individual to pay overt attention to signals of defeat, and the person will thus tend to end up seeing to see himself or herself as a loser.

Dichotomous or “black-white” thinking is also of interest in the context of defeat. Most people appear to have the capacity to ignore dichotomies, but suicidal individuals are found to have difficulties in moderating their expectancies, thus making them more prone to see themselves as losers or as rejected by their surroundings (Neuringer, 1976, in Williams & Pollock, 2000). According to the model, signals of defeat are not alone sufficient to produce a situation eliciting suicidal behavior, but they make the individual more vulnerable for perceived entrapment.

1.2.2 Perceived Entrapment

Autobiographical Memory

The “Cry of pain” model suggested that a major factor in attempted suicide and completed suicide is the feeling of being trapped. According to Williams (1997): “*memory provides the key to understanding how, when someone feels under pressure from their life circumstances, they begin to feel trapped in a mental cage from which they appear unable to escape*” (p.159). The “cry of pain” model puts an emphasis on memory because it is the basis on which we make predictions about the future. Biases in memory will therefore lead to biased predictions concerning the future (Williams, 1997).

Current views of autobiographical memory structure are strongly influenced by Conway and Pleydell-Pearce’s theories, which assume that voluntary retrieval has a hierarchical structure (Conway & Pleydell-Pearce, 2000). Although a firmly supported theoretical notion, there

still exists only modest empirical evidence for the existence of a hierarchical structure (Williams et al., 2006). One of the exceptions being a study conducted by Williams et al. (2006) who reports data consistent with Conway and Pleydell-Pearce's theory. Williams et al. (2006) found that non-clinical subjects, when failing to retrieve a target event, responded with a memory at a higher level in the hierarchy. Furthermore, they found that manipulation of memory specificity affected problem solving. According to Conway and Pleydell-Pearce's theory a cue gives rise to a search that moves through the stages of semantic association and categoric memories before reaching the stage of specific memories (See figure 2).

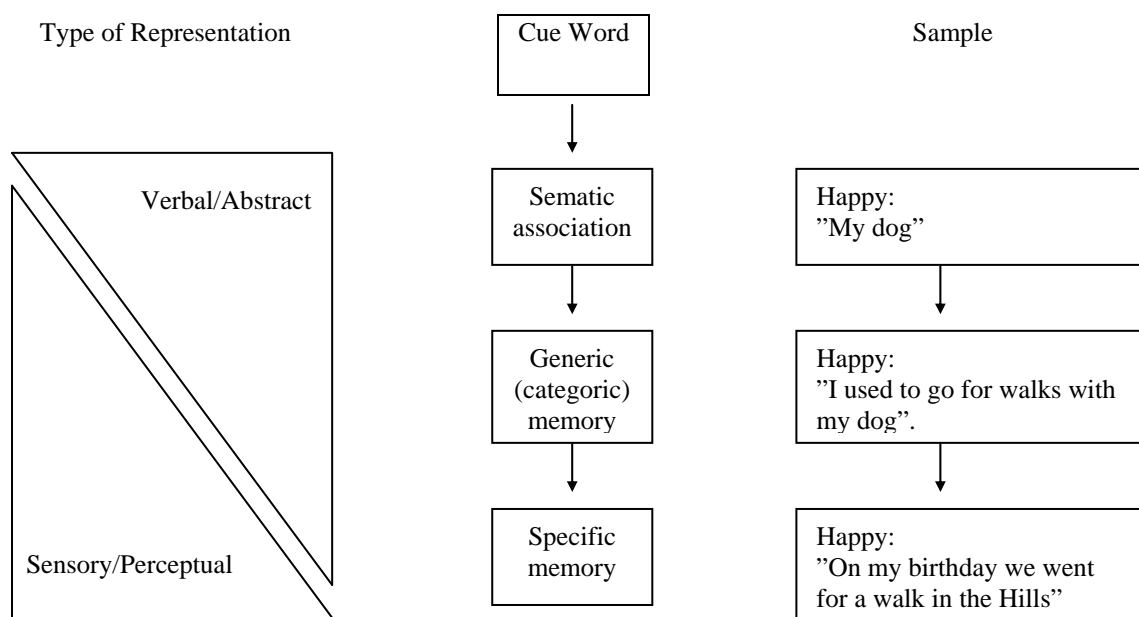


Figure 2: Representation of memory search process (Williams et al., 2007).

The focus of this study will be a feature of autobiographical memory found to be associated with suicidal behavior, overgenerality. In the instance of overgeneral autobiographical memory it appears that the retrieval search never arrives at the stage of the specific memory, but halts at a higher stage in the memory hierarchy. Research presents compelling evidence that specific autobiographical memory, on the basis of presenting examples of previous experiences and successful problem solving, is vital in effective problem solving and in the ability to generate specific images of the future (Williams et al., 2007). Following Williams and Broadbent's finding of overgeneral autobiographical memory in a depressed sample in 1986, this finding has been replicated a range of different clinical samples compared to non-clinical samples, including Post Traumatic Stress Disorder (Kangas, Henry & Bryant, 2005;

Schonfeld & Ehlers, 2006), Borderline Personality Disorder (Jones et al., 1999), Obsessive-Compulsive Disorder (Wilhelm, McNally, Baer & Florin, 1997), Schizophrenia (Wood, Brewin & McLoud, 2006) and Bipolar Disorder (Mansell & Lam, 2004; Scott, Stanton, Garland and Ferrier, 2000; Tzemou & Birchwood; 2006). A review of fourteen studies confirm the differences in autobiographical memory specificity between clinical depressed groups and non-clinical groups, with clinical samples displaying less specific memories (Vreeswijk & de Wilde, 2004).

A limited number of studies have examined overgeneral autobiographical memory in Bipolar Disorder, the author of this paper has been able to identified three. Scott et al. (2000) reported that individuals with euthymic Bipolar Disorder displayed a larger quantity of overgeneral autobiographical memories compared to a healthy control sample. Further, they found an association between overgeneral autobiographical memory and poorer problem solving. Mansell and Lam (2004) compared samples of euthymic Bipolar Disorder and remitted Unipolar Depression, and found the bipolar group to have less specific autobiographical memory. A recent study by Tzemou and Birchwood (2007) found poorer problem solving and overgeneral autobiographical memory, replicating Scott et al. (2000). Additionally, the findings of Tzemou and Birchwood (2007) were unrelated to phase of illness, lending support to the notion that deficits in problem solving and overgeneral autobiographical memory are not state-dependent, but stable traits of the disorder.

As illustrated above, there is compelling empirical evidence on behalf of the presence of overgeneral autobiographical memory in clinical samples compared to controls. Furthermore, several studies have investigated the association between suicidal behavior and autobiographical memory in clinical samples. Within these clinical samples, mostly consisting of less severe mental illnesses, the patients with previous suicidal behavior display significantly more overgeneral autobiographical memories than the patients without suicidal behavior (Arie, Apter, Orbach, Yefet & Zalsman, 2008; Pollock & Williams, 2001; Williams & Broadbent, 1986). Hence, findings suggest that individuals with psychiatric illness produce fewer specific autobiographical memories compared to normal controls, with those within the clinical sample exhibiting previous suicidal behavior having even greater difficulty. The association between overgeneral autobiographical memory and suicidal behavior has not previously been investigated in Bipolar Disorder.

Possible Origins of Overgeneral Autobiographical Memory

As demonstrated by the research presented earlier, many studies find a robust association between overgeneral autobiographical memory and suicidal behavior in a range of clinical samples. What may be the reasons for the development of this less specific style of retrieval?

On the basis of research, Williams et al. (2007) suggest that there are three processes that may independently, or in combination, contribute to overgeneral autobiographical memory (Figure 3). Capture and rumination, and executive capacity and control will be described briefly below, before turning to an in depth description of the process of functional avoidance, more specifically, the affect-regulation hypothesis.

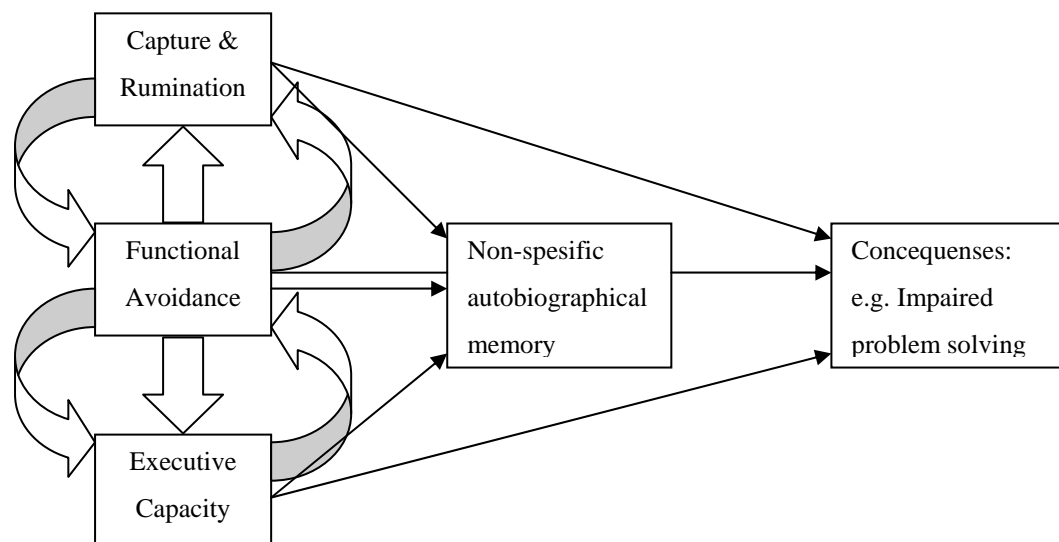


Figure 2. The CaR-FA-X model (Williams et al., 2007).

