“Everybody gets a little bit loco”: Interactions between psychotic experiences and substance use as dimensional phenomena

Jonas Stålheim

UNIVERSITY OF GOTHENBURG

Department of Psychology

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Department of Psychology

University of Gothenburg, 2018

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ABSTRACT

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A large amount of persons with psychosis experience problems related to substance use; and many persons with substance use disorders develop psychiatric symptoms, including psychotic experiences (PEs). The co-existence of PEs and substance use disorders increases the risk for social exclusion, health adversities, violence, and aggravation of symptoms. Besides social exclusion, one of the main factors behind this association is a need for alleviation of distress, or compensatory affect regulation in relative absence of other strategies or protective factors. This may drive a feedback loop between anxiety, increased substance use, lowered self-efficacy, and PEs. There is a need for more research that contributes to the understanding of interactions between substance use, affect regulation and psychopathological processes, not the least since this may have implications for development of psychological treatment. The aim of **Study 1** was to examine aspects of substance use patterns in a group of persons with psychosis (n=16), in comparison with a group of persons with other mental health problems (n=22). The results indicate lesser mental state references to substance use and lesser signs of alcohol dependence in the group of persons with psychosis, but no significant differences in overall consumption. The aim of **Study 2** was to explore the interactions of substance use and affect regulation within the group of persons with psychosis. Interviews were conducted with twelve participants, and the transcripts were analyzed according to thematic analysis. The material was structured along the lines of two main themes; *Approaches to distress* and *Regulating functions of substances*. The results suggest a general tendency to use substances to regulate affect and self-experience in the same time as displaying a great heterogeneity within the group concerning substance use patterns, regulating functions and self-reflection. A possible interpretation is that level of self-reflection and affect regulation style influence pattern and function of substance use on a more primary level than type of psychiatric illness, but that more elaborated levels of self-reflection often are problematic for persons with psychosis. The aim of **Study 3** was to investigate the prevalence of PEs in a group of socially stable persons with alcohol use disorders, and possible differences in childhood trauma and alcohol-related self-efficacy between persons in this group with low and high levels of PEs, respectively. The results suggest that a large minority of this group display substantially elevated levels of PEs, and that this is strongly correlated to childhood trauma and perceived difficulties in abstaining from alcohol. One hypothesis generated by the studies, is that capacities of affect consciousness in combination with difficulties in higher order self-reflection, are associated with the highest risk for developing a substance use disorder in persons with psychosis, since it may lead to emotional pain that calls for quick discharge. The integrated result suggests that there is an association between anxiety (often trauma-related), substance use and PEs irrespective of which problem is considered "primary", and that substance use and PEs should be seen as dimensional and interacting phenomena rather than separate "disorders".

Keywords: psychosis, substance use, mentalization, affect regulation, dimensionality

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Jonas Stålheim, Department of Psychology, University of Gothenburg, Box 500, S-405 30 Gothenburg, Sweden. Phone: +46 31 786 1000. E-mail: jonas.stalheim@psy.gu.se

PREFACE

This thesis is based on the following three studies:

I. Stålheim, J., Berggren, U., Lange, L. & Fahlke, C. (2013). Substance use patterns in persons with psychosis. *Mental Health and Substance Use*, DOI: 10.1080/17523281.2012.759129

II. Stålheim, J., Tidefors, I., & Fahlke, C. (2014). Mentalization and affect regulation as reflected in interviews with men diagnosed with psychosis and substance abuse. *Mental Health and Substance Use*, DOI: 10.1080/17523281.2014.939219

III. Stålheim, J., Berglund, K., Berggren, U., Balldin, J. & Fahlke, C. (2018). Psychotic experiences, childhood trauma and alcohol-related self-efficacy in a non-psychiatric sample of individuals in alcohol dependence treatment: a pilot study. *Alcoholism Treatment Quarterly (in press).* DOI: 10.1080/07347324.2018.1424590

SAMMANFATTNING PÅ SVENSKA

Psykos brukar definieras som ett psykiskt tillstånd där upplevelsen av verkligheten på ett påtagligt sätt skiljer sig från den konventionella. I vår kultursfär betraktas detta ofta som en sjukdom eller störning, men det kan också ses som en psykologisk krisreaktion, tolkas utifrån ett andligt eller konstnärligt perspektiv mm. Denna avhandling är sprungen ur en psykiatrisk kontext, och kommer att förhålla sig till detta delvis genom att diskutera och problematisera psykiatrisk begreppsapparat och praxis, men även genom att presentera resultat och tankegångar på ett sätt som kan vara relevant för och användbart inom befintlig beroendevård och psykiatri.

Till psykotiska upplevelser räknas framför allt vanföreställningar, t ex att uppleva sig utsatt för systematisk förföljelse eller att ens tankar styrs utifrån, och hallucinationer, dvs. sinnesupplevelser som saknar motsvarighet i den omgivande verkligheten. Diagnosticerade psykotiska störningar, som schizofreni och vanföreställningssyndrom, är tillstånd som domineras av denna typ av symtom. Personer med psykosproblematik kan fungera mycket olika, och psykotiska tillstånd kan vara såväl kortvariga som livslånga, men en stor andel personer med psykosproblematik har längre perioder av funktionssvårigheter inom sociala, relationella och yrkesmässiga områden. Psykotiska upplevelser är dock inte begränsade till personer med denna typ av diagnoser, utan förekommer även i den allmänna befolkningen oavsett övrig psykisk (o)hälsa. Fenomenen är alltså *dimensionella*, dvs det finns ingen tydlig gräns mellan ”friskt” och ”sjukt”.

Personer med långvarig psykos löper hög risk att utveckla problem med alkohol eller droger; forskning visar att risken är uppemot 50 % i ett livstidsperspektiv. Att många med psykos

överkonsumerar droger kan ha flera förklaringar, inte minst socialt utanförskap och därtill kopplad hög tillgänglighet till droger. På individnivå är en av de vanligare förklaringarna att droger används som ett sätt att minska olust samt reglera känslotillstånd och självupplevelse. Detta gäller till viss del för alla människor som använder droger eller alkohol. Dock tyder mycket på att personer med svår psykisk ohälsa *i större utsträckning* använder droger för att ”stänga av” negativa känslor, än för att uppnå välbefinnande. Att droger får denna funktion ökar sannolikt risken för missbruksutveckling. En annan aspekt av droganvändning hos personer med långvarig psykos, är att droganvändningsmönstret ofta beskrivs som oregelbundet och periodiskt, samt att dessa personer i mindre utsträckning verkar bli beroende av droger. Denna uppfattning är vanlig hos kliniskt verksamma men har inte studerats vetenskapligt i någon större utsträckning.

Alkohol och andra droger används och har använts av människor i de flesta tider och kulturer. Droger fyller många funktioner, bl a sociala, gastronomiska och rituella. Droganvändning är också ett sätt att reglera känslor; man kan uppleva att man blir gladare, får bättre självkänsla, blir mer avslappnad eller får minskad ångest och oro. I Sverige använder 85-90% av den vuxna befolkningen alkohol och några procent andra droger, varav den vanligaste illegala substansen är cannabis. Runt 10% av befolkningen har någon form av problem med droger, i de flesta fall gäller detta alkohol eftersom det är den vanligaste substansen. Personer med alkohol- eller drogmissbruk har oftare än andra psykisk ohälsa eller utvecklar detta pga missbruket.

Hur vi reglerar känslor och självupplevelse samspelar med vår psykiska hälsa, och personer med långvarig psykiatrisk problematik har ofta svårigheter med detta. Det kan t ex visa sig i att man översköljs av ångest, upplever rädsla för social kontakt, har orealistiskt höga eller låga

tankar om sig själv etc. Resultatet kan bli isolering, för andra människor svårbegripliga beteenden som syftar till att kontrollera ångest eller rädsla, att man stänger av helt eller att känslouttrycken blir antingen obefintliga eller extrema på ett sätt som försvårar socialt samspel. En någorlunda fungerande känsloreglering behövs alltså för att må psykiskt bra, för att hantera de svårigheter, kriser och konflikter som oundvikligen inträffar, samt för att balansera behovet av att uttrycka sina känslor mot krav och begränsningar i det omgivande sociala sammanhanget. Känsloreglering pågår troligen kontinuerligt på flera olika nivåer, och behöver inte alltid vara medveten eller kopplad till ord och tankar. Språket innebär dock en speciell möjlighet till känsloreglering. Samtidigt innebär språket att vi kan föreställa oss saker som gör att vi upplever ångest, rädsla, sorg och ilska. Vi kan oroa oss för saker som inte har hänt och som kanske aldrig kommer att hända. Vi kan vara rädda för saker som inte finns, och vi kan sörja sådant som aldrig blivit av. T ex är det svårt att föreställa sig psykotiska vanföreställningar utan en språkligt grundad fantasiförmåga. Man kan säga att språket skapar förutsättningar för känslomässiga konflikter som vi behöver språkligt grundade strategier för att kunna förhålla oss till. Två psykologiska termer som används för att försöka ringa in denna föreställningsförmåga är *metakognition* eller *mentalisering*. Metakognition betyder ”att tänka om tankar” och mentaliseringsbegreppet brukar inkludera såväl reflektion över egna tankar, känslor och avsikter som försök att tolka andras beteende utifrån deras möjliga inre tillstånd. I båda fallen handlar det om att man s a s kan se sig själv utifrån. Den möjlighet till självreflektion som detta innebär gör att vi kan skapa olika perspektiv på våra egna tankar och känslor vilket gör att låsningar kan släppa och att det skapas förutsättningar för psykologisk utveckling. Tidigare forskning har visat att svårigheter med mentalisering kan ha samband med både psykisk ohälsa och missbruk, samt att personer med allvarlig psykisk ohälsa, inte minst psykoser, ofta har svårigheter inom dessa områden. Det är därför av värde att studera mentalisering och känsloreglering i relation till personer med missbruk och psykisk ohälsa.

Troligtvis uppstår ofta en negativ spiral mellan psykisk ohälsa och droganvändning, där t ex ångest dämpas med hjälp av droger, något som dock ökar ångesten i ett längre perspektiv, vilket kan försätta individen i en känsla av maktlöshet där det är svårt att se vägen ut även om man är medveten om problemet. Bakomliggande orsaker till kombinationen psykisk ohälsa och missbruk kan vara allt från genetiska till socioekonomiska och skiljer sig från individ till individ. Av denna anledning brukar man tala om riskfaktorer snarare än konkreta orsaker. En typ av psykologisk riskfaktor som enligt tidigare forskning visat sig viktig är barndomstrauma. Det kan handla om konkreta fysiska eller sexuella övergrepp, men också om känslomässiga övergrepp eller att växa upp i en miljö av ständig otrygghet. Det finns också forskning som tyder på att barndomstrauma generellt har en negativ inverkan på förmågan till känsloreglering och mentalisering. Det är därför av intresse att väga in denna faktor i forskning kring missbruk, psykisk ohälsa och känsloreglering.

Det övergripande syftet med denna avhandling var att undersöka samspelet mellan psykotiska upplevelser och droganvändning, med särskilt fokus på den roll känsloreglering spelar i interaktionen. Detta gjordes genom att studera dels droganvändningens mönster och funktion hos personer med psykosproblematik, och dels förekomsten av psykotiska upplevelser hos personer med alkoholberoende och hur sådana upplevelser samvarierar med barndomstrauma och känslan av kontroll över sin alkoholkonsumtion.

Studie 1 syftade till att undersöka aspekter av droganvändningsmönster hos personer med psykos och missbruksproblematik (n = 16) och jämföra dessa med personer med annan psykisk ohälsa, främst ångest- och depressionstillstånd, och samtidigt missbruk (n = 22). Både alkohol- och övrig droganvändning togs upp i studien, som genomfördes med hjälp av enkäter. De viktigaste resultaten är att personerna med psykosproblematik visade mindre

tecken på alkoholberoende, upplevde mindre skuld i relation till sitt alkoholanvändande och kände mindre längtan efter droger, samt att de inte i samma utsträckning kände att de försummade annat pga sin droganvändning, jämfört med den andra gruppen. Skillnaderna kunde inte förklaras av faktisk självrapporterad alkohol- eller drogkonsumtion eller av bakgrundsfaktorer som t ex ålder eller sysselsättning. Resultaten skulle kunna tyda på att personerna med psykos i denna studie reflekterade mindre över sin droganvändning än de med andra typer av psykisk ohälsa, och att mentaliseringsfunktionen därför kan vara av intresse att studera i relation till droganvändning i denna grupp. Pga de små undersökningsgrupperna måste man dock tolka resultaten med försiktighet.

Syftet i **Studie 2** var att med hjälp av intervjuer undersöka hur ett antal män med psykos- och missbruksproblematik (*n* = 12) reflekterade över sin droganvändning och vilken roll droger spelade i regleringen av känslor och självupplevelse. Materialet delades upp i två teman; dels hur personerna förhöll sig till psykiskt lidande generellt, och dels vilken funktion droganvändning hade i känsloregleringen. Deltagarna beskrev att de använde droger som ett sätt att undkomma psykisk smärta eller som ett sätt att känna sig normal och fungerande. Vissa uppgav även att de använde droger som ett sätt att må bra och ha kul. Det föreföll också som att några inte upplevde en tydlig funktion med sin droganvändning eller såg den som kopplad till känslomässiga problem. Här användes droger mer efter tillgänglighet. Även om de flesta deltagarna i någon mån använde droger för att minska psykiskt lidande (”självmedicinering”) fanns det stora skillnader inom gruppen när det gällde drogbrukets mönster och funktion.

Studie 3 syftade dels till att undersöka förekomst av psykossymtom i en grupp personer som behandlades för alkoholberoende (n=349), men som bedömts som socialt stabila och som inte

hade andra psykiatriska diagnoser, och dels till att jämföra personer i denna grupp som hade mycket (n=50) respektive lite (n=91) psykossymtom med avseende på barndomstrauma och upplevd kontroll över sitt alkoholbruk. Det visade sig att närmare 15% av personerna med alkoholberoende uppgav sig ha klart förhöjda nivåer av psykotiska upplevelser. Det fanns också ett tydligt samband mellan psykossymtom, barndomstrauma och en upplevelse av låg kontroll över sitt alkoholbruk.

En sammantagen tolkning av resultaten är att olika känsloregleringsprocesser troligen säger mer än typen av psykiatrisk problematik om hur och varför droger används. Rimligen bör det finnas ett samband mellan droganvändningens funktion och dess mönster; *varför* man använder droger påverkar sannolikt *hur* man gör det. När det gäller personer med långvarig psykos, där reglering av negativa känslor ofta är en viktig sådan funktion, kan man då tänka sig att droganvändningen skulle vara intensiv och tydligt kopplad till flykt från olika bekymmer. Klinisk erfarenhet ger dock vid handen att droganvändningen, även om den är vanligt förekommande, inte alltid är så intensiv i denna grupp, och det stöds också till viss del av resultaten. Samtidigt finns stora skillnader inom gruppen rörande hur mycket och på vilket sätt man använder droger. Många, men inte alla, personer med långvarig psykos har stora svårigheter med självreflektion som innebär problem med att skilja på egna och andras känslor och identifiera problem som sina egna. Eventuellt kan detta minska incitamentet för att aktivt söka sig till droger. Möjligen är det så att en kombination av en förmåga att uppleva tydliga känslomässiga problem och svårigheter att reflektera över dem, innebär störst behov av att hitta snabba kraftfulla lösningar som droganvändning. Detta gäller dock inte bara för personer med psykos.

