



Universitat Autònoma de Barcelona

Attachment Styles and Psychosis:

Impact on Treatment Outcome in the Early

Phases of Psychosis

Doctoral thesis submitted by:

Yanet Quijada

Director: Prof. Dr. Neus Barrantes-Vidal

Departament de Psicologia Clínica i de la Salut

Facultat de Psicologia

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PART 1

Introduction: Theoretical Framework

1. Attachment Theory in Adulthood

Model of Adult Attachment

Attachment theory defines attachment as the tendency of human beings to establish strong affectional bonds with others (Bowlby, 1977). Attachment behaviours, triggered by environmental threats, distress, illness, or fatigue, are defined as any form of behaviour that results in the individual regaining or retaining contact with his or her attachment figure (Bowlby, 1982). The quality of early experiences with caregivers influences in such a way that these attachment relationships result in internal representations which are composed of cognitive, affective, motivational and behavioural elements that serve as mental models or schemas for relationships and interpersonal experience (Bowlby, 1980; Levy, Blatt and Shaver, 1998)..Taking Bowlby's theory as a basis, and following a line of investigation that examines attachment from the perspective of adulthood (Hazan and Shaver, 1987; Main, Kaplan and Cassidy, 1985), Bartholomew and Horowitz (1991) proposed two types of internal working models: of the self and others. The two models can also be conceptualized in emotional/behavioral terms as representing "anxiety" and "avoidance" dimensions, respectively (Brennan, Clark and Shaver, 1998). The model of the self, or anxiety, refers to the extent to which an individual has internalized a sense of his own self-worth and consequently expects others to react to him in a positive way. This model is associated

with the degree of anxiety and dependency experienced in close relationships (Griffin and Bartholomew, 1994), and also with a negative self-image and excessive need for approval, fear of rejection and abandonment, and feelings of discomfort when alone (Fossati et al., 2003). The model of others, or avoidance, refers to the extent to which an individual expects that others might be available and provide support. This model is associated with the tendency to search for or avoid closeness in relationships (Griffin and Bartholomew, 1994), social avoidance, excessive need for self-confidence and independence, and emotional distance from others (Mikulincer, Shaver and Pereg, 2003). Each of these internal working models can be divided into either positive or negative resulting in four attachment prototypes (see Figure 1.). The *secure* prototype has a positive model of the self and others and indicates a sense of worthiness plus an expectation that other people are generally accepting and responsive. The *preoccupied* prototype combines a negative model of the self and a positive model of others, that is, a sense of unworthiness with a positive evaluation of others, leading the person to strive for self-acceptance by gaining the acceptance of valued others. The *dismissing-avoidant* prototype is characterized by a positive model of the self and a negative model of others and indicates a sense of love-worthiness combined with a negative disposition toward other people. They protect themselves against disappointment by avoiding close relationships and maintaining a sense of independence and invulnerability. The *fearful-avoidant* prototype has a negative model of the self and others and portrays a sense of unworthiness combined with an expectation that others will be negatively disposed. By avoiding close involvement with others, this style enables people to protect themselves against anticipated rejection by others (Bartholomew and Horowitz, 1991).

Figure 1. Model of Adult Attachment (adapted from Bartholomew and Horowitz, 1991)

		Model of Self (<i>Dependence</i>)	
		Positive (<i>Low</i>)	Negative (<i>High</i>)
Model of Others (<i>Avoidance</i>)	Positive (<i>Low</i>)	SECURE Comfortable with intimacy and autonomy	DISMISSING Dismissing of intimacy Counter-dependent
	Negative (<i>High</i>)	PREOCCUPIED Preoccupied with relationships	FEARFUL Fearful of intimacy Socially avoidant

Stability of Attachment

A basic principle of this theory is that attachment relationships remain important throughout life (Ainsworth, 1989; Bowlby, 1980). Since the human attachment system organizes personal experiences within internal working models which filter and channel new experiences, an individual tends to follow the same life trajectory (Mayseless, 1996). However, these working models can be modified as a result of an adaptation to new, interpersonal and relevant life circumstances that are ongoing and emotionally significant (Bowlby, 1982), especially when there is a high degree of inconsistency between the models and actual experience (Crowell and Treboux, 1995). For the patient, therapy can represent a significant emotional experience capable of changing problematic working models (Crowell and Treboux, 1995). Bowlby suggested that the therapist's role is to provide a secure base for the patient while disconfirming the patient's problematic working models of relationships.

Research on stability of attachment style in the therapy context has found significant stability over periods ranging from one week to two years, but the estimates are usually around .5 – .7 (Zhang and Labouvie-Vief, 2004). This indicates that a substantial proportion of people, nearly 30%, report changes in their attachment style over time (Travis, Bliwise, Binder and Horne-Moyer, 2001). In general, adult attachment models are only moderately stable in non-clinical (Davila and Cobb, 2003), clinical (Scharfe, 2002) and chronic schizophrenia samples (Berry, Barrowclough and Wearden, 2008). However, there is an increasing recognition in the attachment literature that people are changing for psychologically important reasons rather than being attributable to unreliability in measurement (Baldwin and Fehr, 1995; Davila and Cobb, 2003). Attachment theory postulated that any changes in attachment representations will result in fundamental changes in relationship schemas and self-concept (Bowlby, 1988), and that these changes will be directly related to treatment outcomes (Tasca, Balfour, Ritchie and Bissada, 2007).

Change of Attachment in the Therapy Context

Studies investigating change of attachment style during psychotherapy are very rare (Strauss, Mestel and Kirchmann, 2011). Previous work has reported improvement in attachment security after treatment and that this is associated with better outcome in response to treatment in Borderline Personality Disorder (Travis et al., 2001) and Post Traumatic Stress Disorder (Muller and Rosenkranz, 2009). Studies have also found that patients change from insecure to secure attachment styles (Travis et al., 2001; Lawson, Barnes, Madkins and Francois-Lamonte, 2006; Kilmann, Laughlin, Carranza, Downer, Major and Parnell, 1999; Levy et al., 2006). However, Strauss et al. (2011) did not find this tendency after a time-limited psychological treatment of personality disorders.

From a different angle, other studies have shown a relationship between decreasing levels of attachment insecurity and better outcome (Muller and Rosenkranz, 2009; McBride, Atkinson, Quilty and Bagby, 2006; Tasca et al., 2007). In psychosis samples only one study has explored change in attachment dimensions and change in symptoms, finding a correlation between increases in attachment anxiety and worse symptoms, specifically in general psychopathology and in hallucinations after a six-month follow-up (Berry et al., 2008).

2. Early Detection and Treatment of Psychosis

In recent years, the aim of intervening in the early phases of psychosis has drawn great interest. The prodromal field has now been active for about 15 years. During this period, many of the clinical research programs specializing in early detection and intervention in the prodromal phase of psychosis have been created in Australia, North America, Europe and in Asia as well.

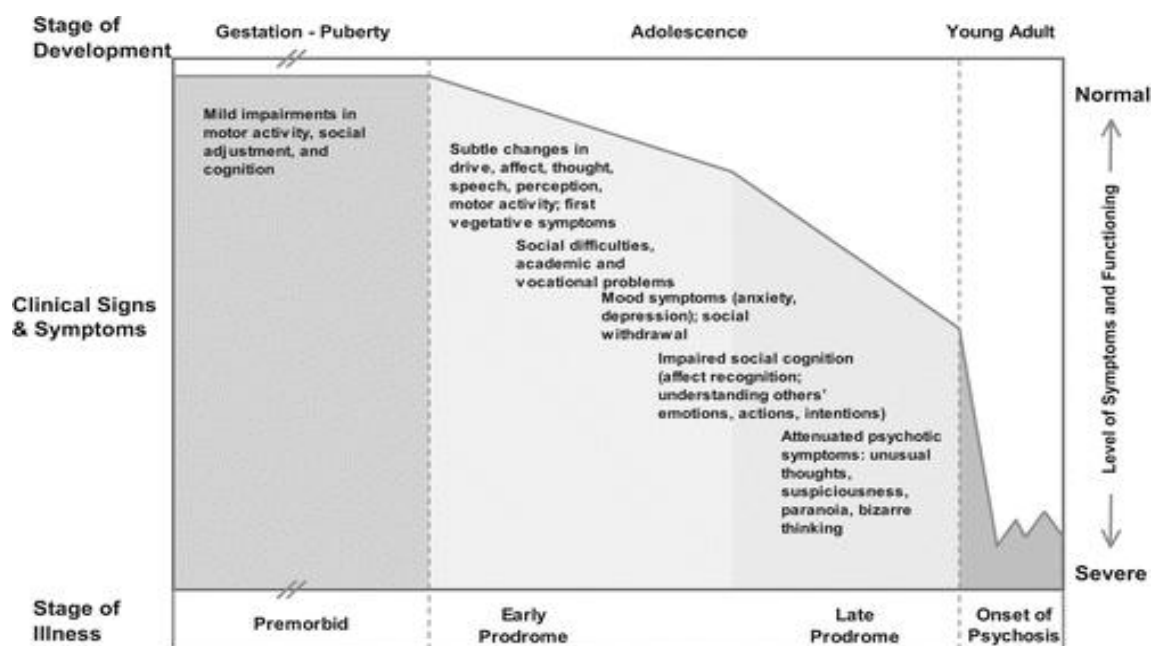
Contributions from a diverse range of backgrounds (clinical psychiatry and psychology, neuroimaging, neurochemistry, neuropsychology, and epidemiology) have indicated that the early course of psychosis is the most active stage of the overall disorder and that the most permanent consequences have its origin in this early stage (Häfner and Maurer, 2006). Also, the delay in treatment, known as Duration of Untreated Psychosis, correlates with unfavorable outcomes (Norman and Malla, 2001). These findings underscore the clinical potential of prodromal research and corroborate the critical period hypothesis, that the very beginning of psychosis is a critical metastable phase during which symptomatic and psychosocial deterioration progresses rapidly, displaying a long-term negative effect on the level of possible psychobiological recovery (Raballo and Larøi, 2009). Even more crucially, they provide support for early

intervention as a rational strategy to reduce the duration of the critical period and hence minimise the lifetime functional morbidity of psychosis. The importance of the early intervention model lies in the reconciliation of a new interpretative model of psychotic vulnerability with practical preventive strategies already established in mainstream health care (McGorry, Killackey and Yung, 2008; Schultze-Lutter, Ruhrmann and Klosterkötter, 2009). The clinical staging model of psychosis differs from conventional diagnostic practice in that it defines not only the extent of progression of a disorder at a particular point in time but also where a person lies currently along the continuum of the course of an illness (McGorry, 2007). The differentiation of early and milder clinical phenomena from those that accompany illness extension, progression, and chronicity, lies at the heart of the concept, which therefore makes it especially useful in adolescence and early adulthood, when most adult-type disorders emerge for the first time (McGorry, Nelson, Goldstone and Yung, 2010). This model provides a clinical-decisional framework for person-tailored early intervention (McGorry, Yung, Bechdolf and Amminger, 2008), allowing clinicians to select treatments relevant to earlier stages of an illness, and generally assumes that such interventions will be both more effective and less harmful than treatments delivered later in the course (McGorry et al., 2010).

Thanks to recent modelling of the progression to schizophrenia and related disorders it is possible to identify at least four stages along a continuum of increasing risk, in which initially unspecific conditions phenotypically overlap with the initial stages of other disorders and gradually progress to more crisply defined clinical-diagnostic profiles (Raballo and Larøi, 2009). First, a premorbid phase of no gross psychosocial impairment, but detectable endophenotypic vulnerability traits and risk factors. Second, an early prodromal phase, mainly anomalous subjective experiences (eg, transient

feelings of depersonalisation, distortions of the stream of consciousness, self-perceived disturbances of thought, concentration and attention), initial psychosocial impairment, and deterioration of quality of life and inter-peer performance (Lieberman et al., 2001). Third, a late prodromal phase of subthreshold, attenuated psychotic symptoms (such as a predelusional feeling of irrevocable change in the sense of self and the world, increasing suspiciousness, subthreshold transitory auditory hallucinations), and/or brief, limited, intermittent psychosis (eg, frank psychotic symptoms that have not lasted longer than a week and have spontaneously abated) (Yung, Phillips and McGorry, 2004). Fourth, an overt psychotic phase of full-blown prolonged symptoms of psychosis, susceptible to develop into schizophrenia. Figure 2 presents a composite view of the changes in cognition, affect, and behavior reported to precede the onset of frank psychotic symptoms in retrospective and prospective studies (Addington and Heissen, 2012).

Figure 2. Clinical Course of Psychosis Prodrome (Adapted from Addington and Heissen, 2012)



Considering this model based on clinical experience and empirical studies many efforts focus on the prediction of psychosis onset in order to understand the emergence of symptoms and impairment and to intervene prior to psychosis onset during the putatively prodromal phase. This latter aim is termed "indicated prevention" (Mrazek and Haggerty 1994), as it involves the treatment of a person prior to reaching a full threshold syndrome.

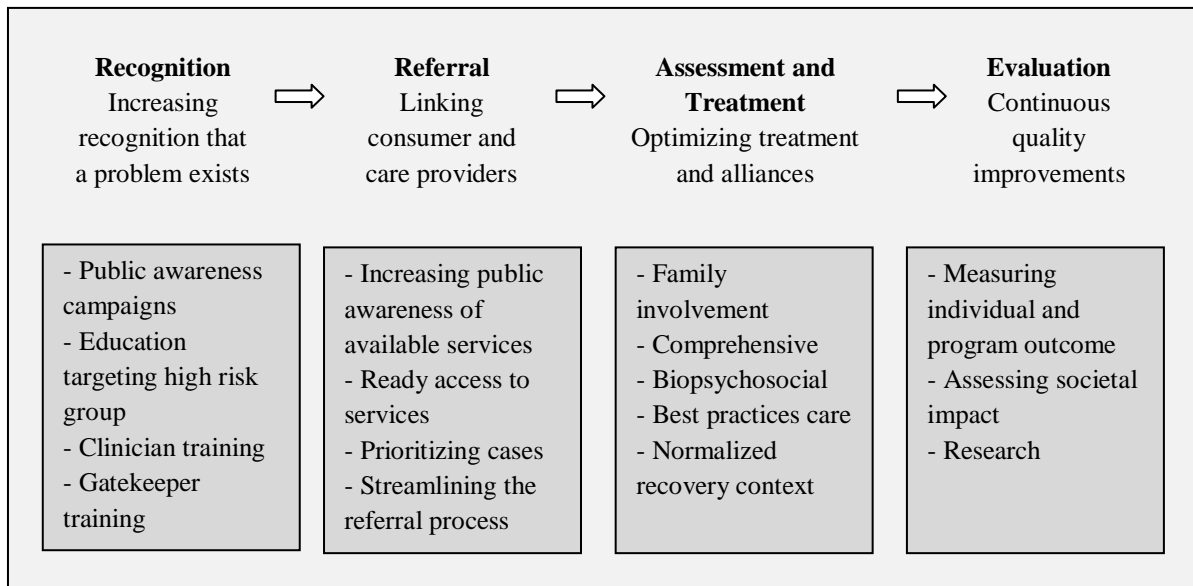
Considerable emphasis is currently focused on the early detection and treatment of traditionally called prodromal patients, or "at-risk mental states" (ARMS) for psychosis, as a way to improve the course of the disorder (Yung et al., 2004). One detection strategy of patients in ARMS for psychosis with a big impact in research is to register symptoms which are prototypical of the late prodromal states (positive symptoms) while considering several risk factors for psychotic disorders (such as age, schizotypal personality and familiar antecedents of psychosis). Based on this strategy, studies have developed criteria capable of predicting the onset of psychosis in 35-54% of help-seeking populations over a period of 12 months (Miller et al., 2002; Yung et al., 2004) even though these percentages have recently declined (e.g., Ziermans, Schothorst, Sprong and van Engeland, 2011). Patients in ARMS for psychosis are clearly symptomatic and need help, even those who do not progress to psychosis tend to develop some kind of mental disorder (Yung, 2007). In fact, these patients are no different from those with First-Episode of Psychosis (FEP) in terms of premorbid functioning, which suggests that the social deficits and difficulties are present long before the onset of psychotic symptoms (Addington, Penn, Woods, Addington and Perkins, 2008).