Rumination on the same topic is believed to be a vital basis in the formation of overgeneral autobiographical memory. Ruminative negative thinking can even be activated by a positive cue word (e.g., proud), which gives connotations to negative feelings (e.g., I have nothing to be proud of, I am a failure), and takes place at a general level that disrupt the access to specific memories (Williams, 2006). Further, it is suggested that deficits in executive capacity and control can cause the individual to get caught in a “mnemonic interlock” that stops at the general level of retrieval (Williams, 2006).

In the development of autobiographical memory deficits, exposure to trauma, has long been assumed to be of profound importance. Through engaging in functional avoidance of

traumatic memories a person can evade negative affect. We now turn to expand further on the affect-regulation hypothesis.

Trauma

In the field of trauma and memory research there has typically been two areas of focus. Firstly, irregularities in the autobiographical memory of the traumatic events, and secondly, the possible more global disruption of memory, reflected by overgeneral autobiographical memory also for non-traumatic events (Moore & Zoellner, 2007). The latter area is of particular interest in the context of this paper. Many theorists, among them Williams (1997) in his “cry of pain” model, have postulated that overgeneral autobiographical memory is a protective mechanism to help the individual regulate negative affects associated with previous trauma. According to Williams’ affect-regulation hypothesis, retrieval of less specific memories will reduce the negative affect experienced with recollection of past painful events. Further, the tendency to retrieve less specific memories will develop into a more global general retrieval style, also including memories of non-traumatic events. This perspective of overgeneral autobiographical memory as a protective mechanism is a view held by many theorists. Evidence has been offered for the relation between overgeneral autobiographical memory and previous trauma history (De Decker, Hermans, Raes & Helen, 2003; Williams, 2006). Still, there exists a controversy regarding trauma as the principal mechanism in the development of overgeneral autobiographical memory (Moore & Zoellner, 2007).

According to Moore and Zoellner (2007), Williams’ affect-regulation hypothesis has not been subjected to a thorough evaluative review. They conducted a meta-analysis of 24 studies assessing trauma exposure and overgeneral autobiographical memory. The samples included a range of clinical disorders, including Post Traumatic Stress Disorder, Acute Stress Disorder and Depression. The review shows no consistent association between previous trauma exposure and overgeneral autobiographical memory. These findings imply that previous history of trauma may not be the primary mechanism behind overgeneral autobiographical memory. In other words these findings suggest that trauma may not be sufficient to produce overgeneral autobiographical memory. Instead, they found psychopathological factors such as depression and posttraumatic stress to be more consistently associated with overgenerality.

To the best of the author's knowledge the association between exposure to trauma and overgeneral autobiographical memory has not previously been investigated in Bipolar Disorder. Additionally, many theorists support the notion that trauma can alter retrieval of memories resulting in retrieval of less specific autobiographical memories, while others question this assumption. For these reasons it is of interest to further investigate the association between trauma, autobiographical memory and Bipolar Disorder.

Problem Solving

The most commonly associated consequence of overgeneral autobiographical memory is poor problem solving as measured by the Mean Ends Problem Solving task (MEPS) (Pollock & Williams, 2001; Raes et al., 2005; Sidley, Whitaker, Calam & Wells, 1997). MEPS is found to be intimately related to difficulties in solving real life problems (Marx, Williams & Claridge, 1992). Pollock and Williams (2001) found deficits in both problem solving and overgeneral autobiographical memory to be more pronounced in suicidal patients, than in normal controls and other clinical samples with equal levels of illness severity. These findings lend further support to previous findings reported (Evans, Williams, O'Loughlin & Howells, 1992; Sidley et al., 1997). Findings by Williams et al. (2006) suggest, on the basis that problem solving was affected by manipulating level of specificity of memory, a causal role of overgeneral memory in problem solving.

There is compelling evidence for the presence of deficits in problem solving in individuals with suicidal behavior. Data is ambiguous in regards to what extent the differences observed are lasting traits or state-dependent; state-dependent, in this instance, meaning limited to proximity of suicidal behavior. This ambiguity is due to the fact that studies of these psychological processes are frequently carried out in close proximity to the suicidal behavior (Williams, Barnhofer, Crane & Beck, 2005). Findings suggest, on the basis that individuals with previous suicidal behavior exhibit deficits in problem solving in periods with low suicidal ideation, that problem solving may be a long lasting trait in these individuals (Pollock & Williams, 2004).

According to the "cry of pain" model it is not poor problem solving per se that is of importance, it is how it tells the individual that there is "no escape". General memories contain fewer hints on how to confront a situation that signals defeat and rejection. Poorer access to specific memories reduce the likelihood that the person will find cues, in a

situation, of what behavior they can engage in to ease their distress and feeling of defeat. Hence, making the individual ill equipped to use prior experience to generate potential solutions to current problems (Williams, 1997).

The findings presented above are consistent with the “cry of pain” model’s assumption that the presence of specific memories are vital in problem solving, and that the lack of access to specific memories contribute to increases in levels of hopelessness and feelings of entrapment, leaving the individual more vulnerable and prone to suicidal behavior.

1.2.3 No Prospect of Rescue

The psychological processes that turn the crisis situation, brought forth by signals of “defeat” and “no escape”, into a suicidal situation are those that signal “no rescue”, that nothing will change in the future (Williams & Pollock, 2000).

Hopelessness

As discussed in the “bird” analogy, the “cry of pain” model includes a third component; whether rescue factors are perceived to be present by the individual (Williams & Pollock, 2001). How does this perception of “no rescue” arise? In the “cry of pain” model, as described earlier, the lack of specific memories cause poorer problem solving, which again cause hopelessness. In keeping with this notion, there is evidence that overgeneral autobiographical memory contributes to an increase in hopelessness in samples of adolescents (Arie, Apter, Orbach, Yefet & Zalzman, 2008) and adults (Williams et al., 1996). The concept of hopelessness refers to a negative view of the self in relation to the future. Hopelessness is a crucial aspect in suicidal behavior with numerous studies linking the two (Beck, Brown, Berchick, Stewart & Steer, 1990; McMillian, Gilbody, Beresford & Neilly, 2007). Findings demonstrate that hopelessness mediates the relationship between problem solving appraisal and suicidal ideation (Dixon, Heppner & Rudd, 1994), and is a main factor in mediating the relationship between depression and suicidal behavior (Dixon, Heppner & Anderson, 1991), with findings suggesting that suicidal intent is more closely related to hopelessness than to depression (Beck et al., 1985). The latter implying that depression, per se, is not sufficient to produce an elevated risk of suicide; it is when feelings of hopelessness occur that risk of suicide increases.

To be able to investigate this topic in more depth, Williams and Pollock (2001) look to research in the domain of prospective cognition. Prospective cognition refers to the ability to imagine future events, both positive and negative. In regards to suicidal behavior, the lack of positive thoughts concerning the future is found to be of greater importance than the presence of negative thoughts about the future (MacLeod, Pankhania, Lee & Mitchell, 1997; MacLeod et al., 2005). This means that hopelessness is perceived as a lack of ability to see possible rescue factors in the future, thus making the individual vulnerable to suicidal behavior (Williams & Pollock, 2001).

In regards to whether hopelessness is a trait or state-dependent, findings suggest that hopelessness may be both. Individuals with high levels of suicidal ideation exhibit a reduction in levels of hopelessness when the suicidal ideation decreases (Schotte, Cools & Payvar, 1990), yet the level of hopelessness is still significantly elevated (Young et al., 1996). While it appears that the deficit in problem solving is a stable trait, elevated hopelessness may share both trait and state-dependent features (Pollock & Williams, 2004; Schotte et al., 1990; Young et al., 1996). As noted by Pettersen and Rydningen (2006), the well-documented association between overgeneral autobiographical memory and the feature of hopelessness and deficits in problem solving, lends indirect support to the notion of autobiographical memory as a trait-based psychological variable that can contribute to increased risk of suicidal behavior independent of psychiatric disorder.

1.3 Bipolar Disorder

This section will describe the epidemiology in Bipolar Disorder, rates of completed suicide and suicide attempts, and address risk factors in regards to these suicidal behaviors. Further, cognitive deficits in this patient group will be discussed. The focus in the research literature is mainly Bipolar I Disorder, which will also be the focus in the current study.

1.3.1 Epidemiology and Description of Disorder

There exist a number of sub-classifications of Bipolar Disorder, the two main classifications being Bipolar I Disorder and Bipolar II Disorder. In accordance with DSM-IV (American Psychiatric Association, 2000) Bipolar I Disorder is defined by the occurrence of one or more manic episodes and in most instances one or more major depressive episode, while

Bipolar II Disorder is comprised of recurrent major depressive episodes in conjunction with hypomanic episodes. ICD-10 (1993) requires the presence of one other affective episode, in addition to a manic episode, to meet the criteria for Bipolar I Disorder.