En annan slutsats är, att det verkar finnas en relativt stor minoritet bland socialt etablerade personer med alkoholberoende som har psykotiska upplevelser, och att detta har samband

med barndomstrauma och lågt självförtroende när det gäller att avstå från alkohol. Detta kan avspegla en negativ spiral där ångest, eventuellt kopplad till trauma, driver en droganvändning som i slutändan leder till mer ångest, något som kan eskalera och resultera i psykosnära upplevelser som i sin tur hanteras med droger. I denna process försvagas mentaliseringsförmågan och flexibiliteten i känsloregleringen, vilket gör att individen får svårt att se andra lösningar än droger och därmed svårigheter att bryta mönstret.
Resultaten av studierna tyder också på att missbruk och psykotiska upplevelser inte är uttryck för avgränsade ”störningar” utan bör ses som dimensionella fenomen som samspelar med varandra.

Resultaten som presenteras i denna avhandling antyder att det i arbete med personer med psykos- och missbruksproblematik är viktigt att försöka den funktion droganvändningen har för varje enskild individ och att man behöver anpassa insatserna efter individens förmåga att reflektera över sig själv och sin problematik. Dessutom är det viktigt att arbeta med den reflekterande förmågan i sig, då det kan leda till bättre förutsättningar för att sätta in problemen i ett personligt sammanhang, och öka den bearbetande förmågan vilket sannolikt minskar behovet av att stänga av eller agera ut känslor. Det minskar troligen också risken för destruktivt droganvändande. Det är sannolikt också viktigt att uppmärksamma psykisk ohälsa, däribland eventuella psykossymtom, hos personer som söker hjälp för alkoholproblem, då sådana faktorer blir viktiga att väga in i behandlingen. Detta gäller även förekomst av barndomstrauma, som kan vara förhöjd i denna grupp. Sannolikt är det generellt så, att vården bör röra sig från det kategoriska synsättet och i större utsträckning betrakta psykisk ohälsa och missbruk som samspelande och dimensionella fenomen som kan finnas hos alla människor i större eller mindre utsträckning, och som utgör en meningsfull helhet där individen försökt hantera sin livssituation på ett subjektivt funktionellt sätt.

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CONTENTS

INTRODUCTION

Psychosis is usually defined as a form of psychological state or functioning, involving severe *loss of reality testing*. During the last centuries of Western culture this has mainly been seen as an expression of a disease or disorder, but it may also be viewed as a psychological crisis reaction, be construed from a spiritual perspective, and more. This thesis has been sprung out of a psychiatric context, and will relate to this partly through discussing and problematizing psychiatric conceptualization and practice, but also through presenting results and lines of thought in a way that may be relevant and useful for contemporary psychiatric and addiction services.

Psychotic experiences include delusions, hallucinations and thought disorders; and psychotic syndromes, like schizophrenia and delusional disorder, are from a psychiatric perspective defined as mental disorders dominated by such symptoms. The worldwide lifetime prevalence of schizophrenia spectrum disorders is on average about 0,7%, although differing between countries and areas (McGrath et al., 2008). However, research suggests that psychotic symptoms and experiences occur in non-clinical populations as well (e.g. van Os & Reiningshaus, 2016), thus forming a continuum rather than a specific category. Persons experiencing psychotic symptoms differ in functioning, but those with more severe and persistent symptoms often experience great difficulties in social, vocational and various health-related areas. Persons with a diagnosis of a psychotic disorder are in high risk of developing problems with alcohol and other drugs; the lifetime prevalence for substance use disorders in this group has been estimated to almost 50% (Regier et al., 1990; Buckley & Meyer, 2009). The combination of psychosis and substance use disorders is especially problematic as it increases the risk for social exclusion, somatic illness, aggravation of

symptoms, being victim or perpetrator of violent crime, and more (Buckley & Meyer, 2009; Schmidt et al., 2011). The reasons why substance use disorders are common in psychosis has been discussed extensively in clinical settings as well as in the research community during the last two or three decades; and the function of ameliorating distress (i.e. affect regulation) by means of drug use is often put forward as an important factor on the individual level behind the high risk (e.g. Gregg et al., 2007). The other way around, persons with substance use disorders have an elevated risk for also having, or developing, psychotic symptoms (Fridell, 1995), irrespective of having a psychiatric diagnosis or not. This may in many cases be more or less attributable to substance effects, but also to other factors increasing the risk for both psychotic symptoms and substance related problems. Not much research has been done about psychological processes involved in the interaction between substance use and psychotic symptoms irrespective of which problem is concerned "primary", or the role of affect regulation in this process. The aim of this thesis was to explore this area and thus hopefully contribute to a greater psychological understanding of the interaction between substance use and psychotic experiences.

Psychosis – conceptual and historical aspects

The word "psychosis" is of Greek origin and literarily means "psychological abnormality". The term was originally used by German physician *Karl Friedrich Canstatt* (Bürgy, 2008; Canstatt, 1841) as shorthand for "psychic neurosis", referring to an allegedly neurological disorder that expressed itself in the psychological domain. In the following decades, there was a change in terminological praxis where the neuroses were seen as functional mental disorders

and the psychoses as those being of somatic origin (Bürgy, 2008). Nowadays, the term "psychosis" is commonly

used as an umbrella term for psychological states and processes implying severe difficulties in "reality testing", like in "psychotic symptoms" or "psychotic disorders", irrespective of underlying explanations concerning nature or etiology of the phenomena (American Psychiatric Association, 2013). This way of using the term is probably the most common one in various Western psychiatric and psychotherapeutic traditions, as well as in everyday language. Moreover, acute psychosis also closely corresponds to what most people would call madness or insanity, and is discernable to lay people in a more obvious way than other types of mental disorders.

The term psychosis won distribution and was widely employed in the latter part of the 19th century, and through the years there has been an on-going discussion concerning how to define, understand and sub-categorize psychosis and psychotic disorders. German psychiatrist *Emil Kraepelin* (1907) aimed to categorize the psychoses in two major groups, *manic-depressive illness* and *dementia praecox*. For the latter he assumed a poor prognosis due to an inherently deteriorating course, hence the name. Although criticized (e.g. Bentall, 2003), the thoughts of Kraepelin is still influential in psychiatric classification and research. In 1911, Swiss psychiatrist *Eugen Bleuler* coined the term *schizophrenia*, which alluded to the loosening of associations that he saw as fundamental to the illness. Bleuler, however, did not see schizophrenia as a unitary brain disease in the way that Kraepelin viewed dementia praecox, but as a more heterogeneous syndrome with possibilities of recovery (Bleuler, 1911). When *Sigmund Freud* analyzed the Schreber case, (Freud, 2000/1911), he employed the term *dementia paranoides*. Freud maintained the distinction between neurosis and psychosis but put more emphasis on the underlying dynamics than issues of etiology or classification. An

important contribution of his analysis was the proposed view of the delirium (the delusional system) as an attempted solution rather than being the illness itself. This highlights the possibility of seeing psychosis, or elements of psychosis, as a strategy of self-regulation that may in a way be adaptive or even "rational"; a viewpoint that has been influential in various psychological theories of psychosis (e.g. Zubin & Spring, 1977; McKay et al., 2007; 2008), although not in itself excluding the possible contribution of biological etiological factors.

During the rest of the 20th century and up to now, the term psychosis has been accepted in most branches of psychology and psychiatry, even if the nature of psychosis has been, and still is, under debate, as will be outlined below. The division between neurosis and psychosis has been abandoned in the established, allegedly a-theoretical, systems of psychiatric classification. Contemporary classification (American Psychiatric Association, 2013; World Health Organization, 2011) base diagnoses exclusively on observable symptoms and behaviour, and are thus more consistent with Kraepelins syndrome-oriented disease model, than with the phenomenological model of Bleuler, that aimed more at understanding the specific dynamics behind the observable symptoms. However, in a way, the division between psychosis and neurosis remains, since clinical settings often have separated care systems for persons with psychosis and persons with other kinds of mental health problems, not the least due to differences in treatment approach.

Different ways of conceptualizing psychosis

Psychosis is a puzzling phenomenon, and various efforts have been made to understand it; in science, as well as in art, literature and religion. Here, three different models that are

reasonably well-known and relevant for this thesis will be shortly reviewed. These are the *disease model*, the *stress-vulnerability model* combined with a *continuity hypothesis*, and psychoanalytical theories of *personality organization* or *structure*. All these models are also applicable on general psychopathology.

The disease model

The current disease model of psychosis (and general psychopathology) is based on categorical diagnosis according to classification systems, in particular the Diagnostic and Statistical Manual of Mental Disorders (DSM). The latest version of the DSM (DSM 5, American Psychiatric Association, 2013) is moving towards a more dimensional view, but largely remains adherent to the categorical disorder concept. The manual specifies several psychotic disorders, not the least schizophrenia, delusional disorder and schizoaffective disorder. Delusional disorder (paranoid psychosis) is characterized by relatively persistent, predominantly non-bizarre delusions but no obvious functional disabilities. Schizophrenia is diagnosed if the individual fulfills at least two of the following criteria: A) delusions, B) hallucinations, C) disorganized speech, D) disorganized behaviour, and E) negative symptoms (e.g. diminished emotional expression and avolition), out of which at least one is A, B or C. Furthermore, the symptoms need to persist for at least six months and result in functional disability for a diagnosis of schizophrenia to be considered. Schizoaffective disorder is characterized by psychotic symptoms largely as in schizophrenia, but in combination with major mood episodes, i.e. periods of depression and/or mania. Delusions are commonly categorized as bizarre or non-bizarre. Non-bizarre delusions include beliefs that are theoretically possible but odd in relation to the cultural context, as well as maintained in spite

of contradictory evidence. Bizarre delusions are defined as beliefs that are obviously implausible. Delusions will be further discussed below, in the section about language and reality testing.

The disease model of psychosis has been tremendously influential in psychiatry, not the least since French psychiatrists *Jean Delay* and *Pierre Deniker* discovered the "antipsychotic" effect of chlorpromazine in 1952, which made medical treatment of psychotic symptoms possible. Consequently, and in pace with advances in technology, a vast neurobiological and genetic research has been done, making it possible to associate psychotic symptoms with various biological markers (e.g. McCarthy et al., 2014). However, no evidence for the strict Kraepelinian view of, for example, schizophrenia as a unitary brain disease with a *consistent* biological background has yet been produced (e.g. Bentall, 2003; Anckarsäter, 2010; Keshavan et al., 2011). The idea of one-to-one mapping between schizophrenic symptoms and a discernible pathophysiological process is largely contested, and many biologically oriented researchers and clinicians view schizophrenia as a non-specific poly-genetic disorder where various vulnerability factors interact in producing the diagnosable state (Keshavan et al., 2011). Moreover, it is argued that it is impossible to draw clear boundaries between different mental disorders (including the psychoses) and between normality and mental illness (Kotov et al., 2017; Bentall, 2003). In spite of this criticism, the disease concept is still influential as a pragmatic model for diagnosis and treatment in mainstream Western psychiatry. Moreover, a disease model of psychosis is not necessarily the same as a neurobiologically oriented view or perspective on psychosis, even if the combination is common. Neurobiological research and models of mental illness are per se not dependent on categorical diagnosis, since there are possibilities of using for example symptoms and not "diseases" as units of analysis.

Stress-vulnerability and continuity models

Joseph Zubin and Bonnie Spring (1977) proposed a stress-vulnerability model as an alternative way of understanding psychosis. The model has won widespread acceptance even in other areas and is in practice often combined to different degrees with a disease model. The model is multifactorial and states that all individuals have a degree of vulnerability (genetic, biological, psychological and social) that across the life-span is weighed against various kinds of stress (biological, psychological and social). Psychosis may then be seen as a breakdown that occurs when the stress turns unmanageable due to both the level of stress in itself and the underlying vulnerability/resilience of the affected person. In this view, psychosis is not an actual disease but rather a psychological reaction, and schizophrenia may then be seen as more severe and persistent types of psychosis where a greater vulnerability is assumed. The model has a simple, pedagogical approach, and may be seen as compatible with neurodevelopmental models of psychosis as well as psychological theories, for example the Freudian view of the psychotic delirium as an attempt at solving an unbearable psychological situation.

The stress-vulnerability model fits with more recent epidemiological research (van Os & Reiningshaus, 2016; McGrath et al., 2015; Bebbington et al., 2013; Linscott & van Os, 2013; Verdoux & van Os, 2002) suggesting that psychotic symptoms follows a *continuum* in the population rather than being confined to a limited category of people that are (or should be) diagnosed with mental illness. This continuum stretches all the way from mild and transient symptoms in well-functioning individuals without need for psychiatric care to persistent and disabling symptoms that call for life-long treatment. Most people experiencing psychotic symptoms are seemingly not diagnosed with a psychotic disorder, but more often with other

kinds of mental health problems or not at all. For example auditory hallucinations, a symptom predominantly associated with schizophrenia, seems to have a lifetime prevalence of at least ten percent (Johns et al., 2014), and paranoid symptoms are probably even more common (Bebbington et al., 2013). According to epidemiological research, psychotic symptoms are transitory in 80% of the cases, and only 7% of individuals experiencing such symptoms develop a psychotic disorder (see van Os & Reiningshaus, 2016, for overview). In this view there is no absolute limit between "normal" and "pathological" in the psychiatric field, and need for treatment is based on quantity and severity rather than category of symptoms, and on functional disability that may not always be related to the symptoms per se. Based on findings in this research area, it is currently argued that the concept of schizophrenia should be abandoned and that it is more relevant to talk about a "psychosis spectrum" (Guloksuz & van Os, 2017; van Os & Reininghaus, 2016). Correlates of psychotic symptoms, both in clinical and non-clinical populations that have been found in large scale studies are stressful/traumatic life events (van Os & Reininghaus, 2016; Wiles et al., 2006; Sharifi et al., 2012; Linscott & van Os, 2013), alcohol and cannabis misuse (Wiles et al., 2006; Linscott & van Os, 2013), tobacco use (Wiles et al., 2006), other psychiatric symptoms (Wiles et al., 2006, Sharifi et al., 2012), family history of mental health problems (Linscott & van Os, 2013) and young age (Wiles et al., 2006; Linscott & van Os, 2013). However, it is hard to make causal conclusions and these correlates should be seen as risk factors of various strengths and/or in some cases merely co-occurring phenomena. Moreover, it should be mentioned that a dimensional view of this kind is probably applicable to most psychiatric symptoms, not only psychosis. It is currently suggested that replacing categorical with dimensional thinking in psychiatry, may lead to a diagnostic practice that is not compromised by arbitrary boundaries, diagnostic instability and problems with comorbidity in the way that current systems are (Kotov et al., 2017).

Psychosis as personality organization or structure

A third way of conceptualizing psychosis is as a modality or level of psychological functioning. This has mostly been the case in psychoanalytical theories of psychopathology, even if there is some correspondence with both the stress-vulnerability model and psychiatric descriptions of pre-psychotic personalities. Two of the most elaborated models of this kind are *Otto Kernbergs* theory of personality organization (Kernberg, 1975; McWilliams, 2011) and *Jacques Lacans* Freudian based theory of the clinical structures (e.g. Lacan 1956; Verhaeghe, 2008). The models of Kernberg and Lacan are in part built on different terminologies and are not interchangeable, in some respects not even similar. However, one common feature is that diagnosis is not built on observation of symptoms but on a deeper investigation of psychological functioning, such as defense mechanisms, reality testing and identity integration. Both models specify three different categories. In Kernbergs theory, these are the neurotic, borderline and psychotic personality organizations; and in Lacan the structures of neurosis, perversion and psychosis. The organizations/structures are thus seen as overarching categories of psychological functioning, and not as diseases or symptom clusters. Both theories use the term psychotic symptoms, but such symptoms are neither necessary nor sufficient for a diagnosis of a psychotic organization or structure. However, severe psychotic disorders probably mostly occur in persons with this level or modality of psychological functioning.