Three possible aims can be identified for the early intervention in psychosis with

ARMS patients: 1) prevention of social decline/stagnation, 2) prevention or delay in the progression of psychosis, and 3) improvement in existing pre-psychotic symptoms (Bechdolf et al., 2006). Psychosocial interventions can have some advantages when compared to antipsychotics for prevention purposes in ARMS patients (Bentall and Morrison, 2002); for instance, it is more acceptable and tolerable for patients as it is less stigmatizing (Lauber, Nordt, Falcato and Rossler, 2001), does not have somatic secondary effects and increased morbidity and mortality rates, and is less harming for those individuals who do not transition to psychosis. However, the goal of providing intensive psychosocial treatment as the best first line strategy requires the possibility of engaging patients and developing a reasonable working alliance. Engagement and trust are easier to develop in the pre-psychotic phase and set the basis for a better subsequent therapeutic relationship (Bechdolf et al., 2006).

The detection and recruitment of ARMS patients for psychosis involved a series of strategies which differ from the traditional mental health care model. Because the prodrome is a new clinical constellation, recruiting symptomatic, help-seeking persons who are at risk for psychosis requires active outreach to potential health care-oriented referral sources. This includes efforts to educate these sources about the prodrome and training and maintaining staff to be available to triage calls and to conduct rapid, low threshold evaluations of potential referrals (McGlashan et al., 2007). In general, effective early psychosis intervention consists of multiple components that progress from recognition and referral through assessment and treatment, and ultimately, to evaluation of outcome (Ehmann and Hanson, 2004). Each of these stages entail a series of practices which are summarized in Figure 3.

Figure 3. Fundamental Components of Early Psychosis Services (Ehmann and Hanson, 2004)



3. Interpersonal Factors in Psychosis: Relationship between Attachment and Psychosis

Role of the Interpersonal Factors in Psychosis

Nowadays there is renewed interest in the emotional, social and psychological mechanisms that may confer vulnerability to psychosis. Recently, attachment theory has been considered as a valid theoretical framework to understand the influence of social, cognitive, interpersonal and affective factors in the development and course of psychosis, which incorporates recent psychological models from the cognitive literature and enhances them (Berry, Barrowclough, and Wearden, 2007). Current models of psychosis suggest that adverse environmental factors, especially interpersonal ones, have an impact on emotional and cognitive styles which, in turn, play an important role

in the development and course of psychosis (e.g., Bentall and Fernyhough, 2008; Myin-Germeys and van Os, 2007; Read, van Os, Morrison, and Ross, 2005). It has been postulated that negative beliefs about the self and one's social environment have a fundamental role in the vulnerability and maintenance of psychotic symptoms (Garety, Kuipers, Fowler, Freeman and Bebbington, 2001; Penn et al., 2004), particularly paranoia (Freeman, Garety, Kuipers, Fowler, Bebbington, 2002). Evidence suggests that psychotic beliefs are more resistant to change if their content is composed of negative beliefs about the self, others and the world (Bowins and Shugar, 1998). There is also evidence from a longitudinal study suggesting that low self-esteem is predictive of the onset of psychosis (Krabbendam et al., 2002). In the same way, avoidant strategies have been linked to both poor recovery following the onset of psychotic symptoms (Thompson, McGorry and Harrigan, 2003) and to insecure attachment and negative self-evaluation in patients with psychosis (Tait, Birchwood and Trower, 2004). Other environmental factors, like the quality of interpersonal relationships and interpersonal functioning, have been associated with relapse and recovery after the onset of symptoms (Platts, Tyson and Mason, 2002).

The aforementioned findings can be related to recent applications of attachment theory to psychosis, which underline that attachment embeds key elements playing a critical role in the vulnerability and response to psychosis emergence, such as affective dysregulation, social cognition, and interpersonal behaviour (Berry et al., 2007). Insecure or disorganized attachment patterns are activated during periods of stress or threat perception, yielding the activation of nonadaptive affective, attentional and behavioural modes linked to negative internal working models. These patterns could mediate the use of dysfunctional cognitive mechanisms and affective dysregulation

which, probably in interaction, might lead to reality distortion (Read, Bentall and Fosse, 2009).

Findings on the Association between Attachment and Psychosis

Studies on attachment and psychosis have reported that the majority of patients with schizophrenia are classified as having either dismissing or fearful attachment prototypes (Dozier and Lee, 1995; Dozier, Stevenson, Lee and Velligan, 1991). In the same way, in a large sample of patients with schizophrenia, Mickelson, Kessler and Shaver (1997) found a high proportion of patients having avoidant attachment. Insecure attachment has also been linked to the onset of schizophrenia at an earlier age (Ponizovsky, Nechamkin and Rosca, 2007). A greater prevalence of the ambivalent prototype of peer attachment (similar to the preoccupied prototype) has been found in FEP samples (Couture, Lecomte and Leclerc, 2007). At symptom level, the avoidant attachment has been associated with positive and negative symptoms (Ponizovsky et al., 2007), as well as paranoia, in patients with schizophrenia (Berry et al., 2008) while anxious/ambivalent style (similar to the preoccupied prototype) correlated with positive syndrome (Ponizovsky et al., 2007). Also the preoccupied and fearful-avoidant attachment prototypes have been associated with higher scores of specific psychotic symptoms (delusions, suspiciousness/persecution, and hallucinatory behaviour) among outpatients with schizophrenia (Ponizovsky, Vitenberg, Baumgarten-Katz and Grinshpoon, 2011)

Important to note that the majority of studies on psychotic disorder have been carried out in chronic psychotic patients and little is known about the role of attachment in the initial stages of psychosis.

4. General Overview of the Aims of the Study

The introduction provides a conceptual framework that integrates key elements of the theory of attachment in the understanding of psychotic symptoms and its relevance in the treatment of the early stages of psychosis. This thesis aimed at exploring the impact of attachment on prodromal psychotic symptoms and functioning in a population at risk of psychosis defined with specific criteria and participating in specialized psychosocial intervention.

This section presents the general goals addressed in this project, whereas specific aims and hypotheses are described in the different studies that constitute the thesis. The thesis is structured in two sections. First, the description of the development of the early detection program where patients were recruited and the clinical and sociodemographic characterization of this sample. Second, the report of two empirical studies analyzing the impact of attachment on six and twelve month follow-up clinical and functional outcome.

1. Description of the detection of at risk mental state for psychosis in a specialized center for early attention to psychosis

As mentioned in the introduction, early intervention of psychosis and, specially, the recruitment of ARMS patients, require a trained referral system that allows precise and rapid referrals facilitating the early detection and treatment of these persons. Chapter 1 describes the strategy applied in a community mental health service for the detection of people at risk of psychosis. It includes the description of the referral system developed, the inclusion criteria and sociodemographic and symptomatic characteristics of the ARMS patients that constitute the sample of the present thesis.

2. Attachment style and its impact on symptom and functional outcome in persons with at-risk mental states for psychosis.

Several findings support an association between attachment and psychosis. However, the role that attachment plays in the early phases of psychosis remains poorly understood. Given the critical role of patients' psychological reaction to symptom onset and the key interest of understanding what factors impact on initial therapeutic engagement, work addressing the role of attachment in early psychosis is needed. The studies presented in Chapter 2 and Chapter 1 of the Annex address the impact of attachment styles on psychotic symptoms and functioning improvement in ARMS patients characterized in Chapter 1. Chapter 2 reports the contribution of attachment styles in the prediction of clinical and functional outcome in patients in ARMS for psychosis after six months of psychosocial intervention. Chapter 1 of the Annex reports the change in attachment prototypes after one year of psychosocial treatment in ARMS patients and its relationship with clinical and functional change beyond the effect of baseline severity.

The third part of the thesis presents a summary of all studies, a general discussion and both the theoretical and clinical implications derived from this work.

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PART 2

Empirical studies

CHAPTER 1: At-risk Mental State (ARMS) Detection in a Community Service Center for Early Attention to Psychosis in Barcelona¹

Abstract

Aim: To describe the strategy and some results in at-risk mental state (ARMS) patient detection as well as some of the ARMS clinical and socio-demographical characteristics. The subjects were selected among the patients visited by an Early Care Equipment for patients at high risk of psychoses, in Barcelona (Spain) during its first year in operation.

Methods: Descriptive study of the community–team relations, selection criteria and intervention procedure. Description of patient’s sociodemographic and symptomatic characteristics according to the different instruments used in detection and diagnoses, taking account of four principal origins of referrals: mental health services, primary care services, education services and social services.

Results: Twenty of 55 referred people fulfilled the at-risk mental state criteria, showing an incidence of 2.4 cases per 10 000 inhabitants. They were mainly adolescent males referred from health, education and social services. Overall, negative symptoms were predominant symptoms and the more frequent specific symptoms were decrease of motivation and poor work and school performance, decreased ability to maintain or initiate social relationships, depressed mood and withdrawal.

¹ Quijada, Y., Tizón, J. L., Artigue, J. and Parra, B. (2010). At-risk mental state (ARMS) detection in a community service center for early attention to psychosis in Barcelona. *Early Intervention in Psychiatry* 4, 257–262

Conclusions: It is possible to detect and to provide early treatment to patients with prodromal symptoms if the whole matrix of the community –including the social services – contributes to the process. The utilization of a screening instrument and a two phase strategy – the second carried out by the specialized team – seems to be an appropriate approach for early psychosis and ARMS detection.

Key words: at risk mental state, detection strategy, early psychoses, first psychotic episode, prodromal symptoms.

INTRODUCTION

In general, the investigations focused on the identification of personal and social consequences of duration of untreated psychosis (DUP) suggest that the longest DUP are associated with an unfavorable disorder course^{1,2} with the consistent increase in costs that it implies,³ including, probably, the total economic costs of the disorder.⁴ Moreover, some studies conclude that the early course of psychosis is the most active stage of the overall disorder and most permanent consequences have its origin in this early stage.⁵ Consequently, it is a priority for mental health care to implement strategies designed to reduce DUP and to intervene as soon as possible. One of the key elements to achieve it is the detection of people at risk of psychosis, also called ‘at-risk mental state’ (ARMS),⁶ a derivation of the ultra high risk (UHR) concept. The second element is the early diagnostic of the beginning of the psychosis.⁷ Different strategies for ARMS identification have been developed with this intent. One UHR detection proposed strategy (i.e. UHR strategy)⁸ – with a big impact in research – is to register characteristic symptoms of late prodromal states (positive symptoms) while considering several risk factors for psychotic disorders, such as age, schizotypal personality and

familiar antecedents of psychosis. The UHR criteria have been adapted as ARMS concept by other research and clinical teams, such as the addition of a negative symptoms group⁹ and a basic symptoms group.¹⁰ Based on this premises, several strategies aiming to the detection of ARMS have been devised.^{5,9-11}

Early intervention in psychoses necessarily implies the development of strategies designed to improve the rates of detection in primary care, education and social services settings.¹¹ Also, awareness in the general population regarding psychosis and networking among different community services must be improved.¹² As an example, our Early Care Equipment for At-Risk of Psychosis Patients, the ECEARP, carries out 50 meetings each year (a 2 month meeting with each service, approximately) with all the community services with which it collaborates. One of the objectives of such shared meetings is to contribute to the training of professionals by encouraging the use of an instrument for the screening of high risk of psychosis individuals. A key step in the achievement of this objective is the progressive training of the referral professionals in the use of practical screening instruments to detect people at moderate risk. In that way, the ECEARP can work as consecutive filter inside the Primary Health, Social and Pedagogic Care System, because referral rates were higher among those professionals with a higher awareness of the disorder.⁵

In 2006 in Barcelona (Spain) the Early Care Equipment for At-Risk of Psychosis Patients started to work, focusing on early treatment and help for ARMS patients (EMAR in Spanish), for individuals with a first episode of psychotic (FEP) and for highly vulnerable children (HVC) due to an accumulation of risk factors of psychopathology. The aim of this study is to describe the strategy and the results of the ARMS detection programmes used and the clinical and socio-demographic

characteristics of those patients visited for the first time at the Service during its first year of operation.

METHOD

Setting

The team consists of two psychiatrists/psychotherapists, a psychologist/psychotherapist, a social worker, two nurses specialized in mental health and administrative staff. Its assigned population is 83 567 inhabitants from a central urban sector in Barcelona, from middle and low-middle classes and with a progressive increment of immigration. It works in a network base with the sanitary services (primary, secondary and tertiary, including mental health services), the education services (psycho-pedagogy attention teams and primary and secondary education centers) and the social services (preventive attention teams, primary social care attention, justice institutions for the protection of young in a risk situation) of its sector, in detection and treatment as well as at a preventive and formative level.

Participants

We selected consultants as ARMS/EMAR when they met the criteria proposed by the *European Prediction of Psychosis Study* (EPOS),¹³ with two modifications in such criteria: (i) for organizational reasons, the criteria concerning basic symptoms was disregarded and (ii) the age range was expanded from 14–30 to 12–56 years in order to improve truly early detections,⁵ and to detect the first manifestation of the delusional disorder, which can begin at the third or fourth decade of life. Consequently, each patient needed to have either *attenuated positive symptoms* (APS) as assessed by the *Scale of Prodromal Symptoms* (SOPS),^{14,15} *Brief limited intermittent psychotic*

symptoms as assessed by the *Positive and Negative Symtoms Scale* (PANSS),^{16,17} or family vulnerability, with functioning impairment as measured by the *Global Assessment Functioning* (GAF)¹⁸ (Table 1). The exclusion criteria used where common to the study EPOS: (i) diagnosis of a previous psychotic episode with a duration greater than 1 week; (ii) psychotic symptoms due to a substance abuse or to an organic mental disorder and (iii) previous diagnosis of mental retardation. Prior exposure to antipsychotic medication was not an exclusion criterion because those drugs are frequently administered to FEP and ARMS patients in our context (4/20 in our ARMS sample).