Manic episodes are characterized by elevated mood and energy, diminished need for sleep, increased speech, quicker thought, elevated physical and mental activity, irritability, paranoia, increases in sexual desire and impulsivity. The degree of change determines classification of mania and hypomania, with the latter displaying moderate symptoms in comparison to the more all-encompassing symptoms exhibited in mania. Reduction in mood and lack of interest are the key symptoms in a depressive episode. Other characteristics include decrease in speech and speed of thought, lack of energy, decreases in sexual desire and an inability to experience pleasure (American Psychiatric Association, 2000).

Epidemiological studies indicate a lifetime prevalence of Bipolar I Disorder and Bipolar II Disorder of 3.9%, with median age of onset at 25 years (Kessler et al., 2005). Lifetime prevalence of Bipolar I Disorder alone has varied from 0.4% to 1.6% in community samples (American Psychiatric Association, 2000), with an equal distribution of Bipolar I Disorder in men and women (Goodwin & Jamison, 2007). Bipolar I Disorder is found to be a highly recurrent and severe illness, with more than 90% of individuals who have a single manic episode having further mood episodes (American Psychiatric Association, 2000).

1.3.2 Suicidal Behavior in Bipolar Disorder

Bipolar Disorder may be the psychiatric condition associated with the highest lifetime risk of suicide and suicide attempts. A wealth of studies has established an association between suicidal behavior and Bipolar Disorder. Rates of suicide in this group appear to be 15 times that of the general population (Harris & Barraclough, 1997). According to Goodwin and Jamison (2007) approximately 10% to 15% of individuals with Bipolar Disorder complete suicide, but recent studies suggest that this may be an overestimate (Tondo, Isacson, & Baldessarini, 2003). It is estimated that 25% to 50% attempt suicide at least once (Jamison, 2000).

Some authors suggest that the higher rates of completed suicides in Bipolar Disorder, compared to other mental disorders, may be due to more lethal suicidal behavior among male bipolar subjects and the higher proportion of males with Bipolar Disorder relative to

Major Depression (Zalman et al., 2006). Bipolar Disorder is found to be more genetically based than most other psychiatric disorders (Goodwin & Jamison, 2007), and this is of relevance in relation to the more equal gender distribution. The lack of association with female gender contrasts markedly with the picture for suicidal behavior in general (Hawton et al., 2005), indicating that Bipolar Disorder increases the risk of suicidal behavior to a similar degree in both sexes.

As alluded to above, recent studies find lower rates of suicide attempts and completed suicide in Bipolar Disorder. The higher rates of suicidal behavior in prior studies may mirror poorer clinical outcomes before the use current treatment options such as lithium and other mood stabilizing medications. Other reasons are probably due to methodological considerations (Goodwin & Jamison, 2007). There is evidence from meta-analysis of randomized controlled studies that long-term adherence to lithium is an effective treatment against completed suicide in Bipolar Disorder (Cipriani, Pretty, Hawton & Geddes, 2005). Findings demonstrate a five-fold lowering of suicide risk in patients treated with lithium compared to other compounds, with similar results for attempted suicide (Baldessarini, Hennen, Pompili, Davis & Tondo, 2006).

Some of authors emphasizes the possible underestimation of suicidal behavior. In a prospective study by Valtonen et al. (2006) not all suicide attempts led to admittance to an emergency room. Additionally, a minority of attempters did not communicate about them with the attending professionals. This might imply that attempted suicide among patients with Bipolar Disorder could be underestimated.

Risk Factors of Suicide Attempts and Completed Suicide

While no set of circumstances can predict suicide, certain vulnerabilities, illnesses and events can increase the likelihood that some individuals end their lives (Jamison, 2000).

An array of risk factors for suicide in Bipolar Disorder has been identified, the most consistent finding seeming to be previous suicide attempts (Hawton et al, 2005). A history of attempted suicide is a strong predictor for subsequent completed suicide found in both prospective (Marangell et al., 2006; Oquendo, Currier & Mann, 2006) and retrospective studies (Harris & Barraclough, 1997; Hawton et al., 2005). Still, only 20 % to 30 % of those

who complete suicide have made a previous attempt, illustrating the importance of identifying other risk factors (Mann et al., 1999).

Hawton et al. (2005) and Oquendo et al. (2006) have conducted systematic reviews where they investigate risk factors for completed suicide in Bipolar Disorder. In their review of 24 prospective studies, Oquendo et al. (2005) note that findings on several risk factors was either derived from a singular study or was contradictory, but that the following risk factors appeared to be robust; a history of previous suicide attempts, recurrent depression, and comorbid alcoholism. Hawton et al. (2005) found completed suicide to be associated with a history of suicide attempts and hopelessness. With regards to the significance of previous suicide attempts on subsequent suicide attempts and completed suicide, the prospective study by Marangell et al. (2006) lends further support for this notion, with data implying a four-fold increase in the risk of a repeated suicide attempt or completed suicide.

Additionally, recent hospital discharge (Dutta et al., 2007), alcohol abuse (Dutta et al., 2007; Jamison, 2000), comorbid anxiety (Simon et al., 2007), impulsiveness, family history of suicidality, and social isolation (Jamison, 2000) are among the risk factors identified in regards to completed suicide.

As described there are several risk factors associated with completed suicide in Bipolar Disorder, the most robust finding being a history of previous suicide attempts. In regards to risk factors for attempted suicide a more comprehensive view is emerging, but there are still controversies. More factors tend to be found in association with suicide attempts than completed suicide, in part because this behavior is more frequent (Hawton et al., 2005).

The systematic meta-analysis conducted by Hawton et al., (2005) found that similar to the general population, childhood physical and sexual abuse, marital status and family history of suicide were associated with increase risk of attempted suicide. As in other clinical samples there was an association with comorbid drug and alcohol abuse. Risk was also increased if there was comorbid Anxiety or Eating Disorders. Further, the following specific characteristics of Bipolar Disorder were found to predict attempted suicide: Early onset of disorder, predominantly depressive symptoms and increasing severity of affective episodes.

As with completed suicide, previous suicide attempts are found to be a powerful predictor for new attempts (Marangell et al., 2006; Valtonen et al., 2006). A prospective study by

Valtonen et al. (2006) found previous suicide attempts, hopelessness, depressive phase at index episode, and younger age at intake to be the most robust predictors of attempted suicide. In another study the same authors found that suicidal behavior varied markedly between different phases of bipolar disorder. Phases associated with depressive aspects of the illness were related to attempted suicide and suicide ideation, and in all phases, severity of depression and hopelessness were key predictors of risk (Valtonen et al., 2007).

As presented above there are a number of risk factors associated with attempted and completed suicide in Bipolar Disorder. In the literature, hopelessness, depression and previous history of suicidal behavior, are the most robust predictors of suicidal behavior. Suicidal behavior is a major concern in Bipolar Disorder, and even if it is an area of constant research focus, it is of vital importance to contribute to the continued development of new knowledge in this area.

Methodological Issues

A general limitation of the field has been that it has been constituted of mainly retrospective studies. However, several prospective studies regarding suicide attempts have been presented in recent years. The fact that subjects with Bipolar Disorder constitutes only a minority in many studies, that many studies tend to lack control groups and are comprised of mainly in-patient groups, illustrate that there are several methodological limitations in the literature. Further, the review by Hawton et al. (2005) find that most previous studies examining risk factors of suicidal behavior include too few events to accurately identify clinical or demographic risk factors. These limitations are worth bearing in mind when considering the empirical evidence presented above.

1.3.3 Trauma

Epidemiological studies demonstrate that trauma is associated with development of psychopathology (Mueser et al., 1998), and elevated risk of suicidal behavior (Leverich et al., 2002). Bipolar Disorder has received less attention than disorders like Unipolar Depression and Schizophrenia in the literature pertaining to trauma. The available evidence suggests that as many as 50 % of individuals with Bipolar Disorder have a history of childhood abuse (Goldberg & Garno, 2005; Leverich et al., 2002). Research findings support the relationship between trauma history and poorer course of illness in Bipolar Disorder

(Carbello et al., 2008; Neria, Bromet, Carlson & Naz, 2005), and in particular positive symptoms like auditory hallucinations (Hammersly et al., 2003). Additionally, an association between childhood abuse and later elevated risk of suicidal behavior is revealed in samples of Bipolar Disorder (Garno, Goldberg, Ramirez & Ritzler, 2005; Leverich et al., 2002). Correspondingly, Carballo et al. (2008), find that family history of suicidal behavior and exposure to abuse in childhood equals greater risk of suicidal behavior and a more severe course of illness in Bipolar Disorder.

A review by Alloy et al. (2005) find that prospective studies give compelling evidence that stressful recent life events is associated with the triggering of new episodes of illness in Bipolar Disorder. The review by Alloy et al. (2005) underline that a general limitation, in the literature on trauma in childhood for Bipolar Disorder, is the lack of control groups and the use of retrospective studies. Nevertheless, they point out that the few studies with methodologically better designs, present findings supporting the notion of the importance of trauma in the emergence and course of Bipolar Disorder.