Reflections on different ways of understanding psychosis

Of the theories reviewed above, the continuity hypothesis seems to be the one most based on research, but on the other hand it doesn't primarily make claims to explore the "nature" of psychosis. Models may be seen as overarching theories whose values to a large extent are pragmatically rather than empirically determined. However, it is important to keep in mind that there is no single correct view on psychosis and that the model one adopts in many ways affects what is seen as possibilities and limitations of clinical work. This is true also for implicit preconceptions, something that highlights the need for becoming aware of and analyzing various theoretical and clinical assumptions. Moreover, although of course there are common preferences in different treatment schools, there are no *a priori* overlap between the models reviewed and the question of etiology; for example, an interest in underlying biogenetical factors does not necessarily imply adopting a traditional disease model.
In this thesis, the main reliance will be on continuity- and stress-vulnerability models, in combination with a view that what is seen as psychiatric symptoms in many ways are "normal" and more often than not have a subjective function in the self-regulation of the individual that may be both implicit and explicit.

Psychosis, reality testing and language

In spite of the different viewpoints stated above, it seems quite consensual that the core feature of psychosis is some kind of deficit, lack, or distortion that concerns *reality testing*. Persons in psychotic states are said to be having difficulties in separating fantasy from reality, as well as inner experiences from outer. A symptom may be spectacular, as for example

confusion, but as long as reality testing is intact, it is per se not considered as psychotic. The problem is, that the concept of reality and hence reality testing, is notoriously hard to capture. Who decides what is real for whom?

It is not primarily the perception of physical reality that is problematic in psychosis. What are expressed in so called delusional beliefs are rather idiosyncratic interpretations of sociocultural reality. A simple example is paranoid beliefs, where potentially harmless elements of perception are selected and combined to match an underlying theory of persecution and/or surveillance. Here, it is not the perceptions per se that are problematic (I see three black cats on my way to work), but the systematic interpretation of the perceptions (this proves that the Illuminati has an eye on me). Hence, to understand the core problems in psychosis, there is probably a need for understanding how human beings construct social reality and how this may differ in psychotic states.

Human beings have access to *symbolic representation*, a mode of thinking dependent on language and probably exclusive to humans (Deacon, 1997; Peirce, 1992). Although constructed rather than "natural", human language follows its own rules in a way that resembles mathematics, in the way that both are artificial, symbolic systems where it is still possible to make discoveries (Deacon, 2003), as well as probably impossible to reach a complete understanding. The difference between symbolic representation and other forms of perception (that we share with other species) is that symbols relate to reality by convention rather than similarity or cause (de Saussure, 1983/1916). These symbols (i.e. words), it can be argued, primarily relate to each other, and only indirectly to external reality. Language not only describes but also constructs human reality. The capacity to use language makes it possible for humans to imagine things that do not exist, things that may have existed before or

may exist in the future, to sustain counterfactual beliefs, etc. We can imagine things like our own death, endless space, and possible future suffering. To simplify, it can be said that human beings live in two separate, although related, modalities of reality, one physical and one virtual/symbolic (Deacon, 1997). Without access to the symbolic reality we would not have universities, culture, technology or religion. However, according to theories from different fields in psychiatry (Crow, 1997; 2010), psychoanalysis (Lacan, 1956) and behaviourism (Hayes et al., 2001), we would neither have mental health problems (not the least psychosis) in the way we know them today. As hinted above, in psychosis, it is the "symbolic reality testing", that relates to things like intentions and social systems, that is problematic rather than reality testing concerning the physical world. It is also hard to imagine delusional beliefs without a language, both because beliefs manifest in language and that language provides the tools making it possible to imagine things that may be considered bizarre or counterfactual, like getting a chip operated into the brain by aliens.

The virtual, symbolic world, has a constructive influence on experience, as well as the reality of the body and the primary affects have, and it has been discussed (Deacon, 1997) that the neural underpinnings of symbolic representation during evolution have been intertwined with evolutionary older neural networks in a way that makes it hard to imagine an area of human psychological functioning that is *completely* unaffected by this modality of thinking. Human access to this, in a way, external reality makes for unique capacities in imagery and processing, but also for a potentially unlimited suffering of existential kind, that calls for sophisticated regulation strategies.

Substance use and substance use disorders

The use of psychoactive substances has been a part of human culture since the dawn of history, although the specific substances that are used have differed between places and times. Throughout history until now, substance use have had various functions; recreational, religious, gastronomical, social etc. On part of the individual, using psychoactive substances is one of the most powerful tools to regulate and partially control emotions and other inner states in the short run. The important functions and powerful effects of substance use have created a somewhat ambivalent stance towards substances on part of society; in most cultures, substance use has been cherished and romanticized as well as regulated and stigmatized. The pleasures as well as the risks are well known since thousands of years. However, the use of legal substances may be seen as virtually normative. In Sweden, 85-90% of the adult population use alcohol to some extent and almost half the population use alcohol on a weekly basis (CAN, 2017; Ramstedt et al., 2014). The number of people in Sweden using illicit substances is not entirely known. A recent survey (CAN, 2017) suggests that 3% of the population has been using cannabis during the latest year. The figures for amphetamine, cocaine and other relatively common drugs are below 1%. The actual number of people who have tried or sporadically used any kind of illicit substance is not entirely clear, but may be estimated to at least 12%, with large differences between age groups where young men are over-represented (CAN, 2017).

Use of any kind of psychoactive substance can of course turn problematic. Different drugs have different pharmacological properties, exist in different social contexts and present different risks; although for most substances, a substantial minority of perhaps 10-20% of users will develop some kind of problems. In Sweden, a recent survey suggests that 12-month

prevalence for alcohol use disorders is 5,9% (Ramstedt et al., 2014), and that the prevalence for problematic alcohol use in a wider sense has been estimated to 10% for women and 16% for men (Statens Folkhälsoinstitut, 2011), making it one of the more common health related problems in the general population. The number of persons in Sweden that are addicted to illicit drugs is estimated to 55.000 (0,75%) (Ramstedt et al., 2014). The reasons why many, although not most, individuals turn from use to addiction, are complex and multifaceted. Several risk factors have been identified on group level, as genetic factors, childhood adversity, socioeconomic context factors, mental health, personality factors, and more (e.g. Gunnarsson, 2012). On the individual level, the function and subjective experience of substance use is important. For example, heavy reliance on substances for affect regulation or self-medication purposes presents a risk for repeated and compulsive use. Relative absence of protective factors such as meaningful relationships and activities also increases the risk. All of these factors are also associated to various mental health problems.

Psychosis and substance use

In most clinical groups, substance use disorders are more common than in the general population. One of the groups with the highest prevalence of concurrent substance use disorders is persons with psychosis. Results from a large American survey, the Epidemiologic Catchment Area (ECA) study (Regier et al., 1990), suggested that lifetime prevalence for substance use problems in individuals with a diagnosis of schizophrenia were 47%. More recent research (Buckley & Meyer, 2009) has confirmed this picture, and it seems to hold for most of the Western world, even if there may be some variations between countries due to drug policies, accessibility, care system, cultural traditions etc. A wide definition of substance

use problems was employed in the study, so all 47% did not have actual substance dependence which, although existing in the group, is less common than sporadic or periodical polydrug and alcohol use.

A Swedish study (Fridell, 1995) indicated that the relationship of co-morbidity is bidirectional; of persons with heavy substance use, 10% had long-lasting psychotic symptoms and 4,5% a diagnosis of schizophrenia. The reasons for the strong association between problematic substance use and psychosis are complex, and a few different explanations have been proposed. Below, three of the most common explanations are reviewed. Due to relevance for this thesis, main emphasis will be put on psychological explanations, although others may be as important concerning explanatory value.

Social risk factors for substance use disorders in persons with psychosis

The decline of the great mental hospitals and the transformation of psychiatry into community care were completed in Sweden in the 1990´s and earlier yet in some other Western countries. This meant that many individuals with severe mental health problems were exposed to alcohol and other drugs in a way that was not possible before. It is reasonable to assume, that problems with substance use in these groups, as well as the discourse around "dual disorders", are by and large products of this socio-political process. As for all people, the main factor behind substance use in this group is *accessibility*. This does not, however, explain why such problems are *more* common in clinical groups than in the general population.

One of the most important factors that is more specific to people with mental health problems is probably social exclusion. People with severe mental health problems experience greater poverty, unemployment, housing problems, relational difficulties etc. than the general population. The over-representation, found in a few studies, of people with a background of migration in these groups also highlights the impact of social factors (Morgan et al., 2010), as do the high prevalence of substance abuse in street children (Sharma & Joshi, 2013). Vicious circles may easily be established between mental illness, social difficulties, exclusion, and substance use; where being exposed to one or two of these problems will increase the risk for also having three or four of them. Moreover, being subjected to social exclusion may not only work as a vulnerability factor, but may also result in a relative absence of protective factors. For example, the combination of loneliness, lack of meaningful activities and a low sense of belonging in society may work as risk factors for substance misuse in non-clinical groups as well. The social factors mentioned here have a factual character since they correlate on a macro level with mental health problems and substance use disorders. However, they do not necessarily account for variations and causal processes on an individual level.

Common factor theories and super-sensitivity

Some research has been directed towards possible factors causing, or increasing risk for, *both* mental health problems and substance use disorders simultaneously. The main focus has been on genetic factors (e. g. Verweij et al., 2017; Mueser et al., 2003), including dopaminergic brain dysfunctions that simultaneously increase the risk for both psychotic symptoms and substance use disorders. Social and psychological factors, for example childhood adversity, probably also serve as non-specific vulnerability factors that may increase the risk for both

substance use disorders and psychotic symptoms (e.g. Harley et al., 2010). One theory in this line of research is referred to as the super-sensitivity model (Mueser et al., 2003). It is based on the observation that fewer persons with severe mental health problems maintain a non-problematic way of using substances, than do people in the general population. Substance use tends to have worse consequences for people belonging to clinical populations, especially with psychosis, even in relatively low amounts. These observations may call for biological, psychological as well as social explanations. One question of relevance for this thesis is whether it is possible to specify *psychological processes* that may underlie the development of both substance use disorders and other mental health problems.

Self-medication theories

The individual-level explanation with the most common appeal probably is the self-medication theory. It is often popular in clinical settings, both among workers and patients. However, it has been contested and questioned by researchers for some time (Mueser et al., 2003). To understand this discussion, a short historical review may be useful. In the 1970s, two American researchers developed different but related theories based on the observation that people with mental health problems used substances more than others and seemingly to escape, or medicate, some kind of emotional distress. The researchers were psychoanalyst *Edward Khantzian* and behaviour therapist *David Duncan*.

Khantzian saw substance use as a compensation for a lack of inner resources concerning affect regulation. In his first article on self-medication, Khantzian (1974) hypothesized that individuals with heroin addiction used the substance to regulate anger, and subsequently he

developed a theory claiming that different substances fulfilled different emotional needs, and that individuals on an unconscious level chose the kind of substance whose effect was most appropriate for amelioration of their particular problem. This narrower "drug of choice"-hypothesis has not been empirically verified (Mueser et al., 2003), and it seems like drug choice is more related to availability, if not alone, and not psychologically determined in such a specific way. If the hypothesis was correct, there would have been a clearer relationship between the kind of drug that is used and the kind of symptom or disorder that affects the user. The failure to verify this hypothesis may be the reason why the self-medication theory by many researchers is considered flawed in its entirety. However, the basic assumption of substance use as a compensatory way of affect regulation is still relevant (Khantzian, 1997), and will be discussed further on.

Duncan (1974) based his theory on the observation that most drug users do not develop an addiction, but that about 80 % of drug users, irrespective of substance, either quit or maintain a basically non-problematic use (Anthony & Helzer, 1991). Duncan's main question concerned why some people get addicted and some not. Using learning theory in his analysis, Duncan concluded that individuals that used substances as a relief from distress were of higher risk of developing an addiction, than individuals that used substances more as a means of recreation. The learning process involved in recreational use was conceptualized as positive reinforcement, i.e. behaviour is maintained through positive consequences. When substances are used to relieve distress, however, a negative reinforcement occurs, which means that behaviour is maintained through removal of something experienced as negative (Nicholson et al., 2002). It is known from basic research in learning psychology that behaviour learned by negative reinforcement, i.e. avoidant behaviour, is hard to extinguish; hence the persisting character of addiction. Substance use may then be conceptualized as a kind of safety behaviour, related to what is seen in for example phobias (Duncan, 1974). This may

contribute to the explanation of the over-representation of substance use disorders in persons with mental health problems, since the incentives to relieve distress are greater in these groups. However, Duncan did not specify whether these processes differ between persons with different types of ailments.

More recent research about the functions of substance use in individuals with psychosis (Gregg et al., 2007) has supported this line of thought and proposed an "alleviation of dysphoria-model" of substance use, where the main function is not to "medicate" specific psychotic symptoms but rather to relieve more general distress like anxiety, low mood, difficulties in social functioning, sleeplessness and overwhelming bodily sensations, as well as to enhance self-experience and stabilize identity (ibid.; Loose, 2002).
In this thesis, substance use as compensatory regulation of negative affect will be discussed in different contexts and from various aspects. It is assumed, that affect regulatory functions of substance use will interact with other regulatory strategies (that may be explicit or implicit) and emphasis will be put on the importance of understanding the subjective function of substance use, irrespective of etiology, since this function probably in part determines the pattern and severity of substance use problems.

Substance use patterns in psychosis

According to some clinical experience, substance use in persons with severe psychosis is, although common, often more irregular and incidental than in other clinical groups (Batel, 2001; personal communication with Professor Kim Mueser). It has been discussed, that the drug-seeking behaviour seems less systematic and that spontaneous availability often predicts

consumption in persons with psychosis. There may also be longer substance-free periods and probably a lesser tendency of developing a physiological dependence, possibly due to the fact that a less systematic substance use pattern will lead to a lesser exposition and hence a lesser risk for physiological habituation and increase in tolerance. But other factors may be relevant as well. On the whole, it is not known how general this pattern is, how homogeneous the group is in this regard, or which explanations that may be relevant. What seems likely, although more empirical research is needed, is that substance related problems is more common in psychosis than in many other clinical groups, but that the amounts consumed are often lower (personal communication with Professor Kim Mueser). In spite of that, social and psychological consequences are often destructive.

Other characteristics of persons with psychosis and substance use disorders

Problematic substance use occurs in the whole range of the psychosis spectrum and is present in various levels of social and cognitive functioning. Factors as urbanity and other lifestyle issues relevant for availability are probably the most decisive ones. Still, research has pointed out some group-level differences between persons diagnosed with a psychotic syndrome with or without a substance use disorder, respectively. This may be helpful in identifying specific risk factors *within* the group of individuals diagnosed with "primary" psychotic disorders. Results from research in this area may seem paradoxical, since they indicate a combination of relatively high functioning and more vulnerability factors in persons with psychosis and concurrent substance use problems.

Not surprisingly, it has been found that socio-economical strain, poverty, social exclusion, homelessness and criminality is more abundant in the group with substance use problems (Buckley & Meyer, 2009). Some of these problems are probably caused or aggravated by substance use, but this group still displays a lower socio-economic status than people with psychosis alone even before substance abuse occurred. Concerning symptoms, persons with psychosis and substance use disorders commonly display more depression, more suicidal ideation and more visual hallucinations, but less negative symptoms like emotional detachment and social withdrawal (Scheller-Gilkey et al., 2002; Buckley & Meyer, 2009). There are also studies that indicate more childhood adversity, like physical abuse and dysfunctional parenting, in persons with psychosis and substance use problems (Scheller-Gilkey et al., 2002).