Instruments

The socio-demographic data was obtained from the ‘Catalan Health Institute’ Case Register [Instituto Catalán de la Salud] (ICS, unpubl. data, 2006). As screening instrument we used the *Early Recognition Inventory checklist (ERIRAOS)*, based on the *Retrospective Assessment of the Onset and Course of Schizophrenia and Others Psychosis*.¹⁹ That scale assesses the presence/absence of unspecific symptoms, of late prodromal and psychotic symptoms during the last 12 months, and its intensity variations, and the presence of some risk factors. We used a still non-validated Spanish version of the questionnaire, re-translated twice from English and German version.²⁰ As recommended by the EPOS criteria,¹⁰ we used the SOPS in order to assess APS.¹⁴ We used a Spanish version of the instrument with excellent predictive validity and high internal consistency.¹⁵ Intermittent psychotic symptoms were assessed using the Spanish version of the PANNS,¹⁶ validated in Spanish population¹⁷ and with moderate internal consistency in PANSS–P and high internal consistency in PANSS–N.

Procedure

The research protocol was approved by the Jordi Gol Ethics Committee, an organization supporting investigation in primary healthcare in Catalonia. The informed consent was signed by the participants and/or their parents. Professionals from the community network referred the patients when they scored 3 or more in the ERIraos and/or when doubts did exist concerning their risk of psychosis status in the information or shared group inter-professional sessions conducted by the EAPPP (more than 50 a year). In case that the instrument had not been fully administered it was completed in the first visit to our team. The participants scoring 3 or more in the ERIraos – or any positive answer in its second or third part – were administered the PANSS, the SOPS and the GAF in a second and a third clinical interview. DSM-IV-TR criteria were used to assess the presence of psychotic disorder and schizotypic personality. Organic conditions were ruled out based on physical exploration and somatic screenings (blood and urine analysis, Computed tomography and/or Magnetic resonance imaging, etc.). The possible outcomes of this process were (i) fulfilling the ARMS or FEP criteria, (ii) fulfilling the criteria for HVC (operationalized as having 10 or more risk factors, as determined by the Mental Health Items List (LISMEN in Spanish, an ad hoc checklist that is currently being validated) or (iii) not fulfilling any such criteria and therefore being referred to another specialized service in the mental health network. The LISMEN is a checklist of 87 items assessing risk factors for severe mental disorder throughout childhood and adolescence. It is applied in a semi-structured interview and covers four age groups: 0–2, 3–5, 6–11 and 12–17. Scores indicate risk factor presence or absence. The level of reliability is rating from 0.79 to 0.98.²¹

Statistical analysis

Analyses were conducted using SPSS for Windows 13.0.²² Descriptive analyses (i.e. mean, confidence interval, percentiles, frequencies and percentages) were used in order to describe the ARMS group characteristics.

RESULTS

Figure 1 summarizes the possible trajectories followed by participants along the different arms of the study, which was carried out from June 2006 to June 2007. The reference population size was 83 587 inhabitants and 2.4 ARMS cases per 10 000 inhabitants were detected.

Table 2 shows the general socio-demographic characteristics of the ARMS group. The ARMS Group was composed mainly of teenagers (mean age, 15.8 years). There were a greater proportion of males and most participants had attained the secondary education level. A tenth of the participants were younger than 14 years old. They were evenly distributed across the three areas attended by the Team: health, education and social services. The distribution of participants across socio-economic levels showed no differences with the exception of a small dominance of the middle class. A minority were Latin-American immigrants.

Table 3 shows the baseline characteristics of the ARMS group. In the ARMS baseline, participants showed moderate difficulties in the GAF. They also showed negative symptoms and social impairment more frequently. In terms of intensity, negative symptoms were more severe than positive ones in the PANSS. In the SOPS's item 'Odd behavior or appearance' the mean intensity was low to moderate.

DISCUSSION

One of the objectives of this study was to describe the performance of the ARMS/EMAR people's detection strategy in our team and the result of its application after its first year running.

The ARMS incidence is obviously determined by the selection criteria used by the clinical team. Nevertheless, the consideration of such data is mandatory in public health units, although the identification of this information in published international studies poses a frequent challenge. Although it may seem that the ARMS incidence can be inferred from the transition rates to FEP and FEP incidence, the variability of the transition rates makes this impossible, even when similar strategies are used.²³ Our team estimated an incidence of 2.4 cases per year per 10 000 inhabitants, a higher incidence than other studies like the Cantabria's programme (Spain) on early psychosis, which detected one case per year per 10 000 inhabitants²⁴ using the criteria described by Yung et al.⁸ These differences may be attributable to differences in the age inclusion criteria (in our team: 12–56 years old; 14–30 with the UHR strategy), but in this 1-year study only a 10% of cases detected are between 12 and 14 years old and there are no patients over 30 years old. Another possible explanation for these differences might be that in the Cantabrian and other international studies, the group referrals came from the sanitary sector, whereas in our study this proportion accounted for slightly more than a third of the referrals.

Evidence shows that health and mental health professionals who are aware about psychoses detect psychosis at early stages and tend to carry out appropriate referrals.^{25,26} Nevertheless, when awareness strategies extend to other sectors – such as education services – there is a higher DUP reduction.¹¹ In our study, the inclusion of social

services professionals in the awareness strategy contributed to detect an additional third of cases, since individuals at risk of suffering from mental disorders are more likely to contact social services. Also, social services are more likely than health or education services to reach individuals with severe mental illness and social risk of isolation.²⁷

A considerable proportion (20 of 55) of individuals referred to the EAPPP met criteria for the ARMS group, to be added at nine FEP cases. This may be explained by the familiarity of the network with screening instruments as the ER Iraos – which detects both negative and positive symptoms – and the expertise and formation of the staff. Because of that, and because the use of a screening instrument such as ER Iraos might contribute to a higher accuracy of the referral process, completing the validation of the Spanish version of that instrument is a pressing issue.

Our results show that in our ARMS sample the four symptoms more frequent at baseline, as determined by the ER Iraos, are negative symptoms and linked to social functioning impairment: depressed mood, reduction of motivation and poor work and school, decrease in the ability to maintain or start social relationships, and social withdrawal. These results are consistent with those from other studies showing that depression and social functioning impairment were the more frequent reasons justifying initial visits.²⁸ They are also consistent with other studies showing that negative symptoms are dominant in the early stages of the prodromal phase.^{29,30}

Our sample highlights an ARMS high frequency of negative symptoms and social impairment, together with a relative youth age (mean 15 years) and dominance of APS symptoms. This particular syndrome might be due to the fact that we were detecting ARMS further in time from the first episode of psychosis. Indeed, this would be a key difference with the UHR strategy and would increase the potential for

preventive interventions because of the lower risk of diagnostic error between ARMS and undiagnosed first episode of psychosis.³¹ On the other hand, this translates the problem into the possibility of a higher risk of ‘false ARMS positives’.³²

Although negative symptoms are important, they are also both unspecific and frequently seen in other types of disorders. Because of that, as suggested by Simon et al.,³³ it seems sensible implementing a two-stage detection strategy, with one stage using broader criteria (ERIRaos) in a community setting, and a second stage using more specific criteria (ARMS) in a specialized setting.

ARMS cases in our study did receive specialized care delivered under the EAPPP programmes, based in the integration of biological, psychological and psychosocial therapies with different approaches, in a combination of individual, family and group care.³⁴ Two of 20 first cases developed a first episode of psychosis in a period of 1 year.

It is important to stress the descriptive nature of our study. Because of it, our findings do not bear the comparison of two strategies or their absence in similar populations, as a quasi-experimental study would.

Future works will have to compare the relative performance of different detection strategies using a proper control group to further expand the results presented here. Also, further development is urgently needed of resources, techniques and procedures for the improvement of the integration of the work carried out from different settings: health, education and social services.

Table 1. Inclusion criteria for the ARMS group of the EAPPP

<p>- Age: 12 to 56 years old.</p> <p>- Presence of any of the following conditions:</p> <p>A. Attenuated positive symptoms: Presence of at least one of the following SOPS symptoms with a score between 3 and 5 and an appearance of several times per week for a period of at least one week: Unusual thought content / delusional ideas, suspiciousness / persecutory ideas, grandiosity, Perceptual abnormalities / hallucinations, Disorganized communication, Odd behaviour or appearance.</p> <p>B. Brief limited intermittent psychotic symptoms: Presence of at least one of the following PANSS symptoms, score ≤ 4, that resolve spontaneously in 7 days and an interval between episodes with these symptoms of at least one week: Delusions, Conceptual disorganization, Grandiosity, Hallucinations, Suspiciousness.</p> <p>C. Familial risk plus reduced functioning: A change in mental state or functioning leading to a reduction of 30% or more on the GAF for at least one month within the last year compared to the highest level of previous functioning, plus at least one of the following risk indicators: 1- One first- or second-degree relative with a history of any DSM-IV psychotic disorder (not due to a medical factor or substance induced) (EPOS criteria)¹³, 2- A schizotypal personality disorder of the index person according to DSM-IV.</p>
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ARMS, At-risk mental state; EAPP; Equip d'Atenció Precoç als Pacients en risc de Psicosis; GAF, global assessment functioning; PANSS, positive and negative symptoms scale; SOPS, scale of prodromal symptoms.

Table. 2 Socio-demographic characteristics of ARMS group.

	ARMS group
Age, years: mean (CI)	15,8 (14,7-16,8)
Age range, years	12-20
Sex (men:women)	12:8
Referrals source %	
Health	38,1
Education	33,3
Social services	28,6
Immigrants population %	20
Educational level %	
Primary	15
Secondary	80
University	5
Socio-economic level %	
Low-low	20
Low	20
Middle-low	20
Middle	25
Middle-high	15
ARMS, At-risk mental state.	

Table 3. Baseline of at-risk mental state group

	ARMS
GAF: mean (IC)	50,8 (46,9-54,6)
ERiraos %	
Depressed mood	85
Reduction of motivation and poor work and school performance	80
Decrease in the ability to maintain or start social relationships	70
Social withdrawal	55
Manic and dysphoric symptoms	30
Disturbed body functions	30
Suspiciousness / distrust	28,6
Feeling of slowing down, reduced energy and affect	23,8
Odd behaviour	23,8
Rumination (without inner resistance)	14,3
Depersonalization and derealisation	14,3
Ideas of reference and paranoid symptoms	9,5
Preoccupation with mysterious things / unusual thought contents	4,8
(Pre-)psychotic thought disorders	4,8
Abnormal perceptions and hallucinations	4,8
PANSS mean (IC)	

Subscale positive	13,4 (11,3-15,5)
Subscale negative	15,8 (13,2-18,3)
Subscale general	35,6 (30,8-40,32)
SOPS mean (IC)	
SOPS Positive	6,3 (4,6-8)
SOPS D1 (Odd behaviour or appearance)	2,9 (2,24-3,56)

ARMS, at-risk mental state; ERIRAOS, Early recognition inventory: retrospective assessment of the onset and course of schizophrenia and others psychosis; GAF, global assessment functioning; PASS, positive and negative symptoms scale; SOPS, scale of prodromal symptoms.

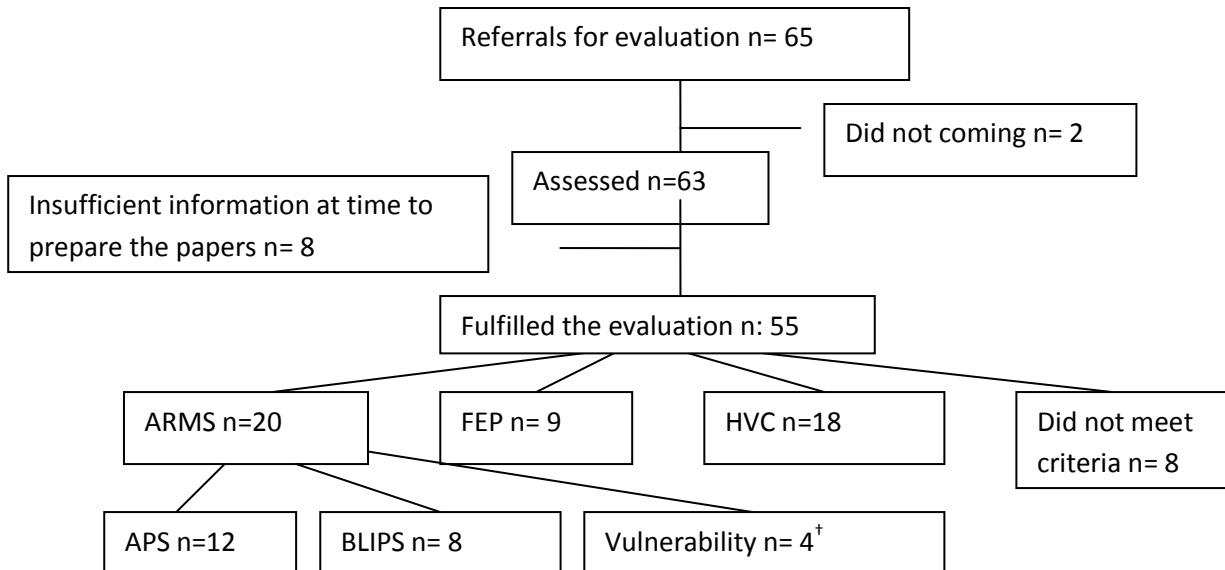


FIGURE 1. Numbers of referrals and evaluations of the team in the first year of functioning. (ARMS, at-risk mental state; FEP, first episode of psychosis; HVC, highly vulnerable children; APS, attenuated positive symptoms; BLIPS, brief limited intermittent psychotic symptoms). [†]This group meet criteria for APS or BLIPS group.

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CHAPTER 2: Attachment Style Predicts 6-Month Improvement in Psychoticism in Persons At-Risk Mental States for Psychosis²

ABSTRACT

Aim: Insecure attachment may influence vulnerability to and outcome of psychotic symptomatology. The present study examined whether attachment style predicted symptom and functioning of at-risk mental state (ARMS) patients after 6 months of psychosocial intervention, over-and-above the effects of initial clinical severity and premorbid social adjustment (PSA).

Methods: Symptoms and functioning were assessed at baseline and 6 months later in 31 ARMS patients (mean age = 15.7). No patient received antipsychotic medication, but all engaged in intense psychosocial needs-adapted treatment. Clinicians (unaware to the aims of the study) rated attachment, PSA, symptoms, and functioning.