1.3.4 Cognitive Deficits

In recent years an array of methodologically robust studies has been presented regarding cognitive deficits in Bipolar Disorder (Chowdhury, Ferrier & Thompson, 2003), providing accumulating and compelling evidence that cognitive deficits are an important characteristic of Bipolar Disorder.

A decisive question has been whether it is found that the deficits, in contrast to Schizophrenia, dissolve at remission of a mood episode. It has long been presumed that the deficits in Bipolar Disorder are limited to the affective episodes (Tabares-Seisdedos et al., 2003), but recent studies suggest that the deficits persist in symptom free phases (Clark, Iversen & Goodwin, 2002; Robinson et al., 2006) as well as in depressive (Bearden, Hoffman & Cannon, 2001) and manic phases (Quraishi & Frangou, 2002). Schizophrenia is the psychiatric disorder associated with the most pervasive cognitive deficits. A range of studies document similar deficits in Bipolar Disorder, however, less pronounced than in Schizophrenia (Martinez-Aran et al., 2002; Seidman et al., 2002), leading many theorists to suggest that Bipolar Disorder and Schizophrenia represent a continuum of illness severity, rather than being two qualitatively distinct disorders.

Goodwin and Jamison (2007) have conducted a systematic meta-analysis of 52 studies comparing neuropsychological function in bipolar patients and healthy controls. Findings give compelling evidence for substantial deficits in executive functions in all phases of Bipolar Disorder. Likewise, deficits in attention, memory and learning are found in all phases of the disorder. According to Goodwin and Jamison (2007) the deficits seen in learning, memory and visuospatial skills are likely to be a result of deficits in attention. The meta-analysis demonstrate that both acutely ill and euthymic samples showed approximately the same level of deficits. These findings are in line with previous suggestions, that the underlying disturbance in cognitive function is not state-dependent, but a trait characteristic of Bipolar Disorder.

Lifetime duration of illness and previous hospital admissions are negatively associated with cognitive performance. Consequently, poorer cognitive functioning appears to be related to a more severe course of illness, where poorer cognitive function is associated with a history of psychosis, especially on spatial working memory and executive measures (Glahn et al., 2007). There is an indication that patients with poorer cognitive functioning display poorer psychosocial function in daily life (Martinez-Aran et al., 2002; 2004), highlighting the significance of understanding the consequences of these kinds of deficits.

The association between cognitive deficits and suicidal behavior is not clearly understood. In Schizophrenia it is found that individuals with better cognitive functioning is more likely to engage in suicidal behavior, it is suggested that this is conveyed through a higher capacity for planning and executing suicidal behavior (Nagle et al., 2006). On the other hand, deficits in executive function, learning and memory may add to difficulties in problem solving, and thus to elevated feelings of hopelessness. Cognitive deficits are consequently intimately associated with the mechanisms perceived to be vital in the “cry of pain” model.

1.4 Aims of the Study

Individuals with Bipolar Disorder have a high risk for attempted suicide and completed suicide compared to most other clinical populations. Given the well-documented association between suicidal behavior and overgeneral autobiographical memory in several other mental disorders, it is of interest to investigate whether the same relationship exists in Bipolar Disorder. The clinical samples used in previous studies has, as a rule, been less severe

mental disorders. To the author of this paper's knowledge there is no study to date that has investigated the association between overgeneral autobiographical memory and suicidal behavior in Bipolar Disorder. According to the "cry of pain" model an overgeneral style of retrieval is understood as a protective mechanism developed to help shelter the individual from intense negative affect associated with previous trauma. To the author of this paper's knowledge the association between exposure to trauma and autobiographical memory functioning has not yet been subjected to investigation in Bipolar Disorder.

The aim of this study is to investigate whether autobiographical memory is related to suicidal behavior in individuals with Bipolar Disorder. This will be done by comparing bipolar individuals with and without previous suicidal behavior. It is expected that subjects with fewer specific memories on the Autobiographical Memory Test will exhibit more suicidal behavior. Further, this study will explore whether an overgeneralization of memory is associated with hopelessness and prior exposure to traumatic events, this to help further the advance of the "Cry of pain" model.

The following hypothesises will be studied: (1) Will individuals with Bipolar Disorder and previous suicidal behavior exhibit more overgeneral autobiographical memory compared to a group of Bipolar Disorder without previous suicidal behavior? (2) Are overgeneral memory in the suicidal behavior group associated with elevated feelings of hopelessness, or (3) prior exposure to trauma?

2. Method

2.1 Design

A cross-sectional design was used. Data was gathered by means of structured interviews and rating scales. After the completions of the interview the subjects were divided in two groups according to whether they reported previous suicidal behavior.

2.2 Participants

The subjects were recruited from two hospitals; Diakonhjemmet sykehus ($n=26$) and Sørlandet sykehus, Arendal ($n=10$). Inclusion took place from December of 2006 to February of 2008. All participants meet criteria for F.31 bipolar disorder (ICD-10, 1992) according to the Mini International Neuropsychiatric Interview Plus (MINI-Plus; Sheenan et al., 1998). Exclusion criteria were acute suicidality, poor Norwegian language-abilities or too low level of functioning to be able to complete a 45-minute interview.

2.3 Procedure

Clinicians at the different clinical institutions were asked to inform eligible patients of the study. The author of this paper interviewed subjects affiliated to the Diakonhjemmet sykehus, while the subjects affiliated to Sørlandet sykehus Arendal, were interviewed by an experienced psychiatrist at the ward. Prior to the administration of the interview, a brief spoken and written introduction was given, and a form of consent was signed by the subjects.

The instruments were administered in the same order to all subjects. With the exception of Beck Hopelessness Scale, which was self-rated by the subjects, the interviewer administered all other instruments. Due to the instrument's reliance on observation of the subject, the Brief Psychiatric Rating Scale was administered last in order to gather as precise a picture as possible based on observations during the interview. It should be noted that due to methodological considerations the Autobiographical Memory Test were administered prior

the interviewer learning if the subject had previous suicidal behavior. This was done in order to exclude the possibility that knowledge of group affiliation affecting rating.

2.4 Measures

2.4.1 Demographic Information and Suicidal Behavior

Demographic Information and Suicidal Behavior

Selected questions from SCID-I (DSM-IV, 1994) regarding demographic information such as age, level of education, work status, marriage status, suicidal behavior, number of depressive and manic episodes, drug and alcohol use.

Mini International Neuropsychiatric Interview Plus (MINI-Plus; Sheenan et al., 1998).

MINI-Plus part A and D were performed on all subjects to conform the diagnosis of Bipolar Disorder. The MINI has been reported to be both reliable and valid (Lecrubier et al., 1997), and demonstrates good concordance with the Structured Clinical Interview for DSM diagnoses (SCID) and the Composite International Diagnostic Interview for ICD-10 (CIDI) (Grant, McMahon & Austen, 2008).

InterSePT Scale for Suicidal Thinking (ISST; Lindenmayer et al., 2003).

A semi-structured 12-item scale that assesses current suicidal ideation over the last seven days according to intensity (0, 1, 2). The scale is reliable and valid, and demonstrates good internal consistency: .88 (Lindenmayer et al., 2003). In the current study, the Cronbach alpha coefficient was .86. Norwegian translation by E. Ødegaard & F. Walby (Seksjon for selvmordsforskning- og forbygging, UiO).

2.4.2 Autobiographical Memory

The Autobiographical Memory Test (AMT; Williams, & Broadbent, 1986)

AMT is an 18-item instrument measuring autobiographical memory. A revised version of AMT (Williams, 1995, in Pettersen & Rydningen, 2006) was used in this study. This version has also been used in other similar studies within this paradigm (Pollock & Williams, 2001; Williams et al., 2005) and has been translated and used in a previous Norwegian study where it was believed to work well (Pettersen & Rydningen, 2006). The questionnaire consists of 18 words that were used as cues to responses. The words were positive (e.g. happy, proud), negative (e.g. guilty, hopeless) or neutral (e.g. grass, apply) and the subject were asked to recall a specific personal memory to each of the words presented. Three trial words were given (rain, newspaper, milk) prior to the 18-items. A 30 second time limit were given for each response. If the subject did not provide specific memories, they were asked; “Can you remember a specific occasion, an episode?”. The final response were recorded as; (1) specific if the memory presented took place at a specific place, at a specific time and lasted shorter than the span of a day (When I fell of my bike and broke my wrist); as (2) extended if it lasted longer than a day (the Christmas holiday last year); as (3) categoric if repeating events (I feel like a failure every time I play football); as (4) a semantic association (“my children”); or as (5) no response. Previous studies demonstrate high levels of inter-rater reliability (Raes, Hermans, de Decker, Eelen & Williams, 2003; Williams & Broadbent, 1986). Norwegian translation by Pettersen and Rydningen.

2.4.3 Trauma

Recent Life Event Scale (Rahe, 1977).

A revised version including 13 recent life events (Heikkinen, Aro & Lonnqvist 1994), but with the original categories of 6, 12, 18, 24 months was employed (Rahe, 1977). Norwegian translation by the author of this paper.

Trauma Exposure Checklist (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995).

