Patient Engagement and the Effectiveness ofBehavioural Activation in Inpatient Psychiatry

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Dissertation presented at Uppsala University to be publicly examined in Gunnesalen, Psykiatrins hus, Ingång 10, Akademiska Sjukhuset, Uppsala, Friday, 24 November 2017 at 09:00 for the degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in Swedish. Faculty examiner: Professor Mikael Landén (Institutionen för neurovetenskap och fysiologi, sektionen för psykiatri och neurokemi, Göteborgs Universitet).

Abstract

Psychiatric inpatient services provide important care for individuals with serious mental health problems. Studies show that passivity and social disengagement prevail in inpatient settings, and the transition to outpatient care is associated with increased suicide risk. Behavioural Activation is an intervention that targets depression by increasing personally meaningful activities. Preliminary research shows that Behavioural Activation can be used in inpatient settings.

The overall aim of this thesis was to evaluate the feasibility and effectiveness of Behavioural Activation for individuals in psychiatric inpatient settings, and in the transition between inpatient and outpatient care.

Study I investigated inpatient activities and associated experiences. Study II was a pilot single-case experimental study of the feasibility and effectiveness of inpatient Behavioural Activation. Study III, was an interrupted time series evaluation of nursing-adapted Behavioural Activation across three wards. In Study IV Behavioural Activation in the transition from inpatient to outpatient care was compared to Supportive Therapy in a randomised controlled trial with 64 participants. The primary outcome was that of self-reported depressive symptoms and participants were followed up 12 months after treatment completion.

Doing nothing was the most common inpatient activity, along with meal related activities. Passive and solitary activities were associated with negative distress and reward profiles. The preliminary evaluation of Behavioural Activation found high patient and staff satisfaction, and four of six participants showed improvement in depressive symptoms and functioning. After nursing-adapted Behavioural Activation was implemented on three wards, engagement increased. Avoidance decreased but later returned to baseline levels. Depressive symptoms and global clinical severity did not improve after nursing-adapted Behavioural Activations was introduced. The randomised controlled trial found that adding Behavioural Activation in the transition to outpatient care had a small, short-term, advantage over Supportive Therapy for self-reported depression.

In conclusion, inpatient disengagement is associated with distress, and Behavioural Activation is a feasible intervention in inpatient settings that can be used by both trained therapists and nursing staff to increase patients’ treatment engagement. Behavioural Activation seems useful in targeting depressive symptoms in the transition from inpatient to outpatient care, a period associated with increased risk of suicide and clinical deterioration.

Keywords: Inpatient Mental Healthcare, Hospital Psychiatry, Behavioural Activation, Behaviour Therapy, Mental Health Nursing

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Dedicated to my beloved Åke, Olle and Sofia
List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.


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<td>GAF</td>
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<td>The Treatment Credibility Scale</td>
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Introduction

Individuals with the most severe mental health problems may need intensive around-the-clock treatment and care during acute deterioration. This is referred to as psychiatric inpatient or hospital treatment. Five or six decades ago, inpatient care was the primary service modality for most individuals with major mental health problems. With the psychiatric reform and the closure of most mental health institutions, the responsibility for mental health services has been transferred to outpatient treatment centres [1]. Despite the development of better treatments and outpatient services, inpatient treatment is still a critical component for many individuals [2]. However, the number of inpatient beds and the length of stay have decreased drastically [3; 4] and current inpatient services are often criticised for not providing high quality care and for failing to engage patients in treatment [5; 6; 7].

During the same era as the psychiatric reform, the virtues of the evidence-based medicine movement were embraced by clinical psychology [8]. This has resulted in a number of evidence-based psychological treatments for most major psychiatric disorders. These treatments have primarily been developed and evaluated for outpatient use, whereas the inpatient milieu is very different. Thus it is important to study whether psychological interventions are feasible and if their effectiveness is maintained when transported into the inpatient setting.

Inpatient psychiatry

Patient characteristics

The criteria for psychiatric inpatient admission as a function of what treatment alternatives are available, differ from one location to another [2]. Commonly cited reasons for admission involve increased symptom acuity, impaired self-care and a need for crisis stabilisation and safety management [9; 10; 2]. All major psychiatric disorders are represented within acute psychiatry and the population is heterogeneous [11; 12; 13].

The severity of psychiatric problems among inpatient admitted individuals has notably increased over time, both in Europe and the US [14; 10]. The hospitalised patient group is characterised by a higher level of risk and severity compared to outpatients, as indicated by more complex psychiatric histories,
more severe symptoms, difficulties adhering to treatment, lower social functioning and increased suicidality [15]. The rate of inpatient suicide has been described as “disturbingly high” with a pooled estimate of 676 admissions per suicide [16], and the risk of violence is considerably higher among individuals admitted for inpatient care as compared to individuals in outpatient care [17].

Depressive symptoms

Typically, individuals admitted to inpatient mental health care have moderately severe depressive symptoms, even in the absence of a depression diagnosis [18]. Examples of depressive symptoms are low mood, diminished interest/pleasure in activities, change in appetite/weight, insomnia/hypersomnia, psychomotor agitation, loss of energy, feelings of worthlessness/guilt, diminished ability to concentrate, recurrent thoughts of death, or suicidal thoughts or behaviour [19].

Individuals with increased depressive symptoms more often have a prior history of admission [20]. Depressed mood, along with feelings of guilt, inadequacy, and hopelessness, is associated with an increased risk of inpatient suicide, both during admission [21] and after discharge [22; 23]. Depression is also associated with increased risk for post-discharge, non-fatal self-harm [24]. Personality disorders are common in inpatient settings [25; 26], and considering that individuals with co-morbid personality disorders have a doubled risk of poor depression outcome [27], admitted patients may be at greater risk of poor response to treatment. Less favourable outcomes among inpatients are also indicated by smaller psychotherapy effects on depression in hospitalised samples, compared to outpatient samples [28].

Inpatient treatment and care

The typical length of stay at inpatient units ranges from one to several weeks [29; 30; 12]. The treatment and care provided in this brief time period often revolve around rapid stabilisation, diagnosis, psychopharmacologic treatment, discharge planning and keeping patients safe [9]. There is limited research evidence supporting the overall effectiveness of inpatient treatment [2], and relatively little is known about when inpatient care versus a less restrictive treatment is indicated [31]. In fact, it has been argued that research on inpatient care has almost disappeared [32]. In this situation there is relatively little guidance concerning best inpatient practices. Available Textbooks and guidelines generally recommend the use of psychosocial interventions in addition to typical medical treatment [33; 34; 10].
The nursing staff is the largest professional group in inpatient care, and mental health nursing is a mainstay of inpatient services. It involves establishing working relationships with patients, maintaining safety, and educating and empowering patients [35]. The research concerning mental health nursing has progressed over the last decade, and many promising nursing interventions exist that can be used to improve important aspects of inpatient care, such as patient engagement [36], patient experiences [37], effective use of resources [38], and reduction in coercive measures [39]. Most studies are however preliminary and there is a need for further empirical evaluation [40].

Clinical guidelines also recommend the use of psychological interventions in inpatient care [41; 42]. Meta-analyses show that adding psychotherapies to inpatient care is associated with a small effect size difference, compared to the usual treatment for depression [28] and mixed disorders [43], and adjunctive psychoeducation for schizophrenia can reduce the length of stay and readmission rates [44]. The most recent systematic review of inpatient psychotherapies for depression, identified 12 controlled trials in total [28]. Adding any psychotherapy to inpatient care was associated with a robust but small effect. The number needed to treat analysis indicated six patients must be treated with adjunctive psychotherapy in order for one to benefit sufficiently [28]. However, studies are relatively few, heterogeneous, and study-quality is variable. When considering inpatient psychotherapy for depression it is important to note that in very severe depression both psychotherapy and pharmacotherapy often fall short, whereas electroconvulsive therapy has consistently been demonstrated to have greater short-term effects [45; 46].

Since the publication of these meta-analytic studies, a number of controlled studies concerning psychosocial inpatient interventions have been published. For example, psychologist-led team formulation based on evidence-based psychological treatment principles has been shown to improve patient care experiences [47]. A recent study, including over 1000 participants from 16 wards, showed that nurses with training in evidence-based psychosocial interventions can improve the perception of the therapeutic environment among detained patients [37]. Occupational therapy has also been evaluated within rehabilitation inpatient units. One of the largest trials to date found no additional benefits of occupational therapy on activity engagement [48].

Many of the above cited studies are not from acute inpatient contexts and many have been conducted in settings specifically focused on one primary diagnosis, as opposed to the typically heterogeneous and preliminarily diagnosed inpatient population. Also, most studies have involved skilled and experienced therapists, whereas psychosocial training is often scarce in the real-world inpatient setting. Thus there is a need for further evaluation of both feasibility and effectiveness of psychological interventions as they are transported into inpatient settings.
Inpatient treatment engagement

Patient engagement is a key priority in all health care [49] and possibly particularly important in mental health inpatient settings where engagement is challenging, as indicated by the common use of compulsory care [50] and increased levels of non-adherence [15]. As many as one third of the patients in longer-term inpatient settings are deemed difficult to engage in activity, and around half of those admitted require assistance with some or most activities [51]. A limited proportion of the admission time is spent in therapeutic interaction [7] and organised care activity [52]. Much, if not most, of the time is spent in social disengagement and passivity [53; 7]. One in four patients does not participate in any structured activities on acute wards [52]. This does not apply to structured physical activities only and many patients do not engage in social interaction at all [54; 7]. This may have detrimental consequences, as different forms of disengagement in the inpatient setting are associated with increased symptoms [55], suicidal ideation [56], aggression [57], absconding [58], disturbed behaviour and lower patient rated quality of care [52]. Individuals with more depressive symptoms and a depression diagnosis are particularly prone to experience boredom during admission [59]. This may have important clinical implications considering the fact that boredom during admission predicts suicidal ideation [56]. The impact of activity on mental health is further shown in studies of medical conditions where there is a correlation between activity restriction and depression \( r = .45 \) [60]. The prevailing disengagement and the detrimental consequences indicate a need for developing and studying interventions that can be used to support and increase engagement in general psychiatric acute care.

A number of factors can be hypothesised to contribute to the disengagement described above. First, low levels of activity among individuals with serious mental illness are not only seen in inpatient settings but in other milieus as well [61; 62]. Admitted individuals also report more interpersonal problems, as indicated by higher levels of relationship breakdown, compared to non-admitted individuals [15]. Furthermore, hospitalised individuals have high levels of personality disorders [25; 26], and individuals in inpatient wards report lower levels of perceived working alliance compared to outpatients [63]. On the other hand, therapeutic interactions may also be hampered by non-patient factors in the ward context. Many wards offer very little structured activity for patients to engage in to begin with [52]. Nurses spend, at most, 50 percent of their time interacting with patients [7], perhaps due to time constraints [64] and administrative chores [65; 66]. Increasing staff numbers does not necessarily equal more time spent with patients [67; 68] and there may be other, underlying, factors that are important to consider, such as reliance on custodial [69] and observational traditions [70]. Importantly, inpatient staff members value and believe in the importance of interaction, but feel hindered
by organisational short-comings [71]. Taken together there is a need for development and evaluation of interventions that can be integrated into the existing inpatient context characterised by limited time, training and organisational barriers for therapeutic interaction.

The transition from inpatient to outpatient care

The time period following discharge from psychiatric inpatient care is perceived as challenging by many individuals [72]. Stressors that existed prior to admission re-emerge, and new stressors occur as a result of the hospitalisation. Many patients are readmitted repeatedly [73] and shortly after discharge [74]. The suicide risk is particularly high early in the admission period [75] and in the months after discharge [76]. Among those with suicidal ideas and behaviour, the risk after discharge is 200 times that of the global rate [77]. The period after discharge is also associated with increased risk of self-harm [24].

There has been an increasing emphasis on discharge planning and interventions that transcend the inpatient and outpatient gap [34; 78]. Available transitional interventions vary greatly in format and content. A recent systematic review concluded that psychoeducation, needs assessment, medication reconciliation/education, transition managers and communication between care providers, may improve transition outcomes [79]. Cognitive Behavioural Therapy (CBT) has been used across the transition, or immediately after discharge. In one study, depressed patients were randomly assigned to adjunctive CBT, social skills training or standard treatment only [80]. CBT and skills training were initiated during inpatient treatment and continued after discharge. The CBT and skills training interventions were associated with similar and significantly better long-term symptomatic outcomes. In another study, an aftercare programme including CBT was compared to standard care and was found to reduce readmission and bed days in a mixed psychiatric patient sample [81]. Sustained recovery has also been found, if CBT skills learned during admission are continuously supported after discharge in contrast to standard care [82]. In summary, intervening in the risk-filled discharge period appears meaningful, but the existing research is limited and there is a need for further controlled studies of feasibility and effectiveness of psychological interventions in the transition phase.