Results: Attachment was not related to baseline clinical severity. However, improvement in psychoticism was predicted by attachment (in particular by secure, preoccupied and dismissing) beyond the effects of baseline clinical severity and PSA. Secure attachment also predicted improvements in disorganization and functioning. Poor PSA predicted less improvement in disorganization and negative symptoms, but did not impact psychoticism.

Conclusions: The three attachment prototypes that predicted improvement in psychoticism (secure, preoccupied and dismissing) share the existence of at least one

² Quijada, Y., Tizón, J. L. , Artigue, J. , Kwapil, T. and Barrantes-Vidal, N. Attachment style predicts 6-month improvement in psychoticism in persons at-risk mental states for psychosis. *Early Intervention in Psychiatry* DOI: 10.1111/j.1751-7893.2012.00342.x

positive psychological model (either about self or others). It may be that the psychosocial intervention helped ARMS patients to disconfirm negative models and/or reinforce positive ones. Patients' attachment styles were not related to baseline clinical severity but impacted improvement of positive symptoms. These findings appear consistent with evidence that impaired self-esteem and dysfunctional self and others schemas constitute risk factors for reality distortion.

Key words: At-risk mental state, attachment, early psychosis, premorbid social adjustment, psychosocial treatment.

INTRODUCTION

Bowlby's attachment theory postulates that the quality of early experiences with caregivers contributes to internal working models that provide the prototypes for subsequent social relationships.^{1,2} Following a line of investigation that examines attachment from the perspective of adulthood, Bartholomew and Horowitz³ proposed two types of internal working models: first, the model of the self is associated with the degree of anxiety and dependency experienced in close relationships. Second, the model of others is associated with the tendency to search for or avoid closeness in relationships. These internal working models can be divided into either positive or negative expressions, resulting in four attachment prototypes: secure (positive model of the self and others), preoccupied (negative model of the self and positive model of others), dismissing avoidant (positive model of the self and negative model of others) and fearful avoidant (negative model of the self and others).

Studies found that the majority of patients with schizophrenia were classified as having either dismissing or fearful attachment prototypes.^{4,5} Mickelson and colleagues⁶

found a high proportion of schizophrenia patients with avoidant attachment. Insecure attachment has been linked to the onset of schizophrenia at an earlier age.⁷ A greater prevalence of the ambivalent prototype (similar to the preoccupied prototype) of peer attachment has been found in first-episode psychosis samples.⁸ Avoidance attachment has been associated with positive and negative symptoms,⁷ as well as paranoia, in schizophrenia patients.⁹

The role of environmental factors in the development and course of psychosis has been increasingly demonstrated.¹⁰ Specifically, negative beliefs about the self and one's social environment play an important role in vulnerability for and the maintenance of psychotic symptoms in current psychosocial models of psychosis.¹¹ Associations between avoidant attachment and positive symptoms support cognitive models of psychosis that suggest that negative beliefs and social withdrawal play a role in maintaining positive symptoms,¹² particularly paranoia.¹³ Some investigations have demonstrated a link between psychotic symptoms and negative beliefs about the self and others.¹⁴ Avoidant strategies have been linked to both a poor recovery following the onset of psychotic symptoms,¹⁵ and insecure attachment and negative self-evaluation in psychotic patients.¹⁶ The quality of interpersonal relationships and interpersonal functioning has been associated with relapse and recovery after the onset of symptoms.¹⁷ All these findings seem to indicate that insecure attachment in adulthood, which is associated with negative beliefs about the self and others as well as with maladaptive methods for coping with stress, can increase the vulnerability to psychotic symptoms and have an adverse effect on the course of psychosis once symptoms are present.¹⁸

The majority of studies on attachment in psychotic disorders were conducted with chronic patients, so the role of attachment in the initial stages of psychosis remains poorly understood. The early detection and treatment of prodromal patients or ‘at-risk mental states’ (ARMS) for psychosis is considered as a way to improve the course of the disorder,¹⁹ because delay in treatment correlates with unfavourable outcome.²⁰ In ARMS patients psychosocial interventions appear to offer advantages relative to antipsychotic medications.²¹ However, an intensive psychosocial treatment needs the engagement and a reasonable working alliance,²² two aspects easier to develop in the prepsychotic phase²³ and both related to attachment prototypes.^{16,24} So, it seems essential to know the role of patients’ attachment prototypes at this early stage and its impact on treatment outcomes.

Several studies link childhood attachment prototypes to children’s social and emotional adjustment throughout childhood.²⁵ In this sense, premorbid social adjustment (PSA) in psychosis and attachment prototypes are related and might share some behavioural aspects. Poor PSA is predictive of transition to the first episode of psychosis²⁶ and is associated with poorer clinical outcome in psychosis.²⁷ Therefore, it is important to explore whether attachment prototypes contribute to the prediction of outcome in the early phases of psychosis beyond the well-established role of PSA. To the best of our knowledge, there are no studies that have addressed this issue.

Using a prospective design, the aim of the current study was to explore whether attachment prototypes (defined at baseline, pretreatment) predict symptomatic and functional status of ARMS patients after 6 months of psychosocial intervention.

Also, the role of attachment over and above the effect of PSA and clinical severity is analysed. It is expected that PSA will be associated with symptoms and functioning at 6

months and that attachment will predict improvement over and above the effect of PSA. In particular, the secure attachment prototype is hypothesized to be predictive of symptomatic and functional improvement, whereas insecure prototypes will be predictive of poorer recovery.

METHODS

Participants

Participants were recruited from a public service from Barcelona, Spain specializing in the early detection and treatment of psychosis, the Early Care Team for At-Risk of Psychosis Patients (EAPP) team.²⁸ Criteria for the ARMS groups were derived from the European Prediction of Psychosis Study proposal²⁹: age range between 12 and 35 years, presence of attenuated positive symptoms, brief limited intermittent psychotic symptoms or familial vulnerability plus reduced functioning (operationalization of criteria in Table 1). Exclusion criteria were diagnosis of a previous psychotic episode lasting for more than 1 week, psychotic symptoms due to substance abuse or to organic mental disorder, mental retardation and taking antipsychotic medication during the study period.

Informed consent was signed by the participants and/or their parents. The procedure was approved by the Jordi Gol Ethics Committee, an organism that supports research in primary health care in Catalonia. All patients who fulfilled ARMS criteria received a needs-based treatment^{30,31} during at least the 6-month follow-up.

Forty-eight patients met the ARMS criteria during the 30 months recruitment period. Three refused to participate, 11 did not complete the follow-up and 3 received antipsychotic medication during the follow-up period. No differences were found for

symptoms and functioning at baseline between those who completed the study and those who did not. The final sample was composed of 31 patients with a mean age of 15.7 (SD = 3.1) years (range 12–25). The participants were all single, 74% were men and 84% were in secondary school. Socioeconomic level ranged from very-low (13%), low (52%), middle-low (26%) to middle-middle (10%) level. During follow-up, 26 patients did not receive medications; two took antidepressant and three took anxiolytic medications.

Measures

Symptoms were assessed with the Positive and Negative Symptoms Scale (PANSS),^{32,33} using the subset of PANSS items proposed to tap symptom outcome by Andreasen and colleagues.³⁴ This includes psychoticism (delusions, hallucinatory behaviour and unusual thought content), disorganization (conceptual disorganization and mannerisms) and negative symptoms (blunted affect, social withdrawal and lack of spontaneity).

General functioning was evaluated with the Global Assessment of Functioning (GAF),³⁵ and PSA was assessed with the Mental Health Items List,³⁶ a checklist of 87 items assessing risk factors for severe mental disorder throughout childhood and adolescence. For this study, the 15 items tapping social functioning up to age 11 were selected. High PSA scores indicate poor adjustment. Internal consistency of the PSA was 0.79. The assessment of PSA at baseline was done using a multisource approach. Firstly, scoring was based on the information obtained in the comprehensive clinical record. Then, the clinician in charge was interviewed by a trained psychologist to collect missing data, and when information was still unavailable, the psychologist conducted an interview with relatives.

Attachment was assessed with the Relationships Questionnaire (RQ).^{3,37} The RQ is a single-item measure made up of four short paragraphs, each describing a prototypical attachment pattern: Secure, Fearful, Preoccupied and Dismissing. It has been widely used in adult attachment research, including clinical samples of adolescents, and has been established to have good reliability and validity.^{38,39} Its stability is moderate but better when the scale is completed by an observer than by self-report and when using continuous rather than categorical ratings,⁴⁰ which is the case of this study. The primary clinician rated each participant on degree of correspondence to each prototype on a seven-point scale and chose which prototype best characterized participants.

Raters of all measures were unaware of the aim of the research.

RESULTS

Most patients had a predominant fearful attachment prototype (71%), followed by preoccupied (16.1%), dismissing (6.4%) and secure (6.5%) prototypes. The average PSA was 7.84 (SD = 4.05; range = 0–14).

Regarding change in symptoms and functioning from baseline to 6-month follow-up, 83.9% of participants either improved or remained the same on the psychoticism dimension; the same applied to 83.9% on the disorganization dimension, 71% on the negative symptoms dimension and 77.4% on the GAF. Paired-samples *t*-tests comparing each symptom dimension and functioning at baseline and follow-up indicated that the change was only significant for functional level, $t(30) = -2.40$, $P = 0.02$, indicating better functioning at 6 months. Table 2 shows descriptive data for symptoms and functioning at baseline and follow-up.

Table 3 presents the correlations of the attachment prototypes and PSA with the baseline measures of symptoms and functioning. None of these correlations were significant, indicating that attachment was unassociated with participants' baseline levels of symptoms and functioning.

Table 4 shows the results of the regression analyses conducted to evaluate the independent contribution of attachment in predicting change in symptom/functioning scores over and above the predictive value of baseline symptom/functioning levels and PSA. Baseline scores (symptoms or functioning) were entered at the first step, PSA was entered at the second step, and the four attachment variables were entered as a block at the third step in order to examine their independent contribution over and above the previous main effects. This provides a conservative test of the effect of attachment prototypes because their impact is examined after variance from all of the other predictors has been partialled out. Please note that for regression analyses effect sizes, expressed as f-squared values, a small effect is denoted by an f-square around 0.02, medium at 0.15 and large at 0.35. As seen in the earlier correlational analyses, symptoms/functioning baseline levels significantly predicted respective change scores at the first step. At the second step, PSA only predicted improvement in disorganization and negative symptoms over and above the effect of baseline status. Secure, preoccupied and dismissing attachment independently accounted for significant variance in the change in psychoticism symptoms across the 6-month period at step 3. For disorganization, secure attachment contributed significantly to explain improvement at follow-up. For negative symptoms, none of the attachment prototypes predicted change scores at 6 months. As for functioning, secure attachment made a significant contribution over and above the effect of baseline symptom levels and PSA. Note that

among the attachment prototypes, the effect sizes were largest for secure attachment. Despite the fact that secure attachment was unrelated to baseline measures of symptoms and functioning, it significantly predicted improvement in participants across the 6-month period.

DISCUSSION

The main finding of this study is that attachment prototypes, particularly secure, preoccupied and dismissing attachment, predicted improvement in psychoticism beyond the effects of baseline symptom severity and PSA. There was no significant change in any clinical dimension at 6 months at group level, but significant associations between predictors and clinical and functional outcome did emerge. At first sight, the finding that preoccupied and dismissing prototypes also predicted amelioration of psychoticism might seem contradictory. However, a deeper examination reveals that these prototypes share with the secure one the existence of at least one positive working model (either of the self or others), suggesting that in order to benefit from treatment, at least in a relatively early stage, it is necessary to have some degree of a positive internal working model.

The protective therapeutic setting probably helps patients to strengthen the positive elements of the working models and thus the development of trust and engagement with the therapist. This might decrease the negative model of others and make the therapeutic interventions a valid source of personal confirmation, reinforcing equally a less negative model of the self. In this sense, a more negative model of the self (strongly related with self-esteem) has been linked to increases in hallucinatory behaviour,⁹ paranoia,¹⁴ risk of psychosis⁴¹ and maintaining the symptomatology.⁴²

Consequently, feeling valued in psychotherapy can contribute to symptom reduction, especially paranoia and hallucinatory behaviour.

The secure emotional setting that therapy offers might also explain why secure attachment was predictive of improvement in disorganization and functioning. In therapeutic contexts, reinforcement of positive aspects of attachment could help to contain anxiety, facilitating more coherent and organized verbal and behavioural expression and recovering contact with others in daily activities.

The possible therapeutic changes proposed earlier required that therapy represents a significant emotional experience⁴³ in which the therapist becomes a healthy attachment figure.⁴⁴ This therapeutic approach has been demonstrated to be effective at least in promoting emotional recovery and relapse prevention following a psychotic episode.^{45,46}

None of the attachment prototypes predicted improvement in negative symptoms. Negative symptoms might have a stronger genetic and neurodevelopmental basis compared with the stress-sensitivity and cognitive pathways leading to positive symptoms.⁴⁷ Indeed, negative symptoms show a greater relationship with neurocognitive deficits,⁴⁸ exposure to putative neurodevelopmental markers and poor PSA⁴⁹ than positive symptoms. In addition, no treatment appears to substantially work when negative symptoms are narrowly defined,⁵⁰ which is the case of this study.

Poor PSA was predictive of less improvement in negative symptoms and disorganization. It is well known that poor PSA is a powerful predictor of poorer treatment outcome,²⁷ especially for severity and persistence of negative symptoms in first episode psychosis (FEP) samples.⁵¹ The specific relationship between disorganization and PSA has been less explored; however, it has been proposed that the

outcome of negative symptoms and disorganization are more likely to be influenced by longer-term characteristics such as premorbid adjustment and therefore may not be as responsive to effects of early intervention.⁵² From the attachment framework, these results can be associated with the establishment, early in life, of predominantly negative internal working models of the self and others, which can lead to interpersonal problems such as social inhibition that remain throughout development and might favour the emergence of psychotic symptomatology in conjunction with other risk factors.

The slight symptomatic change after 6 months detected in this study might have been influenced by using the PANSS as a follow-up instrument, as it might be inappropriate for measuring symptomatic change in prodromal samples.⁵³ On the other hand, the predominance of low socioeconomic status in our sample, related to living in a densely urbanized sector, might be impacting on living conditions, generating a flow of constant stressful situations that limit the impact of the therapeutic intervention. Of note, these factors have been associated with a high presence of psychotic symptoms and a greater risk of psychosis in epidemiological studies and vulnerable samples to psychosis.^{54–58} However, the *maintenance* of symptomatology in prodromal samples, not its *deterioration*, is in itself relevant at a clinical level, especially when dealing with ‘nuclear’ symptoms of schizophrenia that have not been treated with antipsychotic medication. According to various investigations, between 35% and 54% of ARMS cases detected using criteria similar to this study make the transition to FEP in 1 year,^{19,59} even if these percentages have recently declined (e.g. Woods *et al.*⁶⁰). Therefore, the slight symptomatic change might indicate that a brief psychosocial treatment acts as a brake on the exacerbation of symptoms, thereby maintaining symptomatology at entry level.