A structured trauma exposure scale made up of 12-items, one for each of 12 types of trauma. On each of the 12 events, it was asked whether the event had ever occurred. Additionally, 9 items included information on the subject’s age when the trauma first occurred. This study

rates the items that entail direct involvement of the individual (e.g. have you ever been raped) as more severe than the items where it is difficult to tell the degree of involvement (e.g. have you ever been involved in a fire, flood or natural disaster). Norwegian translation by the author of this paper.

2.4.4 Clinical Variables

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester & Trexler, 1974).

A self-rated scale measuring hopelessness. The instrument consists of 20 true-false statements concerning the future, each item presenting a positive or negative expectation. Previous studies have found BHS to be both reliable and valid (Aish & Wasserman, 2001; Morris et al., 2005), and demonstrate a satisfactory level of internal consistency: .81 to .93 (Morris et al., 2005) and .93 (Beck et al., 1974). In the current study, the Cronbach alpha coefficient was .86.

Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979).

A semi-structured clinician rated 10-item scale measuring level of depression. Each item is rated on a scale from 0 (no abnormality) to 6 (severe). Studies show an acceptable level of internal consistency: .80 to .89 (Morris et al., 2005), .82 (Mundt et al., 2006) and .92 (Carmody et al., 2006). The inter-rater correlation is satisfactory (Montgomery & Åsberg, 1979), and the instrument is found reliable in most cultures (Malt, Retterstøl & Dahl, 2005). In the current study, the Cronbach alpha coefficient was .84. Norwegian translation by U.F. Malt.

Young's Mania Rating Scale (YMRS-Clinician rated; Young, Biggs, Ziegler, Meyer & Meyer, 1978).

A clinician rated 11-item semi-structured scale measuring level of mania. Items are scored according to severity on a scale from 0-4 (item 1, 2, 3, 4, 7, 10, 11) or 0-8 (item 5, 6, 8, 9). The scale is found to be both reliable and valid (Young et al., 1978), and to possess an adequate internal consistency: .72 to .79 (Morris et al., 2005). In the current study, the Cronbach alpha coefficient was .78. Norwegian translation by the Norwegian Bipolar Research and Innovation Network.

Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962).

An 18-item scale that measure the level of psychopathology according to intensity (0-7). Previous studies have demonstrated acceptable validity and reliability (Hedlund & Viewberg, 1980; Newcomer, Faustman, Yeh & Csernansky, 1990), and a consistent factor structure (Burlingame et al., 2006; Mueser, Curran & McHugo, 1997). In the current study, a somewhat low value of internal consistency ($\alpha = .61$) was found. Norwegian translation by O. Lingjærde.

2.5 Ethics

Subjects were asked questions concerning previous suicidal behavior and present suicidal ideation. This may give rise to difficult thoughts and affects for the subject. In this regard it is important to note that all participants at the time of inclusion were undergoing active treatment, and that their clinicians judged them as not acutely suicidal, and as stable enough to participate. Questions regarding suicidal behavior are routine in Mental Health Services. This entails that the subjects have discussed the questions asked in this study with their clinician previously. Further, it is important to note that contact with the subjects and the administration of the interviews were carried out in close relation with responsible clinicians and staff; this in order to ensure that potential negative reaction to the interview would be discovered and communicated. Neither in a similar project (Pettersen & Rydningen, 2006), or in the study in question were there recorded such negative reactions.

The possible improvement in understanding of suicidal behavior in an important risk-group, and an increased focus on suicidal behavior in Mental Health Services are by themselves arguments for carrying out such a study. This study has received the approval of the Regional Committee of Ethics in Medical research (REK) and from the Norwegian Data Inspectorate (NSD).

2.6 Statistics

Statistical analyses were conducted with SPSS 16.0 for Macintosh. Independent sample t-test and Chi-square was applied for continuous and categorical demographical variables, respectively. As this study seeks to investigate affiliation to a group with and without

suicidal behavior, binary logistic regression analysis was conducted to investigate effect-size and the independent variables' predictive value. In this analysis the term "odds ratio" is used. The "odds ratio" represents the change in odds for being in a category (e.g. the suicidal group) when the value of the predictor increases with one unit. Bivariate correlation analysis was performed, and the Pearson product-moment correlation coefficient used to explore the relationship between autobiographical memory and trauma. Multivariate approaches were not used due to low number of subject in the suicidal group.

3. Results

3.1 Sample

A sample of 42 individuals with Bipolar Disorder was included in the study. The subjects affiliated to Diakonhjemmet Sykehus were admitted inpatients at the acute ward ($n=15$), the medium-term ward ($n=9$) or outpatients attending a District Psychiatric Center ($n=2$). The subjects recruited at Sørlandet Sykehus were inpatients at an acute ward ($n=16$). The sample consisted of 18 men and 16 women, with an age range from 27 to 65 years, with an median age of 49 years (SD 10.2). The distribution of the sample in regards phase of illness is 6.6 % in ethymic phase, 24.2 % in manic phase, 21.2 % in depressive phase, and 42.4% and 6.1% recovering from mania and depression respectively. This gives a total of 27.3% in a depressive phase or in remission from a depressive phase, with the corresponding figure for manic phase and remission being 66.6%.

Eight (22.2 %) of the subjects reported previous suicidal behavior, 26 (72.2 %) subjects reported no suicidal behavior and 2 (5.6 %) did not respond. These two latter subjects were not included in analyses regarding suicidal behavior. The suicidal group consisted of 5 women and 3 male subjects. Of the participants reporting previous suicidal behavior, 62.5 % was in a depressive phase, 12.5 % was in a manic phase and 25.5 % was in remission from a manic episode. Of the suicidal group 62.5 % reported admittance to hospital after the attempt, 25 % reported no treatment, and 12.5 % did not give information in this respect. The suicidal group had a mean of 10.5 depressive and 9.9 manic episodes, with the corresponding figures for the group without suicidal behavior being 6.6 and 7.7 for depressive and manic episodes respectively.

Group differences in demographic variables were investigated using independent sample t-tests on continuous variables, and Chi-squares on categorical variables. One participant was excluded from the variable “units of alcohol per week last two years” due to extreme scores. Table 1 and 2 present continuous and categorical variables, in the group with and without previous suicidal behavior respectively. The group without suicidal behavior is found to have a higher weekly alcohol consumption. Further, the suicidal group tends towards a lower educational level.

Table 1: Continuous demographical variables. Mean values for individuals with and without previous suicidal behavior.

	N	Mean	Suicidal behavior		<i>p</i>
			Yes (n = 8)	No (n = 26)	
Age	34	49 (10.2)	48.6 (10.3)	50.6 (11.3)	.779
Years of education	33	15.9 (4.6)	13.6 (1.2)	16.6 (5)	.110
Number of admissions as inpatient	34	5.7 (6.8)	5.9 (4.4)	5.8 (7.5)	.441
Duration of symptoms	34	23.6 (12.9)	24.3 (9.5)	24.2 (13.3)	1.00
Number of manic episodes	29	8.2 (8.5)	9.9 (10.4)	7.7 (8)	.575
Number of depressive episodes	28	7.7 (8.1)	10.5 (10)	6.6 (7.2)	.253
Units of alcohol per week previous 2 years	34	3.03 (3.3)	0.9 (1.1)	3.7(3.5)	.033*

p* < .05 (two-tailed)Table 2:** Categorical variables and individuals with and without previous suicidal behavior. Percentage distribution, degrees of freedom, Chi-square and level of significance.

	n	Suicidal behavior		<i>df</i>	Chi- Square (χ^2)	<i>p</i>
		Yes (n = 8)	No (n = 26)			
Sex:						
Male	18	3 (37.5%)	15 (57.7%)	1	.335	.551
Female	16	5 (62.5%)	11 (42.3%)	1		
Marital Status:						
In relationship	13	2 (25%)	11 (42.3%)	1	.216	.642
Not in relationship	21	6 (75%)	15 (57.7%)	1		
Occupational Status:						
Employed	10	1 (12.5%)	9 (34.6%)	3	2.789	.424
Rehabilitation	8	2 (25%)	6 (23.1%)	3		
Disability benefits	14	5 (62.5%)	9 (34.6%)	3		
Other	2	0 (0%)	2 (7.7%)	3		

Treatment facility						
Acute ward	15	4 (80%)	11 (52.4%)	2		
Intermediate ward	9	1 (20%)	8 (38.1%)	2	1.392	.499
District Psychiatric Center	2	0 (0 %)	2 (9.5%)	2		

*p <.05 (two-tailed)

3.2 Suicidal behavior, Depression, Hopelessness and Symptoms

Logistical regression analysis was conducted to determine whether the independent clinical variables of depression, hopelessness, suicidal ideation and symptoms could predict suicidal behavior. No significant associations are found, but there is a tendency towards increase in suicidal ideation (as measured by ISST) and depressive symptoms (as measured by MADRS) for the group exhibiting suicidal behavior.