Behavioural Activation

One of the most well-established psychological treatments for depression is Behavioural Activation (BA). In BA, the therapist collaborates with the patient in order to understand what behavioural patterns trigger and maintain low
mood. Subsequently the patient is supported in identifying and scheduling personally meaningful activities with the potential to improve mood and to break the cycle that maintains depressive symptoms.

A brief history
BA dates back to the early learning- or behavioural theoretical models of depression that emerged in the 1960s and 70s [83; 84]. As Cognitive Therapy (CT) [85] increased in popularity during the 1980s, behavioural interventions were deemphasised and subsumed into the cognitive model of depression. The interest resurfaced when a dismantling study showed that behavioural components used in CT were as effective as full-scale CT in treating depression [86]. Since then, BA has become a widely used therapy with a number of different published manuals available [87; 88; 89; 90; 91] and an increasing number of research studies [92]. One important reason for this popularity is likely the fact that BA is relatively parsimonious compared to other, more elaborate, treatment models [88]. However, the theoretical underpinnings of the behavioural approach can be quite complex and are summarised below.

A behavioural theory of depression
BA is based on a learning theoretical understanding of depression [93]. The importance of non-behavioural causal factors in depression development, such as genetic vulnerabilities, is recognised in the learning model [94; 95], but the main focus is on the contribution of depressogenic behavioural processes. More specifically behavioural processes can be defined as “behaviour-environment relationships that evolve over time in a person’s life” [96] (p.329). Behavioural repertoires in depression include both decreased activity (e.g., less goal-directed behaviour and problem solving) and increased activity (e.g., more withdrawal and rumination) [93]. The environment is purported to contribute to such behavioural repertoires over time, by strengthening some responses under certain conditions and weakening others, through the process of reinforcement. Reinforcement is the introduction (positive reinforcement) or removal (negative reinforcement) of any stimulus following a given behaviour, serving to increase the frequency of that behaviour in the future. Thus, a person may be engaging in behaviour that appears to serve no function in the current life situation. But when considering how the behaviour has evolved over time, one may be able to see how the repertoire has been strengthened by the context, and has served functions for the individual, previously or occasionally. One contextual feature with particular relevance to depression, is decrease in response contingent positive reinforcement [83; 84]. As depicted in Figure 1, decreased positive reinforcement is associated with increased negative mood. As positive reinforcement for healthy behaviour decreases and mood is depressed, engagement in healthy activity decreases. Importantly, the
initial mood response to changes in reinforcement is not the same as a clinical depression. However, unhealthy behavioural responses (e.g., maladaptive withdrawal, avoidance etc.) to these changes can, if lasting, maintain a vicious cycle of less positive reinforcement and more depressed mood. Eventually, this cycle may come to dominate the everyday life of an individual to the degree that it is labelled clinical depression.

Reinforcement is a complex process of exchange between an individual’s behaviour and context. For example, as a person receives less response contingent reinforcement he or she may be inclined to attend less to the outside environment and focus inwards [83]. Also, the reduction of response contingent reinforcement can lead to generalised passivity, such that the behavioural repertoire is narrowed and few active attempts at gaining contact with reinforcements are made at all. Aversive stimulation may lead to excessive avoidance and escape repertoires, thus precluding contact with potential positive reinforcements. As a person engages in depressed behavioural repertoires this may elicit maladaptive support from significant others. Even though well-intended, some help could potentially serve to maintain low levels of natural reinforcement for a depressed individual [90; 97].

**Figure 1.** A behavioural model of depression, adapted from Manos, Kanter, & Busch (2010) [98]. Arrows depict increase or decrease. R+ = positive reinforcement, and R- = negative reinforcement.

A fictional case is presented below to illustrate the clinical meaning and interpretation of the technical terms used in the model.

*Ralph had always felt different, shy, and uncomfortable initiating contact with others. After he met his girlfriend who later became his wife, he lost contact with his old friends, except for a friend with whom he had opened a small shop. When his wife died at an early age, many of his daily routines and activities were interrupted as they had revolved around their relationship (i.e. loss of positive reinforcement). Consequently, his mood was lowered, both by the loss of his wife and his loss of routines. One year later, it was revealed his trusted business partner had stolen money from their store. Ralph had always avoided conflicts when possible and coped with this particularly aversive situation by avoiding work and the associated emotions (i.e. negative reinforcement). The reduced contact with his beloved work (i.e. loss of positive reinforcement) worsened Ralph’s mood and made him anxious about the future. In response*
to the down-spiralling situation he withdrew from most social situations. Instead, he spent most of his time ruminating, as a way of trying to figure out how he had ended up in such a dreadful situation (i.e. negative reinforcement) but mostly ending up with a list of personal flaws and worsened mood. The increasing social isolation disrupted his sleeping and eating habits along with most other routines (i.e. loss of positive reinforcement for most healthy behaviour). In this new life context, consisting of little positive reinforcement for engagement in activity, increasing negative reinforcement for avoiding work, and increasing levels of depressed mood he started to experience depressive symptoms. Ralph lost the sense of interest for hobbies, lost his appetite, slept poorly, felt hopeless and had feelings of guilt and shame, i.e. developed signs of a clinical depression.

The BA model is compatible with other theoretical perspectives on depression, and behavioural processes do not refute other causal factors [93]. This is probably even more important in the hospital setting, as more severe forms of depression have been found to be genetically determined to an even larger degree [99]. The interplay between behavioural processes and genetic predispositions has been discussed in BA literature [92], and both behavioural and biological models recognise the importance of environmental events (or stressors) in depression development [100]. Both models also emphasise the importance of how depressed individuals interact with reinforcement or rewards in their environment [101; 84], and the relation between activity and mental health [102; 103]. BA has been shown to improve functioning in neural reward related structures [104] and to normalise other depression related structures in a functional magnetic resonance imaging study [105]. BA is also compatible with cognitive theory and treatment, and as previously noted, BA techniques have been used extensively within the cognitive framework from the very beginning [85]. Cognition is not, contrary to belief, disregarded subject matter in behavioural models of depression. Cognition is conceptualised as private behaviour that can be understood using the principles of learning theory [106; 94]. For example, ruminating is seen as private behaviour that maintains depression by serving as avoidance behaviour [97]. BA is neither incompatible with psychodynamic or existential perspectives, and has been suggested to potentially aid such therapeutic processes [107].

Behavioural Activation treatment

From the psychopathology model of depression, a number of treatment strategies have been derived. The purported mechanisms of these interventions are depicted in Figure 2. In essence, BA targets the behavioural patterns and contingencies that drive and maintain depression. Activities that have the potential to evoke positive reinforcement are increased, and alternatives to avoid-
ance behaviour are explored. The increased positive reinforcement (and decrease in negative reinforcement) is believed to improve mood and, if sustained and generalised, relieve symptoms of depression.

A systematic review of BA treatment manuals showed that two components are employed consistently across all versions of BA; activity monitoring and activity scheduling [108]. Activity monitoring is typically prescribed early in the treatment process to establish a baseline assessment of activities. Monitoring allows identification of treatment targets and patterns of mood-activity associations. Activity scheduling involves planning and scheduling of activities to be performed between sessions. The purpose of scheduling activities is to increase an individual’s contact with positive reinforcement. This is typically done by carefully tailoring activities with regard to the difficulty of the activity. The therapist assesses if the individual has the necessary skills, and makes sure the activity is in alignment with the individual’s personal goals and values. The use of techniques beyond activity monitoring and scheduling varies between BA versions and may, in some manuals, only be used if indicated by the individual assessment [109]. Examples of additional strategies are skills-training, values assessment, relaxation training, contingency management and procedures targeting verbal behaviour or avoidance [108].

Importantly, BA is not the same as “doing more” or being “constantly active” in order to block negative experiences. Activity scheduling in BA is always based on an ideographic assessment of how specific activities affect mood and other important consequences for the individual. BA for some individuals may actually entail “doing less” of certain activities, especially if the assessment indicates that a frequent activity is mainly serving an avoidance function, or if it is problematic for the person in some other sense. The patient and therapist need to pay careful attention to the balance between activity and rest, especially in inpatient settings where some individuals may be at risk of over-stimulation and admission may have been preceded by high activity and disrupted routines.

Apart from prescribing behavioural techniques, manuals also provide instructions for the general therapeutic stance and emphasise the importance of
the therapeutic relationship [90; 97]. These instructions comprise information about active listening and validating experiences, and the therapeutic relationship has gained increasing attention in the BA literature [109]. In spite of the differences between manuals, the BA treatments have more in common than not [110] and the particular strengths of each version have been synthesised into a recent manual [109].

Empirical evidence for Behavioural Activation theory and treatment

The empirical support for the psychopathology mechanisms specified within the BA-model varies between its parts. Contextual changes, including adverse events like interpersonal loss, are well-established precipitants of depression [111; 112; 113]. Furthermore, chronic stress is associated with depression in both animals [114] and humans [115], and depressive episodes of individuals with severe melancholic depression may be particularly influenced by minor stressors [116]. Prolonged adversity may also lead to learned helplessness or unconditioned passivity [117]. The relationship between reinforcement and instant mood changes has been demonstrated in a number of studies (for a review see [108]). A few studies indicate that reinforcement is also involved in the development of depression [118; 119; 120; 121], but measuring the impact of reinforcement on long-term development of a disorder, rather than instant mood changes, is complicated [98]. Empirical studies indicate that avoidance is associated with depression [122; 123] and a recent study found that currently depressed individuals displayed more avoidance than individuals in remission [124]. Remitted individuals still had higher levels of avoidance than non-clinical individuals, indicating that avoidance may be a vulnerability factor for depression.

A total of four, somewhat overlapping, meta-analyses of behavioural treatments for depression, including BA, have been published. Overall, BA has proved to be no less effective than one of the most well-established depression treatments, CT, and more effective than non-active control conditions [125; 126; 127; 128]. One meta-analysis compared BA to brief supportive therapy and found BA to have an advantage [126]. No differences have been found between different versions of BA [128], or BA and pharmacological treatments [127]. This overall general equivalence of different active psychological treatments for depression has also been noted in meta-analyses that don’t investigate BA specifically but psychological treatments in general [129; 130; 131; 132]. Again, non-directive supportive therapy has been found to be less effective than other treatments [133]. Equivalence of efficacy has also been found when psychotherapy and pharmacotherapy for depression are compared [134; 135; 136]. Findings also suggest that psychotherapies are effective in

20
patients with severe depression [137] and severity does not moderate differences between pharmacotherapy and CBT [138]. Combined treatments are associated with greater effects [131; 139; 140] and pharmacotherapy and psychotherapy contribute largely independent from each other and about equally much to the greater effects [140].

Empirical studies of the purported treatment mechanisms of BA are scarce [92] and methodologically complicated to conduct [141]. In support of the proposed mechanisms, a number of smaller studies have found that activation often co-occurs or precedes depression improvement [142; 143; 144; 141]. The BA component has been found to be as effective as the full scale CT for depression [86]. Most of the effects of CT are observed early in the treatment when BA is used [145], and one study reported a causal relationship between compliance with assigned activities and depression improvement [146]. On the other hand, conflicting findings, with no association between activation and outcome [147], and cognitive change predicting BA outcome [86], have also been reported. What role physical activity has as a possible mechanism in BA, as opposed to the proposed importance of reinforcement, is another question evoked by recent studies finding equal effectiveness of BA and physical activity in depression [148; 149].

Inpatient Behavioural Activation
Relative to outpatient psychological treatment of depression, less is known about feasibility and effectiveness in inpatient contexts. This is true for BA treatments as well. In Table 1 a total of 17 BA studies from inpatient and similar intensive treatment settings, are reviewed. The majority of studies report positive findings in one or more study variables, but firm conclusions about feasibility and effectiveness in acute inpatient settings are limited by small sample sizes, the small number of studies from acute general psychiatric settings, and the limited number of controlled studies. Table 1 only includes studies explicitly labelled BA and studies using activity scheduling procedures. However, other behavioural inpatient treatments also exist. For example, Acceptance and Commitment Therapy is a treatment closely related to BA that has been found to have promising results in controlled trials [150; 151; 152; 153] and feasibility research [154] regarding individuals hospitalised for psychosis.

A number of features make BA potentially feasible in inpatient settings, despite limited empirical evidence. First, the central role of activity scheduling in BA may help target the iatrogenic effects of inpatient passivity. Second, a controlled trial showed that BA is more effective than CBT in patients with greater depression severity, and as effective as pharmacotherapy [155]. Fewer participants were extreme non-responders in BA compared to CBT [156]. Furthermore, self-reported use of BA strategies was the only treatment component that predicted depression improvement, when treatment strategies were
### Table 1. Studies of Behavioural Activation in inpatient and intensive care settings.