This exploratory study contributes to the understanding of psychotic symptomatology within the framework of attachment theory, thereby continuing efforts already begun.^{18,61} However, to the best of our knowledge, this is the first study on the potential impact of attachment on psychosocial interventions in ARMS patients, with encouraging results regarding the reduction and stagnation of subclinical levels of psychotic symptoms in help-seeking ARMS patients. It suggests that knowing the patient's attachment prototype can help in planning and tailoring therapeutic objectives and intervention strategies.

The conclusions of this study must be considered taking into account their limitations. The RQ has been mainly applied in relation to specific others and less as a measure of general attachment (which was our approach), although it is one of the most extensively used measures with large validation studies. Also, in the evaluation of attachment prototypes the assessment of the therapist was considered. This was done to avoid a potential bias in patients' self-report due to the current clinical state. Future studies should investigate the convenience of using patients' self-report or a combined approach, as well as taking into account the attachment prototypes of the intervening professionals, because these affect the relationship with patients with psychosis.^{62,63} Finally, in order to prove the assumption that symptomatic improvement reflected change in internal working models, this ongoing project is monitoring changes in attachment with repeated measures over time.

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Table 1. Inclusion criteria for At-risk mental state participants.

<p>Presence of any of the following conditions</p> <p>A- Attenuated Positive Symptoms: Presence of at least one of the following symptoms assessed by Scale of Prodromal Symptoms with a score between 3 and 5 and an appearance of several times per week for a period of at least one week: unusual thought content / delusional ideas, suspiciousness / persecutory ideas, grandiosity, perceptual abnormalities / hallucinations, disorganized communication, odd behaviour or appearance.</p> <p>B- Brief Limited Intermittent Psychotic Symptoms: Presence of at least one of the following symptoms evaluated with the Positive and Negative Symptoms Scale, score equal or more than 4, that resolve spontaneously in 7 days and an interval between episodes with these symptoms of at least one week: delusions, conceptual disorganization, grandiosity, hallucinations, suspiciousness.</p> <p>C- Familial risk plus reduced functioning: A change in mental state or functioning leading to a reduction of 30% or more on the GAF for at least one month within the last year compared with the highest level of previous functioning, plus at least one of the following risk indicators: 1- One first- or second-degree relative with a history of any DSM-IV psychotic disorder (not due to a medical factor or substance induced), 2- A schizotypal personality disorder of the index person according to</p>
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DSM-IV, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; GAF, Global Assessment of Functioning.

Table 2. Descriptive data for symptoms and functioning at baseline and 6-month follow-up

	Baseline		Follow up	
	Mean (SD)	Range	Mean (SD)	Range
PANSS Dimensions				
Psychoticism	4.89 (2.58)	3 – 13	4.74 (2.06)	3 – 11
Disorganization	3.97 (2.01)	2 – 10	3.77 (1.56)	2 – 7
Negative symptoms	7.87 (2.93)	3 – 15	8.06 (2.82)	3 – 14
GAF	46.5 (10.7)	25 -61	51.5 (8.3)	40 - 65

GAF, Global Assessment of Functioning; PANSS, Positive and Negative Symptoms Scale.

Table 3. Pearson correlations of attachment and premorbid social adjustment with baseline measures of symptoms and functioning.

	Secure Attachment	Preoccupied Attachment	Fearful Attachment	Dismissing Attachment	Premorbid Social Adjustment‡
Psychoticism baseline	-0.03	-0.30†	0.01	-0.01	-0.13
Disorganization baseline	-0.05	0.13	-0.31	0.13	-0.06
Negative symptoms baseline	-0.09	-0.17	-0.24	0.00	-0.03
GAF baseline	0.15	0.26	-0.22	-0.01	-0.18

†Medium effect sizes indicated in **bold font**

‡High premorbid social adjustment scores reflect worse adjustment.

GAF, Global Assessment of Functioning.

Table 4. Impact of attachment prototypes on change in symptoms and functioning after partialing baseline symptoms and premorbid social adjustment

Criteria	Step 1			Step 2			Step 3								Total R^2	
	Baseline Symptoms			PSA‡			Attachment Prototypes									
							Secure		Preoccupied		Fearful		Dismissing			
	β	ΔR^2	f^2 †	β	ΔR^2	f^2	β	f^2	β	f^2	β	f^2	β	f^2	ΔR^2	
Change in:																
Psychoticism	0.63***	0.390	<i>0.64</i>	-0.24	0.058	0.11	0.48**	<i>0.44</i>	0.30*	<i>0.21</i>	0.12	0.04	0.28*	<i>0.20</i>	0.204*	0.652***
Disorganization	0.65***	0.398	<i>0.66</i>	-0.33*	0.105	<i>0.21</i>	0.33*	<i>0.20</i>	0.24	0.14	0.18	0.07	-0.03	0.01	0.124	0.627***
Negative symptoms	0.51**	0.260	<i>0.35</i>	-0.36*	0.130	<i>0.21</i>	0.23	0.07	0.13	0.03	0.14	0.03	-0.17	0.05	0.092	0.481**
Functioning	-0.72***	0.521	<i>1.09</i>	-0.14	0.020	0.04	0.47**	<i>0.55</i>	0.10	0.03	0.03	0.00	-0.09	0.03	0.193**	0.734***

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

†Medium effect sizes (f^2) indicated in **bold font**, large effect sizes in ***bold and italicized font***. Note that betas and effect sizes indicate the effect when all variables at the current and previous steps are entered into the model.

‡High scores reflect worse adjustment. PSA, premorbid social adjustment.

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PART 3

General Discussion

As already mentioned, the field of practice and research on early identification and intervention in psychosis has provided direct evidence for the value of early recognition efforts from the past 15 years. One priority task is the identification of individuals at a clinical phase when first symptoms and/or impairments emerge, the so-called ARMS patients. Different strategies have been proposed to detect these individuals, although the goal of all of them is the same: to identify symptoms and signs in combination with other risk factors that enable the prediction of the onset of psychotic disorder in the near future. Despite this unique aim, the conversion rates from at risk state to FEP vary between 10% and 40% over 1–2 years depending on the strategy applied (Addington and Heinssen, 2012). Thus, the ARMS incidence and the conversion rate to FEP are determined in part by the selection criteria used. In public health contexts such data are mandatory to conduct a rational distribution of resources. Another key aspect in the determination of incidence and conversion rates which is complementary to the ARMS criteria is the recruitment practices. An early psychosis service has to display at least two strategies for an efficient recruitment. Firstly, it is necessary to increase the recognition of the prodrome through education targeting high-risk groups, clinical training or education of the potential sources of referral. Secondly, it must favor the derivation systems increasing awareness of available services or streamlining the referral process among other recommendations (Ehmann and Hanson, 2004).

Chapter 1 (part 2) of this dissertation aimed at the description and results of an early detection strategy, reporting both the selection criteria and recruitment practices of

a community and public center specialized in early detection in psychosis in Barcelona, Spain. This study described entry criteria for ARMS patients based on the presence as “attenuated” psychotic symptoms that appear below the threshold of full psychosis, brief and self-limiting psychotic symptoms, or a significant decrease in functioning in the context of a genetic risk for schizophrenia. Such criteria were applied following international consensus. This chapter also described the implementation of a two-stage recruitment strategy. The first stage implied an intense shared work with social, educational and health community services. In addition, a screening instrument is used alongside other activities for the early detection of psychotic disorders in a community setting. This instrument allows the network of professionals to do more precise referrals, and also to know which symptoms are the most distressing for the patient and have therefore led them to seek help. The second stage is carried out by the team, who explored negative and positive symptoms, risk factors for psychosis, and applied somatic examination protocols. Following this strategy we have found a higher incidence of ARMS than in other studies, like Cantabria’s research (Spain) on early psychosis (Vallina et al., 2002) who also use the criteria described by Yung et al. (2004). These inconsistencies may be attributable to differences in inclusion criteria such as age, but another possible explanation for these differences might be that in the Cantabrian and other international studies, the group referrals came from the sanitary sector, whereas in our study this proportion accounted for slightly more than a third of the referrals. In this study, the inclusion of social services and educational professionals in the awareness strategy contributed to detect an additional two thirds of the cases. Previous work has shown that when awareness strategies extend to other sectors – such as education services – there is a higher DUP reduction (Johannessen et al., 2001). In the case of social services, it is possible that they are more likely than health or

education services to reach individuals with severe mental illness and social risk of isolation, especially when the person is disconnected of the regular services that all citizens should have (Tizón et al., 2009).

Consistent with other studies showing that negative symptoms are dominant in the early stages of the prodromal phase (Cornblatt et al., 2003; Yung, Phillips, Yuen and McGorry, 2004), the most frequent symptoms at baseline in this study were negative symptoms (linked to social functioning impairment). These results, combined with a relatively young age (that is, 15 years old) and the dominance of attenuated positive symptoms, might indicate that this strategy has detected ARMS further in time from FEP. In this way, it would increase the possibility of preventive interventions, but also the risk to treat ‘false ARMS positives’ (Corcoran, Malaespina and Hercher., 2005).

The reliable identification of ARMS patients is the first step toward prevention. The next step is how to treat those who are in risk and seeking help. The beginning of indicated early intervention in the pre-psychotic state was accompanied by extensive ethical discussions regarding the potential benefits and risks (McGlashan, 2001). Generally, the prevention or delay of psychosis, the improvement of prodromal symptoms, and the amelioration of the course and outcome of the full psychotic disorder, if it emerges, are considered potential benefits. These possible gains have to be weighed against potential risks of stigmatization and provocation of anxiety by confronting individuals with the threat of a psychotic disorder and of possible short- and long-term side-effects of the interventions (Correl, Hauser, Auther and Cornblatt, 2010). The general approach to minimize these risks is to use a clinical staging model in the treatment of ARMS individuals that reserves higher-risk interventions for the later and more symptomatic disease stages (McGorry, Hickie, Yung, Pantelis and Jackson, , 2006). Four treatment stages tailored to match the symptom presentation of ARMS

patients have been proposed (Haroun, Dunn, Haroun and Cadenhead, 2006). The first three involved diagnostic, psychoeducation and psychosocial and therapy interventions. Only the last phase entails pharmacologic interventions. So, the first line of treatment is characterized by an intensive psychosocial treatment which needs engagement and a reasonable working alliance (Lecomte, Spidel, Leclerc, Macewan, Greaves and Bentall, 2008), two aspects easier to develop in the prepsychotic phase than in full-blown psychosis (Bechdolf et al., 2006). Psychosocial and interpersonal factors have been involved in the engagement process in psychosis samples (Tait, Birchwood and Trower, 2004), and also in the development and course of psychosis (Read, van Os, Morrison and Ross, 2005). As already mentioned, different findings in emotional, cognitive and interpersonal process related with psychotic symptoms seem to indicate that insecure attachment in adulthood, which is associated with negative beliefs about the self and others as well as with maladaptive methods for coping with stress, can increase the vulnerability to psychotic symptoms and have an adverse effect on the course of psychosis once symptoms are present (Berry, Barrowclough and Wearden, 2007).

Chapter 2 (part 2) and chapter 1 of the annex presented two studies that aimed at exploring the impact of attachment on the evolution of symptoms and functioning across two different periods of psychosocial treatment in ARMS patients. Both controlled for severity of baseline symptoms.

The principal finding of the studies presented in chapter 2 revealed that attachment prototypes, particularly secure, preoccupied and dismissing attachments, predicted improvement in psychoticism beyond the effects of baseline symptom severity and premorbid social adjustment (PSA). These prototypes share the existence of at least one positive working model (either of the self or others), suggesting that in order to benefit from the treatment, at least in a relatively early stage, it is necessary to

have some degree of a positive internal working model. Also, secure attachment was predictive of improvement in disorganization and functioning. However, none of the attachment prototypes predicted improvement in negative symptoms, probably due to the stronger genetic and neurodevelopmental basis that negative symptoms might have compared with the stress-sensitivity and cognitive pathways leading to positive symptoms (Myin-Germeys and van Os, 2007).

The mechanism through which attachment impacts on clinical outcomes within a therapeutic setting might be related to the fact that the therapist becomes a healthy attachment figure (Adshead, 1998) and that therapy turns into a protective context and a significant emotional experience (Crowell and Treboux, 1995). In this way, the protective therapeutic setting probably helps patients to strengthen the positive elements of the working models while decreasing the negative ones. Consistently, a more negative model of the self (strongly related with self-esteem) has been linked to increases in hallucinatory behaviour (Berry, Barrowclough and Wearden, 2008), paranoia (Smith et al., 2006), risk of psychosis (Krabbendam et al., 2002) and symptom maintenance (Close and Garety, 1998). Consequently, feeling valued in psychotherapy can contribute to symptom reduction. The reinforcement of positive aspects of attachment could help to contain anxiety, facilitating more coherent and organized verbal and behavioural expression and recovering contact with others in daily activities.

These studies also found a slight symptomatic change after six months of psychosocial interventions. These apparently modest results might have been influenced by using a no “prodromal” instrument (Olsen and Rosenbaum, 2006) in combination with relevant risk factors for psychosis: the sample had low socioeconomic status and high urbanization levels (van Os, Hanseen and Bak, 2003; Wicks, Hjern, Gunnell, Lewis and Dalman, 2005). However, at clinical level these results might indicate that a

brief psychosocial treatment acts as a brake on the exacerbation of symptoms, thereby maintaining symptomatology at entry level.

The study presented in chapter 1 of the annex extends the follow-up from six months to one year and a bigger sample. The results indicated that the sample as whole improved in all clinical measures. Thus, symptom and functional improvement was greater at 12-month than a 6-month follow-up. The engagement in a psychosocial intervention for a period spanning a whole year can be related with the development of positive therapeutic relationships and higher adherence to treatment than those who do not complete the follow-up, which could have a profound positive impact way on clinical outcome. Both results might indicate that a psychosocial treatment contributes to a better course in the early phases of psychosis even in socially vulnerable samples.

With respect to the main objectives of this study, the results showed that patients with better attachment at the beginning of treatment presented a better clinical outcome after 12 months of psychosocial treatment. Specially, participants with lower levels of avoidant attachment (fearful and dismissing attachment) at the start of treatment showed greater improvement in positive, negative and total scores of the PANSS across one year of treatment than did participants with poorer attachment. Regarding secure attachment, results revealed that ARMS patients with higher baseline secure attachment experienced greater improvement in functioning, but not in symptoms, over 12 months of psychosocial treatment than did patients lower in secure attachment. These findings refer to a dimensional approach of the attachment organization in which an individual can favor avoidant modes of defense in a more secure or organized way, or in a more insecure or disorganized way. Therefore, clinical outcomes can vary in patients with insecure-avoidant attachment depending on the level of rigidity and self-defeating of

their defensive strategies and flexibility and vulnerability of their organizational capacities (Slade, 2008).