Table 3: Distribution of mean scores, log(odds), odds ratios with confidence interval and level of significance on the measures of ISST, BHS, MADRS, YMRS and BPRS

	Suicidal behavior		B	Odds Ratio	OR 95.0% C. I		df	p
	Yes (n = 8)	No (n = 26)			Lower	Upper		
ISST	2.63 (SD 5.2)	.462 (SD 1.65)	.217	1.242	.941	1.639	1	.126
BHS	26.57 (SD 6.45)	23.35 (3.26)	.165	1.179	.976	1.425	1	.880
MADRS	15.0 (SD 11.71)	9.46 (SD 5.6)	.092	1.097	.980	1.227	1	.108
YMRS	4.25 (SD 5.14)	5.9 (SD 6.4)	-.052	.950	.818	1.103	1	.495
BPRS	9.63 (SD 5.13)	10.46 (SD 5.77)	-.029	.971	.835	1.130	1	.704

*p <.05 (two-tailed)

ISST = The InterSePT Scale for Suicidal Thinking, BHS = Beck Hopelessness Scale, MADRS = Montgomery and Åsberg Depression Rating Scale, YMRS = Young's Mania Rating Scale, BPRS = Brief Psychiatric Rating Scale.

3.3 Autobiographical Memory

To examine the relationship between autobiographical memory and suicidal behavior, binary logistic regression analyses was conducted. As displayed in table 4 and 5, no significant association between suicidal behavior and autobiographical memory was found on measures

of total, positive, negative or neutral memories. However, there is a tendency towards the suicidal group displaying less specific memory, more semantic associations and more no response. Further, total memories, a score comprised of specific, extended and categorical memories, are found to be marginally significant. The subjects with previous suicidal behavior tends to exhibit a lower number of total memories.

Table 4: Distribution of mean scores (with standard deviation) for total autobiographical memory in individuals with and without previous suicidal behavior, and odds ratios with confidence interval and level of significance.

	Suicidal behavior		B	Odds ratio	OR 95.0 % C.I.		df	p
	Yes (n = 8)	No (n = 26)			Upper	Lower		
Total memories	11.26 (4.89)	14.32 (2.8)	-.238	.789	.620	1.003	1	.053
Specific	7.63 (4.27)	10.47 (4.97)	-.118	.888	.754	1.047	1	.159
Extended	1.75 (1.28)	2.03 (1.93)	-.099	.905	.559	1.465	1	.686
Categorical	1.88 (1.25)	1.81 (2.04)	.020	1.020	.667	1.560	1	.928
General memories	3.63 (2.20)	3.85 (3.04)	-.029	.971	.727	1.298	1	.845
Semantic association	4.38 (4.57)	2.42 (2.39)	.192	1.211	.946	1.556	1	.134
No response	2.38 (2.2)	1.27 (1.66)	.313	1.367	.897	2.082	1	.145

* p < .05 (two-tailed)

Table 5: Distribution of mean scores (with standard deviation) for autobiographical memory in individuals with and without previous suicidal behavior, and odds ratios with confidence interval and level of significance.

	Suicidal behavior		B	Odds ratio	OR 95.0 % C.I.		df	p
	Yes (n = 8)	No (n = 26)			Upper	Lower		
Positive cues								
Specific	3.13 (1.64)	4.08 (1.79)	-.309	.734	.463	1.165	1	.236
Extended	0.38 (0.74)	0.5 (0.86)	-.204	.815	.283	2.347	1	.705
Categorical	0.63 (0.52)	0.54 (0.81)	.154	1.167	.412	3.305	1	.771
General memories	1.0 (0.76)	1.04 (1.28)	-.029	.971	.485	1.945	1	.934
Semantic association	1.25 (1.28)	0.46 (0.71)	.912	2.489	.954	6.494	1	.062
No response	0.63 (1.06)	0.42 (0.64)	.341	1.406	.517	3.823	1	.504
Negative cues								
Specific	1.63 (1.60)	2.08 (1.72)	-.451	0.734	.370	1.096	1	.104
Extended	1.0 (1.41)	0.85 (0.97)	.134	1.144	.552	2.369	1	.718
Categorical	0.63 (0.74)	0.77 (0.95)	-.194	.823	.319	2.126	1	.688
General memories	1.63 (1.60)	1.62 (1.34)	.005	1.005	.570	1.773	1	.986
Semantic association	1.75 (1.58)	1.0 (1.06)	.498	1.642	.853	3.173	1	.137
No response	1.0 (1.20)	0.57 (1.10)	.315	1.370	.705	2.665	1	.353
Neutral cues								
Specific	2.88 (2.03)	3.58 (2.18)	-.155	.857	.591	1.241	1	.413
Extended	0.38 (0.52)	0.69 (0.88)	-.621	.538	.149	1.937	1	.343
Categorical	0.63 (0.92)	0.5 (0.81)	.180	1.198	.471	3.044	1	.705
General memories	1.0 (0.76)	1.19 (1.2)	-.169	.845	.395	1.805	1	.663
Semantic association	1.38 (2.0)	0.96 (1.34)	.177	1.194	.720	1.978	1	.493
No response	0.75 (1.16)	0.27 (0.53)	.783	2.188	.789	6.072	1	.133

* p < .05 (two-tailed)

3.4 Exposure to Trauma

Binary logistic regression was performed to examine if the independent variables of previous trauma (as measured by the Trauma Exposure Checklist) and recent life events (as measured by the Recent Life Event Scale) could predict affiliation on the categorical variable of suicidal behavior. As presented in table 6, no convincing association between suicidal behavior and these independent variables were found in this sample. However, there is a tendency towards the suicidal group displaying a higher exposure to total numbers of recent life event and traumas.

Table 6: Distribution of mean scores (with standard deviation) on recent life events and trauma in individuals with and without suicidal behavior, and odds ratios with confidence interval and level of significance. In regards to exposure to trauma and childhood trauma, percentage of subjects with exposure is presented.

	Suicidal behavior		B	Odds ratio	OR 95.0 % C.I.		df	p
	Yes (n = 8)	No (n = 26)			Upper	Lower		
Recent life events								
Total number events	2.5 (1.49)	3.5 (1.7)	-.408	.665	.380	1.162	1	.152
Total score RLES	21.37 (4.5)	24.04 (5.65)	-.102	.903	.763	1.068	1	.232
Trauma								
Exposure	100 %	88.5 %	1.099	3.000	.508	17.708	1	.225
In childhood	25 %	23.1 %	.105	1.111	.176	7.011	1	.911
Total number	2.25 (2.49)	1.08 (1.47)	.334	1.397	.913	2.139	1	.124

*p < .05 (two-tailed)

The association between autobiographical memory and the variables of trauma and recent life events was investigated using Pearson product-moment correlation coefficient. As illustrated in table 7, there are several significant findings pertaining to recent life events. There is a general finding that specific autobiographical memory is positively correlated with recent life events, while general autobiographical memories conversely, tend to be negatively correlated. Additionally there is a negative correlation between lack of response and recent life events.

Table 7: Pearson Product-Moment Correlations between measures on trauma and recent life events. Level of significance is presented in parentheses.

	Trauma			Recent life events	
	Exposure	Total number	Childhood	Total number	Score
Total memories	.011 (.950)	.022 (.897)	-.141 (.413)	.194 (.257)	.192 (.263)
Specific	.108 (.530)	.095 (.581)	.052 (.765)	.371 (.026)*	.352 (.035)*
Extended	.001 (.997)	-.004 (.980)	.128 (.456)	-.278 (.101)	-.229 (.179)
Categorical	-.115 (.503)	-.201 (.239)	.096 (.576)	-.196 (.253)	-.221 (.196)
General memories	-.062 (.721)	-.112 (.517)	.050 (.774)	-.325 (.053)	-.300 (.075)
Semantic association	.069 (.479)	.031 (.860)	.094 (.587)	-.018 (.915)	-.054 (.756)
No response	.095 (.581)	-.097 (.575)	.122 (.480)	-.418 (.011)*	-.474 (.004)*
Positive cues					
Specific	.195 (.254)	.150 (.384)	-.029(.866)	.350 (.036*)	.394 (.018*)
Extended	-.177 (.303)	-.092 (.593)	.096 (.576)	-.245 (.150)	-.219 (.200)
Categorical	-.196 (.251)	-.210 (.218)	-.041 (.812)	-.220 (.197)	-.305 (.071)
General memories	-.251 (.139)	-.188 (.272)	.059 (.731)	-.321 (.056)	-.344 (.040)
Semantic association	-.212 (.215)	.195 (.254)	.158 (.356)	-.001 (.995)	.004 (.979)
No response	-.265 (.119)	-.252 (.138)	-.236 (.166)	-.253 (.137)	-.324 (.054)
Negative cues					
Specific	.016 (.924)	.085 (.623)	-.198 (.248)	.207 (.225)	.130 (.450)
Extended	.148 (.390)	-.014 (.935)	.177 (.301)	-.130 (.450)	-.113 (.511)
Categorical	-.140 (.415)	-.080 (.642)	.000 (1.000)	.132 (.441)	.140 (.414)
General memories	-.028 (.870)	-.059 (.731)	.136 (.431)	-.019 (.991)	-.002 (.992)
Semantic association	-.238 (.163)	-.055 (.751)	-.050 (.774)	.033 (.847)	.110 (.522)
No response	.198 (.247)	-.009 (.958)	.178 (.299)	-.334 (.046)*	-.322 (.055)
Neutral cues					
Specific	-.060 (.730)	.024 (.889)	-.132 (.441)	.388 (.019)*	.369 (.027)*
Extended	.034 (.842)	-.098 (.568)	.033 (.849)	-.290 (.086)	-.216 (.205)
Categorical	.068 (.695)	-.185 (.279)	-.186 (.278)	-.401 (.015)*	-.391 (.018)*

General memories	.071 (.682)	-.028 (.870)	-.085 (.623)	-.493 (.002)**	-.424 (.010)*
Semantic association	-.077 (.657)	-.011 (.949)	.138 (.422)	.011 (.948)	.018 (.919)
No response	.202 (.237)	.002 (.989)	.269 (.113)	-.272 (.109)	-.355 (.034)*

*p<.05 (two-tailed)

4. Discussion

The aim of this study was to investigate whether overgeneral autobiographical memory is associated with suicidal behavior in individuals with Bipolar Disorder. Further, this study aimed at exploring the association between overgeneral autobiographical memory and the variables of hopelessness and exposure to trauma. Overall, few significant differences were found.