According to some studies, persons in this group generally have a higher premorbid level of social functioning, and possibly even in some areas of cognitive functioning (Wobrock et al., 2007); something that may account for the finding that persons in this group also more often have had a job or a partner relationship than is the case of persons with psychosis alone (Buckley & Meyer, 2009). There are also some studies indicating greater novelty seeking (Kim et al., 2007) and difficulties in regulation of fear in persons with psychosis and substance use problems. The combination of problematic life histories and relatively high functioning may indeed seem paradoxical. But after closer consideration, the co-existing of exclusion, socio-economic adversity, severe mental health problems but still a reasonable level of social functioning, may well indicate a higher risk for developing a substance use disorder. Taken the other way around, persons with psychotic disorders leading to severe social dysfunction will probably not be exposed for substances in the same way. Substance use is most commonly started and maintained in social arenas.

Another interesting aspect is the indications of greater depression and lesser emotional detachment in persons with psychosis and substance use problems. Depression in psychosis is often seen as a good prognostic sign (Oosthuizen et al., 2002; Haro et al., 2011) and it has been related to higher psychological functioning, for example metacognitive functioning (Lysaker et al., 2009). It is possible that persons with psychosis that are more socially avoidant and detached experience less emotional distress, and therefore have lesser incentives to use substances for affect regulatory purposes.

Drug-induced psychoses

An alternative explanation to the possibility of a higher functioning in some areas in persons with substance use disorders and psychosis, compared to persons with psychosis alone, is that substance use in itself has caused or contributed to the development of psychosis, and that some of the persons in this group would not otherwise have been psychotic. This may hold some truth for a sub-group of persons with psychosis and substance use problems, but seem somewhat problematic when considering that most research mentioned above is conducted with persons with a diagnosis within the schizophrenia spectrum. The critique of the schizophrenia concept notwithstanding, it is quite clear that the diagnosis most often is given to individuals with severe and long-lasting psychotic states that not in a straightforward manner can be attributed to substance use. However, the question may not be settled by this argument, and there is still reason to discuss the possibility of substance use causing psychotic symptoms, not the least in relation to the concept of "drug-induced psychosis".

The idea that substances may trigger transient psychotic experiences or states is probably not controversial either among substance users or clinicians. The question is rather if, or to what extent, substances may *cause* more long lasting psychotic disorders. The area is quite well-researched, and the main efforts have been made in exploring the relation between *cannabis use and subsequent psychosis*. The connection between these two phenomena has been known for a long time; it has been described in case studies at least since the first half of the 20th century (Bromberg, 1934).

A pioneering Swedish study (Andréasson et al., 1987) of 50 000 conscripts, i.e. an unselected cohort of 18 year-old males with Swedish citizenship, pointed out that cannabis use increased the risk for a subsequent diagnosis of schizophrenia at 15-year follow-up with about three times, and that there was a dose-response relationship. High consumers, defined as those having used cannabis for more than 50 times, displayed a six-fold increase in risk for a subsequent diagnosis of schizophrenia. More studies have followed, and recent meta-analyses (Radhakrishnan et al., 2014; Moore et al., 2007; Arseneault et al., 2004) have by and large confirmed the results. The conclusions are that cannabis use increases the risk for long-lasting psychotic disorders, but that it is neither necessary nor sufficient as a causal factor. It is more likely that cannabis works as a trigger factor in persons already vulnerable for psychotic reactions (ibid.), although it is not impossible that there is a smaller group residing in some kind of grey zone that would have remained on the sub-clinical side of the threshold if not using cannabis. The fundamental issue, then, should be vulnerability. Using the stress-vulnerability model, it can be argued that severe psychoses may be triggered by different biological, psychological or social factors, and that cannabis theoretically may work just like any other psychosis-triggering factor. The specific nature of such vulnerability still remains largely unclear, but is most certainly multifactorial and may also differ a lot on the individual

level. However, research has pointed out some general risk factors for developing a "schizophrenic" psychosis after cannabis use; childhood trauma and adversity (Harley et al., 2010, Houston et al., 2011), earlier mental health problems, family history of psychotic disorders (Radhakrishnan et al., 2014), high consumption during early teens (ibid.; Arseneault et al., 2002), and common genetic factors (Radhakrishnan et al., 2014). Moreover, a three-year follow-up study of 535 persons referred to psychiatric care for what was assessed as cannabis-induced psychosis (Arendt et al., 2005), showed that, at final follow up, 44,5% had a diagnosis of a schizophrenia spectrum disorder, 77,2% had been through new psychotic episodes of any kind, 7% had been diagnosed with some other kind of mental disorder, and only 16% were out of contact with psychiatry. The onset of psychosis was earlier in this group than in a comparison group with a diagnosis of schizophrenia but no cannabis use. The conclusion was that cannabis-induced psychoses are of important prognostic value. Since this study only included people admitted to psychiatric care, the results may be seen as biased in a more severe direction. However, it supports the idea that cannabis-induced psychosis in the majority of cases is not a discrete category but basically like any psychotic break in a vulnerable person, highlighted by the finding that almost half of the patients received a diagnosis of schizophrenia or related disorder within three years.

Psychotic symptoms can be induced by other drugs than cannabis, and especially use of stimulants (i.e. amphetamine, methamphetamine and cocaine) can result in symptoms that may be similar to schizophrenic psychoses, however of a shorter duration (Bramness et al., 2012). The relationship between such reactions and more long-lasting subsequent psychotic states, however, are not as clear as in the case of cannabis even if the stress-vulnerability may be applied here as well (ibid.). Moreover, hallucinogens like LSD, DMT and psilocybin, produce altered state of consciousness that may resemble psychotic functioning. These states,

however, are more characterized by “psychedelic” visual hallucinations and spiritual experiences. Similar features may sometimes be present in “primary” psychoses as well, but are not as prevalent in such states and not included in diagnostic criteria.

Affect regulation, trauma and substance use

The assertion that substance use has a function of affect- and self-regulation may be seen as self-evident. Irrespective of mental health and social situation, people turn to substances to relax, make social events run more smoothly, feel more happy or less sad, gain confidence, etc. In most, if not all, cultures and times, people have used substances for these reasons. The fact that substance use, although sometimes controversial, is primarily a “normal” phenomenon in most cultures as well as in everyday life for many people, and that it has a general affect regulatory function, makes it disputable if affect regulation models add something to the understanding of the more specific question of substance use in persons with severe mental health problems. However, as David Duncan (1974) pointed out, there may be a difference between using substances to regulate negative and positive affect respectively, where emphasis on negative affect regulation may be an important risk factor for harmful use or dependence, not the least in clinical populations. It is also of interest, if and how substance use interacts with other strategies of affect regulation as well as with psychological processes involved in symptom development and, in the case of psychotic symptoms, related to reality testing.

The term affect regulation, or emotional self-regulation, is widely used; and research as well as theorizing in this area has been done from various viewpoints like behavioural psychology,

psychoanalysis, attachment theory and neurobiology. The term in itself may be problematized since it is possible to argue that the regulating activities in question not only concern affects in a narrow sense but also cognitions, interpersonal behaviour and self-experience. However, all these phenomena can be seen as having affective aspects. The human affect system is evolutionarily old, similar to those of other mammal species, and has in itself changed little over the generations. Still, it has been argued that human cognitive capacities, especially those related to language, interacts with the affect system in a way that makes them interdependent and hard to separate practically (Deacon, 1997). This makes human affect regulation theoretically more complex and more sophisticated as well as probably more demanding for the individual.

The purposes of affect regulation are both to make individuals enough comfortable with themselves to function, and to balance the needs for emotional expression and social acceptability. This is of course a continuous process that does not need to be conscious if running smoothly. Probably, there is a constant implicit regulating of proximity to others and of different external and internal stimuli (Fonagy et al., 2002). Simultaneously, there are various more specific, although not necessarily conscious, strategies used to ward off unpleasant affect, enhance self-image etc., as have been discussed both in psychoanalytical theories of defense mechanisms and learning psychology accounts of avoidance and safety behaviour.

Developmentally, affect regulation is largely a learned process where genetic factors interact with the relational context (Fonagy et al., 2002). Infants have poor affect regulation capacities in themselves, and need caregivers to verbally and non-verbally mirror and interpret affective signals, before and parallel to gradually internalizing these functions (ibid.). Affect regulation is thus developed in an interpersonal context, starting in the infant-caregiver relation where

there is a continuous interplay in which the caregiver verbally interprets the bodily sensations displayed by the infant. This is probably the root of verbally based affect regulatory capacities (ibid.), like self-reflection, often discussed under the heading of *mentalization*. This research area will be further discussed below. Another term used in this thesis is *affect consciousness*. This refers to perception and awareness of affects, which requires at least some capacity of differentiation between different affects and, to become explicit for the individual, verbal recognition. The difference between affect consciousness and affect regulation is basically that the former concerns awareness and the latter some kind of conscious or unconscious action taken to manage the affects.

Childhood trauma, substance use and psychotic experiences

Attachment- and relational difficulties, and not the least trauma during childhood, is considered a risk factor for development of both substance use disorders (e.g. Schwandt et al., 2013) and psychotic symptoms (e.g. Varese et al., 2012, Linscott & van Os, 2013). Here, the term childhood trauma is used in a wide sense, including physical and sexual abuse, long-term emotional neglect and abuse, as well as other forms of pervasive childhood unsafety. This makes the discussion around trauma somewhat unspecific and generalizing, something that works on a group level. However, on the individual level adverse events are construed and handled in different ways, and here the question of trauma should be approached with more specificity and with focus on the subjective perspective.

Affect regulation processes probably have relevance for the above mentioned associations between trauma, substance use and psychotic symptoms. Garland et al. (2013) found that trauma history tended to drive a feedback loop between psychological distress and

substance abuse in youth, and that substance abuse partly mediated the relationship between trauma and psychiatric symptoms. As discussed in self-medication theory (Khantzian, 1997), substances are used to ameliorate different kinds of distress, where trauma-related-anxiety may be an important factor. In these cases, self-medication may be a conscious strategy as well as more implicitly learned by experience. Since substance use often works as a powerful anxiolytic in the short run, the incentives to repeat the behaviour becomes strong. However, repeated substance use tends to aggravate distress in the longer perspective. This may lead to a vicious circle that is hard to break irrespective if it is evident to the individual.

From a biological perspective, Garland et al. (ibid.) argues, that repeated substance use leads to a downward regulation of the reward system that causes a greater sensitivity to negative affect and difficulties in well-being and pleasant feelings without the assistance of substances, something that also increases the risk for continuous use. For the individual, this process typically ends up in a higher general level of anxiety and at the same time lowered capacities in regulating and handling anxiety by means of other strategies than substance use. This kind of feedback loop may result in learned helplessness and lowered trust and self-efficacy (Bandura, 1977) on part of the individual. The complexity in these kind of processes probably highlight the need for step-wise individualized treatment approaches, in contrast to simplistic "one-size-fits-all" models.

Anxiety may also be considered a mediating factor between childhood trauma and psychotic symptoms, as suggested by Freeman & Fowler (2008), who in a cross sectional study of UK general population found that the association between trauma and psychotic symptoms was dependent on the level of anxiety. Most probably, it is of importance *how* trauma-related

anxiety is regulated. Amelioration through substance use may be a risk factor, although not necessary, for the further development of mental health problems (including psychotic symptoms), in individuals with a history of childhood trauma. As discussed above, theories of mentalization and related functions, may be helpful in understanding different modalities of affect regulation, including management of anxiety, as well as the interaction between affect regulation and mental health problems.

Mentalization, Theory of Mind and metacognition

Verbal/symbolic capacities, as stated above, probably enables for specific modes of mental suffering (Hayes, 2001); but it also enables for more sophisticated ways of affect regulation. Perhaps it can be said that language may help to ameliorate what language itself has produced. Starting within the early attachment relationship, human beings successively learn to recognize, differentiate, reflect upon and hence regulate affects by means of language. It may be a psychotherapeutic cliché, but also supported by research, that the ability of "putting feelings into words" is crucial for psychological growth and flexibility (Lieberman et. al., 2007). The development of these functions, as well as the functions themselves, has been conceptualized in theories of *mentalization* (e.g. Fonagy et al., 2002). Mentalization can be seen as an umbrella concept summarizing the abilities to recognize, differentiate and think about one´s own "mental states", i.e. thoughts, emotions, wishes, intentions, etc., as well as to imagine and reflect upon those of others. It has been aphoristically defined as "seeing oneself from the outside and others from the inside" (ibid). According to British psychologist and psychoanalyst *Peter Fonagy,* there is a theoretical differentiation between implicit (non-

verbal) and explicit (verbal) mentalization. Implicit mentalization is a highly relational concept that includes automatized interpretation of body language etc., whereas explicit mentalization has more to do with self-reflection and interpretation of other´s behaviour. Both concepts concerns the regulation of proximity to, and interpretation of intentions, of other persons, a process that is simultaneously verbal and non-verbal, conscious and unconscious.

The research area is not at all new; the function of mentalization has been addressed in philosophy and science since long ago, and various terms and theoretical contexts have been applied through the years. Freud (2008/1911) discussed how drive impulses (originally related to pleasure and pain) are being bound to mental representations, enabling thought and differentiation, something that makes it possible to regulate the impulses. These ideas may be seen as foundational for modern research in mentalization and affect regulation from a psychoanalytic and attachment theory perspective (Fonagy et al., 2002). The word mentalization, however, is not of psychoanalytical origin, and was allegedly introduced in psychoanalytic vocabulary in the 1960´s by Pierre Marty (ibid.).

From the 1970´s and on, the concept of mentalization has been used in cognitive and neuropsychological research as well, not the least concerning autism (Baron-Cohen et al., 1985) and schizophrenia (Frith, 1992). The term has sometimes been used interchangely with "Theory of Mind" (ToM), a concept invented by primatologists David Premack and Guy Woodruff (1978). ToM concerns the basic ability to recognize that other people have minds of their own that are separate from each other and thereby not transparent to other people. The term ToM is originally narrower and more cognitively oriented than Fonagy´s concept of mentalization, since the latter also includes affective and interpersonal aspects, and are often

operationalized accordingly in research. However, in practice, the words are often used almost as synonyms.

A third related concept is *metacognition*. This term, which means "thinking about thinking", was coined by developmental psychologist *James Flavell* (1979) and has been widely used in pedagogical, cognitive, forensic and clinical psychology. All three concepts have spawned relevant research in the areas of psychosis and psychopathology, as will be addressed further below.

The function of mentalization is important in many ways, not the least crucial for affect regulation and for navigating in an ever changing and ambiguous social environment. Severe difficulties in putting feelings into words and relate socially have been conceptualized as *alexithymia* (Sifneos, 1973), and have been associated to various kinds of mental-health and interpersonal problems, as well as to substance abuse. (Dimaggio & Lysaker, 2010; De Rick, Vanheule & Verhaeghe, 2009; Vanheule, Desmet, Mehanck & Bogaerts, 2007). Probably, substance use often works as compensation for wavering mentalization capacities, both momentarily and more permanently; but specific causal relationships and interactions still largely remain unclear. It is assumed though, that theories of mentalization/metacognition provide valuable contributions to the understanding of substance use as means to affect regulation, and that there is a need for more research addressing these interactions.