Unlike the 6-month follow-up (chapter 2), where secure attachment predicted improvement in psychoticism and disorganization, the 12-month follow-up found that secure attachment levels predicted better functioning, but not symptom improvement. One possible explanation, based on the social cognitive model of attachment (Baldwin, Keelan, Fehr, Enns and Koh-Rangarajoo, 1996), involves the idea that different attachment models can be activated in a person by specific circumstances (Davila, Karney and Bradbury, 1999). Psychosocial interventions could elicit secure schemas of attachment and have an impact on functioning that evaluates global activities such as go to work or to school, activities that can persist a long term and are promoted by this type of intervention. But at symptom level, which has cognitive and emotional components, the activation of secure models (less predominant in this sample), only lasts for initial periods of intervention when one of the goal is to establish a therapeutic relationship, but finally the predominant insecure attachments have an influence on symptoms at a long-term period. In fact, the majority of the sample changed from an insecure prototype to another insecure organization, as reported in others studies (Diamond et al., 1999; Travis, Bliwise, Binder and Horne-Moyer, 2001).

The study presented in chapter 1 of the annex addressed the objective of exploring the relationship between change in attachment and change in symptoms. Specially, it was proposed that improvement in secure attachment and decrease in insecure attachment across the 12 months of treatment would be related with better outcome. The results partially confirmed the hypothesis. A decrease in preoccupied attachment was related to improvement in positive symptoms, negative symptoms, general psychopathology and total PANSS. Several studies indicate a relationship

between preoccupied attachment and differences in clinical outcome in psychotherapy contexts (Berry et al., 2008; Fonagy et al., 1996; McBride, Atkinson, Quilty and Bagby, 2006) -- including the results of chapter 2, which indicated that preoccupied attachment, or anxious attachment according to other measures, predicted improvement in positive symptoms, especially in psychoticism.

One unexpected finding was that change in secure attachment was not related with change in symptoms. The secure attachment was the less frequent in this sample, contrary the more frequent was fearful attachment. So, it is likely that the main traits of the fearful attachment, which has two negative working models both related to psychotic symptomatology, must change in order to impact the course of psychotic symptoms. The aforementioned negative models of the self are linked to psychotic symptoms, and negative models of others are also related with this type of symptoms, especially with paranoia in clinical (Berry et al., 2008) and non-clinical samples (Pickering, Simpson and Bentall, 2008). Therefore, in order to improve symptomatology, the negative working models have to diminish, turning to a softer insecure attachment.

Summary and Research Findings

The three studies presented here refer to different phases of one process: the early intervention in psychosis. The first study described the detection strategy of ARMS patients, including selection criteria and recruitment practices of an Early Care Team. Following international proposals, both entry criteria and recruitment detected a higher incidence than other studies, probably due to the consideration of educational and social services in the network of referrals. The predominant symptoms of these patients were negative symptoms, which were related with social deterioration; both are

unspecific and present in other mental disorders. Thus, it seems appropriate to implement a two-stage detection strategy, with one stage using broader criteria (identified through a screening instrument) in a community setting, and a second stage using more specific criteria (ARMS) in a specialized context.

The second and third studies described clinical outcome after six and twelve months of an intense psychosocial intervention of ARMS patients in the Early Team Care. The principal aim of both studies was to explore the impact of attachment on symptoms and functioning over and above the symptom/functioning severity. At a six-month follow-up all attachment prototypes that shared some positive working models, i.e. secure, preoccupied and dismissing, predict improvement in psychoticism. In the same way, secure attachment also predicted improvement in disorganization and functioning. Probably, experiencing the therapeutic setting as a secure attachment base helped ARMS patients to disconfirm negative models and/or reinforce positive ones.

At twelve-month follow-up the results showed that patients with lower avoidant attachment at the beginning of the psychosocial treatment presented a better clinical outcome after 12 months of psychosocial treatment, specifically improvement in positive, negative and total scores of the PANSS. ARMS patients with higher baseline secure attachment experienced greater improvement in functioning, but not in symptoms across the follow up. Regarding the relationship between change in attachment and change in symptoms, a decrease in preoccupied attachment was related to the improvement on all symptom measures. These findings seem to suggest that at the one-year follow-up the intensity and predominance of the insecure attachment plays a differential role in the clinical outcome. The mechanism of a long-term symptom change would be via the softening of insecure attachment rather than the reinforcement of the secure prototype, less intense and less predominant in these patients.

The two studies suggest that knowing the patient's attachment prototype can help in planning and tailoring therapeutic objectives and intervention strategies.

In both studies symptom improvement was slight, but was greater at a twelve-month follow-up than at a six-month. However, these results might indicate that psychosocial treatment contributes to a better course of early phases of psychosis even in socially vulnerable samples.

Directions for Future Research

The description of a detection strategy for ARMS patients in a public system reveals some pending issues for future research. Firstly, the use of a screening instrument such as ERIRAOS might contribute to a higher accuracy of the referral process, so it would be convenient to have its standardized Spanish version. Secondly, in order to test the effectiveness of this strategy, it is necessary to compare the relative performance of different detection strategies using a proper control group to further expand the results presented here.

Regarding the studies of attachment as an outcome predictor in ARMS patients under psychosocial treatment, different research aims arise from these investigations. The therapist assessed the attachment prototypes of the patients as a way to avoid a potential bias in patients' self-report due to the current clinical state. Future studies should research the convenience of using patients' self-report or a combined approach, as well as taking into account the attachment prototypes of the intervening professionals, because these affect the relationship with patients with psychosis (Tyrrel, Dozier, Teague and Fallot, 1999; Berry, Shah, Cook, Geater, Barrowclough and Wearden, 2008).

In order to control possible confounders in the relation between attachment change and symptom change, it is necessary to consider that factors can contribute to change on attachment like the meaning of life events or losses (Davila and Sargent, 2003).

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PART 4

Annex

CHAPTER 1: Impact of Attachment Style on Change in Symptoms Across 12 Months in Persons with an At-Risk Mental State for Psychosis³

Abstract

Attachment theory provides key elements for understanding the psychosocial vulnerability for and response to the emergence of psychosis. This study examined 1) whether pre-treatment attachment styles are differentially associated with clinical and functional outcome in at-risk mental state (ARMS) for psychosis patients across one year of psychosocial treatment, and 2) whether clinical change is associated with change in attachment ratings beyond the effect of baseline symptom severity. Thirty-eight ARMS patients (mean age= 16.7, SD=5.9) identified from a psychosocial needs-adapted treatment were evaluated with the Positive and Negative Symptoms Scale, the Global Assessment of Functioning and the Relationships Questionnaire. Lower levels of insecure-avoidant attachment predicted better clinical outcomes. A decrease in preoccupied-anxious attachment was associated with symptom amelioration, whereas higher levels of secure attachment predicted improvement in functioning. The intensity of insecure attachment plays a significant role in the clinical outcome of ARMS patients involved in psychosocial treatment. Softening insecure attachment in the therapeutic setting probably favors a better course in the early phases of psychosis. In this sense, negative schemas of the self and others were related with symptom outcome, which is consistent with current psychosocial models of psychosis.

³ Quijada, Y., Kwapil, T., Tizón, J. L. and Barrantes-Vidal, N. Impact of Attachment Style on Change in Symptoms across 12 months in Persons with an At-Risk Mental State for Psychosis (*Submitted for publication*)

Key words: Early psychosis, prodromal symptoms, attachment styles, change, at-risk mental states

1. Introduction

Attachment theory provides research and theoretical models with key elements for understanding difficulties in relations with the self and others across the life span. The human attachment system organizes early personal experiences within internal working models that filter and channel new experiences; therefore, an individual tends to follow the same attachment trajectory throughout life (Bowlby, 1980). Following these postulates, Bartholomew and Horowitz (1991) proposed a model of adult attachment that distinguishes the working models of the self (related with anxiety and dependency in close relationships) and others (associated with the tendency to avoid closeness in relationships), which intersect in a two-dimensional space to yield four attachment prototypes: *Fearful-avoidant*, characterized by negative views of self and other; *Dismissing-avoidant*, typified by a positive view of self and negative view of other; *Preoccupied*, typified by a negative view of self and positive view of others; *Secure*, characterized by positive views of self and other.

Despite the essential stability and continuity of the attachment system, internal working models can be modified as a result of an adaptation to new or interpersonally relevant life circumstances that are ongoing and emotionally significant (Bowlby, 1969). In this sense, psychotherapy offers a significant emotional experience that is capable of changing problematic working models (Crowell and Treboux, 1995). Bowlby suggested that the therapist's role is to provide a secure base for the client while disconfirming the client's problematic working models of relationships.

Investigations on the stability of attachment prototypes have found significant

stability over periods ranging from one week to two years, but the estimates have been usually around .5 – .7 (Zhang and Labouvie-Vief, 2004). In general, attachment prototypes are only moderately stable in both nonclinical (Davila and Cobb, 2003) and clinical (Crowell and Hauser, 2008) samples, including samples of patients with chronic schizophrenia (Berry et al., 2008). However, there is an increasing recognition in the attachment literature that people change for psychologically important reasons rather than due to unreliable measurement (Baldwin and Fehr, 1995; Davila and Cobb, 2003).

Current models of psychosis suggest that adverse environmental factors, especially interpersonal ones, have an impact on emotional and cognitive styles which, in turn, play an important role in the development and course of psychosis (e.g., Bentall and Fernyhough, 2008; Myin-Germeys and van Os, 2007; Read et al., 2005). It has been postulated that negative beliefs about the self and one's social environment play a fundamental role in the vulnerability for and maintenance of psychotic symptoms (Garety et al., 2001; Penn et al., 2004), particularly paranoia (Freeman et al., 2002). Likewise, avoidant strategies have been linked to both poor recovery following the onset of psychotic symptoms (Thompson et al., 2003) and to insecure attachment and negative self-evaluation in patients with psychosis (Tait et al., 2004). Other factors, like the interpersonal context and interpersonal functioning, have been associated with relapse and recovery after the onset of symptoms (Gumley, 2011).

Attachment theory provides a useful framework for understanding the impact of interpersonal factors on the development and expression of psychosis. Specifically, attachment embeds key elements playing a critical role in the vulnerability for and response to the emergence of psychosis, such as affective dysregulation, social cognition, and interpersonal behaviour (Berry et al., 2007). Insecure or disorganized attachment patterns are activated during periods of stress or threat perception, yielding

the activation of nonadaptive affective, attentional and behavioural modes linked to negative internal working models. These patterns could mediate the use of dysfunctional cognitive mechanisms and affective dysregulation which, probably in interaction, might lead to reality distortion (Read et al., 2009).

Studies on attachment and psychosis have reported that the majority of patients with schizophrenia are classified as having either dismissing or fearful attachment prototypes (Dozier et al., 1991; Dozier and Lee, 1995). Likewise, in a large sample of patients with schizophrenia, Mickelson and colleagues (1997) found a high proportion of patients having avoidant attachment. Insecure attachment has also been linked to the onset of schizophrenia at an earlier age (Ponizovsky et al., 2007). A greater prevalence of the ambivalent prototype of peer attachment (similar to the preoccupied prototypes) has been found in First-Episode Psychosis samples (Couture et al., 2007). At the symptom level, the avoidant attachment dimension has been associated with positive and negative symptoms (Ponizovsky et al., 2007), as well as paranoia, in persons with schizophrenia (Berry et al., 2008). Also preoccupied and fearful-avoidant attachment prototypes have been associated with higher scores of delusions, suspiciousness/persecution, and hallucinatory behaviour (Ponizovsky et al., 2011)

However, the role of attachment in the initial stages of psychosis is not yet well understood. The early detection and treatment of prodromal or “at-risk mental states” (ARMS) patients for psychosis has been considered essential for the improvement of the disorder (Yung et al., 2004), since delay in treatment correlates with unfavorable outcome (Norman and Malla, 2001). In this stage, psychosocial interventions appear as the first-line treatment strategy, as assumed by different early intervention programs (Killackey and Yung, 2007). The continuity and development of this type of intervention needs the engagement of patients and a good working alliance with care

providers (Lecomte et al., 2008), two aspects easier to develop in the pre-psychotic phase (Bechdolf et al., 2006), and both related with attachment style (Dozier et al., 2001; Tait et al., 2004). Therefore, it is essential to understand the role of patient's attachment style at this early stage and its impact on treatment outcomes.

Attachment theory postulates that changes in attachment representations result in fundamental changes in relationship schemas and self-concept (Bowlby, 1988), and that these changes will be directly related to treatment outcomes (Tasca et al., 2007). Surprisingly, studies investigating changes of attachment styles during psychotherapy are very rare (Strauss et al., 2011). These studies have reported associations between improvement in attachment security (Muller and Rosenkranz, 2009; Travis et al., 2001), change from insecure to secure attachment (Kilmann et al., 1999; Lawson et al., 2006; Levy et al., 2006; Travis et al., 2001), decreasing levels of attachment insecurity (McBride et al., 2006; Muller and Rosenkranz, 2009; Tasca et al., 2007), and better outcome. However, other investigations have failed to replicate these findings (e.g., Strauss et al., 2011). Only one study has explored change in attachment dimensions and change in symptoms in patients with psychosis, finding a significant association between increases in attachment anxiety and changes in the PANSS total score and in hallucinations item after six months follow-up (Berry et al., 2008).

In a previous study with ARMS patients (Quijada et al., 2012), we found that attachment predicted symptom improvement after six months of psychosocial treatment. Specifically, a high level of secure attachment predicted improvement in psychoticism, disorganization and functioning, and higher levels of preoccupied and dismissing styles also predicted improvement in psychoticism. Both the preoccupied and dismissing styles share a positive view of others, so it was hypothesised that the psychosocial intervention may have had an impact on internal working models via strengthening the

positive working models and disconfirming the negative ones. However, this proposal could not be tested in that study as attachment re-test was not available at six months.

The present study expands upon earlier findings by examining whether 1) pre-treatment attachment is differentially associated with change in symptoms and functioning of ARMS patients across one year of psychosocial treatment, and 2) clinical change is associated with change in attachment ratings beyond the effect of baseline symptom severity. Taking into account the scarcity of studies in this area, highly specific hypotheses were not offered. However, it was expected that patients with better attachment at the start of treatment will show greater decrease in symptoms and better improvement in functioning across the 12 months of treatment (over-and-above the baseline level of symptoms and impairment). Furthermore, it was expected that improvement in secure attachment and decrease in insecure attachment across the 12 months of treatment would be related with better outcome over-and-above the effect of baseline symptom/functioning severity. As noted earlier, few studies have examined the associations of attachment, treatment, and change in symptoms and functioning. The present study offers several advantages in that it assessed ARMS patients, employed a 12-month longitudinal design, and used multi-level regression to analyse nested data.