<table>
<thead>
<tr>
<th>Author, Randomised Controlled Trial (RCT)</th>
<th>N</th>
<th>Therapist &amp; manual</th>
<th>Individual/group (n sessions)</th>
<th>Findings on depression and other outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General psychiatry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De Jong [157]</td>
<td>30</td>
<td>Therapist^{d}</td>
<td>Both (20-25)</td>
<td>(+) depression, social outcomes, (ns) observer-ratings</td>
</tr>
<tr>
<td>Fereidooni [158] RCT</td>
<td>24</td>
<td>-</td>
<td>Group (7)</td>
<td>(ns) depression</td>
</tr>
<tr>
<td>Gollan [159]</td>
<td>144</td>
<td>Mix^{c}</td>
<td>Open group</td>
<td>(+) positive affect, engagement (ns) negative affect, avoidance</td>
</tr>
<tr>
<td>Iqbal [160]</td>
<td>16</td>
<td>Nurse^{a}</td>
<td>Open group</td>
<td>(+) usefulness</td>
</tr>
<tr>
<td>Hopko [161] RCT</td>
<td>25</td>
<td>Therapist^{b}</td>
<td>Individual (6)</td>
<td>(+) depression</td>
</tr>
<tr>
<td>Taube-Schiff [162]</td>
<td>41</td>
<td>Nurse^{c}</td>
<td>Open group</td>
<td>(+) boredom (+) Staff and patient experiences</td>
</tr>
<tr>
<td><strong>Geriatri</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand [163]</td>
<td>53</td>
<td>Therapist^{a}</td>
<td>Group (8)</td>
<td>(mixed) depression</td>
</tr>
<tr>
<td>Clignet [164] RCT</td>
<td>1</td>
<td>Nurse^{a}</td>
<td>Individual; (7)</td>
<td>(+) qualitative findings</td>
</tr>
<tr>
<td>Snarski [165] RCT</td>
<td>50</td>
<td>Therapist^{b}</td>
<td>Individual (8)</td>
<td>(+) depression, (ns) Quality of life</td>
</tr>
<tr>
<td>Meeks [166]</td>
<td>5</td>
<td>Therapist^{a}</td>
<td>Individual (10)</td>
<td>(+) usefulness, depression</td>
</tr>
<tr>
<td>Meeks [166] RCT</td>
<td>20</td>
<td>Therapist^{a}</td>
<td>Individual (10)</td>
<td>(+) activity, depression</td>
</tr>
<tr>
<td>Meeks [167] RCT</td>
<td>82</td>
<td>Mix^{a}</td>
<td>Individual (10)</td>
<td>(+) diagnostic recovery at post, (+) symptoms/functioning</td>
</tr>
<tr>
<td><strong>Substance Use disorder</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daughters [168] RCT</td>
<td>44</td>
<td>Therapist^{b}</td>
<td>Group (6+2)</td>
<td>(+) depression, anxiety and satisfaction</td>
</tr>
<tr>
<td>Banducci [169]</td>
<td>12</td>
<td>Therapist^{b}</td>
<td>Individual (5)</td>
<td>(+) smoking and depression</td>
</tr>
<tr>
<td>Banducci [170]</td>
<td>3</td>
<td>Therapist^{b}</td>
<td>Individual (5+2)</td>
<td>(+) smoking and depression</td>
</tr>
<tr>
<td>Magidson [171] RCT</td>
<td>58</td>
<td>Therapist^{b}</td>
<td>Individual (5)</td>
<td>(+) treatment retention, activation, (ns) depression</td>
</tr>
<tr>
<td>Daughters [172] RCT</td>
<td>263</td>
<td>Therapist^{b}</td>
<td>Group (5-8)</td>
<td>(+) abstinence, (ns) depression</td>
</tr>
</tbody>
</table>

^{(+)} = positive outcomes, ^(-) = negative outcomes, ^{(ns)} = non-significant outcomes, ^{(mixed)} = mixed outcomes, ^{a} manual by Levinsohn et al [173], ^{b} manual by Lejuez et al [90; 91] ^{c} manual by Martell et al [89]. ^{d} Multiple manuals, Open group = group is open for attendance.
compared in hospitalised individuals with more severe depression [174]. Third, training in psychosocial interventions is scarce in inpatient settings [175; 176], and BA is arguably a parsimonious treatment that may be more amenable to dissemination than more elaborate treatments [86; 88]. Three controlled outpatient trials show that BA conducted by mental health workers without psychotherapy training, can deliver BA with greater effects on depression than usual care [177; 178] and the same effects as CBT delivered by experienced therapists [179]. Fourth, BA has been adapted and evaluated for different co-morbidities, populations, age groups [92], engagement problems [159], and may thus be feasible in the heterogeneous inpatient population. Lastly, the contextual understanding of depression in BA may be associated with greater staff willingness to help patients, compared to models that portray problems as stable and internal [180]. [181]. In summary, although promising, there is a need for studies that test the feasibility and further evaluate the effectiveness of BA applied in acute inpatient settings and individuals with heterogeneous psychiatric problems.

Synthesis

The availability of inpatient care has decreased over time, but is still an important service for the group of individuals with the most severe and challenging psychiatric problems. Patient disengagement and suboptimal discharge practices prevail in inpatient settings, and this may have detrimental consequences for patient outcomes. Psychosocial interventions may present a viable means for targeting disengagement and depressive symptoms. Behavioural Activation is an empirically established treatment with promising features for, and findings from, inpatient milieus. However, the research is limited and the feasibility and effectiveness of inpatient adaptations to acute psychiatry remain to be studied.
Aims

The overall aim of this thesis was to evaluate the feasibility and effectiveness of Behavioural Activation for individuals in acute psychiatric inpatient settings, and in the transition between inpatient and outpatient care.

The specific aims of this thesis were:

- To investigate the frequency of admitted individuals’ different activities during inpatient admission, and the reward and distress experiences associated with these activities. Another aim was to examine if low reward, solitary and passive activities would predict later distress. (Study I)

- To conduct an initial investigation of the mechanisms, feasibility, and effectiveness of inpatient Behavioural Activation for depressive symptoms in individuals with different psychiatric disorders. (Study II)

- To investigate changes in engagement in, and avoidance of, the treatment milieu among admitted individuals, before and after the implementation of a nurse-adapted Behavioural Activation group intervention. The aim was also to investigate changes in the nurse-patient relationship, self-reported depressive symptoms and global clinical severity. (Study III)

- To investigate the effectiveness of Behavioural Activation in the transition from inpatient to outpatient care, as an adjunct to standard care for individuals with significant depressive symptoms, compared to Supportive Therapy. The aim was also to investigate possible differences in secondary outcomes, treatment process, preference and adverse events. (Study IV)
Methods

Setting
The participants in the studies were recruited from four acute general psychiatric wards in Dalarna County, Sweden. The wards were locked hospital-based, adult, general psychiatric units. Admitted patients had mixed psychiatric diagnoses, mixed sex and mixed legal status (i.e. voluntary or compulsory care). All admissions were acute, meaning they were non-planned, and lower-intensity alternatives were deemed insufficient. Staff consisted of a medical team of psychiatrists, residents and interns. The nursing team consisted of nurses and nursing assistants. A paramedical team with a social worker, psychologist and occupational therapist was also available. Psychiatrists, nurses and the paramedical team were often understaffed and bank psychiatrists and nurses were sometimes used.

In routine care, patients meet with the psychiatrist at different intervals during admission and with the paramedical team if requested by the patients themselves or other professionals. Nursing staff interaction with patients is occasionally scheduled but more often consists of informal interaction and brief supportive talks. Nurses provide information, assist in planning important care activities and medical procedures. The only scheduled organised nursing activity, with the exception of meals and medical procedures, prior to the implementation of study interventions, was a daily walk and occasional brief morning gatherings. One ward offered occupational therapy groups.

Participants
The participants in all four studies were recruited from the inpatient units described above. All participants were at least 18 years old and were able to read and speak Swedish on a level that required no translator. All eligible patients were informed about the studies, both verbally and in writing. Verbal and signed consent was required for participation in all four studies. The plan was to recruit patients from all four wards in all four studies, but due to organisational problems Studies II and III only included participants from three wards. The results of the recruitment procedures (i.e. number of participants, attrition and characteristics of samples) are presented under the section Summary of results and Table 5.
Participants in Study I were recruited during predetermined days spread over the course of two months or more per ward (see Study designs section for detailed information). All admitted patients were approached and participant data was eligible for analysis if the participant had been admitted for more than 24 hours, if scheduled to remain on the ward the entire day (brief leaves were accepted), and if the participant was considered able to complete self-report instruments reliably.

In Study II, participants were recruited after screening the admitted patients. Patients were eligible if they had a total score of 20 or more on the Montgomery-Åsberg Depression Rating Scale (MADRS-S) [182]. Patients who were unable to participate in the intervention due to upcoming discharge, other intensive treatment or significant confusion (e.g., dementia, intoxication, acute psychosis), were not eligible. The Mini-International Neuropsychiatric Interview (M.I.N.I) [183] was used to establish mood, anxiety, eating, and substance use disorders in Studies II and IV. Clinicians used the general diagnostic criteria drawn from the Structured Clinical Interview for DSM-IV Personality Disorders [184]. Borderline personality disorder and avoidant personality disorder were assessed with the self-report SCID-Screen. This instrument contains a number of statements and patients are asked to answer yes or no. The SCID-Screen has shown good agreement with the SCID-II interview when using adjusted cut-offs [185].

In Study III participants were, as in Study I, recruited on predetermined days. All patients present on the ward were approached and data was eligible for analysis if the participant had been admitted for more than 24 hours and if the patient was considered able to complete self-report instruments reliably.

In Study IV, patients 18 to 60 years were eligible to participate if they had an admission score of 20 or more on MADRS-S and a subsequent repeated score above the same cut-off point at least two days later. Participants were also required to have been deemed by the ward psychiatrist to have continuing need for specialised psychiatric care after discharge. Non-eligibility criteria were acute mania, acute psychosis, significant confusion, mental retardation, a primary eating disorder, ongoing treatment that could interfere with the study therapy (e.g., psychotherapy), or a substance use disorder requiring acute treatment as indicated by a primary clinical diagnosis, or ≥ 20 on the Alcohol Use Disorders Identification Test (AUDIT) [186]. The diagnostic procedure from Study II was replicated in this study.
Study designs

A range of different study designs were employed and they are listed in Table 2.

Table 2. Procedures and designs of Studies I-IV.

<table>
<thead>
<tr>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study design</td>
<td>Observational</td>
<td>Single case experimental</td>
<td>Interrupted Time Series</td>
</tr>
<tr>
<td>Sample size</td>
<td>102</td>
<td>6</td>
<td>525 (289 unique)</td>
</tr>
<tr>
<td>Intervention</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Comparison</td>
<td>-</td>
<td>Baseline comparison</td>
<td>Baseline comparison</td>
</tr>
<tr>
<td>Assessment</td>
<td>Hourly during 1 day</td>
<td>Daily and hourly. Before</td>
<td>8 assessment points at baseline, directly</td>
</tr>
<tr>
<td>points</td>
<td></td>
<td>and after baseline and</td>
<td>after intervention introduction, and at 6-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>treatment.</td>
<td>month follow-up.</td>
</tr>
</tbody>
</table>

*Unique = the sample-size when only using the first assessment from each individual.*

Study I was an observational study of self-assessed activities and concurrent experiences of reward and distress, over the course of one day per participant. Participants were asked to record their activities and experiences in a structured diary. This kind of study design is sometimes referred to as Ecological Momentary Assessment because it allows close investigation of individuals in their milieu, with assessments conducted in close proximity to events as they unfold.

Study II employed a Single-Case Experimental Design (SCED) across subjects [187; 188]. BA was added to standard care. As such it did not include any control condition. Instead, earlier assessment points are used as controls for later ones. In a SCED design each participant acts as his or her own control by providing repeated assessments, and assessments prior to the treatment can be compared to later ones. The term *multiple baseline* implies that the intervention is introduced after different lengths of repeated measures for each participant. This allows observation of the timing of effects in relation to when an intervention is introduced. Participants were randomly assigned to different baseline lengths. They did not start the study at the same time, and the design was thus *non-concurrent.*
Study III employed a design somewhat similar to Study II, but instead of investigating change in individuals over time, entire wards (i.e. all available patients who consented) were assessed in an Interrupted Time Series (ITS) design [189]. At baseline, eight assessment points were spread out over at least eight weeks (see Figure 3). Then the intervention was rolled out during a period of approximately three weeks, consisting of preparations and training and no assessments were conducted. After training, the intervention ran continuously and the assessment procedure was repeated twice; directly following the implementation of the intervention and 6 months after the baseline assessment was concluded (follow-up). This procedure was repeated for the three participating wards. Research designs such as the multiple baseline SCED and the ITS have both been advocated as important practical alternatives to randomised efficacy trials when interventions are disseminated in complex real-world settings [190].