Levels of mentalization and representation

In the conceptualizations of both Fonagy and *Paul Lysaker* (the latter will be outlined below in the section about psychosis and mentalization), it is assumed that it is possible to discern and measure different levels of mentalization or metacognition (Fonagy et al., 2002, Fonagy, 1998; Lysaker & Dimaggio, 2014). The work of these research groups has resulted in two different assessment procedures; the Reflective Functioning scale (RF; Fonagy et al., 1998) and the Metacognition Assessment Scale (MAS; Lysaker, 2010; Lysaker et al., 2011), that are based on interview material concerning relational subjects, life history and emotional difficulties; topics that are assumed to "provoke" the reflective capacities of the individual. RF measures a global capacity of mentalization and results in a score between -1 (negative RF) and 9 (exceptional RF), where 5 is considered as an ordinary mentalizing capacity. MAS measures four different domains that are assumed to be semi-related although reflecting different aspects of metacognition (Semerari et al., 2003; Lysaker et al., 2011). These four domains are Self-Reflectivity, Understanding of Others' Minds, Decentration and Mastery. As in the case of RF, the domains are scored numerically between absence of and very high metacognitive capacity. Both procedures stress acceptance of uncertainty as a sign of a developed reflective capacity, and are based on a constructivist tradition where thinking is explicitly seen as representational (Lysaker et al., 2011). Differences in operationalizing notwithstanding, there are common lines of thought in these theories that will be discussed integratively. Lower levels of mentalization reflect collapse or disorganization of metacognitive capacities; intermediate levels allows for basal affect consciousness; and higher levels for more elaborate and processed verbal accounts of inner states. Both theories, it can be said, assume a combination of trait and state approaches to these functions. They postulate existence of individual differences in mentalization capacities, but also a situational plasticity,

as well as a possibility to develop these functions, for example within the frame of psychotherapeutic interventions (e.g. Bateman & Fonagy, 2006; Lysaker & Dimaggio, 2014; Dimaggio et al., 2003).

As mentioned above, the functions of mentalization/metacognition implies *representation* of inner states (Lysaker et al., 2011), i. e. access to inner reality by means of *signs*, as opposed to some kind of unmediated accessibility resulting in objective assessments, that obviously would be impossible since the psychological aspect of such phenomena is subjective in nature. It is assumed that higher levels of mentalization, with full utilization of language as a means of self-reflection, demands *symbolic representation*, as outlined above in the section about reality testing. Symbolic representation allows for an explicitly acknowledged distance between thought and reality, for example between what is *felt* and what is *known*, e.g. "right now it feels like I hate you but I know I don´t". As previously discussed, the problems with reality testing displayed in for instance delusional beliefs, may be related to wavering of this kind of representation.

American 19th century philosopher *Charles Sanders Peirce* developed a theory of semiotics where he specified three different sign levels (icon, index and symbol) corresponding to three categories of psychological phenomena (Firstness, Secondness and Thirdness; Peirce, 1992). The theory of Peirce has subsequently been used in cognitive psychology, psychoanalysis and conceptualizations of the mind-brain problem (e.g. Brandt, 2004; Müller, 1996; Deacon, 1997) as a tool in understanding human cognitive and affective processes, although not to a larger extent specifically related to the concept of mentalization. The iconic level and category of Firstness refers to unlabeled states, feelings that are not delimited or differentiated from each other. Index/Secondness implies some kind of connection and reactivity between

separate elements; whilst Symbol/Thirdness allows for feelings to be to some extent predictable and possible to understand on the basis of generalized rules, i.e. “I don´t think it´s personal, people sometimes behave like that when they are stressed out”. Peirce argued that actual thinking utilize symbolic representation, i.e. a distance between thought and reality, as mentioned above. The theory of Peirce and its later applications may be useful to integrate with mentalization theory, since it may help in differentiating more clearly between levels of mentalization and their implications for behaviour, for example substance use. A tentative approach in combining Peircean semiotics with mentalization theory will be part of the analysis of the results of the studies included in this thesis.

Psychosis, affect regulation and mentalization

Much research has been done in different areas and theoretical traditions about mentalization and related functions in psychosis. British psychologist *Christopher Frith* (1992) developed the idea that core symptoms of psychosis may be explained by deficits in mentalization/ToM. For instance, paranoid beliefs may be seen as stemming from difficulties in interpreting intentions of other people, and so called negative symptoms as social withdrawal and amotivation, may reflect difficulties in representing one´s own mental states. Since Frith, a lot of neurocognitive research has been addressing questions about what kinds of mentalization difficulties are relevant to psychosis, and if mentalization deficits in psychosis should be seen as state or trait phenomena, and more. Summarizing much of this research, two meta-analyses (Bora et al., 2009; Sprong et al., 2007) indicated large group differences between persons with psychosis and general population concerning mentalization-related functions. The most severe

difficulties were found in persons with negative symptoms and high degree of disorganization. The picture is however less clear when it comes to delusional beliefs. Paranoia may be understood both as a deficit in interpreting intentions (Frith, 1992) and as a result of over-mentalization where more underlying intentions than necessary are attributed in interpreting the behaviour of other people (Montag et al., 2011).

Concerning the question of state or trait, Frith (1992) hypothesized that mentalization deficits in psychosis, as opposed to those in autism, were related to the acute psychotic state, and that a formerly functioning ToM were deteriorating during the course of the illness. Some research supports this notion (Bentall, 2003), even though the earlier mentioned meta-analyses point more in the trait direction. For instance, studies comparing persons with acute psychosis, first degree relatives to persons with psychosis, people with "at-risk"/pre-psychotic states and people who recovered from psychosis, with general population, found that all the mentioned groups differed more from the general population than from each other concerning mentalization difficulties; even though the difficulties were more pervasive in the group with acute psychosis (Sprong et al., 2007; Bora et al., 2009). It thus seems likely that mentalization difficulties work as a vulnerability factor for psychotic reactions, as well as that acute psychosis leads to a more dramatic collapse in mentalization.

Since the early 2000´s, there has been research and theoretical development going on about *metacognition* and psychosis, not the least by American psychologist Paul Lysaker and different research groups where he has participated (e.g. Dimaggio & Lysaker, 2010). Here, the concept of metacognition is reasonably close to Fonagy's definition of mentalization. However, it is not considered as a unitary concept but divided into four semi-independent modalities: self-reflectivity, understanding other´s minds, decentration and mastery (Semerari

et al., 2003); where it is possible for a person to function differently in each of the four areas. Both case studies and larger comparative studies have been conducted using this theory. One case study indicated that metacognitive functioning is possible to enhance in psychotherapy (Lysaker et al., 2005b) and group level studies indicated that metacognitive functioning in persons with psychosis was positively associated with social and vocational functioning (Lysaker et al., 2011), quality of life, and insight (Lysaker et al., 2005a), as well as negatively associated with social and emotional isolation (Lysaker et al., 2013). There also seems to be a positive association between metacognitive functioning and risk for depression in this group (Lysaker et al., 2009), something that may seem paradoxical, but that may be construed as resulting from a more realistic appraisal of the problematic life situation and experience of various adversities that is common for persons with severe psychosis. These findings highlight the importance of metacognitive functions for relating to the social environment, solving conflicts and making decisions. There are also findings indicating that metacognitive functioning is not possible to reduce to general cognitive or neuropsychological functioning, even if some basal cognitive underpinning concerning memory and attention is needed for metacognition to work (Lysaker, 2010).

The empirical research of the later decades about psychosis and mentalization may to a large extent be considered in line with earlier theories about the core features of psychosis and the problem of reality testing. Worth mentioning in this context is Bleulers (1911) descriptions of loosening of associations in schizophrenia, *Harold Searles* (1965) theories of psychotic thinking as a collapse in the metaphorical function, *Wilfred Bions* (1967) account of splitting of thought as a core defensive process in psychosis, and Lacans (1956) theories of language in psychosis as dissociated from the sociolinguistic context.

The functions denoted by the concepts of mentalization, metacognition and ToM overlap to a large degree with symbolic, language-dependent thinking; and difficulties in reality testing may well be discussed from the viewpoint of these theories. It has been argued, that mentalization-related problems that occur in psychosis are related to a wavering, and sometimes breakdown, in symbolic representation. This includes difficulties in representing one´s own mental states, interpreting mental states of others, thinking in metaphors, experiencing being the owner of one´s own thoughts and organizer of one´s speech (Rosenbaum, 2000), as well as experiencing the "natural evidence of commonsensical everyday reality" (Stanghellini, 2010), These areas and functions may also be seen as related to the construction of social reality, hence to reality testing.

The problem of *hallucinations* in psychosis may be interpreted along similar lines. First and foremost, hallucinations are usually not defined as genuinely psychotic phenomena if not combined with delusions, and auditory hallucinations (i.e. "voices") may be seen as a semi-normal psychological phenomenon since evidence indicates that they exist in at least 10% of the general population, out of which the majority do not fulfill diagnostic criteria for a psychotic syndrome and are perfectly aware that the hallucinations are not "real" (van Os & Reininghaus, 2016; Johns & van Os, 2001; Beavan, Read & Cartwright, 2001, Bentall, 2003). Moreover, hallucinations have been conceptualized as expressions of mentalization deficits, not the least as a problem of "self-monitoring" (e.g. Frith, 1992), referring to difficulties in determining if perceptions originate from oneself or from the surroundings, making it possible to interpret one´s own thoughts as voices.

Psychosis, emotion and substance use

Concerning emotions in psychosis, the categorical division between bipolar and schizophrenic syndromes may have affected subsequent theoretical development in psychiatry and the way that emotions have been discussed in relation to psychosis. This division builds on Kraepelins (1907) theories, whereas other "early" thinkers in the area may be seen as more holistic concerning the interplay between affect and cognition and the expression of these modalities in psychiatric disorders (Bleuler, 1911; Freud, 2008/1911). It has been discussed (Moskovitz & Heim, 2013), that the established diagnostic systems, especially from DSM-III and forward, have been increasingly adherent to Kraepelins original ideas in conceptualizing schizophrenia as a disorder of thought and bipolar syndrome as a mood disorder (not a primary psychotic disorder), as well as seeing the two disorders as fully distinct from each other. Evidence indicates however, that the two disorders fade into each other and do not constitute two separate categories, neither phenomenologically nor genetically (Marneros & Akiskal, 2007).

Possibly, this theoretical development has led to downplay of the affective aspects of psychosis spectrum disorders. From a clinical point of view, it is however evident that persons suffering from these conditions experience strong affects, and that anxiety and depression belong to the most troubling symptoms, although not included in diagnostic criteria. Research in attachment (Dozier et al., 2008) suggests that a majority of persons with a diagnosis of schizophrenia display a dismissive attachment style, indicating that affects are regulated mainly by withdrawal and avoidance. This does not mean that affects lack or are irrelevant; it is rather a question about how they are regulated and expressed; and it is possible to think of psychotic avoidance and other features of psychotic disorders, like systematized

delusions, as strategies of affect regulation in themselves. Another study (Schindler et al., 2005) indicates that persons with a predominantly dismissive attachment style may be less prone to use substances to regulate affect than persons with other forms of insecure attachment, i. e. preoccupied or disorganized attachment. Another finding that may be relevant, is that persons with severe psychosis in an experimental study seemed to have the same access to emotions than healthy controls, but that they had difficulties in imagining emotional states that were not currently at hand (Gard et al., 2007), something that may be interpreted as a mentalization-related difficulty and that would possibly implicate a lesser incentive to search for external remedies, like substances.

These findings may seem contradictory to the fact that substance use disorders are common in persons with psychosis. It is however possible, that this kind of affect regulation style in combination with social exclusion and high access to substances, may result in a high prevalence of substance use disorders, although perhaps of a less malignant character. It is also possible that persons with psychosis and preoccupied or disorganized attachment styles are more at risk for substance use disorders than those with a dismissive pattern. Seemingly, however, this has not yet been a matter of empirical research.

AIM OF THE THESIS

The area of psychosis and substance use is complex and has not been extensively studied from a psychological perspective, neither theoretically nor empirically. Moreover, the area has seemingly not been explicitly related to underlying models of psychopathology or psychosis. The main aim of this thesis was therefore to explore psychological aspects of the interaction between substance use and psychotic symptoms. This was done by investigating patterns and functions of substance use in persons with psychotic disorders and how different modes of affect regulation were related to use of substances, as well as exploring prevalence of and correlates to psychotic symptoms in persons with primary substance use disorders.

The specific aims of the studies included in this thesis will be described in the following chapter.

SUMMARY OF THE STUDIES

Study 1

Aim

This study aimed to explore substance use patterns in persons with psychotic disorders, and compare these to substance use patterns in a group of individuals with other psychiatric (mainly anxiety- and mood-) disorders and concurrent substance use problems.

Participants and procedure

One group of participants (n = 16, all men aged 22-40) was recruited from two different outpatient units in south west Sweden. The inclusion criteria were a diagnosis of psychotic disorder according to ICD-10, and a problematic substance use in a broad sense, i. e. hazardous use, harmful use or dependence on alcohol and/or illicit drugs. Participants completed the questionnaires AUDIT and DUDIT (described below). Beside the questionnaires, some basic information about the participants was collected by staff members using a semi-standardized form. This included gender, age, duration of contact with the unit, diagnosis, type of drug(s) used, housing, employment, sustainment, and number of days in in-

patient care during the latest year (psychiatric hospital care and rehabilitation clinic care reported separately).

Problematic substance use was defined as an AUDIT score of >7 for men and >5 for women (Babor et al., 1989, 2001), and/or a DUDIT score of >5 for both genders in combination with an individual assessment. However, persons with current hazardous use, i.e. scores below 15 on AUDIT and/or DUDIT, were included only on the basis of newly remitted dependence or harmful use, and persons with fully remitted substance use disorders (i. e. no substance use at all during the latest year), were excluded from the study altogether. As comparison group, individuals (n = 22; aged 19-52; 7 women and 15 men) with a problematic substance use as defined above, and a non-psychotic disorder (predominantly anxiety- and/or mood disorders), were recruited from another outpatient unit in the same urban area in south west Sweden. Persons with a history of psychotic episodes were not included in the comparison group and persons with a main diagnosis of bipolar disorder were excluded from the study altogether. For both groups, participants were recruited consecutively as they were admitted to the units.

Measurements and statistical analysis

Alcohol Use Disorders Identification Test (AUDIT) is a self-report questionnaire developed by WHO for screening of problematic alcohol use (Babor et al., 1989). Drug Use Disorders Identification Test (DUDIT) is a similar questionnaire concerning other, mostly illicit, drugs (Berman et al., 2005). Both questionnaires measure various aspects of drug use; quantities and frequencies of consumption, practical and emotional consequences, earlier problems as well as signs of harmful use and/or dependence. The questionnaires can thus be considered to

measure some aspects of substance use patterns. AUDIT may on a theoretical basis be split into three different domains (Berman et al., 2012; Babor et al., 2001): *consumption* (items 1-3), *dependence* (items 4-6) and *harmful drinking* (items 7-10). These domains were also included in the analysis, as well as the three domains of DUDIT that were found in a factor analysis (Berman et al., 2012; 2005): *dependence* (items 1, 4-8), *drug related problems* (items 2, 10-11) and *intensity of use* (items 3, 9).

Data from the measurements were analysed using Mann-Whitney U-test, Spearman correlations or Fishers exact test depending on type of data and level of measurement. Effect sizes, reported as Cohen´s *d* (Cohen, 1988), were calculated in the cases where significant group differences were found.