2. Method

2.1 Subjects

Participants were recruited from a public service from Barcelona (Spain) specialised in the early detection and treatment of psychosis, the EAPPP team (Quijada et al., 2010). Criteria for the ARMS groups were derived from Yung et al.(1998) and Miller et al.(2002): age range between 12 to 45 years, presence of Attenuated Positive Symptoms (APS), Brief Limited Intermittent Psychotic Symptoms (BLIPS), or familial

vulnerability plus reduced functioning. The operationalization of these conditions follows the European Prediction of Psychosis Study proposal (see Quijada et al., 2010, 2012). Exclusion criteria were: (a) diagnosis of a previous psychotic episode for more than one week; (b) psychotic symptoms due to substance abuse or to an organic mental disorder; (c) mental retardation.

Sixty -eight patients met the ARMS criteria during the 41-month recruitment period. Four refused to participate and twenty six did not complete the follow-up assessment due to withdrawing from treatment or relocation. No differences were found for symptoms and functioning at baseline between those who completed the study and those who did not. The final sample was composed of 38 patients with a mean age of 16.7 (SD = 5.9) years (range 12.0-38.6). Participants were all single, 76.3 % were men, and 81.6% were in secondary school. Socioeconomic level ranged from very-low (15.8%), low (44.7%), middle-low (24.9%) to middle-middle (10.5%) level. 28 of these patients participated in a previous study (Quijada et al., 2012). Note that a neither a nonclinical comparison sample nor a nontreatment clinical comparison sampler were included because the hypotheses of the study focused on examining the association of attachment with change in symptoms and functioning across 12 months of treatment.

2.2 Measures

Symptoms were assessed with the Positive and Negative Symptoms Scale (PANSS, Kay et al., 1987; Peralta and Cuesta, 1994). The PANSS is a clinician-administered, 30-item semistructured interview consisting of 7 items assessing positive symptoms of psychosis , 7 items assessing negative symptoms and 16 items assessing global psychopathology. All items are scored between 1 (not present) and 7 (severe). Its reliability and validity have been demonstrated in several studies (Kay et al., 1988) and

has been used as an outcome measure in psychotherapy treatment with ARMS patients for psychosis (Morrison et al., 2007). General functioning was evaluated with the Global Assessment of Functioning (GAF, APA, 1994), a 100-point measure of psychological, social and occupational ability.

Attachment was assessed with the Relationships Questionnaire (RQ; Bartholomew and Horowitz, 1991; Schmitt et al., 2004). The RQ is a single item measure made up of four short paragraphs, each describing a prototypical attachment pattern: Secure, Fearful, Preoccupied and Dismissing. It has been widely used in adult attachment research including clinical samples of adolescents, and established to have good reliability and validity (Ravitz, 2010; Scharfe, 2002). Its stability is moderate, but better when the scale is completed by an observer than a self report and when using continuous rather than categorial ratings (Scharfe and Bartholomew, 1994), which is the case of this study. The primary clinician rated each participant on degree of correspondence to each prototype on a 7-point scale and chose which prototype best characterised participants.

2.3 Procedure

The procedure was approved by the Jordi Gol Ethics Committee, an organization that supports research in primary health care in Catalonia. Informed consent was provided by the participants and/or their parents. Participants also completed comprehensive medical and neurological evaluations (including computed tomography and electroencephalogram) to rule out organicity and a toxicological screening.

All patients who fulfilled ARMS criteria received a needs-based treatment during at least the 12-month-follow-up period with an individualised design of the therapeutic plan, in line with the guidelines of Alanen (2003).

Clinicians completed the clinical measures at baseline, 6 months and 12-month follow-up, and the attachment questionnaire at baseline and at 12 months. Raters of all measures were unaware of the goals and hypotheses of the research.

2.4. Data Analysis

Data were analyzed using IBM Statistical Package for the Social Sciences version 19.0 and HLM 6.0. Three types of analyses were conducted to test the hypotheses of the study. First of all, a comparison was conducted between baseline and 12-month follow-up scores on measures of attachment, symptoms, and functioning by means of paired samples t-tests. Effect sizes were calculated using Cohen's *d*. Following Cohen (1988), a small effect is denoted by a *d* of 0.2, medium at 0.5, and large at 0.8. Alpha was set at .05, two-tailed, for all analyses.

Multilevel regression analyses were performed to analyze whether baseline attachment predicted change in symptoms and functioning across the baseline, 6 and 12 months assessments. Multi-level modeling provides a more appropriate method than uni-level regression for analyzing longitudinal data. The multi-level analyses examined whether attachment ratings moderated the slope of symptoms and functioning across the three assessments. All the multilevel regression analyses included as a first step the baseline score on the dependent measure of symptoms or functioning (e.g., PANSS scales and GAF baseline scores). This was done to make a more conservative test of whether variance in the attachment measures were predictive of the change in symptoms and functioning over-and-above the possible baseline association between attachment and symptoms, that is to determine that the predictive effect of attachment on outcome was not solely due to baseline associations of attachment and symptoms.

Finally, partial correlations were computed to examine whether the change in attachment across the 12 months was associated with change in symptoms and functioning across that time period, after partialling out variance associated with baseline symptoms or functioning. Note that change scores for all measures were calculated by subtracting the baseline scores from the 12 month scores. Therefore, positive scores in secure attachment and GAF reflect improvement, whereas positive scores for the PANSS and insecure attachments indicate worsening over time.

3. Results

At baseline most patients had a predominant fearful attachment prototype (60.5%), followed by preoccupied (21.1%), dismissing (10.5 %) and secure (7.9%). At the end of the follow up, 39.5% of patients changed their predominant attachment prototype. Of those who changed, 3 patients (7.9%) did so from an insecure to a secure attachment, and the rest (31.6%) changed from an insecure attachment prototype to another insecure prototype. Finally, fearful and preoccupied attachment were the most frequent predominant prototypes (both 15%), followed by secure (13.2 %) and dismissing (7.9 %). Regarding the stability of the attachment prototypes, attachment scores at baseline were positively and significantly correlated with attachment scores at 12 months, with the exception of the fearful prototype (secure attachment: $r = 0.49$, $p = 0.002$; fearful attachment: $r = 0.22$, $p = 0.189$; preoccupied attachment: $r = 0.43$, $p = 0.006$; dismissing attachment: $r = 0.65$, $p = 0.000$).

Table 1 presents descriptive data for attachment, symptoms and functioning at baseline and 12-month assessments, as well as the results of t-test comparisons. As can be seen, participants showed a pattern of overall improvement, reaching significant

differences on secure attachment ratings, general psychopathology, total PANSS scores and functioning. Table 1 also shows the effect sizes of all comparisons.

Table 2 presents the results of the multilevel regression analyses performed to analyze the impact of baseline attachment on the slope of clinical and functional measures across the three assessments. As can be seen, fearful and dismissing attachment scores significantly predicted change in positive, negative and total scores. Dismissing attachment scores also predicted change in general psychopathology. For each of the significant analyses, participants with better baseline attachment experienced greater improvement across the 12 months of treatment than did participants with poorer attachment, over-and-above the effects of baseline symptoms. As illustrated in Figure 1, participants lower in dismissing attachment experienced a greater decrease in positive symptoms of psychosis across 12 months than did participants higher in dismissing attachment. Finally, secure attachment significantly predicted improvement in GAF scores across the 12-month treatment period over-and-above baseline GAF score. As seen in Figure 2, participants who were higher in baseline secure attachment experienced greater improvement in functioning over the 12 months of treatment than did participants lower in secure attachment.

Partial correlations were conducted between change in attachment prototypes and change in clinical measures controlling for the respective baseline scores (Table 3). Only change in preoccupied attachment was associated with clinical change. In particular, a decrease in preoccupied attachment ratings correlated with improvement in all PANSS scales: positive symptoms, negative symptoms, general psychopathology and total PANSS, but not with improvement in GAF. All these associations had a medium size effect.

4. Discussion

As expected, patients with better attachment at the beginning of treatment presented with better clinical outcome after 12 months of psychosocial treatment beyond the effect of baseline symptom severity. Specifically, participants with lower levels of fearful and dismissing attachment (both considered avoidant attachment) at the start of treatment showed greater improvement in positive, negative and total scores of the PANSS across one year of treatment. Low dismissing attachment scores also predicted an improvement in general psychopathology. Previous studies (McBride et al., 2006) indicated that dismissing patients are likely to do better in psychotherapy than other insecure attachment prototypes, even so than patients with secure attachment (Fonagy et al., 1996). In a previous study with ARMS patients we found that dismissing attachment predicted improvement in positive symptoms at 6 months follow up (Quijada et al., 2012). This result indicated that the intensity of the insecure-avoidant attachment plays a differential role in clinical outcome. The impact of the intensity of attachment expression is consistent with a dimensional model of attachment. Within this view, Slade (2008) identified crucial dimensions that are seen to underlie all adult and infant attachment classification systems. One of them is the organized versus disorganized dimension. Those who fall at the low end of the organization axis are likely to be more disturbed and lower-functioning. Implicit in this dimensional approach to attachment classification is the notion that an individual can favor avoidant modes of defense in a more secure or organized way, or in a more insecure or disorganized way. Therefore, clinical outcomes can vary in patients with insecure-avoidant attachment depending of the level of rigidity and self-defeating of their defensive strategies and flexibility and vulnerability of their organizational capacities.

Regarding secure attachment, results revealed that ARMS patients with higher baseline secure attachment experienced greater improvement in functioning over 12 months of psychosocial treatment. Others investigations have found that secure attachment predicted better functioning in different types of mental disorders (Strauss et al., 2006). Similarly, we previously found that secure attachment predicted amelioration in functioning after 6 months of treatment in ARMS patients (Quijada et al., 2012). In that study secure attachment also predicted improvement in psychoticism and disorganization, but those associations have not emerged at the one year follow-up. In both studies the majority of patients had a fearful attachment as the predominate prototype at baseline. According to the social cognitive model of attachment (Baldwin et al., 1996), they also could have a number of different attachment models or relational schemas that can be activated by specific circumstances (Davila et al., 1999). Psychosocial interventions could elicit secure schemas of attachment and have an impact on functioning in the long term; however, at a symptom level, with greater cognitive and emotional components, the activation of secure models may only last for short-time periods. Finally the predominant insecure attachments might have an influence on symptoms over the long-term. In fact, only 3 patients changed at the 12 month follow-up from insecure to secure attachment, and the others did so from an insecure prototype to another insecure prototype. This is consistent with previous studies that found that some patients did not become secure over the course of treatment, but rather shifted to a different insecure attachment organization (Diamond et al., 1999; Travis et al., 2001).

The proposal that increases in secure attachment and decreases in insecure attachment across the 12 months of treatment would be related with better outcomes over-and-above the effect of baseline symptom severity was partially confirmed. A

decrease in preoccupied attachment was related to improvement in positive symptoms, negative symptoms, general psychopathology and total PANSS. Several studies indicate a relationship between preoccupied attachment and worse outcome in the psychotherapy context. For example, in our 6-month report, preoccupied attachment, or anxious attachment according to others measures, predicted improvement in positive symptoms, specifically in psychoticism (Quijada et al., 2012). Likewise, Berry and colleagues (2008) found a significant association between decreases in attachment anxiety and lower score in the PANSS total and in the hallucination item after six months of follow-up in persons with schizophrenia. Other studies with non psychosis samples have found that preoccupied/anxious patients are likely to do worse in psychotherapy than other insecure attachment organizations (Fonagy et al., 1996; McBride et al., 2006). Also, decrease in attachment anxiety was related with improvement in depression in group psychodynamic-interpersonal psychotherapy (Tasca et al., 2007).

The positive impact of change in preoccupied attachment on all symptom scales in ARMS patients is probably related with its intrinsic characteristics: a negative model of the self and external evaluation as a source of self-confirmation. The protective therapeutic setting may strengthen the capacity to perceive others in a positive way, thus validating the therapeutic space as a source of personal confirmation. In this way, psychosocial treatment can help to diminish a negative model of the self and reinforce better self-esteem. This change process might explain symptom improvement given that a negative model of the self and poor self-esteem are related to increases in hallucinatory behavior (Berry et al., 2008), paranoia (Smith et al., 2006), risk of psychosis (Krabberman et al., 2002) and symptom maintenance (Close and Garety, 1998).

It is surprising that change in secure attachment was not related with change in symptoms as expected. It is likely that the association between attachment and clinical outcome actually emerges from the change in those working models that are hypothesised to be related to psychotic symptoms, that is, a negative model of the self and a negative model of others. Thus, the predominant working models of the self and others of this sample were negative (the opposite of secure attachment), corresponding to fearful attachment as is seen in other psychotic samples (Mickelson et al., 1997). Negative models of the self, as mentioned before, are linked to psychotic symptoms, and also negative models of others are related with these type of symptoms, especially with paranoia in clinical (Berry et al., 2008) and non-clinical samples (Pickering et al., 2008). Therefore, it may be that negative working models need to diminish so that symptomatic change can occur. This mechanism should be plausible in the context of psychotic symptoms as several other studies have found associations between change in secure attachment and better outcomes, although none included psychotic disorders or psychotic symptoms (McBride et al., 2006; Meyer et al. 2001; Muller and Rosenkranz, 2009; Travis et al. 2001).

It is important to note that the sample showed a tendency towards general improvement, reaching statistical significance for functioning, general psychopathology and total PANSS scores. These results are specially relevant for prodromal samples of psychosis as initial estimates suggested that between 35% and 54% of ARMS cases detected using criteria similar to this study transition to psychosis in the first year after detection (Miller et al., 2002; Yung et al., 2004), although more recent studies have suggested lower rates of transition into psychosis (e.g. Woods et al., 2009). Also, the clinical improvement becomes more striking since the majority of ARMS patients in this sample came from low socioeconomic levels and lived in a densely urbanized

sector, two factors associated with a higher presence of psychotic symptoms and a greater risk of psychosis in epidemiological studies and studies of individuals vulnerable to psychosis (Ellett et al., 2007; Krabbendam and van Os, 2005; Olfson et al., 2002; van Os et al., 2003;). Thus, symptom and functional improvement in this study might indicate that psychosocial treatment contributes to a better course in the early phases of psychosis even in especially vulnerable samples.