The instruments employed are of good psychometric quality. In the current study all instrument display a satisfactory internal consistency, with the exception of BPRS ($\alpha = .61$). However, due to previous well-documented reliability with larger samples, one cannot question the BPRS internal consistency on the basis of findings in the current study.

The following will discuss the results and relevant aspects of this study, and finally the limitations of the study will be considered.

4.1 Autobiographical Memory and Suicidal Behavior

In this sample a proportion of 22.2 % reported previous suicidal behavior. The general literature report that 25% to 50% of individuals with Bipolar Disorder attempt suicide at least once in their lifetime (Jamison, 2000). In recent years, studies have reported findings suggesting that previous studies may have overestimated the percentage of completed suicide (Tondo et al., 2003). Taking into consideration that recent studies report lower percentages of suicidal behavior, there is still a surprisingly low proportion of suicidal behavior in the current predominantly inpatient sample. There may be several explanations for the current findings regarding suicidal behavior.

First, the subjects themselves report on their lifetime suicidal behavior. The author of this paper does not have access to information concerning their actual history of suicidal behavior. Due to the delicate and sensitive nature of the matter, it may be that the subjects do not report actual suicidal behavior in their past. Second, two thirds of the sample was admitted on the basis of a manic episode. Suicidal behavior in Bipolar Disorder is found to be associated with the depressive phase of the illness (Isometsa, Henriksen, Aro & Lonnqvist, 1994; Valtonen et al, 2007; Oquendo et al., 2006), giving rise to the possibility

that individuals in a manic phase may report less suicidal behavior than a more equally distributed sample with a larger percentage in a depressive phase. Furthermore, as demonstrated by compelling evidence, memories are highly influenced by context, (e.g. Godden & Baddeley, 1975). As a consequence one can speculate that, when in a manic phase, the individual may be inclined to minimize suicidal behavior, be less prone to uneasiness and consequently remember less suicidal behavior. According to the diagnostic criteria in DSM-IV (American Psychiatric Association, 2000), Bipolar Disorder is among other things characterized by inflated self-esteem (criterion B.1), flight of ideas (criterion B.4) and distractibility (criterion B.5). Thus, Bipolar Disorder entails several characteristics that could possibly give rise to memory effects that exercise influence on suicidal behavior reported by the subjects. Third, as reflected in this sample, individuals in a manic phase is to a larger extent subjected to inpatient treatment, than those in depressive phases which are associated with greater subjective distress and proneness to suicidal behavior. It is therefore reason to contemplate if these individuals in a manic phase have struggled less with depression and suicidal behavior. Research indicate that Bipolar individuals that die by suicide have a history of more frequent and more severe depressions (e.g. Keith-Spiegel & Spiegel, 1967). The current study finds that the suicidal group has a mean of 10.5 depressive episodes, with the corresponding figure being 6.6 in the group with no suicidal behavior. Although not a significant finding, it is noteworthy in this respect. Due to skewed distribution regarding phase there is an increased likelihood of a result that is not representative for the general population of Bipolar Disorder. An alternative or additional prospect is that the limited number of subjects in the current study may explain the low incidence of suicidal behavior due to more expected accidental results.

The current study finds a marginally significant association between suicidal behavior and fewer total autobiographical memories. Furthermore, the results indicate a tendency towards the group with suicidal behavior exhibiting less specific autobiographical memory.

As suggested by these findings, there may exist a difference between the two groups, which is to a certain extent uncovered in this study. If so, what may be the cause of this potential failure to detect a significant difference between the two groups? The answer may lie in a small sample size ($n=36$) that increases the likelihood of type II errors, in other words, failure to detect a difference that is in fact present. In particular, the small proportion of the sample with suicidal behavior ($n=8$) is central in this query. The finding concerning total

autobiographical memory shows a considerably higher level of significance than the finding on specific autobiographical memories. This regardless of the fact that there is little difference in general autobiographical memories, which make up the total autobiographical memories in conjunction with specific autobiographical memories. The total score has greater reliability than its separate parts. An implication derived from this, is that a larger sample with improved statistical power and measures with better reliability, might also yield a significant finding on the measure of specific autobiographical memory.

However, there is an alternative interpretation of these results. The findings of the current study constitute a tendency. In addition to its limited statistical power, a small sample size may also be vulnerable to individuals with especially high or low scores. In combination with the low level of significance, this leaves the possibility that there is, in fact, no association between less specific autobiographical memory and suicidal behavior in Bipolar Disorder. Why might this be? Firstly, as reported by compelling evidence, Bipolar Disorder is a highly genetically influenced illness compared to most other psychiatric illnesses. One may hypothesize that this larger contribution of genes limits the impact of stressors encountered by the individual. One possible prospect in this regard is that the individual will never develop deficits in autobiographical memory to begin with. Furthermore, one might speculate that the individual does develop deficits in autobiographical memories, but that these deficits will be of less consequence due to larger influence of genes, and for that reason not manifest as suicidal behavior. Secondly, a large proportion of the suicidal group is in a depressive phase (62.5%), in particular when considering the proportion of depressive phase in the total sample (21.2%). As previously mentioned, suicidal behavior is associated with the depressive phase of Bipolar Disorder (Isometsa et al., 1994; Valtonen et al., 2007; Oquendo et al., 2006). This gives reason to speculate that the tendency reported is due to unequal distribution of phase, and that a more equally distributed sample in this respect would result in a non-finding. This would entail that less specific autobiographical memory is linked to the depressive phase of the disorder, and not to the manic phase of the disorder.

The “cry of pain” model postulates an equal amount of total autobiographical memory in individuals with and without suicidal behavior. A reduction in specific autobiographical memories is accompanied by a corresponding increase in general autobiographical memories. In other words, the concept of overgeneral autobiographical memory in literature refers to the presence of more general autobiographical memories at the expense of specific

autobiographical memories. The findings of the current study do not form a consistent pattern in regards to the “cry of pain” model. I found that the suicidal group provided 3 specific memories less than the group without suicidal behavior. Although not a significant finding, this constitutes a tendency in accordance with the “cry of pain” model, and as such, presenting some support for findings reported in several studies of less severely ill patients (Arie et al., 2008; Pollock & Williams, 2001; Williams & Broadbent, 1986), and one study of patients with Schizophrenia (Pettersen & Rydningen, 2006). Then again, there is no association between general autobiographical memory and suicidal behavior. Instead we find a marginally significant association between suicidal behavior and fewer total autobiographical memories. This lack of more general autobiographical memory in the suicidal group, and the presence of a difference in total autobiographical memories produced, does not correspond with the notion presented in the “cry of pain” model or findings reported in previous studies within this paradigm (Pettersen & Rydningen, 2006; Pollock & Williams, 2001; Williams & Broadbent, 1986). How can we explain the finding of fewer total autobiographical memories in the suicidal group in this sample? It should be noted that this study does not include measures on cognitive deficits. This leaves the possibility that the tendency towards fewer memories in the suicidal group, a form of cognitive deficit, may be attributable to differences in level of cognitive functioning between the groups. Additionally, due to skewed composition of the groups regarding phase, there may be characteristics related to phase of illness that contribute to the differences observed. The suicidal group, which is made up of a large proportion in depressive phase, in addition to displaying fewer total memories, has a tendency towards displaying a greater lack of response and more semantic associations. Further, the suicidal group displays a tendency in the direction of higher levels of depressive symptoms. According to the DSM-IV (American Psychiatric Association, 2000), Depression is characterized by a lack of interest (criterion A.2), insomnia (criterion A.4), lack of energy (criterion A.6), diminished ability to concentrate and decreased speed of thought (criterion A.8). Thus, it is possible to speculate that the participants in a depressive phase may be less motivated or capable of producing memories due to their symptoms, than participants in a manic phase. Differences in length of symptoms and number of admittances to inpatient treatment, which may have indicated a discrepancy regarding level of functioning, were not observed between groups.

This study does not include a control group. The reason for this being that the aim of the current study is not to conduct an epidemiological study, but to test a theoretically generated

hypothesis. Previous studies have found an increase in overgeneral autobiographical memory in Bipolar Disorder compared to normal controls (Mansell & Lam, 2004; Scott et al., 2000; Tzemou & Birchwood; 2007), but this has not been studied in relation to suicidal behavior. As described above, the current study does not find an association in respect to more general autobiographical memory, but we do find a non-significant association between less specific autobiographical memory and suicidal behavior. Due to the lack of a control group, one cannot say whether the sample exhibit more general or less specific autobiographical memory compared to normal controls.