Main findings and discussion

The groups did not differ in total score on the above mentioned self-report questionnaires, or on the items measuring level of consumption. However, the group of persons with psychosis scored significantly lower on some items and domains (see Table 1). This concerned failing to do what is expected because of drinking, guilt feelings related to drinking, signs of alcohol dependence, times using more than one drug in the same occasion and experiencing irresistible longing for drugs. The item concerning guilt feelings related to drug use did not display a significant difference, although there was a medium effect size, suggesting a possible difference that is not obvious due to small group sizes. Regarding socio-demographic and care-related variables, significant differences were found in three cases; the persons with psychosis were younger, all men, and had spent more days in in-patient care during the latest

year. The socio-demographic and care-related variables were considered possible confounders and thus controlled for, showing that they did not affect or explain group differences on the questionnaires.

Table 1. Group differences on AUDIT and DUDIT*

Variable	p-value (n=38)	effect size Cohen´s *d* (n=38)	estimation of *d* (Cohen, 1988)
AUDIT item 5 (failing to do what is expected because of alcohol use)	.002	.97	large
AUDIT item 7 (guilt feelings because of alcohol use)	.018	1.05	large
AUDIT dependence on alcohol domain	.025	.63	medium
DUDIT item 2 (times using more than one drug** in the same occasion)	.035	.62	medium
DUDIT item 5 (experience irresistible longing for drugs)	.042	.63	medium
(DUDIT item 9) (guilt feelings because of drug use)	.144 ns	.51	medium

*Individuals with psychosis scored lower on all reported items
**In this table "drug" refers to any other psychoactive substance than alcohol

Some of the group differences mentioned above concern the ways persons *think* and *feel* in relation to drugs and to their own drug-related behaviour, i. e. *guilt feelings* and *longing*. This may also concern the observation that persons with psychosis to a lesser degree reported that they *failed to do what was expected* because of alcohol use, which can be construed as a way of thinking about substance use and its impact on one's life, as much as a mere fact. These findings were construed as suggesting, however tenuous due to small groups, that the participants with psychosis *on a group level* had a tendency to make *less mental state reference* to substance use, i.e. to put substance use in an emotional and/or cognitive context,

than those with other kinds of mental health problems. It may be so, that persons with psychosis in general reflect less about substance use, and have a lower tendency to put it in an emotional context, something that would be consistent with earlier research about ToM/mentalization/metacognitive difficulties in psychosis (e.g. Bora et al., 2009; Sprong et al., 2007; Frith, 1992). It may also be consistent with research suggesting that persons with psychosis, compared to healthy controls, make less references to absent emotional states that need to be imagined (Gard et al., 2007), something that possibly might result in less active affect regulation strategies and lower incentives to *search for* something (in this case drugs) that will enhance well-being and/or reduce dysphoria. A plausible outcome of this way of affect regulation would be a less regular substance use pattern often ascribed to persons with psychosis (Batel, 2000).

Another finding was that persons with psychotic disorders showed lesser indications of alcohol dependence, as measured by AUDIT, and that they used fewer types of drugs. Our results support earlier research that indicates lesser risk for dependence (although not harmful use) in persons with psychosis (for overview, see Mueser et al., 2003). Possibly, this may in part be explained by differences in expectation, as observed by Gard et al. (2007), and in corresponding tendencies to attach to and remain attached to the drug as a potential remedy for emotional distress.

It should be noted though, that the findings of this study should be approached with caution due to small group sizes and limited statistical power. The interpretations mentioned above are seen as hypotheses that should be subjected to further testing.

Study 2

Aim

The aim of this study was to investigate how different modes of self-reflection and affect regulation can relate to patterns and subjective functions of substance use, as expressed in interviews with 12 men diagnosed with both a "primary" psychotic disorder and a substance use disorder.

Participants and procedure

Participants were recruited on an availability basis out of patients in contact with three different psychiatric outpatient units in south west Sweden. Inclusion criteria were a diagnosis of a primary psychotic disorder, i.e. schizophrenia, schizoaffective disorder, delusional disorder or non-specified non-organic psychosis (F2 in ICD-10), and problems with substance use, including both harmful use and dependence (F1 in ICD-10). Patients fulfilling these criteria and who were assessed by staff to be stable enough to participate and capable of providing informed consent were approached personally and informed orally by a staff member. Patients interested in participating were given written information. About half of those invited were willing to participate (i.e. 12 men between 22 and 41 years of age), and they were given one or two interview appointments.

Interview analysis

The interview consisted of three parts: life history and mental health; family relationships; and different aspects of substance use. The interviews lasted on average about 1.5 hours (range 35 minutes to 2.5 hours) and were carried out over one or two sessions, depending upon the wish of the participant. The interviews were recorded and transcribed verbatim.

The transcripts were analysed according to thematic analysis, mainly of the deductive or theory-driven type (Braun & Clarke, 2006). First, the entire data set was coded to obtain a basic structure of the material and to identify the parts relevant for the research questions. The selected parts (about 40 % of the entire data set) included all passages related to affect regulation and substance use. Codes not indicating a clear relationship between affect regulation and subjective experience of substance use were also included, and the selected parts were submitted to further analysis. During the analysis, the authors continuously discussed the labelling of codes and themes, as well as the overall thematic structure.

Moreover, the interviews were analysed according to the RF and MAS procedures (see the Introduction section for description), to assess the mentalization- and metacognitive capacities of the participants. Due to the small number of participants, no statistical analyses of these results were conducted. However, on an individual level it was possible to relate these capacities to other aspects of the interview material.

Main findings and discussion

The analysis resulted in two main themes, consisting of three or four sub-themes each. The first theme, *Approaches to distress*, encompassed ways in which participants related to psychological and interpersonal problems and to various kinds of emotional distress. The sub-themes, labelled *Non-articulated approaches*, *Concrete approaches* and *Reflective approaches*, were considered as expressing three different levels or modalities in mentalization and processing capacities (Fonagy et al., 1998; Lysaker & Dimaggio, 2014; Peirce, 1992). The different approaches to distress were also discussed in relation to emotional avoidance. The second theme, *Regulating function of substances*, shows how the participants described the regulating function of substances in psychological and interpersonal areas. The sub-themes *To feel normal*, *To avoid suffering*, *To feel good* and *To take it or leave it* were considered as reflecting different personal meanings of , and reasons for, substance use; as well as being related to the mentalization and processing approaches discussed in relation to the first theme.

The findings of Study 2 indicate great heterogeneity among the participants concerning substance use patterns, as well as *how* substances were used to regulate affect. As expected, however, all participants reported that substance use had at least some regulatory purpose. In the sub-theme *Non-articulated approaches*, the participants did not verbally acknowledge psychological forms of distress. Instead, problems were ascribed to the external world or not addressed at all. There were also some signs of narrative disorganization when such problems were discussed. This mentalization style can be conceptualized as alexithymic (i.e., emotions were not verbalized; Sifneos, 1973), and may be related to difficulties in mentalization and self-experience often associated with more severe forms of psychosis (Bora et al., 2009;

Sprong et al., 2007; Stanghellini, 2010). In the sub-theme *Concrete approaches*, quotes were collected where participants displayed an ability to name feelings and other inner states and to acknowledge them as their own. However, the naming of emotions were more of a labelling character and, not the least concerning negative emotions, there were no signs of verbal elaboration or reflection as a means to cope. Rather, these inner states were often described as hard or impossible to bear and did therefore appeal for immediate discharge or quick remedy. The final sub-theme, *Reflective approaches*, concerned relatively complex verbal accounts of inner states, where language was used as an regulatory strategy, making it possible to utilize metacognitive strategies in creating an understanding of one´s own emotions, interpersonal interactions, and the behaviour of others. This corresponds with full mentalization capacity, *reflective functioning*, according to the theories of Fonagy and colleagues (1998, 2002). It is notable, that all these three approaches are represented in a group of persons with a diagnosis of primary psychosis, where severe mentalization difficulties may be expected. However, as discussed earlier, psychiatric diagnoses focus on symptoms and do not primarily provide information about psychological processes of this kind. It is also in line with research in metacognition as well as clinical experience that persons with psychosis display various kinds of self-reflection that differs both between persons and may change within persons over time (Lysaker et al., 2005b).

The second theme, "*Regulating functions of substances*", addressed the more specific question of functions of substance use in coping with, manipulating and enhancing inner states. Four sub-themes were defined, where four different regulating functions were discussed. The first sub-theme, "*To be normal*", concerned using substances to enhance social and cognitive functioning, including blunting of social anxiety, leading to a subjective feeling of acceptable normality or functioning. Some quotes in this sub-theme were also thought to refer to using

substances to obtain a more basal sense of self, as being delimited in relation to the external world. In the second sub-theme "*To avoid suffering*", participants described substance use as concrete self-medication (Khantzian, 1997), concerning various forms of distress, from specific symptoms to everyday worries. The more recreational ways of using substances, where an important function is to enhance positive feelings, were addressed in the sub-theme "*To feel good*". As expected in a group of persons with severe mental health problems, this was the least common type of quotes, although clearly obvious in some narratives. The last sub-theme, "*To take it or leave it*", refers to descriptions of tenuous relationships to substances. They may be used, but are not described as subjectively important, and use is often related to exposition for social contexts where substances are accessible. The person is not dependent on the substance in question. This pattern is possible to interpret in many ways. The lesser need to use substances for affect regulation purposes probably reflects a lesser degree of subjective suffering, either in itself or due to the use of other regulatory strategies.

The two main themes both mainly refer to individual experiences of coping with distress. Theoretically, it seems likely that a predominance of *non-articulated approaches* will result in lower incentives to search for external remedies like drugs, partly because of difficulties in organizing of behaviour but not the least since psychotic avoidance (e.g. delusions) may already serve important regulatory functions (McKay et al., 2007; 2008). However, this way of functioning may increase the risk of social exclusion and hence exposition for substances that in combination with few protective factors may lead to a high risk for substance related problems, even in absence of active searching. The result will probably be a relatively non-regular substance use pattern. Predominance of *concrete approaches*, on the other hand, imply a strong need for immediate emotional discharge where substance use may be seen as one of the most effective strategies in the short perspective, something that probably leads to a

systematic and intense substance use pattern. Finally, the utilizing of *reflective approaches* provides for a larger and more flexible set of affect regulation and coping skills, allowing for tolerance of frustration and long-term self-care in a way that probably decreases the risk for substance-related disorders. However, these final reflections should be seen as hypotheses that are partly grounded in the findings of Study 2 and partly theoretically based.

Study 3

Aim

The aim of this study was to investigate prevalence of psychotic experiences in a group of socially stable individuals with alcohol use disorders, and to explore possible differences in self-efficacy and prevalence of childhood trauma between individuals in this group, with high and low levels of self-reported psychotic experiences respectively. Seemingly, these questions have not been specifically addressed in any past research.

Participants and procedure

Data was obtained from the on-going Gothenburg Alcohol Research Project (GARP; e.g. Berglund et al., 2016; Wennberg et al., 2016; Berglund, 2009), which aims to investigate risk factors and treatment outcome in socially stable individuals with alcohol dependence. The

participants (n=349) were recruited from three alcohol treatment units in south west Sweden. Since the GARP project includes extensive assessment procedures, there were available data concerning psychiatric symptoms, socio-demographic variables, childhood trauma, different aspects of substance use, and more. Out of the participants in the GARP project two sub-groups were extracted; one with a high level of psychotic experiences (n=50), and one with a low level of psychotic experiences (n=91). These groups were compared concerning age, gender, self-reported childhood trauma, socio-demographic variables and management of alcohol dependence, i. e. perceived self-efficacy and capacity to abstain from alcohol in potentially triggering situations.

High level of psychotic experiences was defined as scoring at least two standard deviations above general population mean on *both* the Paranoia and the Psychoticism scales on the SCL-90 (described below). Low level of psychotic experiences was defined as scoring below general population mean on both scales.

Measurements and statistical analysis

Symptom Checklist-90 (SCL-90) is a comprehensive scale of mental health problems that is widely used in research and clinical settings. It has been considered having good psychometric properties (Fridell et al., 2002).

Prevalence and severity of childhood trauma was measured using the Childhood Trauma Questionnaire (CTQ), which is a self-report questionnaire with five subscales; Emotional abuse, Physical abuse, Sexual abuse, Emotional neglect and Physical neglect. The instrument

has good psychometric properties (Gerdner & Allgulander, 2009), and at least one study (Paivio, 2001) suggests that the ratings display some resilience towards negative bias that may result from current mental health problems.

Alcohol Abstinence Self-Efficacy Scale (AASE-A) was used to measure perceived capacity to manage alcohol dependence and abstain from alcohol. The instrument consists of two parts, Temptation and Self-efficacy. Temptation concerns the degree of perceived temptation in usual triggering situations, and Self-efficacy concerns the extent to which the individual feels able to abstain from alcohol in such situations. The instrument is considered to have good psychometric properties (Di Clemente et al., 1994).

To assess alcohol and drug consumption as well as socio-demographic variables, the Addiction Severity Index (ASI; McLellan et al., 1980) was used. The ASI is a comprehensive structured interview that covers various health-related and socio-economic life areas and that is widely used in research and addiction treatment settings.

As stated above, two sub-groups were extracted, one with high and one with low degree of psychotic experiences as measured with the SCL-90. To analyze group differences on childhood trauma, management of alcohol dependence and socio-demographic variables, ANOVA was used. Finally, a binary logistic regression with group as target variable was conducted. The input variables were those found significantly associated to group belonging in earlier analyses as well as considered theoretically relevant.

Main findings and discussion

50 individuals, 14,3% of the total GARP study population, displayed a high level of psychotic experiences according to above mentioned criteria. When compared to the group with low levels of psychotic experiences, these individuals scored significantly higher, i.e. reported greater problems, on all sub-scales of both the CTQ and the AASE-A (see Tables 2 and 3). They were also significantly younger. No differences were found in other socio-demographic variables. There were more individuals in the group with high levels of psychotic experiences that used cannabis and/or amphetamine, but still too few to include this variable in statistical analyses or to be a large or likely explanatory factor of other group differences. The variables that showed the largest effect on prevalence and severity of psychotic experiences was age and the Emotional abuse subscale of the CTQ.

Table 2, Group differences on CTQ. Data for CTQ scores in individuals with high levels of psychotic experiences (high PE; n=50) and in individuals with low levels of psychotic experiences (low PE, n=91). Data are presented as mean value (standard deviation, SD) and range.

CTQ-subscale*	High PE	Low PE	No/minimal abuse	*p*-value
EA	10,7 (5,1; 5-23)	6,6 (2,3; 5-16)	5-8	.000
PA	7,0 (2,9; 5-18)	5,9 (2,5; 5-25)	5-7	.028
SA	6,2 (3,0; 5-17)	5,2 (1,0; 5-11)	5	.003
EN	13,1 (5,0; 5-24)	9,7 (4,4; 5-21)	5-9	.000
PN	9,3 (3,9; 5-18)	7,1 (2,6; 5-15)	5-7	.000

*EA=Emotional abuse, PA=Physical abuse, SA=Sexual abuse, EN=Emotional neglect, PN=Physical neglect

Table 3, group differences on AASE-A. Data for AASE-A in individuals with high levels of psychotic experiences (high PE; n=50) and in individuals with low levels of psychotic experiences (low PE, n=91). Data are presented as mean value (standard deviation, SD).

AASE-A subscales	High PE	Low PE	*p*-value
Temptation:			
Negative affect	19,4 (4,3)	11,5 (5,1)	.000
Social positive	17,8 (5,1)	14,1 (5,3)	.000
Physical/other	13,8 (4,1)	9,0 (3,1)	.000
Craving/urging	16,6 (4,7)	11,1 (4.9)	.000
Self-efficacy:			
Negative affect	10,0 (4,7)	16,5 (5,9)	.000
Social positive	11,9 (6,0)	14,5 (5,9)	.019
Physical/other	14.2 (4,4)	18,4 (5,1)	.000
Craving/urging	12,0 (5,3)	16,0 (5,9)	.000

Findings indicate that there may be a large minority among socially stable and psychiatrically non-diagnosed individuals with alcohol use disorders that have a substantial level of psychotic experiences, show elevated levels of childhood adversity and also express greater difficulties in managing their alcohol dependence, not the least to abstain from alcohol. Probably, this is not a clearly delineated group, since apparently neither psychotic experiences, childhood trauma nor difficulties in management of alcohol dependence are distinct categories. However, if the three areas correlate strongly it may be clinically meaningful to associate them.