<table>
<thead>
<tr>
<th>Before implementation (pre)</th>
<th>Training and implementation</th>
<th>After implementation</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment points 1-8 (&gt; 1 week apart)</td>
<td>Intensive training period (approximately 3 weeks)</td>
<td>Assessment points 1-8 (&gt; 1 week apart)</td>
<td>Assessment points 1-8 (&gt; 1 week apart)</td>
</tr>
<tr>
<td>Ward 1 1 2 3 4 5 6 7 8</td>
<td>Observational training, training on site, discussions, reading manual and listening to recordings, practice.</td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>Ward 2 1 2 3 4 5 6 7 8</td>
<td></td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>Ward 3 1 2 3 4 5 6 7 8</td>
<td></td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
</tbody>
</table>

![Figure 3. The study design and assessment points of Study III.](image)

Study IV was a single blind randomised controlled pragmatic trial. The trial was planned in accordance with the CONSORT guidelines [191], and was registered in advance at www.clinicaltrials.gov [192]. Participants were randomly assigned to 8-12 sessions of BA or a Supportive Therapy (ST). A computer-generated randomisation list (block sizes four to eight) was created by an external source, the Uppsala Clinical Research Centre. Participants were allocated (1:1) to adjunctive BA or ST. The randomisation list and block-size was concealed from the research team and handled by a non-affiliated staff. In order to control the masking of assessments, clinicians were asked to indicate if the allocation had been revealed during the assessment procedures. If not, clinicians were asked to guess the allocation of each patient they interviewed. A crossed therapist design was used, where the same therapists provided both treatment conditions.
Interventions

Studies II, III and IV included interventions. These interventions were all based on BA, except the control condition in Study IV. The interventions had been adapted to target different challenges and consequently the interventions had considerable differences. Intervention characteristics are listed in Table 3.

Table 3. Interventions in Studies II, III and IV.

<table>
<thead>
<tr>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Individual</td>
<td>Open group</td>
</tr>
<tr>
<td>Setting</td>
<td>Inpatient</td>
<td>Inpatient</td>
</tr>
<tr>
<td>Therapists</td>
<td>Psychologist (MSc), Nurses and nursing assistants as co-therapists</td>
<td>Nurses and nursing assistants</td>
</tr>
<tr>
<td>Training</td>
<td>Standard training</td>
<td>Intensive on-site training</td>
</tr>
<tr>
<td>Treatment integrity check</td>
<td>Manual</td>
<td>Staff-rated use of strategies</td>
</tr>
<tr>
<td>Sessions</td>
<td>10 (2 daily)</td>
<td>2 daily sessions open to all admitted patients</td>
</tr>
<tr>
<td>Intervention content</td>
<td>Traditional</td>
<td>Nursing adapted</td>
</tr>
<tr>
<td>Specific adaptations</td>
<td>Co-therapist nurses, in-vivo training on ward</td>
<td>Nursing adaptations</td>
</tr>
</tbody>
</table>

MSc = Master of Science, Standard training = typical training days with didactics and role-play, Traditional = in accordance with well-established manuals.

The interventions in Studies II and IV were performed by mental-health professionals with a pre-existing degree in CBT, formally trained in BA before the studies. The interventions in these studies entailed traditional BA components, with some inpatient modifications. First, considering that admitted individuals often present with a wide range of clinical and social problems, therapists were instructed to use BA strategies to target a wider array of problems than depression alone. However, the BA-model was emphasised and therapists were not to add other components. For example, therapists could address anxiety related avoidance, as is typically done in behavioural exposure treat-
ment, however, therapists were instructed to use only the BA rational for targeting avoidance when doing so. BA and exposure therapy has been integrated before [193].

The overall BA structure used in Studies II and IV is depicted in Figure 4. It was adapted from a BA manual that integrates different BA versions [109] and was tested in a pilot-study [194]. Three phases of therapy are depicted; early phase, middle phase and late phase. In the early phase, the first sessions involve history taking, and providing patients with a rationale for how mental health problems and depressive symptoms can be understood with the help of a behavioural perspective. Activity monitoring is used to identify examples from the patient’s life and to learn more about the relationship between activity and mood, as well as other symptoms. Activity monitoring is also used to identify targets for change. A rationale for the intervention is provided. Patient’s values and goals are assessed. Activity scheduling is initiated and an activity-hierarchy is used to coach the patient in starting with less demanding activities, and gradually increasing the level of difficulty. In the middle phase, the therapist and patient evaluate whether activity scheduling has been sufficiently effective in terms of improved mood. If improvements are noted the therapist encourages the patient to continue to schedule activities and progress through the activation-hierarchy. If, on the other hand, activity scheduling has not been successful, the reasons for this are assessed and problems are targeted with an appropriate strategy. In the last phase of therapy, gains are summarised and consolidated. Therapist instructions are faded to allow more self-prompting. Relapse preventive strategies are discussed and planned.

The interventions in Studies II and IV had important differences despite sharing the overall principles. The Study II intervention was shorter but more intensive as sessions were conducted twice daily. In-vivo testing of strategies on the unit was possible and nursing staff were engaged as co-therapists in order to integrate the intervention with the inpatient care routines. In Study IV, BA was adapted for the transition period between inpatient and outpatient treatment. Sessions ran once or twice weekly and were, if possible, scheduled at the outpatient treatment centre in order to reinforce activities outside the hospital and allow generalisation of new skills. Therapists were encouraged to focus specifically on challenges related to discharge and return home.

The nursing-adapted BA intervention in Study III was modified to a greater extent. The intervention was tailored to inform the daily nursing care on the ward. A nursing staff manual with written and audio recorded material was produced. The main target of this manual was to increase patient engagement in the inpatient treatment and nursing care. The intervention entailed discussion and normalisation of disengagement. Patients were encouraged to identify their own disengagement behaviours as well as engagement strategies. Activity monitoring was used to help patients identify associations between mood, engagement and activity in their daily life on the ward. The intervention was based on the manual used in Studies II and IV, but was simplified, and
included components described in a previous study of inpatient Behavioural Activation [159].

Figure 4. Overview of treatment components and process in Studies II and IV. The figure has been adapted from Folke et al., 2015 [194].

The ST intervention in Study IV was based on a non-published manual (2012) by Professor Michael Sacks (Weill Cornell Medical College) and Professor John C Markowitz (Columbia University College). Everything but the treatment content mimicked the BA condition. The ST manual described standardised elements of an eclectic supportive therapy. The primary components of ST comprised a non-directive stance and a focus on non-specific therapeutic interaction and techniques that convey interest, concern and understanding to the patient. The ST manual explicitly instructed therapists to abstain from BA strategies. Versions of this supportive manual have been described elsewhere [195] and used in empirical studies [196; 197].
Different methods for ensuring therapist adherence to intervention manuals, so called integrity, were used. Therapist manuals and patient handouts were produced to increase structure. Training and supervision was provided to aid therapist learning.

Instruments and measures
Studies used a range of instruments and measurements pertaining to different clinically relevant areas. They are described below and listed in Table 4.

Depressive symptoms
The MADRS-S [182] was used to assess self-reported depressive symptoms. It contains nine items each rated from 0 (not at all) to 6 (completely) and total scores range from 0–54 with high scores representing more depressive symptoms. It has high test–retest reliability (.80 –.94) [182] and patient ratings overlap considerably with the physician ratings on the interview MADRS [198] and correlate significantly with the Beck Depression Inventory [199]. The clinician rated MADRS [200] was used to supplement the self-report version. This is a 10-item instrument, rated as the MADRS-S on a scale from 0 to 6. Nine of the ten items correspond with the MADRS-S and one item is an observer rating of apparent sadness. The MADRS correlates ($r \geq .80$) with the well-established Hamilton Depression Rating Scale (HDRS) in measuring depression severity and treatment response [201].

Activity and engagement
A structured self-report diary with free-text entries for activities was used to assess activity. Every hour was rated categorically as social vs alone and passive vs engaged. Hours were also rated in terms of how rewarding they were and in terms of distress level on a scale from 1 to 10. Study II included a diary with hourly ratings of engagement and depressive mood, both on a scale from 1 to 10. Higher scores in diaries indicated greater reward, engagement, distress and depressive mood.

The Behavioural Activation for Depression Scale – Short Form (BADS-SF) [144] was used to assess overall activation and avoidance. It is a nine item self-report instrument. Items are rated from 0 (not at all) to 6 (completely) and total scores range from 0–54 with high scores representing more activation and less avoidance. The BADS-SF has good psychometric properties with an internal consistency of $\alpha = .82$ [144].

The Checklist of Unit Behaviour (CUB) was used to assess activation and avoidance in relation to the inpatient treatment milieu. In the CUB, hospitalised patients are asked to rate their engagement in personal activities (e.g.,
getting out of bed, maintaining hygiene, eating, socialising), and prescribed treatment activities (e.g., attending scheduled activities, talking constructively with the treatment team, planning the treatment and discharge) offered within the acute psychiatric inpatient milieu. The scale is divided in two, with nine items assessing engagement behaviour (CUB-Approach) and seven items assessing avoidance behaviour (CUB-Avoidance). Each item is rated on a scale from 0 (not at all true) to 4 (very true). The CUB-Approach ranges from 0 to 36 with high scores representing greater engagement, and the CUB-Avoidance ranges from 0 to 28 with high scores representing greater avoidance. The CUB has good internal consistency (.79 - .93) [202].

A single item nurse-rating was used to assess patient engagement and avoidance, the Staff Rated Engagement (SRE). It ranged from 1 (constantly avoidant) to 7 (constantly engaged).

In order to assess therapeutic relationships the 12-item Working Alliance Inventory (WAI) [203] was used. Items are rated from 1 (never) to 7 (always), and total scores range from 12 to 84 with high scores representing greater alliance. The internal reliability of the WAI is good in both inpatient and outpatient samples (.80) [63]. In Study III the WAI was reworded slightly to better fit the working alliance between the patient and the staff over all. The WAI has adequate psychometric properties [204] and consists of three subscales measuring different aspects of the relationship between the patient and the clinician; 1) agreement on goals of treatment (WAI-goal), 2) agreement on how to achieve the goals (WAI-task), and 3) the development of a personal bond (WAI-bond).

Feasibility and integrity

Patients’ perception of treatment credibility was assessed with the Treatment Credibility Scale (TCS) [205]. It contains 5 items each rated from 0 (not at all) to 10 (very much), and total scores range from 0–50 with high scores representing higher credibility. Patients’ satisfaction with treatment was measured following treatment, using a Client Satisfaction Questionnaire (CSQ-8) [206]. The eight items of the CSQ-8 are rated from 1 to 4, and total scores range from 8–32. High scores represent greater satisfaction. Nursing staff perceptions of a BA approach were measured with a simple question (I believe BA is a useful approach for inpatient settings) rated on a scale from 0 (not at all) to 10 (completely). They were also asked to indicate possible barriers to the use of the BA approach independently of the research team in routine care. Treatment attrition and retention were also considered measures of feasibility.

Treatment integrity, or adherence, was assessed indirectly in Study III. A nursing staff self-rating instrument was developed for the study, the Behavioural Strategies Instrument (BSI). It asked staff to rate how often they used ten different behavioural strategies on a scale from 1 (almost never) to 4 (almost always).
Table 4. Instruments and measures used in studies I-IV.

<table>
<thead>
<tr>
<th></th>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depressive symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MADRS-S</td>
<td>All points</td>
<td>All points</td>
<td>All points</td>
<td>All points</td>
</tr>
<tr>
<td>MADRS</td>
<td>-</td>
<td>All phases</td>
<td>-</td>
<td>Pre, post, follow-up</td>
</tr>
<tr>
<td><strong>Activity and engagement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diary</td>
<td>All points</td>
<td>All points</td>
<td>-</td>
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<td>BADS-SF</td>
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<td>All phases</td>
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<td>Pre, post</td>
<td>Sessions 3, 6 and 9</td>
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<td>SRE</td>
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<td>Pre, post</td>
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<tr>
<td><strong>Feasibility and integrity</strong></td>
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<tr>
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<td>Post BA</td>
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<td>X</td>
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<tr>
<td><strong>Secondary outcomes</strong></td>
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<td>Pre, post, follow-up</td>
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<td>CGI-S</td>
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<td>All phases</td>
<td>Pre, post</td>
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<tr>
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<td>-</td>
<td>Pre</td>
<td>-</td>
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<tr>
<td><strong>Adverse events</strong></td>
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<td>Self-harm</td>
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<td>Readmission</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Pre, post, follow-up</td>
</tr>
</tbody>
</table>

All points = instrument used at all assessment points, All phases = instrument used at the turn of each study phase, X = used at least once, for outcome measures see abbreviations list, * = instruments intended to be used but dropped due to low interrater agreement during assessor training, ^= Assessed, but not within this thesis. Instrument names in the entirety are available in the Abbreviations section of the thesis.