4.2 Trauma

There exists a controversy regarding trauma as a pivotal mechanism in the development of overgeneral autobiographical memory. The “cry of pain” model views overgeneral autobiographical memories as a protective mechanism helping the individual regulate negative affect associated with previous traumatic events. Substantial evidence has been offered on behalf of this notion (Arie et al., 2008; De Decker et al., 2003; Williams, 2006); however, others question its validity (Moore & Zoellner, 2007).

In line with the meta-analysis conducted by Moore and Zoellner (2007), this study does not find an association between previous trauma history and overgeneral autobiographical memory. Thus, the affect-regulation hypothesis put forward by Mark Williams is not supported by the current study. What we do find is a systematic association between more specific and less general autobiographical memory, and recent life events. In other words, the opposite of what one would expect on the basis of the affect-regulation hypothesis. What does this finding mean? There have been considerable research efforts regarding autobiographical memory and trauma. However, in respect to recent life events, the author of this paper has not been able located any studies. One might speculate that there are other mechanisms underlying the association between autobiographical memory and recent life events in this study, than the affect-regulation link between trauma and overgeneral autobiographical memory described in the literature presented earlier. There are several distinctions between recent life events and trauma, the most evident being that recent life events do not result in as much negative affect as an incident defined as traumatic. This gives rise to the prospect that recent life events, due to the lower level of negative affect

associated with them, does not result in an avoidant overgeneral style of retrieval. One might further speculate that more recent life events reflect a higher level of functioning, and that these participants as a consequence, remember more specific autobiographical memories. In this scenario, the elevated level of specific autobiographical memories results from a higher level of functioning. Alternatively, one might speculate that it is the experience of more recent life events that gives increased access to specific memories. In the attempt to explain these findings, proximity to the event is another aspect of interest. While the trauma-hypothesis focuses on traumatic events in childhood as a vital element in the development of overgeneral autobiographical memory, the recent life events are recorded over the last 24 months. This leaves the possibility that the proximity of the events play a part in producing more, rather than less, specific memories. Alone, or in conjunction, several of the factors described above may contribute to the associations observed.

There is compelling evidence that childhood trauma is linked to suicidal behavior in Bipolar Disorder (Carballo et al., 2008; Garino et al., 2005; Leverich et al., 2002). The current study finds no significant association between measures on childhood trauma and suicidal behavior, there is however a tendency towards the suicidal group having been exposed to a larger number of total traumatic events and recent life events. These findings are in line with research linking trauma and suicidal behavior (Garino et al., 2005; Leverich et al., 2002). The small sample size, which is vulnerable to outliers and give low statistical power, may have contributed to the lack of robust association observed.

4.3 Hopelessness

There is compelling evidence of the association between the presence of overgeneral autobiographical memory and increases in hopelessness (Arie et al., 2008; Williams et al., 1996). Numerous studies have reported on the intimate link between suicidal behavior and hopelessness. Neither overgeneral autobiographical memory nor suicidal behavior is found to be associated with hopelessness in the current study. What might be the cause of this unexpected lack of association?

Apart from the small sample size, which increases the likelihood of type II errors, there is a second possible explanation that might shed light on this finding. As mentioned in the introduction, studies measuring hopelessness are frequently carried out in close proximity to

suicidal behavior (Williams et al., 2005). This give rise to an ambiguity regarding to what extent the differences observed are lasting traits or state-dependent, as in limited to proximity of suicidal behavior. It appears that levels of hopelessness decline rapidly after the suicidal crises, with a 50 % drop in BHS scores within one week (Schotte et al., 1990). Yet, other studies report that even though individuals with former suicidal behavior experience a decline in the level of hopelessness outside periods of suicidal crises, they nonetheless display a significantly higher level than individuals without suicidal behavior (Young et al., 1996). This might seemingly contrast the finding of Schotte et al. (1990), but rather it appears that hopelessness possess both trait and state characteristics. This entails smaller differences in the level of hopelessness between the groups with declining proximity to the suicidal behavior. Together with the small sample size, which may make it more difficult to capture differences in the sample, this may explain the finding in the current study.

4.4 Suicidal Ideation

There is no significant difference in current level of suicidal ideation between the groups with and without previous suicidal behavior. However, the result presents a trend in the direction of an association between current suicidal ideation and previous suicidal behavior. On the basis that previous suicidal behavior is found to be a predictor of subsequent attempted and completed suicide, one would expect the group with previous suicidal behavior to exhibit higher levels of current suicidal ideation. Additionally, the depressive phase of the illness is found to be more associated with suicidal ideation than it's manic phase counterpart (Valtonen et al., 2007). Hence, the unequal distribution of subjects, with a larger proportion of depressive phase in the suicidal group and an overrepresentation of manic phase in the group without suicidal behavior, is likely to contribute to the trend observed. Possibly, the lack of a more robust association in the current study is explained by the small sample size, which might obscure differences between the groups due to lowered statistical power.

4.5 Cognitive Deficits

Cognitive deficits are found to be a central feature of Bipolar Disorder (Goodwin & Jamison, 2007). In that overgeneral or less specific autobiographical memory is in itself a

form of cognitive deficit, one would have to include measures of cognitive deficits to exclude the possibility of findings being attributable to differences in the level of cognitive functioning. As the current study does not include measures on cognitive deficits, it leaves the possibility that the difference observed in specific autobiographical memory and total autobiographical memory might be due to differences in the level of cognitive functioning between groups. One might speculate that an increase in illness episodes is associated with a decline in cognitive function. No significant association regarding the number of illness episodes between groups is found. Even so, it is important to note that this is a measure with several weaknesses. Some subjects may want to appear healthier than they are. Furthermore, it may be difficult for the subject to know the correct number of episodes, since this would entail that they would have had to diagnose themselves.

4.6 Limitations

In the current study several limitations need to be highlighted. To increase statistical power, subsequent studies should include a larger sample, thus reducing the likelihood of type II errors. Further, the retrospective design of this study cannot give information on causal effects, unlike a prospective design where a sample is surveyed over a length of time.

A relevant issue concerns restriction of range. This refers to the problem of reduced likelihood of detecting associations due to reduction of variance in the sample. This may be due to an extreme sample (e.g. inpatients), or instruments that are not designed to capture differences in this specific type of population. If a control group is included, this will decrease the likelihood of restriction of range having an impact.

Clinicians at Diakonhjemmet Hospital and Sørlandet Hospital recruited subjects, and the author of this paper did not have access to information regarding individuals who declined participation. This entails that the subjects were not selected at random, and the sample may therefore not reflect the general population of Bipolar Disorder or of bipolar individuals with suicidal behavior.

Two interviewers have conducted the interviews, giving rise to questions regarding the inter-rater agreement. The use of structured interviews, together with an adequate level of internal

consistency, with the exception of the Brief Psychiatric Rating Scale ($\alpha = .61$), suggest that this is not a highly relevant predicament in the current study.

Bipolar Disorder is an illness that consists of two distinct phases with strikingly diverse symptoms. Due to the skewed distribution in the sample regarding phase, it is difficult to say whether a finding is a characteristic of the group with or without suicidal behavior, or if it is linked to the phase of illness. To be able to separate these variables, future research should strive for a more equal distribution.

As previously noted, the current study is lacking in measures on cognitive function, and future research should include such measures to exclude the possibility that findings are attributable to differences in this respect.

4.7 Conclusion

As the first of its kind, this study aimed to investigate whether there exists an association between autobiographical memory and suicidal behavior in Bipolar Disorder. A surprisingly low proportion of the sample reported previous suicidal behavior. One might speculate that the skewed distribution in regards to phase of illness produces the low level suicidal behavior observed. The findings of the current study portray an ambiguous picture. Some support is presented on behalf of the hypothesis that individuals with Bipolar Disorder and less specific autobiographical memory display more suicidal behavior. However, the finding that the suicidal group produces fewer memories is not consistent with the “cry of pain” model, which postulates an equal amount of memories between groups. The “cry of pain” model is found to be valid in a range of mental disorders. On the basis of the findings in this study we cannot suggest that the “cry of pain” model’s applicability is extended to include Bipolar Disorder. Yet, there are tendencies in the data that make it difficult to discard this possibility entirely. The current study does not find support for the hypothesis regarding an association between exposure to trauma in childhood and overgeneral autobiographical memory, replicating the findings of a recent meta-analysis (Moore & Zoellner, 2007). What we do find is an association between more specific and less general autobiographical memory and recent life events, the opposite of what one would expect on the basis of the affect-regulation hypothesis. A possible explanation is that recent life events do not result in as much negative affect as an incident defined as traumatic, and due to this lower level of

negative affect associated, does not result in an avoidant overgeneral style of retrieval. Hopelessness was not found to be associated with suicidal behavior.

To conclude, this study does not provide convincing support for the hypothesis regarding an association between overgeneral autobiographical memory and suicidal behavior in Bipolar Disorder. However, there is a noticeable tendency that the suicidal group exhibits less specific autobiographical memory. One cannot discard the possibility that the lack of a more robust association is due to low statistical power or methodological limitations in the current study. Consequently, subsequent studies should bear the methodological limitations of this study in mind. Future research should include measures on cognitive deficits to control for the level of cognitive function between groups. Also, a more equal distribution regarding phase of illness is desirable.

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