The probable co-occurrence between these three problem areas may be explained by a feedback loop fueled by efforts in affect regulation on part of the individual, an explanation that can be formulated in both psychological and biological terms (Garland et al., 2013). Childhood adversities may increase the risk for a combination of anxiety proneness (van Nierop et al., 2015) and mentalization difficulties (Fonagy & Bateman, 2016) that call for more powerful and straightforward affect regulation strategies. Alcohol and other substances can fulfill this part effectively in the short run. In the long run, however, this form of self-medication tends to increase anxiety, down-regulate the reward system and cause a non-learning of other, more durable, affect regulation strategies, a process that probably leads to more self-medication, etc. The occurrence of psychotic symptoms may be anxiety driven and/or linked to dissociative processes in combination with the pharmacological effects of alcohol and other substances (Garland et al., 2013; Moskowitz & Heim, 2013; Freeman & Fowler, 2008).

The feedback loop explanation also accounts for the greater difficulties in managing alcohol dependence. The incentives for using substances may be stronger because of the higher level of distress, and anxiety and possible mentalization difficulties may lead to weaker sense of agency and self-efficacy (Bateman & Fonagy, 2006). This probably increases the risk for treatment drawbacks and relapse.

Another possible explanation for the high prevalence of psychotic experiences in this population is simply effects of alcohol withdrawal since the participants were assessed quite shortly after being admitted to treatment; although not in early withdrawal which would have been a stronger confounder. This explanation cannot be fully ruled out, but still alcohol

withdrawal does not explain the higher level of self-reported childhood trauma in the group with high levels of psychotic experiences.

GENERAL DISCUSSION

The aim of the first two studies included in this thesis was to explore patterns and function of substance use in persons with psychosis; in the first study on a descriptive group level and in the second on a personal, individual level. One basic assumption was that substance use has an affect regulating function that interacts with various other affect regulation strategies and psychological processes also relevant in understanding psychopathology, like mentalization/metacognition. The results may suggest that persons with psychosis, in comparison with persons with other types of mental health problems, have a lesser tendency to put substance use in an emotional, self-reflective context, but that there is a great heterogeneity within the group in this respect. A possible interpretation is that affect regulation modality, rather than symptoms/diagnosis, predicts the function and perhaps pattern of substance use, but that severe psychosis is associated with certain affect regulation modalities rather than others. The third study aimed to explore psychotic experiences in a group of socially stable individuals with alcohol use disorders but no other psychiatric diagnoses. A substantial minority of the participants reported elevated levels of psychotic experiences, and results suggest that this was associated with childhood trauma as well as difficulties in managing alcohol dependence, including low self-efficacy concerning abstaining from alcohol in case of craving and various triggering situations. Possibly, this reflects a feedback loop (Garland et al., 2013) where trauma-related anxiety works as a driving force behind both substance use and psychotic experiences, eventually constituting a vicious circle where the subjective experience of control and agency successively gets hampered. This kind of feedback loop may be visualized as in Figure 1.

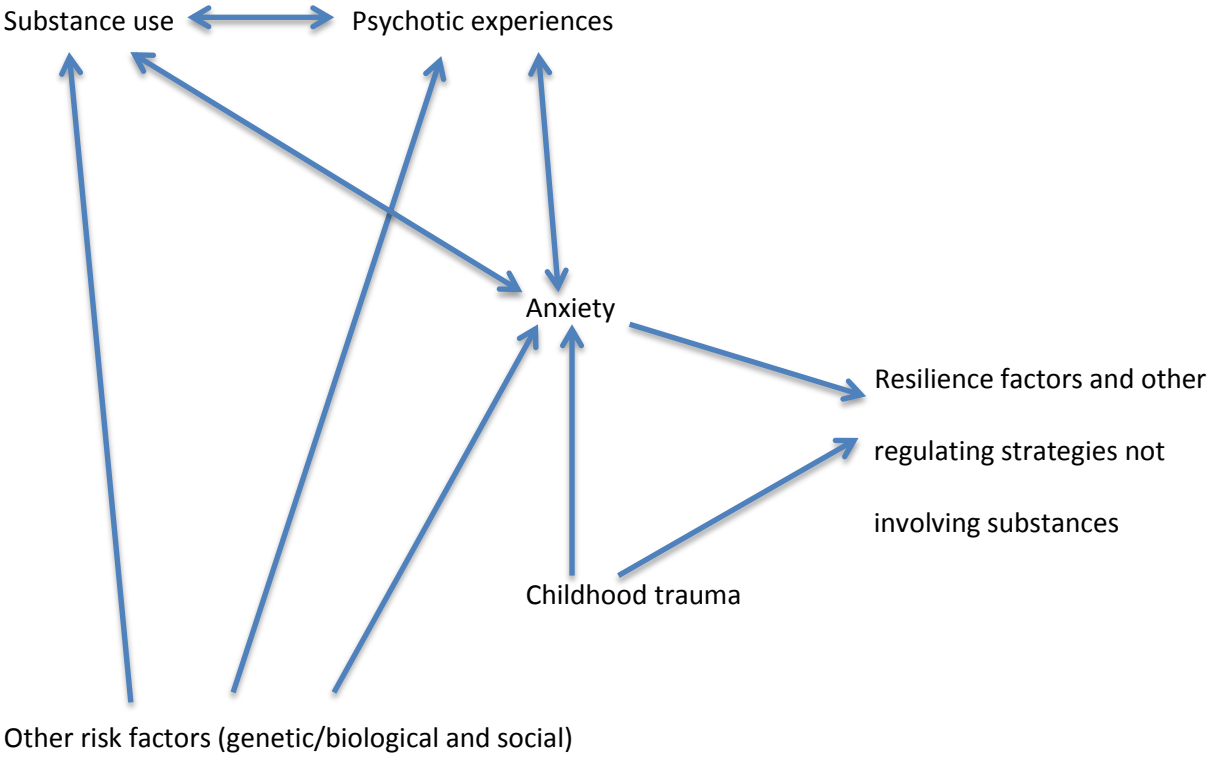

Figure 1. Possible feedback loop between trauma, substance use and psychotic experiences.

Self-medication, affect regulation and psychotic experiences

The results indicate that self-medication is an important factor behind substance use in psychosis, although more in the form of self-regulation or alleviation of dysphoria (Gregg, 2007; Khantzian, 1997), than specific self-medication, as outlined above. Much of the interview material concerned substance use as a way of handling various, often non-specific, forms of distress. However, this might primarily be the case in a segment of persons with psychotic experiences where the reality testing is less affected and the self-image is more integrated, allowing for recognition and ownership of inner states. This may be in line with research findings suggesting a higher functioning in some areas in persons with psychosis and

substance use disorders, in comparison with persons with psychosis alone (e.g. Buckley & Meyer, 2009). Still, persons with more severe psychoses may well develop substance use disorders, but perhaps rather on the basis of social exclusion and lack of protective factors. Then, of course, there is always a possible learning effect involved in the development of substance use disorders that may work irrespective of primary incentive, especially in the absence of protective factors. Many persons with psychosis will probably experience a decrease in anxiety and distress when using substances, possibly providing a strong negative reinforcement (Duncan, 1974). The participants in Study 3, with alcohol use disorders but no other psychiatric diagnoses, that reported high levels of psychotic experiences, also had elevated levels of childhood trauma and difficulties with self-efficacy. This may also suggest a strong affect regulation aspect of substance use, corresponding to the sub-theme "To avoid suffering" as outlined in Study 2. In this group, psychotic experiences may result from a combination of trauma-related anxiety and substance effects, where both factors together and simultaneously affect reality testing. Since these individuals do not have a diagnosis of a psychotic disorder, it is likely that their symptoms in most cases belong to the less severe to intermediate parts of the psychosis spectrum. This may imply less mentalization difficulties than average in persons diagnosed with a psychotic disorder, but more such problems than average in people with no psychotic or other psychiatric symptoms. The relative wavering of self-efficacy in this group may support this assumption, and suggests a predominance of "Concrete approaches" to distress as described in Study 2. This kind of low-to-intermediate level of metacognitive functioning was hypothesized to be associated to a more insisting substance use pattern, including unwieldy difficulties in abstaining.

Models of psychosis and implications for understanding psychopathology

As reviewed above, difficulties in reality testing is usually put forward as the defining feature of psychosis. It was also argued, that human reality testing is based on language and symbolic representation. When speaking of reality testing, it is perhaps most common to think about the surrounding social reality. But the term may also relate to the inner reality, concerning ownership, recognition and differentiation of emotions, thoughts and intentions (Fonagy et al., 2002). The inner reality is represented linguistically as well as the outer; an activity constitutive for the function of mentalization. The three different approaches to distress, outlined in Study 2, may be seen as three ways of relating to, or representing, this reality; roughly corresponding to Peirces categories of Firstness, Secondness and Thirdness, as outlined above (Peirce, 1992).

Since acute psychosis may be seen as a collapse in representation, and since mentalization difficulties (e.g. Sprong et al., 2007) are seen as abundant in, or even a key feature of, psychosis, it is of interest to ask why the study material is this heterogeneous. If psychosis was a fixed phenomenon, we would find a constant deficit in representing both inner and outer reality. This calls for a return to the three different conceptualizations of psychosis reviewed earlier: the disease model, the continuity model, and the structural model.

The traditional *disease model* of psychosis (Kraepelin, 1907; Klerman, 1978) postulates that mental illnesses, as schizophrenia, should be seen as discrete entities with clear boundaries towards normality as well as towards other mental illnesses. In the area studied in this thesis, and considering the results, there seem to be group differences between persons with psychotic disorders and other mental disorders. However, within the group of persons with a

diagnosis of primary psychosis, and not the least on the individual level, it seems hard to overlook that various forms of mental functioning exist simultaneously and that both "psychotic" and "non-psychotic" features exist in the same person, suggesting that it may be more correct to speak of psychotic *processes* than psychotic *individuals*. Of course, it is possible that there is an underlying disease process with a relapsing course, or that the participants due to medical and/or psychological treatment were momentarily or even permanently stable at the time of interview, as is the case with many somatic diseases. However, it should be seen as hypothetical, since such disease processes in psychosis has not yet been specified, and that categorical diagnosis remains increasingly contested (Kotov et al., 2017).

The *continuity hypothesis* and the *stress-vulnerability model* may be used together in interpreting the results of the studies included in this thesis. If a psychosis spectrum (Guloksuz & van Os, 2017) is assumed, it is likely that an individual may be more or less affected by psychotic processes at different points in time, partly depending on current stress factors. This probably holds for individuals with as well as without a diagnosis of a psychotic disorder, differences in habitual state notwithstanding. Probably this also reflects changes in the actual access to metacognitive functions. Substance use can of course be seen as a stress factor increasing the likelihood for psychotic experiences, both momentarily and in more pervasive ways. Hence, the primary question on the individual level will not be if a person has a psychotic disorder or not, but rather how much, in what ways, to what extent the individual is capable of reflecting upon the experiences, and how the interaction between stress and vulnerability factors looks like at a given point in time.

Thinking along the lines of these models, it may also be possible to specify some vulnerability factors that may increase risk for substance use disorders on a group level in persons diagnosed with psychosis (i. e. individuals with symptoms and functional difficulties in the severe end of the psychosis spectrum). Curiously, some of these factors are at the same time seen as good prognostic signs in psychosis, not the least affective symptoms (Oosthuizen et al., 2002; Haro et al., 2011) and relatively high social functioning. It is also possible that *relatively* high metacognitive functioning may be seen as such a factor, as discussed in relation to the sub-theme "Concrete approaches" of Study 2. As discussed earlier, it is considered possible that persons, although with psychosis, that are more active, less withdrawn and more in contact with feelings are more prone to search for solutions, something that of course can be done in constructive as well as destructive ways; sometimes even simultaneously.

Psychoanalytical models of psychosis as a form of *personality organization* or *structure* may be construed in different ways, but strictly interpreted it has at least one thing in common with the traditional disease model, namely the categorical stance: i.e., either you are psychotic or not. As was the case with the disease model, this strict categorical interpretation seems problematic as related to the results presented in this thesis. Anyway, there are similarities between the psychoanalytical models and the thematic structuring of the material in Study 2. The non-articulated approaches correspond mainly with the category of psychosis in the models of both Kernberg (1975; McWilliams, 2011) and Lacan (1956), and the concrete approaches has an affinity with borderline personality organization in Kernberg and lesser so, but perhaps to some extent, with Lacans category of perversion. The reflective approaches, finally, partly correspond to neurotic functioning in the psychoanalytical models. As was discussed in relation to the disease model, this may be considered curious since all three

approaches were found in persons with psychotic disorders. However, the answer may be the same: perhaps it is even here more adequate to speak of psychotic processes than psychotic individuals, at least on a theoretical level. According to such an interpretation, a personality organization or structure is not something that an individual "has", but rather some kind of *position* one may adopt, and from where one relates to oneself and the surrounding world (even if it is of course possible that any given person in practice may be more or less confined to one of these positions). In this line of reasoning, it is possible to view the psychopathological field as a whole as a matter of positions and more or less flexible processes, rather than categories. These thoughts are in line with various theories that conceptualize psychopathological "states" not as actual diseases, but as outcomes of bio-psycho-social self-regulatory processes (e.g. Zubin & Spring, 1977).

Although not normally distributed in the population, but rather dimensionally (Kotov et al., 2017), phenomena conventionally viewed as psychopathological, e.g. anxiety, depression, psychotic experiences and more, should most probably be seen as "normal" parts of human life. For example, anxiety per se can be seen as a parallel to physical pain, a form of reaction with an adequate signaling function that becomes pathological when this function does not work (as in the case with chronic pain). Most psychological treatments addressing anxiety includes exposition for unpleasant feelings which reduces "anxiety for anxiety" and thus hopefully restores the normal function of anxiety. In practice, this will reduce the general feeling of anxiety on part of the individual, but it is neither realistic nor beneficial to completely diminish the capacity of experiencing negative emotions. This would probably be the equivalent of taking away the possibility of physical pain, which obviously is an absurd as well as dangerous goal. The normalizing of anxiety, explicitly in treatment but also in

everyday life, usually requires verbally based strategies, i.e. various forms of self-reflection, in contrast to avoidant behaviour as for example substance use or isolation.

The function of self-reflection (i.e. mentalization/metacognition) has been proposed as a general factor in psychotherapy (Goodman, 2013; Bateman & Fonagy, 2004) and may, given the discussion above, possibly also be seen as a general factor in understanding psychopathology. Of course, verbally based functions may be "hijacked" in various troubling states, as in anxiety-driven catastrophic thinking, depressive rumination and the elaborating of paranoid/delusional systems. In these cases, probably more or less recognizable to most human beings, words do not help and alleviation of distress demands more straightforward methods. Substance use may be such a strategy, but catastrophic thinking, rumination or elaboration of delusions may also be seen as attempt to control the inner world as a means of reducing anxiety (McKay et al., 2007;2008). However, although verbal, these strategies lack in symbolic representation and probably correspond to the "Concrete" or "Non-articulate" approaches, as outlined in this thesis. When symbolic representation works, as in full mentalization (Fonagy et al., 1998), the individual is capable of distancing from and problematizing her own thoughts in contrast to fully "believing in" and seeking confirmation of various imaginations and conclusions. This will most probably limit the effects of various "symptoms" on the health and functioning of the individual.