In Study IV, sessions were audio recorded and assessed for integrity. The Quality of Behavioural Activation Scale (QBAS; Dimidjian S, University of Colorado, personal communication) was used to assess therapist fidelity to BA. A total score from 14 items from the QBAS was used (those pertaining to therapist competence) as well as an overall rating of therapist skill-level. All items are rated on a scale from 0 to 6 with higher scores indicating greater...
integrity. Seven items were added to assess ST integrity. Items were based on a brief scale used by the original manual authors in previous research [195], and they were rated on the same 0 to 6 scale producing a total score from 0 to 42.

Secondary outcomes
The EuroQol (EQ-5D) [207] was used to assess health-related quality of life. The EQ-5D asks patients to rate their health problems in five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression), on a scale from 1 (no problems) to 3 (severe/extreme problems). Raw scores were converted into an EQ-5D index value (EQ-5D-index) ranging from -.594 to 1.0 with greater values indicating better health-related quality of life [208]. The second part of the instrument provides a visual analogue scale (EQ-5D-VAS) graded from 0 (worst possible) to 100 (best possible), and patients are asked to indicate their current health status.

The Clinical Global Impression Scales (CGI) [209] were used to obtain clinician ratings of global clinical severity (CGI-S) and improvement (CGI-I). The CGI-S ranges from 1 (normal, not at all ill) to 7 (extremely ill). The CGI-I ranges from 1 (very much improved) to 7 (very much worse).

The Global Assessment of Functioning (GAF) [19] was used to assess global functioning. Clinicians indicate the patient’s level of functioning on a scale from 1 to 100 with lower scores indicating more severe impairment. A self-rated version of the GAF [210] was also used. This self-report GAF is a valid complement to the clinician rated version [210; 211]. The Sheehan Disability Scale (SDS) [212] was used to assess functional impairment in three life domains (disability in work, social life/leisure, and family life/home responsibilities). Each item is scored by the patient on a scale from 0 (not at all) to 10 (very severe). The SDS has good internal consistency and construct validity [213]. A total score was obtained by summing the three items. The number of diagnoses using the M.I.N.I. was also used as an outcome measure.

Adverse events
Deliberate non-suicidal self-harm and suicide attempts were assessed by clinical assessors in Study IV. Readmissions were recorded from medical charts, along with Emergency Room (ER) visits and admissions to the Intensive Care Unit (ICU) that required psychiatrist consultation.

Additional measurement information
Study IV required clinical assessors to achieve interrater agreement on clinician assessments. Due to lack of agreement on the CGI-scales during assessor training, and due to very high levels of missing sick-leave and employment
data, these outcomes were not used in the study as planned in the trial protocol [192]. The self-report instruments used during treatment in Study IV were completed online. At assessment points before and after the treatment, they could be completed online or using paper and pencil. Research shows that different modes of administration can be used interchangeably without bias [214].

Analysis
All analyses were performed using IBM SPSS versions 22-24. For statistical significance an alpha level of .05 was employed in all studies.

In Study I participants’ reports of activity types were allocated to 10 major categories, defined by the first author, after a review of the entered data. These categories were; (i) doing nothing (i.e. spending time in the room, dayroom, or corridor with no activity apart from pacing, sitting, or lying down); (ii) sleeping; (iii) professional contact (i.e. talking to any kind of professional on the ward); (iv) meal (i.e. breakfast, lunch, or dinner); (v) media use (i.e. television, computer, radio); (vi) self-care (i.e. hygiene activities, cleaning, relaxation, paying bills); (vii) recreational activity (i.e. crossword puzzles, handicrafts); (viii) short leave (i.e. going to the shops, taking a walk); (ix) informal contact (i.e. talking to another patient or a visitor); and (x) smoke/coffee (i.e. drinking coffee in the lunch area, smoking in designated ward area). Assessments from independent mental health professionals were used to assess reliability of categorisation. The number of times each activity category was summed for each participant and the differences in occurrence, were analysed. The features of the activities were also analysed (social vs alone and passive vs engaged). Dependent t-tests were used to analyse differences in activity experience (i.e. levels of reward and distress) between activities. In order to determine the temporal association between activities and distress, a generalised estimating equation was used.

In Study II visual inspection of data was supplemented with statistical methods. For clinical significance of change, the Reliable Change Index (RCI) [215] was used, a cut-off of 50% reduction in MADRS-S and MADRS scores, and clinician ratings of much improved or very much improved on the CGI-I. The magnitude of change between phases was also measured using the Non-overlap of All Pairs [216]. It is a nonparametric calculation of non-overlap, or effect size, between phases. The timing of change was determined using the RCI described above. This may prevent the detection of smaller changes and was supplemented with ipsative z-scores to determine direction of change [143]. Cross-lagged correlations were calculated to determine the correlation between repeated process and outcome measures [217]. Adherence to assessments was reported for each instrument and assessment. Missing responses to individual items were unusual and such assessments were not used. No data
was imputed. Considering that analysis in single-case research is on an individual level, sample size was not determined through power-analysis and thus six participants was considered sufficient as an initial test of feasibility and preliminary effectiveness.

In Study III a segmented regression analysis model [189] was used to analyse differences within and across phases for the CUB and MADRS-S data. Segmented regression analysis estimates three key parameters: 1) the slope (or trend) within each phase, 2) the change in intercept from pre to post, from pre to follow-up and from post to follow-up, and 3) the change in slope across the mentioned study phases. The presence of autocorrelation was tested. The data-set included both dependent and independent data, i.e. multiple assessments of some individuals and others participating only once. This violates the assumption of independence of data and the segmented regression was repeated using only the first assessment point of each participant. This is referred to as the unique individuals sample (n = 289). Other measures were aggregated according to the phase at which they were collected, and phase differences were tested with parametric or non-parametric tests depending on normality of data. A proportion of the self-report instruments (3-8%) had missing responses (> 2 items missing) and were excluded from the analyses. Data was found to be missing at random (Little’s MCAR: $\chi^2 = 45.5$ to 136.2, $p = .15$ to .69). Participants with single missing items were few and substituted with scale means in accordance with the original CUB-article [202] and considering that items within scales were significantly correlated. Given that this study did not investigate change for individuals over time but rather the change in three wards using repeated measures, we were not able to conduct a traditional power-analysis of sample size. Instead, a minimum of eight assessment points per study phase is considered necessary in order to have the power to estimate the regression coefficients [189].

In Study IV a total of 64 participants was considered necessary for inclusion based on an a priori analysis, based on prior research [161] taking into consideration attrition in a pilot study [194]. A linear mixed model analysis was used with the intention-to-treat sample. This approach uses all available data and is preferred to univariate or multivariate analysis of variance [218]. For continuous outcome measures, the models included the effect of group belonging (BA vs ST), time, and the time × group interaction. In the main analysis covariates were not included as no variables were selected a priori, and analysing imbalance is not recommended by the CONSORT statement [219]. However, considering that differences between the BA and ST groups were visible at baseline, a secondary analysis was conducted specifically for this thesis (not in the manuscript). The secondary analysis included testing of baseline imbalances using independent t-tests and $\chi^2$ tests, and repeating the mixed model analysis for the primary outcome (MADRS-S) with imbalanced variables as covariates. A secondary analysis was also conducted for clinician rating instruments, where the unmasked interviews were removed.
and the mixed model analysis was conducted only for data that was collected under masked conditions. Assessments with missing item-responses within instruments were few. When this occurred, assessments were not used because the proportion missing exceeded 20% of the instruments’ items. Cohen’s d between group effect sizes were calculated using estimated means. Standard deviations were calculated from the standard error. Differences in change scores were divided by the pooled standard deviations. Effect sizes 0.20–0.49 were interpreted as small, 0.50–0.79 moderate, and ≥ 0.80 large [220]. Remission was defined as < 7 on the MADRS-S and < 10 on the MADRS as suggested in previous research [221], and not fulfilling the criteria for depression according to the M.I.N.I. Responder was defined as a 50% reduction in total score, compared to baseline, on the MADRS-S and the MADRS respectively. In addition, both remission and response required an absence of adverse events. Group differences in remission and response rates were analysed with logistic regression.

Ethics

The studies were approved by the regional ethical review board in Uppsala, Sweden. When changes were made to study plans, amendments were completed and approved. All participants received verbal and written information and provided written informed consent.
Summary of results

Participant recruitment, characteristics and attrition

The characteristics of the included participants in the studies are displayed in Table 5. The majority of participants in all studies were female (56.3% - 66.6%) and mood disorders were the most common primary diagnostic category. The median length of stay was assessed in two studies and ranged from 18.5 to 24.0 days with highly skewed data due to some patients having extended admissions beyond 100 and 200 days.

Table 5. Participant characteristics in studies I-IV.

<table>
<thead>
<tr>
<th></th>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>102</td>
<td>6</td>
<td>525</td>
<td>64</td>
</tr>
<tr>
<td>Age, M (SD)</td>
<td>38.3 (15.5)</td>
<td>36.0 (16.5)</td>
<td>41.4 (19.1)</td>
<td>34.1 (12.3)</td>
</tr>
<tr>
<td>Female %</td>
<td>57.8</td>
<td>66.7</td>
<td>61.7</td>
<td>56.3</td>
</tr>
<tr>
<td>Median length of stay</td>
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<td>-</td>
<td>24.0</td>
<td>-</td>
</tr>
<tr>
<td>Diagnoses (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood disorder</td>
<td>30.3 p</td>
<td>100.0 a</td>
<td>34.5 p</td>
<td>98.4 a</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>14.7 p</td>
<td>83.3 a</td>
<td>25.5 p</td>
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</tr>
<tr>
<td>Personality disorder</td>
<td>19.6 p</td>
<td>33.3 a</td>
<td>13.0 p</td>
<td>75.0 a</td>
</tr>
<tr>
<td>Other disorders</td>
<td>23.5 p</td>
<td>33.3 a</td>
<td>12.5 p</td>
<td>32.8 a</td>
</tr>
</tbody>
</table>

* = primary diagnosis assessed with structured diagnostic assessment, a = numbers include both primary and co-morbid diagnoses, Other disorders = any other psychiatric disorder not listed in prior categories.

In Study I, a total of 102 (45.7%) of 223 approached patients consented to participate. A total of 53 (23.8%) patients declined participation, and 23 (10.3%) did not read or speak Swedish. Of the patients who consented, 40 (17.9%) were unable to complete the assessments reliably, and five (2.2%) quit after one to two hours of recording. In Study I, when the included sample was compared to non-included patients they were younger ($Z = 3.09, p < .001$),

In Study II, a total of 55 patients were screened for eligibility. This included all available patients on each ward on the day of inclusion. The reasons for non-eligibility were MADRS-S < 20 (n = 4), significant confusion (n = 5), language (n = 1), prompt discharge (n = 23), or other intensive treatment (n = 10). A total of 83.3% attended all 10 sessions.

In Study III, 525 of all 1126 admitted patients were included (46.6%). A total of n = 163 declined to participate, n = 51 had been admitted for less than 24 hours and thus could not provide data on the CUB-instrument, as it asks patients to rate their engagement during the last 24 hours, n = 172 were on extended leave, n = 50 did not read or speak Swedish, and n = 158 ratings were deemed unreliable (consent was uncertain, responses were unclear or values were almost completely missing). When included participants where compared to the total patient population on the wards, they had longer admissions ($Z = 12.88; p < .001$), were older ($Z = 3.1; p = .002$), and were more often diagnosed with personality disorders ($\chi^2 = 46.22, p < .001$).

In Study IV, a total of 1008 patients were screened for eligibility. The large number of screened patients was due to screening all admitted patients from the therapist’s catchment area on all wards each time one patient was to be included. Admission time being too short was the most common reason for non-eligibility (42.0%). A total of eight of those finally approached declined participation. A total of 64 patients were included with 32 randomly allocated to BA and 32 allocated to ST. There were no differences between BA and ST participants in terms of length of admission ($Z = .97, p = .33$), number of completed therapy sessions ($Z = .38, p = .70$), or attrition rates ($\chi^2 = .41, p = .52$). The mean duration of therapy was 12.7 weeks (SD = 4.4) and 84.4% completed BA treatment, and 78.1% completed ST treatment. There were no differences in the proportion of patients in BA or ST who received their preferred therapy (assessed at baseline) ($\chi^2 = .31 - .78, p = .38 - .58$). Clinicians were asked to indicate if they were kept masked as to what treatment each individual had received. The proportion of unmasked assessments varied from 7.7% to 26.9% and there were no differences between BA and ST assessments. Clinicians were also equally successful at guessing the allocation of masked assessments for BA and ST participants.

### Depressive symptoms

In Study II, five of six participants showed gradual improvement in self-reported depression during BA, as indicated by visual inspection, ipsative z-scores and reliable change index. Non-overlap of All Pairs indicated strong
effects in four, and moderate in two participants. Two of Six participants decreased MADRS-S total scores by more than 50% compared to their baseline score. This pattern was mostly paralleled by clinician rated depression trajectories. Diary mood ratings were more variable and only one participant improved with a strong effect size. Also, one participant displayed possible improvements during baseline.