The results of this study must be interpreted considering several limitations. The RQ has been mainly applied in relation to specific others and less so as a measure of general attachment, although it is one of the most extensively used measures with large validation studies. Also, the assessment of the therapist was considered in the evaluation of attachment prototypes. This was done to avoid a potential bias in patients' self-report due to the current clinical state. Future studies should investigate the convenience of using patients' self-report or a combined approach, as well as taking into account the attachment prototypes of the intervening professionals, because these affect the relationship with patients with psychosis (Berry et al. 2008b; Tyrrell et al. 1999). Furthermore, different factors can contribute to change in attachment, like the meaning of life events or losses (Davila and Sargent, 2003). Adult attachment prototypes are particularly unstable in clinical populations (Waters et al., 2000), although a moderate stability in attachment has been found in schizophrenia samples (Berry et al., 2008), as it was the case in our study, with the exception of the fearful prototype. Fearful attachment has been considered similar to disorganization attachment, and attachment representations that are fragmented and not well consolidated, as it is the case in disorganized attachment, are more prone to change (Davila and Cob, 2004).

To conclude, this study continued to explore the potential role of attachment in clinical outcome in the context of psychosocial intervention in the early phases of

psychosis. The results indicated that the intensity of insecure attachment plays a role in the clinical outcome of ARMS patients and offers a more comprehensive approach to psychotherapy than categorical conceptions of attachment. Our findings support previous evidence that psychosocial interventions can improve the course of psychotic symptoms in at-risk phases of psychotic disorders and strengthen the importance of considering both the attachment prototype of ARMS patients and its intensity for the design of treatment strategies.

Table 1. Descriptive Data for Attachment, Symptoms and Functioning and Mean Comparisons between Baseline and 12-Month Follow-Up.

	Baseline (<i>n</i> = 38)		12-Month (<i>n</i> = 38)			
	Mean (SD)	Range	Mean (SD)	Range	T-test	Effect sizes (Cohen's <i>d</i>)
Attachment Prototype						
Secure	2.61 (1.60)	1-6	3.18 (1.50)	1-6	2.27 (0.02)*	0.37
Fearful	4.84 (1.24)	2-6	4.61 (1.26)	2-7	-0.93 (0.35)	-0.18
Preoccupied	3.89 (1.46)	1-6	4.34 (1.71)	1-7	1.61 (0.11)	0.28
Dismissing	2.79 (1.40)	1-6	2.87 (1.41)	1-6	0.41 (0.68)	0.06
PANSS Scale						
Positive	16.05 (6.02)	8-32	14.86 (4.72)	8-27	-1.28 (0.21)	-0.22
Negative	18.58 (6.48)	7-30	17.10 (5.78)	7-26	-1.47 (0.08)	-0.24
Psychopathology	39.58 (11.9)	22-66	36.05 (12.18)	21-74	-3.52 (0.03)*	-0.29
Total	74.21 (22.14)	46-119	68.03 (20.21)	41-122	-6.18 (0.03)*	-0.29
GAF	49.58 (10.71)	25-70	56.87 (8.20)	40-70	3.65 (0.001)*	0.76

* $p < .05$

Table 2. Multilevel Regression Analyses on the Association of Baseline Attachment with Change in PANSS Scales over 12 Months Partialling Out PANSS Baseline Scores.

PANSS Positive symptoms		
<i>Predictor</i>	Coefficient	Standard Error
Secure	-0.003	0.040
Fearful	0.067*	0.029
Preoccupied	-0.003	0.041
Dismissing	0.078*	0.038
PANSS Negative symptoms		
<i>Predictor</i>	Coefficient	Standard Error
Secure	0.032	0.037
Fearful	0.073*	0.028
Preoccupied	-0.042	0.038
Dismissing	0.100*	0.050
PANSS General Psychopathology		
<i>Predictor</i>	Coefficient	Standard Error
Secure	0.161*	0.076
Fearful	0.130	0.074
Preoccupied	0.057	0.091
Dismissing	0.184*	0.075
PANSS Total		
<i>Predictor</i>	Coefficient	Standard Error
Secure	0.165	0.135
Fearful	0.275*	0.118
Preoccupied	-0.000	0.143
Dismissing	0.348*	0.137
GAF		
<i>Predictor</i>	Coefficient	Standard Error
Secure	0.153**	0.045
Fearful	0.018	0.066
Preoccupied	0.054	0.069
Dismissing	-0.117	0.087

* $p < .05$, ** $p < .01$

Table 3. Correlations between Change Scores in Attachment and Clinical Measures after the 12-Month Treatment Controlling for the Respective Baseline Symptoms/functioning Scores.

	Change in			
	Secure	Fearful	Preoccupied	Dismissing
Change in				
PANSS Scale				
Positive	0.02	-0.09	0.38*	-0.11
Negative	-0.28	-0.23	0.41*	-0.18
Psychopathology	-0.01	-0.06	0.38*	-0.08
Total	-0.08	-0.13	0.44**	-0.15
GAF	-0.01	0.08	0.16	0.02

* $p < .05$, ** $p < .01$

Medium effect sizes indicated in **bold font**

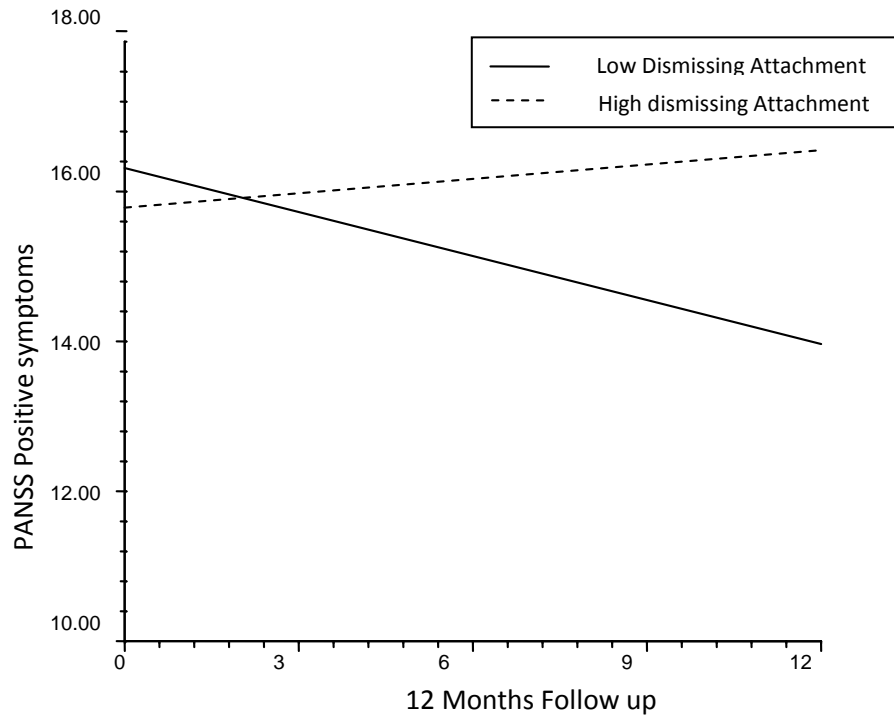


Figure 1. Relationship of the Course in PANSS Positive Symptoms with Dismissive Attachment across the 12 Months Assessments.

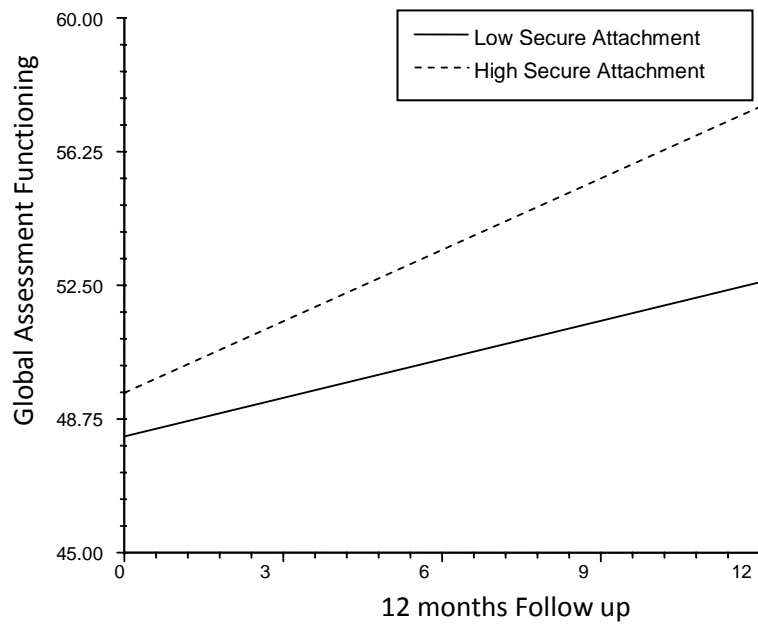


Figure 2. Relationship of the Course in GAF with Secure Attachment across the 12 Months Assessments.

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Curriculum Vitae

Academic formation

Master in Research in Child, Adolescent and adult Psychopathology (MSc)

(Máster de Iniciación a la Investigación en psicopatología de niños adolescentes y Adultos). Universidad Autónoma de Barcelona (2006-2009)

Professional Degree in Interdisciplinary Evaluation and Intervention in Child Maltreatment and Sexual Abuse. (Post-título en Evaluación e Intervención Interdisciplinaria en Maltrato y Abuso Sexual Infantil) Universidad de Concepción, Chile (2005)

Professional Degree in Family Mediation. (Post-título en Mediación Familiar) Universidad de Concepción, Chile (2003)

Degree in Psychology

Universidad de Concepción, Chile (1997–2002)

Participation in research projects

Member of the reserach group Interaction Person-Environment in Psychopathology (Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) (SGR 672).

Principal Investigator: Prof. Neus Barrantes-Vidal

Financial agency: Agencia de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) - Generalitat de Catalunya

Funding: 41.600€

Duration: 2009-2014

(Since October 2009)

Colaboration in clinical research in the institution “Equipo de Atención Precoz al Paciente en Riesgo de Psicosis”(Barcelona, Spain) under the supervision of Dr. Jorge L. Tizón (Institutional Director) and Prof. Neus Barrantes-Vidal (UAB).

Student-Faculty collaborator in the Project “Risk and Protective factors for Mental Disorders in Child and Adolescence”

Participation since: 03/2002 until: 12/2002

Principal investigator: Félix Cova.

Department of Psychology, Universidad de Concepción, Chile.

Student-Faculty collaborator in the Project “Metacognitive Learning Strategies”

Participation since: 03/1999 until: 07/1999

Principal investigator: María Victoria Pérez

Department of Psychology, Universidad de Concepción, Chile.

Publications

Quijada, Y., Kwapil, T.,Tizón, J. L., Barrantes-Vidal, N. Impact of Attachment Style on Change in Symptoms across 12 months in Persons with an At Risk Mental State for Psychosis (Submitted for publication)

Quijada, Y., Tizón, J. L. , Artigue, J. , Kwapil, T., Barrantes-Vidal, N. Attachment style predicts 6-month improvement in psychoticism in persons at-risk mental states for psychosis. *Early Intervention in Psychiatry* DOI: 10.1111/j.1751-7893.2012.00342.x

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Cova, F., Díaz, R., Inostroza, C., Quijada, Y. (2004). Propiedades psicométricas de dos medidas de adversidad familiar: Eje V de la CIE-10 para Trastornos Mentales en Niños

y Adolescentes, y Escala de Evaluación del Ambiente Familiar Global (EAFG). *Revista de Psiquiatría y Salud Mental*, 21, 143-149.

Publications (In preparation)

Sheinbaum, T., **Quijada, Y.**, Barrantes-Vidal, N. Papel de los Factores Psicosociales en el Riesgo, Inicio y Vinculación Terapéutica en la Psicosis.

Grants:

Grant funded by the Comisión Nacional de Investigación Científica y Tecnológica. Expedient nº 72100122. Grant for doctoral programs (oct. 2009–feb. 2011).

Presentations in congresses

Congress: 7th International Conference on Early Psychosis

Place: Amsterdam

Date: November 2010

Title: Attachment prototypes predict 6-month symptom and functioning improvement in persons with at-risk mental states for psychosis.

Authors: **Quijada Y.** Barrantes-Vidal N, Artigue Kwapil T., Tizón J.

Poster

Congress: XV Curso Anual de Esquizofrenia "Crisis, emociones y psicosis"

Place: Madrid

Date: November 2010

Title: Los prototipos de apego predicen a los 6 meses de seguimiento mejoría en síntomas y funcionamiento en pacientes en estado mental de alto riesgo para psicosis bajo intervención psicosocial.

Authors: **Quijada Y.** Barrantes-Vidal N, Artigue Kwapil T., Tizón J.

Poster

Congress: XV Curso Anual de Esquizofrenia "Crisis, emociones y psicosis"

Place: Madrid

Date: November 2010

Title: Síntomas iniciales de las psicosis delirantes ("no afectivas").

Authors: Tizón JL., Artigue J., **Quijada Y.**, Gasso JM^a., Morales N.

Poster

Congress: I Congreso Catalán de Enfermería de Salud Mental

Place: Sant Boi de Llobregat

Date: February 2010

Title: Factors de risc en la detecció i prevenció dels trastorns mentals. LISMEN un instrument en la pràctica infermera especialista en salut mental.

Authors: Gasso JM^a., Martinez M., Artigue J., Oriol A., **Quijada Y.**, Tizon JL.

Poster

Congress: Jornades Internacionals Baetulae sobre l'Atenció Integral a les Psicosis

Place: Badalona

Date: october 2009

Title: Impacto de los estilos de apego y el ajuste social premórbido en la respuesta a 6 meses de intervención psicosocial en pacientes en riesgo de psicosis: datos preliminares.

Authors: **Quijada Y.** Barrantes-Vidal N, Artigue J, Kwapil T., Tizón J.

Poster

Congress: Jornades Internacionals Baetulae sobre l'Atenció Integral a les Psicosis

Place: Badalona

Date: october 2009

Title: Factors de risc en la detecció i prevenció dels trastorns psicòtics

Authors: Artigue J., **Quijada Y**

Workshop presentation

Congress: International Attachment Conference

Place: Barcelona

Date: october 2009

Title: Impact of Attachment Styles on the Response to 6-Month Psychosocial Treatment
in Patients at-Risk Mental States for Psychosis: Preliminary Data

Authors: **Quijada Y.** Barrantes-Vidal N, Artigue J, Kwapil T., Tizón J.

Poster

Congress: 16th International Congress for the Psychological Treatments of the
Schizophrenias and other Psychoses

Place: Denmark

Date: june 2009

Title: ARMS and ARMS detection strategies of the EAPPP team

Authors: **Quijada Y.**

Symposium oral

Undergraduate teaching

Psychiatry, Department of psychology, Universidad Pedro de Valdivia, Chile
(Academic course 2012)

Semiology of Mental Pathology, Department of psychology, Universidad Pedro de Valdivia, Chile (Academic course 2012)

Methodology of the Investigation, Department of psychology, Universidad de las Américas, Chile (Academic course 2012)

Professional experience

Professional Assessor of the child protection program “Adopta un Hermano”.
Fundación para la Superación de la Pobreza, Chile (2005-2006).

Psychologist of the Interdisciplinary Team of the Education Department of
Municipalidad de Arauco, Chile. (2003-2005).