If, then, the function of mentalization/metacognition is placed as a central factor in understanding psychopathology, it enables *one* way to construct and systematize the field that differs from, although not completely contradicts, both psychiatric and psychoanalytical models as well as it transgresses the nature-nurture debate altogether. It is also compatible with a dimensional view of psychiatric diagnosis (e.g. Kotov et al., 2017). Figure 2 shows

possible correspondences between levels of representation, individual stance towards psychotic experiences, affect regulation modalities, and different functions of substance use as was outlined as sub-themes in Study 2. It needs to be mentioned again, that these three levels or positions should not be taken as categories, and that a given individual does not "have" or belong to any of them. Rather, in line with a stress-vulnerability or continuity paradigm, individuals may have access to one, two or all three positions at different points in time, depending on individual vulnerability, resilience and stress factors.

Level of mentalization (Reflective Functioning) according to Fonagy et al. (1998)	*Sign level (form of representation) according to Pierce (1992):*	*Stance towards psychotic experiences (PEs)*	*Approach to distress (theme 1 in Study 2):* *(possible corresponding psychological state)*	*Relationship to substance as affect regulator:*	*Regulating function of substances (theme 2 in Study 2):* *(possible corresponding substance use pattern)*
Ordinary to high mentalization	Symbol Thirdness	PEs may exist but are recognized as such	Reflective (1.1.) (May tolerate frustration)	Optional, flexible	To feel good (2.3.) (Recreation)
Low mentalization Affect consciousness but not actual reflection	Index Secondness	Ambivalent stance towards PEs resulting in anxiety	Concrete (1.2.) (Acting out, insisting need for ”quick fix”)	Strong (Very close, often fetishistic preoccu-pation)	Primarily to avoid suffering (2.2.), possibly to feel normal (2.1.) (Intense and repetitive, strong need for regulation of negative affect)
Collapse in or absence of mentalization and self-experience	Icon Firstness	Deficit in reality testing resulting in mainly delusional or disorganised thinking	Non-articulated (1.3.) (Psychotic avoidance: delusions and/or experiencing distress as not belonging to oneself)	Weak (”Out of sight, out of mind”)	Incidental need for regulation of negative affect, in that case to feel normal (2.1.) and to avoid suffering (2.2.) (Passive, irregular)

Figure 2. Proposed connection between level of mentalization, psychotic experiences and substance use in reference to the themes of Study 2 (as indicated by the bracketed numbers in the figure).

The question of dual disorders

Substance use disorders, although affecting people with all different types of psychological and social functioning, are commonly defined as psychopathological states as well as included in psychiatric diagnostic manuals (American Psychiatric Association, 2013; World Health Organization, 2011). As discussed earlier, these conditions are also possible to conceptualize as disorders of self- and affect regulation, since an important function of substance use is to change inner states. The co-existence in a person of a substance related disorder and another psychiatric disorder is often referred to as "*dual diagnosis*", "*dual disorders*", or "*comorbidity*". Conceptually, this implicates that the person suffers from two *separate* disorders, theoretically as in the case of somebody with, say, appendicitis and pneumonia at the same time. Even if most practitioners probably will acknowledge an interrelation between the two disorders and not assume them as completely separate, this conceptualization may have effects on clinical situations. It is in line with the disease model of psychiatry, where different disorders are seen as discrete conditions with reasonably clear boundaries between each other and against normality. However, when employing a process-oriented self-regulation model, the two (or more) disorders will not be seen as separate, but more as different *expressions* of regulatory processes. Having two diagnoses does not, then, mean having two *disorders*, but rather that two categorical concepts are needed to describe the behaviour and symptom picture of the person in question. This discussion puts emphasis on the need for integrated treatment of the so called dual disorders; something that is well supported by research (e. g. Mueser et al., 2003), but that may be obstructed when care systems are built on a straightforward disease model, as in somatic care. A more dimensional view on psychopathology would possibly contribute to more patient-focused rather than diagnosis-focused mental healthcare.

Ethical considerations

The studies are approved by the Regional Ethics Review Board in Gothenburg. However, some ethical remarks may be made, not the least since some persons with severe psychosis may have difficulties in providing informed consent, due to problems with communication often following psychosis. The recruitment was made by experienced staff at the outpatient centers involved, and patients assessed to have difficulties in leaving informed consent, or being at risk of developing severe anxiety as a result of the participation, were excluded. No payment, or other means of persuasion, was employed in the recruitment process. The identities of interview participants are virtually impossible to disclose, since the narratives are aggregated into larger themes, and since citations are anonymized. The interviews were conducted by a clinical psychologist with experience of the patient group, who was ready to interrupt the interviews in case of adverse reactions. There are also positive ethical aspects in conducting clinical research about psychosis and substance use, since individuals experiencing such problems (especially those on the severe end of the spectrum) are commonly marginalized in society, and lack economic and social power compared to most other patient groups in mental and somatic healthcare to make their needs visible.

Limitations

The studies included in this thesis have some limitations. The main limitation of Study 1 is the small groups of participants, making the findings difficult to generalize. If a larger study

with additional direct measurements of metacognitive functioning would replicate the findings, the conclusions would be more stable and possible to generalize to a larger extent.

An important limitation of Study 2 concerns recruitment, which took place on three different outpatient units for patients with psychosis. The patients approached were assessed by staff members as stable enough for managing a long interview, and for making informed consent. This means that the most troubled patients of the units were excluded, and that the participants belonged to a relatively high-functioning sub-group, although with a diagnosis of primary psychosis (F2 in ICD-10; World Health Organization, 2011). Perhaps this explains some of the heterogeneity manifested in the material.

Another limitation that concerns both studies is that the persons with psychosis that participated were all men. This has partly to do with the recruitment base, since the unit that contributed with the most participants has about 85% male patients. Anyway, even if there is an actual minority of women in this group, it is an obvious limitation that women are not represented at all in these two studies.

One limitation of Study 3 stems from using existing material not originally collected to address the research questions of the study, something that may have affected both measurements and criteria of inclusion and exclusion. Another limitation is the high number of variables that are correlated to each other, something that increases the risk of Type 1-errors. This is partly, but not entirely, compensated through theoretically based interpretation and analysis of confounders. Moreover, the possibility of controlling for confounding factors was also affected by the fact that the study was based on previously existing data.

Finally, the first two studies have a strong theoretical basis, and Study 2 is conducted in line with theory-driven thematic analysis (Braun & Clarke, 2006). This is mainly seen as strength, since it allows for integrating and discussing the findings in an empirical as well as theoretical context. The reason why it is discussed in this section is that it may possibly increase the risk for confirmation bias. This issue is impossible to exhaust at the moment, and will only be resolved by more research that addresses similar questions, and that may either falsify, or provide a stronger empirical basis for, the interpretations outlined here.

To summarize, this thesis and the included studies should not be seen as providing a fixed result, but rather generate hypotheses and open for new research questions and theoretical development in the area of substance use and mental health problems, where there is still need for more psychological research.

Further research

As noted above, there is a lack of research in this area, not the least concerning mentalization and metacognition in different populations with substance use disorders. Here follows some suggestions for future research that in part builds on the findings presented in this thesis. First, a larger study that replicates Study 1, but also includes direct measurements of metacognitive functioning would make it possible to test the interpretations of the findings, as well as increase the possibility of generalization. Such a study would hopefully allow for assessing both level of mentalization and substance use pattern, making it possible to correlate these areas, something that would be interesting in relation to the findings of both Study 1 and 2. For example, this would allow for testing of the proposed patterns outlined above in the

discussion of Study 2 and in Figure 2, something that was not possible in this study due to the low number of transcripts assessed according to RF and MAS. A related study that would be of interest for the intersection of mentalization, affect regulation and substance use, would be to relate patterns and functions of substance use to attachment styles in different populations.

It would also be valuable with more qualitative studies in the line of Study 2, but addressing other populations with substance use disorders; i.e. persons with non-psychotic mental disorders, persons with no psychiatric conditions except for substance use, women with psychosis, and more. This would possibly lead to a more nuanced understanding of the interaction between substance use and psychological/psychopathological processes in the entire field, and not only in persons with psychosis. Such a study would also create a better balance in this thesis between participants with "primary psychotic" and "primary substance-related" disorders, something that would be useful considered the main aim of exploring the interaction of these two phenomena.

Another research question, not directly related to this thesis, is the matter of metacognitive aspects of substance *dependence*, not the least how the function of expectation and conceptualizing solutions to personal problems may be related to the development of dependence.

Moreover, given the limitations of Study 3 outlined above, there is a need for replication of this study using larger groups, more specific measurements of psychotic experiences, and a structured follow-up at least one year after first referral. There is also need for a qualitative study along the lines of Study 2 but with the inclusion criteria of Study 3; i.e. substance use disorder, relatively stable social situation and no current psychiatric diagnosis. Such a study

would possibly shed more light over the question of interaction between subjective functions of substance use, affect regulation, and psychotic experiences.

Conclusions and clinical implications

One of the basic conclusions in this thesis is something we might already know, but not always take into consideration, neither in healthcare systems nor in everyday life; namely that there are no categorical differences between people concerning mental health. We are all confronting basically the same existential conditions and we all utilize the means of affect regulation that seem accessible and useful in the given moment, large differences in life situation or vulnerability factors notwithstanding. Moreover, most of us sometimes experience various phenomena that may be described as "psychiatric symptoms" and most of us sometimes use substances to affect inner states in various ways. A greater acceptance, and perhaps less fear, of the "psychopathology" in "ordinary people" would possibly lessen the need to separate "healthy" from "ill" and hence decrease stigma towards people considered "psychotic". However, this view does not imply that mental health problems do not "exist" as problems, only that the categorical conceptualization is somewhat flawed. Need for assessment, treatment and (re)habilitation will of course remain, and some clinical implications will be outlined below.

The main topic of this thesis has been the interaction between psychotic phenomena and substance use. Interpreting the results from a process-oriented view, the question of what is the "primary" problem on the individual level becomes less interesting, and focus is rather directed to understand the interplay of various vulnerability-, resilience- and stress factors,

where metacognitive functioning may be seen as a possible resilience factor. Substance use may increase the risk for psychotic experiences, as well as psychotic experiences and other mental health problems increase the risk for substance use to turn problematic. Partly, the association between these phenomena may be understood by using the affect regulation and feedback loop models that have been discussed above, as well as slightly modified on basis of the results of the studies included in this thesis.

Integrated treatment, meaning addressing substance use and other mental health problems at the same time and in the same setting, is considered to have a strong evidence base (e.g. Mueser et al., 2003; Socialstyrelsen, 2015), and is also plausible from the view of seeing "both" types of problems as self-regulation disorders, as outlined in this thesis. However, when established, a substance use disorder also becomes a problem on the behavioural level that need to be addressed specifically, although integrated with other treatment interventions. Perhaps it can be said that substance use disorders need to be treated both on a causal level (exploring the functions of and reasons for substance use) and a behavioural level (concrete addressing of the substance use in itself), something that is more or less done in many psychological treatment models for substance use. Turning specifically to persons with severe psychosis, the picture is similar, where interventions leading towards social and psychological stabilization may lessen the reasons for substance use, as well as there are specific psychological treatment interventions aiming at substance use per se. The recommended interventions (if available) in currently existing care systems are about the same as for other patient groups with substance use disorders, e.g. motivational interviewing, cognitive-behavioural therapy, and more (Socialstyrelsen, 2015; Horsfall et al., 2009). However, it can be problematic to adopt treatment models not initially designed for persons with high degree of psychotic symptoms and a low level of social integration, where a longer period of building

a relationship and enhancing metacognitive functioning may be necessary. This line of thought may help interpreting some study findings indicating a lesser benefit than expected using these methods (Barrowclough et al., 2010).

From the view presented in this thesis, it may be important to explicitly address metacognitive functions, both in assessment and treatment, irrespective of which model is used. Persons with psychosis may differ a lot in these functions, both over time and between individuals, but there should always be a preparation for low functioning in these areas, especially in persons with acute psychosis or difficulties related to avoidance and social withdrawal. To be able to talk about the functions, patterns and subjective pros and cons of substance use, as for instance in motivational interviewing, the patient should be able to differentiate herself from others, to identify inner states as inner states, and to have at least some capability of putting words to such states. In many cases, there will be quite a long period of developing these functions before employing specific techniques. A prerequisite for this kind of work, apart from a general stabilization, is a reasonable trust in the therapist, meaning that this process is largely relational in nature. Without doubt, this kind of work already exists in treatment practice with persons with psychosis and substance use disorders, although perhaps not explicitly conceptualized. However, there are a few treatment models that focus on mentalization and metacognition, like Mentalization-Based Treatment (MBT; Bateman & Fonagy, 2004; addressing borderline personality disorder) and Metacognitive Reflection and Insight Therapy (MERIT; Lysaker & Dimaggio, 2014; primarily addressing schizophrenia). Many principles of these treatment models would probably be useful also for individuals with psychotic symptoms and substance use disorders.

While speaking of treatment models designed for persons with *psychosis*, it seems reasonable to evoke the diagnostic issues discussed above. There may be advantages in organizing treatment modalities for large populations along the lines of, at least some, diagnostic categories, as in having separate care systems for persons with psychosis. However, obviously all persons with psychosis are not the same, and a diagnosis should never be used as shorthand for individual assessment or lead to exclusion of the subjective experience of the patient. What matters in psychological treatment is *functioning* rather than diagnosis, something that becomes observable only in speaking and interacting with the patient.

Another clinical issue concerns that persons with psychosis and substance use disorders in a number of areas seem to constitute a somewhat high functioning sub-group within the total population with psychosis. As discussed earlier there are reasons to believe that this may include metacognitive functioning, since capacity to confront the reality of personal distress may lead to a suffering that is hard to bear and therefore calls for quick remedies, i.e. substance use. Hence, there is a possibility that enhancing metacognitive functioning in treatment leads to an increased risk for substance use, as well as for depression and self-harm, at least periodically. This may be seen as a "bottleneck effect" in the treatment process, perhaps responsible for some "negative therapeutic reactions" where a seemingly good work ends up in various kinds of acting out that may be hard to understand on part of the clinician. However, the enhancing of metacognitive capacities is of course also necessary for developing more sophisticated forms of self-reflection that in the long run hopefully will serve as a protective factor against problematic substance use and enhance overall mental health. Therefore, this possible risk should not be seen as a reason not to work with metacognitive growth, but rather it highlights the importance of knowledge and monitoring of these functions along with the treatment process.

The insight that psychotic experiences are not confined to individuals diagnosed with psychotic disorders, or necessarily being "early signs" of such disorders also have implications for treatment. Psychotic experiences, although sometimes in less pervasive forms, do probably affect a larger population without than with such diagnoses, not the least persons with substance use disorders or other mental health problems, but also people without or with minimal such problems. In many cases, there may be no need for treatment, but when causing distress and/or functional problems psychotic experiences need to be addressed irrespective of diagnoses and social situation. The findings of Study 3 suggest that there may be a considerable minority of persons in regular substance use treatment, that are affected by psychotic experiences alongside with other mental health problems not being the primary incentive of seeking care. Individuals with these experiences may also be more likely to have experienced traumatic events, and may have larger difficulties in managing their substance use problems, probably due to greater needs for regulating negative affect. This calls for broader assessment procedures, including asking about life history, mental health and subjective functions of substance use, as well as more integrated treatment services, not only for those individuals with greater functional disabilities.

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