In Study III there were no differences in self-rated depression scores either within (slopes) or between (slopes or intercepts) when analysing data with segmented regression.

In Study IV, MADRS-S scores decreased from baseline to therapy completion and 12-month follow-up for both BA (p<.001) and ST-participants (p<.001). MADRS-S scores decreased more for participants allocated to BA compared to ST at therapy completion (EM Δ= 6.58, p =.03, d = .38), see Figure 5. There was no difference at either the 6- or 12-month follow-up (12-month EM Δ= 4.70, p = .16, d = .25). The difference in self-reported depression was not replicated by findings in clinician rated depression (Post EM Δ= 4.60, p = .14, d = .26). At post, the proportion of participants allocated to BA were more often categorised as responders compared to ST (Odds Ratio = 3.67, 95% CI = 1.02-13.14.). There were no other differences between BA and ST in response or remission rates at any other assessment points.

![Figure 5](image.png)

*Figure 5.* Estimated means for participants in the Behavioural Activation and Supportive Therapy conditions in Study IV, at different assessment points. 95% confidence intervals are displayed. MADRS-S = Montgomery-Åsberg Depression Rating Scale, self-report version.
A secondary analysis of Study IV findings showed that the ST and BA groups were imbalanced in 3 of 51 variables assessed at baseline. There were more participants screening positively for borderline personality disorder in the ST group (75.0%) compared to the BA group (46.9%) ($\chi^2 = 5.3$, $p = .021$). The mean number of regularly scheduled psychotropic drugs was higher among ST participants ($M = 3.7$, $SD = 1.7$) than BA participants ($M = 2.9$, $SD = 1.5$) ($t[62] = 2.1$, $p = .039$). Also, baseline scores on the Self-GAF were lower in the ST group ($M = 42.1$, $SD = 16.5$) than the BA group ($M = 55.5$, $SD = 16.8$) ($t[62] = 3.2$, $p = .002$). Self-GAF scores and borderline personality disorder were associated, as individuals with a positive borderline screening had significantly lower Self-GAF scores ($t[62] = 3.4$, $p <.001$).

Considering that borderline personality can negatively affect depression outcomes [27], and both the number of psychotropic drugs and self-rated functioning can be indicators of more severe problems, the mixed model analysis was redone with the variables as covariates for the primary outcome (MADRS-S). The differences between BA and ST observed in the primary analysis were retained in this secondary analysis at Session 3 ($p =.011$, $d =.46$), Session 9 ($p <.001$, $d = .66$) and post ($p =.026$, $d = 0.39$).

Activity and engagement

In Study I, activities were rated by each participant during one day of 11 hours, 8 am to 7 pm. The mean and median number of hours endorsed for each activity category is displayed in Figure 6. Data was non-normal and analysed with non-parametric tests. Doing nothing was more often endorsed compared to all other activities, with the exception of meal ($p = .011$ to $p <.001$), and patients were more often alone than social ($t[101] = 2.18$, $p = .03$).

Doing nothing was associated with lower levels of reward ($t[84] = -12.98$, $p<.001$) and higher distress levels relative to other activities ($t[85] = 5.87$, $p<.001$) (see Table 6). Informal contact was associated with higher reward levels and lower distress levels when compared with all other activities ($t[64] = 2.61$, $p = .011$). A crude generalised estimating equations analysis indicated that reward predicted later distress ($B = -0.10$; $p = .02$), but when adjusted for distress itself ($B = 0.56$; $p <.001$) reward was no longer a significant predictor ($B = 0.04$; $p = .26$).

In Study II, CUB-Approach and Avoidance scores were stable during baseline and improved gradually in four of the six participants during BA, according to visual inspection, ipsative z-scores and RCI. Changes in CUB were either concurrent or preceded changes in MADRS-S in the majority of the participants, but this pattern was not replicated by diary ratings.
Figure 6. The mean (M) and Median (Mdn) number of hours each activity was endorsed by participants in Study I during one day between 8 am to 7 pm.

In Study III, the mean CUB-Approach scores at pre, post and follow-up were 10.8 (SD = 7.4), 18.2 (SD = 7.6) and 16.5 (SD = 7.2) and the mean scores for the items were 1.2 (SD = 1.2), 2.0 (SD = 1.3) and 1.8 (1.3). For CUB-Avoidance the corresponding scores were 13.2 (SD = 7.2), 8.6 (SD = 5.5) and 9.4 (SD = 6.1) for the scale, and item means were 1.9 (SD = 1.4), 1.2 (SD = 1.1) and 1.3 (SD = 1.2). CUB-Approach scores are plotted in Figure 7. The CUB-Approach intercept increased from pre to post (B = 9.3, SE = 2.1, p<.001) and from pre to follow-up (B = 8.5, SE = 2.2, p<.001). The CUB-Avoidance intercept decreased from pre to post (B = -3.7, SE = 1.7, p<.05), but at follow-up scores had reverted to baseline levels (B = -3.3, SE = 2.0). No differences in slopes were present within or between any phases. Working alliance scores measured with WAI increased from pre to post (Z = 4.8, p <.001).

Nursing staff ratings on the SRE indicated the post sample (M = 4.7, Mdn = 5.0, SD = 1.2) was significantly more engaged than the pre sample (M = 3.8, Mdn = 4.0, SD = 1.5), according to a Mann Whitney U test (Z = 4.5, p <.001).

In Study IV, activation measured with BADS-SF improved more for BA participants compared to the ST group at post (EM Δ= 9.8, p<.001, d = .53), but the difference was not sustained to follow-up (12-month EM Δ= 3.4, p = .34, d = .17). There were no differences in WAI scores between participants allocated to BA compared to those in the ST group at any assessment point.
Table 6. Reward and distress ratings per activity in Study I.

<table>
<thead>
<tr>
<th>Activity category</th>
<th>Reward</th>
<th>Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Doing nothing</td>
<td>3.10</td>
<td>2.71</td>
</tr>
<tr>
<td>Sleeping</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Professional contact</td>
<td>5.90</td>
<td>6.00</td>
</tr>
<tr>
<td>Meal</td>
<td>4.79</td>
<td>5.00</td>
</tr>
<tr>
<td>Media use</td>
<td>5.18</td>
<td>5.00</td>
</tr>
<tr>
<td>Self-care</td>
<td>6.43</td>
<td>6.00</td>
</tr>
<tr>
<td>Recreational activity</td>
<td>6.50</td>
<td>7.00</td>
</tr>
<tr>
<td>Short leave</td>
<td>6.27</td>
<td>7.00</td>
</tr>
<tr>
<td>Informal contact</td>
<td>6.98</td>
<td>7.00</td>
</tr>
<tr>
<td>Smoke or coffee</td>
<td>4.91</td>
<td>5.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity feature</th>
<th>Reward</th>
<th>Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Being alone</td>
<td>3.92</td>
<td>4.00</td>
</tr>
<tr>
<td>Being social</td>
<td>6.23</td>
<td>6.22</td>
</tr>
<tr>
<td>Being passive</td>
<td>3.40</td>
<td>3.40</td>
</tr>
<tr>
<td>Being engaged</td>
<td>6.62</td>
<td>6.58</td>
</tr>
</tbody>
</table>
Feasibility and integrity

In Study II, the intervention satisfaction mean score, measured with the CSQ-8, was 30.0 (SD =3.2). Staff single item ratings of BA usefulness (n = 17) resulted in a mean score of 8.1 (SD = 1.4). Lack of time (82.4%) and lack of competence (29.4%) were the most commonly indicated barriers to nursing-
staff implementation. A total of 83.3% of participating patients attended all 10 sessions.

In Study IV there was no difference between BA (M = 27.1, SD = 4.9) and ST (M = 26.1, SD = 4.1) in terms of treatment satisfaction as measured with CSQ-8 (Z = -1.1, p =.256). Both BA and ST treatments were perceived to be credible treatments with no difference between the two (t [55] = -1.5, p = .15). A total of 87.5% completed BA treatment and 78.1% completed ST-treatment.

In Study III, nursing staff reported more use of behavioural strategies after the intervention was introduced (Z = 3.6, p <.001).

In Study IV, integrity was satisfactory in both BA (M = 56.0, SD =19.6) and ST (M = 24.5, SD = 10.8) and interrater agreement was high (ICC = .86).

Secondary outcomes

In Study II, clinicians assessed that four of the six participants had improved globally, much or very much, according to the CGI-I.

In Study III, staff rated the post sample as significantly more severely ill than the pre sample (Z = 2.8, p< .005).

In Study IV, at post BA, participants had improved more than ST participants on two measures of functioning, GAF (EM ∆= 12.9, p =.01, d = .46) and SDS (EM ∆= 6.6, p<.001, d = .60) from baseline to post. There were no differences between BA and ST in terms of health-related quality of life (EQ-5D), self-rated functioning (Self-GAF) or the number of diagnoses.

Using only data from masked interview ratings, the GAF score no longer differed between BA and ST at the 6-month follow-up (p = .09).

Adverse events

In Study IV there were no differences between BA and ST in terms of deliberate self-harm, suicide attempts, readmissions or psychiatric emergency room or intensive care utilisation (see Table 7 for details).
Table 7. Adverse events in Study IV.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Behavioural Activation</th>
<th>Supportive Therapy</th>
<th>OR</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count (%)</td>
<td>Count (%)</td>
<td>Count (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deliberate self-harm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During treatment</td>
<td>9 (17.6%)</td>
<td>5 (20.0%)</td>
<td>4 (15.4%)</td>
<td>1.38</td>
<td>(0.32-5.85)</td>
</tr>
<tr>
<td>6-m follow-up</td>
<td>9 (18.4%)</td>
<td>4 (15.4%)</td>
<td>5 (21.7%)</td>
<td>0.66</td>
<td>(0.15-2.80)</td>
</tr>
<tr>
<td>12-m follow-up</td>
<td>5 (11.9%)</td>
<td>2 (8.3%)</td>
<td>3 (16.7%)</td>
<td>0.46</td>
<td>(0.07-3.06)</td>
</tr>
<tr>
<td>Suicide attempt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During treatment</td>
<td>2 (3.9%)</td>
<td>1 (4.0%)</td>
<td>1 (3.8%)</td>
<td>1.04</td>
<td>(0.06-17.6)</td>
</tr>
<tr>
<td>6-m follow-up</td>
<td>7 (14.3%)</td>
<td>3 (11.5%)</td>
<td>4 (17.4%)</td>
<td>0.62</td>
<td>(0.12-3.12)</td>
</tr>
<tr>
<td>12-m follow-up</td>
<td>5 (11.9%)</td>
<td>1 (4.2%)</td>
<td>4 (22.2%)</td>
<td>0.15</td>
<td>(0.02-1.50)</td>
</tr>
<tr>
<td>Readmission</td>
<td>21 (34.4%)</td>
<td>9 (29.0%)</td>
<td>12 (40.0%)</td>
<td>0.61</td>
<td>(0.21-1.78)</td>
</tr>
<tr>
<td>ER/ICU</td>
<td>26 (42.6%)</td>
<td>11 (35.5%)</td>
<td>15 (50.0%)</td>
<td>0.56</td>
<td>(0.20-1.54)</td>
</tr>
</tbody>
</table>

OR = Odds Ratio, CI = Confidence Interval, Readmission = readmission during the study period, ER/ICU = Emergency Room visits or Intensive Care Unit admission that required psychiatric consultation.
Discussion

The overall aim of this thesis was to evaluate the feasibility and effectiveness of Behavioural Activation (BA) as it was used to target depressive symptoms, patient disengagement and other psychiatric problems in acute psychiatric in-patient settings and in the transition to outpatient care.

Depressive symptoms

BA delivered by therapists with pre-existing psychotherapy competence (Studies II and IV), was associated with significant improvements in depressive symptoms both during inpatient admission and in the transition to outpatient care.

In the Randomised Controlled Trial (Study IV), with an active control condition and a 12-month follow-up period, BA had an advantage over Supportive Therapy (ST) during the transition to outpatient care. This advantage may have important clinical implications considering that this time-period is associated with increased risk of readmission [74], suicide [76], and self-harm [24]. On the other hand, the advantage of BA was small and not sustained to follow-up, and there was no advantage in terms of adverse events such as readmission, self-harm or suicide attempts. But the study was not powered to study adverse events, and a substantially larger sample would be required to adequately study variables such as suicide. Thus it is possible that even small and transient treatment-effects regarding depressive symptoms are important in the transition period, but further larger studies are needed to discern the clinical importance of the small effect size observed.

The advantages of BA, relative to ST, were less pronounced in this study compared to a previous study comparing similar conditions [161]. Even though BA is likely to be particularly effective in more severe depression [155], the participants in Study IV of this thesis probably had more severe problems than those included in previous research. For example, the current study had high levels of personality disorders. Personality disorder is known to have a negative impact on depression outcome [27], and it is possible that therapy specific effects are smaller as severity is increased. On the other hand, inpatients with positive borderline personality disorder screening have, in another study, been found to improve at least as much as those with a negative borderline personality screening, in terms of depression [222]. An alternative
explanation for the less pronounced difference between BA and ST in this study can perhaps be found in the ST condition. Within-group analyses showed that ST was associated with significant improvements, and it is possible that the ST condition in this study was stronger compared to that in the previous study [161]. This was further indicated by high patient ratings on satisfaction, alliance and credibility in the ST group. Meta-analyses have found that non-directive supportive therapies have considerable effects on depression [133] and are not less effective than Cognitive Behavioural Therapy (CBT) [131] or other treatments [133]. Furthermore, a meta-analysis has shown that when controlling for researcher allegiance, differences between non-directive supportive therapies and other treatments disappear [133]. Research also shows that response to psychotherapy for depression is closely related to non-specific factors [133; 132]. On the other hand, one meta-analysis of BA specifically investigated effects relative to non-directive supportive therapy and found an advantage for BA [126]. Also, supportive therapy has been found to be somewhat less effective than other treatments in at least two meta-analyses [129; 130], but there is debate as to whether these differences are dependent on researcher allegiance bias [223].

There were no differences between BA and ST participants in terms of clinician-rated depression as opposed to self-rated depression. This further questions the clinical meaning of the small difference seen in self-reported depression. On the other hand, differences between self-reported depression and clinician assessed depression is a commonly observed phenomena in controlled trials for depression [224].

In the study where BA was adapted to, and integrated into, nursing-procedures (Study III), no improvements in depressive symptoms were observed. Considerable differences in intervention characteristics perhaps contributed to this null finding. First, nursing-adapted BA was delivered in group format, whereas the other studies in the thesis employed individual therapy formats. Inpatient group CBT has been found to be less effective than individual CBT in a previous study [225], and inpatient group interventions have been shown to be associated with adverse events for most patients [226]. Second, the nursing staff were less experienced in delivering psychological interventions. Even though non-expert therapists have been shown in previous studies to be able to execute BA treatment effectively after brief training [177; 178; 179], the current study setting differed considerably from the primary care and outpatient settings in those prior studies. Little is known about the need for further training in more severe populations. Another important difference between the study employing nursing-adapted BA and those with traditional therapists was related to study design. The study of nursing-adapted BA involved repeated measures of entire wards, whereas the other studies collected repeated measures of individuals over time. It is possible that such study design differences also have implications for the assessment of changes in symptom levels.
Activity and engagement

High levels of self-reported disengagement and passivity were reported in patient diaries in the observational study of this thesis (Study I). This finding replicates previous study findings of inpatients predominantly being alone [67; 54; 227], doing nothing [53; 228], and spending little time with staff [228; 54]. Approximately one third of the time was spent doing nothing. This did not include other potentially passive activities such as watching television, which has also been found to be associated with depressive symptoms [229; 230; 231]. Distress varied systematically across activities, as hypothesised, with passive and solitary activities being associated with more distress. The concurrent association should not be interpreted as causal, as neither activities nor reward predicted distress. Distress could equally well drive passivity, or some other variable could be causing both distress and passivity. Considering the concurrent association and previous research supporting the link between sedentary activities and negative mood, and mental health [232; 233], and considering that activities are amenable to change, targeting inpatient activities with interventions is a potentially promising pathway to improved mental health.

The RCT (Study IV) in this thesis showed that BA was associated with a greater increase in patient activation compared to the ST control condition. The advantage was moderate and was not sustained into later follow-up. In the nursing-adapted BA study (Study III) participants engaged with the treatment milieu to a greater extent and avoided it to a lesser extent, as the intervention was introduced on wards. This engagement was maintained at later follow-up, but avoidance had reverted back to baseline levels. This was paralleled by fewer participants in the study using a Single-Case Experimental Design (SCED) (Study II) achieving decreased avoidance compared to engagement improvements, and similar patterns have also been found in a previous study [159]. Considering the negative impact of avoidance on mental health these findings indicate there is a need to refine interventions in order to better target avoidance.

Even though engagement and avoidance improved following the introduction of nursing adapted BA, when benchmarked against a previous similar study the improvements were modest [159]. In fact, before the introduction of nursing BA, participants typically indicated their agreement with engagement statements on the CUB-Approach scale to be “A Little True” (i.e. 1 on a scale from 0 to 4) whereas the typical score after the introduction was “Somewhat True”, or a score of 2. Thus, even though engagement increased according to the CUB, there was still much room for further improvement.

The clinical importance of the engagement improvements observed in the nursing-adapted BA study (Study III) was further supported by short-term findings of improved patient rated working alliance. Alliance scores were quite poor at baseline, compared to scores found in another inpatient sample
[63], while post scores approached levels similar to that of the other sample. However, considering that the Working Alliance Inventory (WAI) used to assess alliance is actually designed to be used in traditional psychotherapy, these findings should be interpreted with caution. Measuring alliance between a patient and a therapist is arguably something very different from measuring the alliance between a patient and an entire inpatient treatment team [234; 63]. It is possible that participants interpreted WAI items differently in the baseline-condition and the post-condition. When no intervention was available participants may have interpreted WAI items as pertaining to the alliance with the entire inpatient treatment team. After the intervention was introduced however, it is possible that the WAI was interpreted to ask specifically about the alliance within group sessions. In the RCT study (Study IV), the levels of working alliance did not differ between BA and ST, indicating that alliance improvements are not specific to BA.

Feasibility and integrity

The interventional studies in this thesis were pragmatic [235] as BA, and ST, were tested in real-world settings with hospitalised patients, and available mental health professionals and nursing staff conducting the interventions. Feasibility was indicated by high ratings of patient satisfaction, treatment credibility, low attrition rates, and nursing staff reports on usefulness. The variable formats of BA used across studies indicate that BA can be feasibly implemented in different ways. When BA was compared to ST (Study IV), there were no differences in measures of feasibility, such as patient satisfaction or credibility. Other study outcomes also raised a number of feasibility and implementation issues that are discussed below.

As mentioned above, non-therapists have been shown to be able to deliver BA efficaciously after very brief training. However, the lack of improvement in depressive symptoms in the nursing-adapted BA study (Study III) of this thesis, could indicate that BA mechanisms were not appropriately, or only partially, initiated. The lack of direct integrity assessments prevents any definitive conclusions regarding adherence in this study (Study III). It is possible that more intensive training is necessary to reap the full benefit of BA as it is integrated into nursing procedures. On the other hand, engagement and alliance are pivotal nursing goals and important outcomes in their own right. As such, improved engagement and alliance following a limited amount of training, are important findings, and corroborate the largest available study to date [37]. Also, the indirect staff-reported use of behavioural strategies indicated that the BA approach was used to a greater extent after the intervention was implemented.
There was a low baseline rate of interaction between patients and nursing staff, as reported in the observational study (Study I). However, previous studies show that therapeutic interaction is highly regarded by staff, though hindered by organisational short-comings [71]. The nursing-adapted study (Study III) included no active control condition and it is not evident that BA is more effective than any other nursing approach. It remains an empirical question whether there is actually a need for new psychological models, such as BA. Providing more time and structure for the therapeutic competence that already exists [236], would be another, perhaps less resource intensive, implementation strategy. The Protected Engagement Time model is an example of how this could be achieved [237]. Testing the differential effectiveness of freeing time for existing interaction skills versus also adding BA strategies, could disentangle the effectiveness of these components.

Previous studies have noted the importance of attending to several organisational barriers when implementing psychosocial interventions [175; 176; 238]. The studies in this thesis indicate that implementation was largely successful, but there were also significant challenges. For example, two of the interventional studies were only conducted in three instead of the four planned wards, due to organisational issues. Also, the RCT (Study IV) took considerably more time to complete than initially planned, due to difficulties finding study therapists with open schedules. These challenges were not assessed or followed within the realms of this thesis but are definitely closely related to questions of feasibility and implementation.

Secondary outcomes

Clinical outcomes beyond depressive symptoms were assessed to some extent in all three interventional studies. The most pronounced global improvements were found in the SCED study (Study II). This is perhaps unsurprising considering that uncontrolled studies typically display greater treatment effects in inpatient settings [43].

In the nursing-adapted BA study (Study III), the sample collected after the implementation of the intervention was actually rated as more severely ill. Taking into account the concurrent rise in bed-occupancy, this may be a result of an increasing demand for inpatient services overall, resulting in heightened admission thresholds. It is also possible that the increased interaction between patients and staff resulted in staff gaining greater insight into the severity of the patients’ problems. Also, the nursing staff who provided ratings were not blind to the purpose of the study, and it is possible that this biased the staff rating of both engagement and severity. It is also possible that the intervention itself had negative effects on global severity, as inpatient group treatments for most patients are associated with some adverse events [226]. However, negative effects on global severity due to the intervention is perhaps a less likely
explanation considering that increasing severity is a global inpatient trend [14; 10] and bearing in mind that inpatient group interventions are typically associated with improvements [43].

In the RCT (Study IV) there was a moderate sized advantage to BA relative to ST on two measures of functioning, the clinician rated Global Assessment of Functioning (GAF) and the Sheehan Disability Scale (SDS). Functioning is important as individuals admitted for inpatient treatment often have increased levels of functional impairment [15]. The observed advantage of BA relative to ST should be interpreted with caution considering that when only unmasked clinician assessments were analysed, there was no longer a difference between groups, raising questions about a possible bias favouring BA in the clinician assessments. Also, there was a notable lack of agreement between self-rated (Self-GAF) and clinician rated functioning (GAF) at baseline. This replicates previous research showing lower GAF-agreement for individuals with more severe problems, particularly at baseline [211].

Adverse events

Both BA and ST participants in the RCT (Study IV) had disturbingly high rates of adverse events. More than a third of the participants were readmitted or had visits to Emergency Rooms or Intensive Care Units with a need for psychiatrist consultation. Similarly, self-harm and suicidal behaviour rates were high over the course of treatment and follow-up. Considering that the RCT did not include a treatment as usual control condition, it is impossible to know what the rates would have been without any added intervention. Previously published data [24; 239; 76] indicates that the rate of adverse events in either of the study conditions is not likely to reflect an improvement relative to usual rates. On the other hand 75% of the participants screened positive for either borderline or avoidant personality disorder at baseline and this is an unusually high rate [26]. Personality disorders have been found to increase the risk of post-discharge self-harm [24] and hospital readmission [240]. Furthermore the national rate of readmission within six months, for individuals with depressive disorders in Sweden, is 33.4% [241].

Ethical considerations

There is a need for more research that can guide inpatient service improvement [32]. At the same time, hospitalisation is associated with increased levels of distress and many patients have limited cognitive capacity, which may impair the ability to provide informed consent. Researchers must ascertain that consent is truly informed and that study procedures do not cause distress. This
requires careful planning of studies in advance, and also a high degree of presence on wards to observe and respond to the reactions to study procedures as they unfold. The presence of the researcher must, on the other hand, be balanced against the risk of influencing participants and thereby biasing results.

A considerable proportion of patients are hospitalised against their own will, and some inpatient treatments and interventions are administered using coercive measures. A psychosocial intervention such as BA cannot, if administered in accordance with core principles, be used coercively, as it is based entirely on the mutual agreements and joint efforts of the patient and the therapist. However, there is always a risk that patients feel pressured to participate, especially considering the uneven power balance between service users and clinicians. Also, the clear and simple focus on changing behaviour and activities, could potentially be misused in a custodial context. For example, behaviour change could be prescribed by a clinician instead of self-prescribed as intended. Sufficient training, monitoring of integrity and ongoing ethical discussions would seem to be an important and appropriate means, along with increased service user participation in the implementation process, to decrease the risk of misuse.

The observational study in this thesis showed that the activity with the most benign distress and reward profile was socialising with others. On one hand this could be interpreted as an indication that delivering psychosocial interventions in group format would be favourable. On the other hand, it is not evident that the need for engaging treatment milieus means that individuals prefer to discuss their private matters in a group with strangers on a psychiatric ward. There is currently limited evidence for delivering BA in groups at all, and there is evidence that a majority of patients experience adverse events in relation to inpatient group psychotherapy [226]. However, considering financial strains and current low staffing ratios, groups may be the only feasible format. The current situation impacts the quality of psychosocial interventions in more ways than group format. For example, what is the optimal dosage of therapist training, as opposed to what dosage of training is it possible to establish under current conditions? These ethical dilemmas need to be discussed by clinicians and researchers but should also be discussed at the level of healthcare managers and decision makers.

**Methodological considerations**

Due to the acute and complex research context, a number of different study designs were employed, each having both pros and cons as discussed below.

The Single-Case Experimental Design (SCED) and the Interrupted Time Series (ITS) are recommended alternatives that can provide important comparisons to usual conditions, in contexts where randomised controlled studies are difficult to achieve [190]. The use of repeated measures allows earlier time
points to act as controls for later ones as well as detection of secular trends, in contrast to a simple pre-post study.

The SCED design (Study II) in this thesis could be termed quasi-experimental for a number of reasons. Considering that participants were not randomised and treated concurrently, and a restricted number of baseline lengths were employed, researchers knew what baseline lengths had been used previously in the study. Even though they could not affect the baseline length allocation, knowing about it in advance could impact on whom is recruited. Also, the non-concurrent design in this study does not allow for the same control of history events as concurrent designs. However, recruiting participants concurrently requires a larger number of therapists available at the same time, thus non-concurrent recruitment is more practical.

Truly experimental designs are difficult to achieve in inpatient settings for a number of reasons. Bearing in mind that patients see and talk to each other on the ward, randomising individuals to different treatment conditions is complicated and at high risk of contamination between conditions. This risk would be even greater if staff within the ward were to be trained in delivering different conditions, considering that staff work in teams and are generally involved in the care of all patients on a ward. Randomly allocating entire wards, instead of individuals, is an alternative. However, this requires comparable wards and a large number of wards [37]. The randomisation in Study IV was possible to conduct as the treatment was delivered by outpatient therapists, mostly at the outpatient facility, and patients were recruited over a long period. Thus, there was a smaller risk of included participants being on the same ward at the same time, talking to each other about the treatment and being mistakenly exposed to both treatment conditions.

A challenge in regards to SCED studies is the lack of consensus regarding data analysis [242]. The SCED study (Study II) in this thesis involved a number of statistical methods to supplement visual inspection. Statistical methods were used to determine clinical significance and effect size. However, a range of other analytic strategies could have been used as well, such as randomisation tests and methods for addressing autocorrelation.

Sample sizes in the studies varied. In a SCED and ITS study, traditional power-analysis is less applicable. However, the small sample, especially in the SCED (Study II), and the differences between included and non-included samples (Studies I and III), limit generalisability. On the other hand, compared to prior research investigating, inpatient activity [7] and inpatient BA, studies in this thesis were large. The RCT (Study IV) relied on a power-analysis but was under-powered by the 12-month follow-up, especially when unmasked clinician ratings were removed.

Patients in the observational study (Study I) and the nursing-adapted BA study (Study III) were not part of a treatment research programme, as is typical when individuals are followed over time with repeated assessments, but approached occasionally if they were admitted during one or more assessment
points. As such, substantial support was deemed necessary to decrease the risk of negative experiences and added stress from study information and assessment procedures. Also, the assessments in Studies I and III were administered by the first author, who was also responsible for the implementation of the nursing-adapted BA. The nursing staff providing ratings of patient engagement, clinical severity and intervention adherence in the ITS study (Study III), were the same staff that provided the intervention, and this too inevitably increases the risk of bias. Caution was exercised and limited resources prevented any alternative assessment logistics.

It is possible that patients in the ITS study perceived the post and follow-up assessments as an opportunity to evaluate the newly implemented activity programming. This may have attracted patients that were more appreciative of therapeutic interaction and groups, compared to those who participated in the pre phase. And as noted previously in the discussion section, working alliance items may also have been interpreted differently at baseline and post.

Standardised diagnostic procedures were only used in two studies, and the other studies relied on the ward psychiatrist’s clinical diagnoses. Only in one of the studies, the RCT (Study IV), was there an attempt to keep assessments masked. Unmasked assessments are of course at greater risk for bias. Even in the RCT, where masking was part of the protocol, unmasking was quite common. Also, the differences that emerged when analysing clinician ratings in the masked sample, relative to including the unmasked participants, indicate that clinicians may have rated BA participants somewhat more favourably. Including the opportunity for clinical assessors to indicate if they were masked or not, and to guess treatment allocation, was a strength in this study.

Symptomatic assessments were restricted to depressive symptoms due to fear of overstraining patients. Considering that studies included diagnostically heterogeneous samples, it would have been important to study other symptoms as well. However, depressive symptoms seem to be of great importance in inpatient settings, as mentioned in the introduction, and related to serious risks [243; 21]. Also, using both self-report and clinician assessments, as in the case of depressive symptoms (MADRS-S and MADRS) and global functioning (GAF and Self-GAF), was a methodological strength.

Studies did not, except in the case of the RCT (Study IV), include an active control condition. Thus precluding conclusions about the specific effects of BA. Disentangling the effects of different interventions is particularly difficult in inpatient settings where multiple interventions are introduced concurrently. For example, studies in the thesis that assessed concurrent medical treatments (Studies II and IV), found that all participants used psychotropic drugs. Furthermore, all patients received nursing care and treatment planning during admission. Thus, it is possible that other interventions were responsible for the observed effects, and it is possible that implementing other active psychosocial interventions instead of BA would have been equally effective. On the other hand, the RCT (Study IV) showed that BA had advantages over ST in
the transition period. However, the other studies did not control for any intervention except the usual care in the baseline phase of the studies. In order to draw firm conclusions about specific effects, it is also central to assess treatment integrity. The SCED study (Study II) did not investigate intervention integrity at all, which limits conclusions about the specific effects of BA. This limitation also applies to the ITS study (Study III) to some degree, as integrity was only assessed indirectly. Including a direct control for integrity is demanding and resource intensive, and not always possible in pragmatic trials from routine clinical settings [244]. The integrity control in the RCT (Study IV) was a methodological strength. Another strength was the effort to increase adherence by using written and audio recorded materials, such as manuals and handouts, in all interventional studies.

The RCT (Study IV) employed the same therapists in both the BA and the ST condition. This so called “crossed therapists design” may be subject to bias due to therapist allegiance with one study intervention [245; 246]. Treatment integrity monitoring may provide some protection against this bias [245] but therapist allegiance may still influence the results. Using different therapists in the study arms was considered, but not done due to geographical and staffing constraints. Also, one could argue that using the same therapists provides better control by minimising differences between experimental and control conditions, apart from the specific treatment components. Furthermore, a recent meta-analysis found no evidence of different outcomes in depression trials with crossed vs non-crossed therapist designs [246]. Researcher allegiance is also important to consider when comparing different treatments and has been found to be associated with outcome [247]. A remedy for such bias may be mixing research teams in terms of allegiance [247; 248]. The research team behind the studies in this thesis did not include any distinguished proponent of ST. However, the team consisted of individuals with varying experience, professions and psychotherapy training.

Pragmatic studies, such as the studies in this thesis, aim to investigate the translation of interventions into real world settings. Thus obtaining a representative sample that allows generalisability, is crucial [244]. In studies where included samples were compared to the entire population of admitted patients, differences in characteristics were noted. In the observational study (Study I) for example, there were differences between included participants and non-included patients in terms of diagnoses and age. Thus, the activity findings may be less applicable to samples with acute psychotic symptoms and older individuals. Similarly, in the ITS study (Study III), there were differences in the included vs non-included sample characteristics. Also, the samples enrolled in the different phases of the study (i.e. pre, post, and follow-up), differed in terms of clinical severity and bed occupation rates, and may not be completely comparable. The RCT (Study IV) on the other hand was designed to include a more narrowly defined set of participants and was not intended to be generalised to the inpatient population as a whole.
Clinical implications and future directions

The research on inpatient psychiatric care is scarce and has been argued to have almost disappeared [32], and the quality of services has been questioned by both patients and professionals [5; 249]. Considering that inpatient services are an important part of mental healthcare for individuals with severe and acute problems, the findings reported in this thesis have important clinical implications. Directions for future research are also discussed.

Findings indicate that inpatient activities continue to be important targets for interventions, bearing in mind that passivity and social disengagement were common and associated with distress and low reward. These findings should be replicated in studies with protocols extending beyond our one-day diary design. Such studies would allow investigation of individuals’ behaviour change over time during admission. Also, considering that reward and activities did not predict distress, a wider array of mediating variables should be studied in order to further investigate the association between inpatient activity and poor mental-health in the acute setting.

Treatment engagement and therapeutic interaction are important for many reasons. However, the definition of these concepts needs further refinement. Engagement is sometimes defined as working alliance and at other times as participation in care activity [250]. Future studies should investigate different dimensions of treatment engagement and therapeutic interaction, and there is a need for developing instruments that can assess these dimensions in inpatient settings.

Findings indicate that Behavioural Activation (BA) was perceived as feasible by both patients and professionals. When study designs allowed comparison with Supportive Therapy (ST), there was no difference in feasibility. Considering that the BA and ST approach differ in central features (e.g., directive vs non-directive) the equal feasibility may indicate that a wide variety of psychological interventions are useful within the inpatient setting. This is further supported by a recent randomised controlled trial finding that adjunctive psychodynamic therapy was superior to treatment-as-usual for depressed inpatients [251].

One study in this thesis specifically investigated psychosocial interventions in the transition from inpatient to outpatient care. Findings of high feasibility in this period of high risk of suicide, self-harm and readmission, are encouraging. Future studies should investigate whether adding BA or other interven-
tions during this period is associated with added effects compared to treatment-as-usual, and if these effects are meaningful in terms of adverse events (such as suicide attempts and self-harm). This will require well-powered studies with a large number of participants.

Just before this thesis was finalised, a systematic review investigating discharge and transitional management strategies for depression was published [252]. The review did not identify any interventions that were effective in reducing readmission rates and authors concluded that intervening in the transition may be less efficacious for patients with depression compared to patients with other diagnoses. However, studies were few and heterogeneous and considering the serious risks associated with the transition from inpatient to outpatient care I would argue further studies are very important.

Findings in this thesis indicate BA is a promising intervention that can be used to target both engagement and depressive symptoms. The specific effects of BA and the causal status of the purported BA mechanisms, on the other hand, were only partly supported and many questions remain. Future studies should investigate whether BA has specific effects on treatment engagement. This could be accomplished by comparing BA-informed nursing with nurses trained in non-specific supportive strategies. BA-informed nursing should also be tested against traditional nursing, when equal time is devoted to therapeutic interaction in both conditions, bearing in mind that usual care comparisons may suffer from lack of structure and time constraints. Such studies should also employ direct assessments of integrity monitoring methods to establish that interventions are executed as intended.

Positive findings from the study adding nursing-adapted BA to the inpatient care indicate, in line with previous studies, that BA can be used by professionals with different levels of psychotherapy expertise. However, the lack of change in depressive symptoms also raises questions about effectiveness and a possible need for further training in the complex inpatient setting. Future studies could improve the nursing-adapted BA in a number of ways. For example, nursing experts should be more involved in the development of future BA-protocols to ensure integration between BA and nursing-procedures. Also nursing-adapted BA should be tested in formats other than group sessions. For example, individual sessions, or team case-formulation conferences [47]. On the other hand, focusing on one intervention such as BA may be too narrow. The largest inpatient staff training study to date offered wards a range of evidence based interventions from which to choose, depending on the perceived feasibility [37].

A challenge important to consider for future inpatient researchers, is the lack of harmonisation between current psychosocial interventions and inpatient services. The short length of stay on inpatient units and the lack of pre-existing psychosocial training complicate the implementation and investigation of typical psychosocial interventions. Researchers need to adapt interven-
tions to the limitations of the current inpatient situation, and develop interventions that are realistic to introduce. At the same time, researchers should avoid compromising the established effects of psychotherapies, which is of course a risk if one deviates too far from the evidence-based protocols. Maintaining the balance between adapting interventions to the current situation, in such way that implementation is realistic, and at the same time advocating for high quality testing of psychosocial interventions under good conditions, is a delicate and important task for future inpatient psychiatric researchers.

A last, but very important note to future researchers is to involve service users in the development of psychosocial inpatient interventions. Service users have certainly informed the interventions used within this thesis during the process of pilot-testing materials and in discussions during the study process. Formally inviting service users and their significant others, both during admission and after discharge, to participate in study planning and intervention development, is an important next step in the refinement of inpatient BA.
Conclusions

• *Doing nothing* was the most common activity, with the exception of meal related activity. Only 8% of the hours assessed where reported to be spent with staff. Hours characterised by passivity and solitude were associated with negative distress and reward profiles. Informal socialising had a positive profile. Distress was not predicted by activities or reward as hypothesised.

• The preliminary feasibility of inpatient Behavioural Activation was supported by high patient treatment satisfaction and nursing staff reports. Treatment mechanism received preliminary support, but results differed depending on assessment strategy. Effectiveness received preliminary support, as four out of six participants improved on measures of depressive symptoms and functioning.

• Nursing-adapted Behavioural Activation was associated with increased engagement and decreased avoidance of the treatment milieu. Engagement improvements were retained at follow-up but not avoidance. The intervention was associated with short-term improved working alliance but the finding is inconclusive due to assessment methods. Staff reported adherence to the intervention but depressive symptoms and global clinical severity did not improve when the intervention was introduced.

• Experimental findings showed that adding Behavioural Activation to inpatient care and the transition to outpatient care, had a small advantage over Supportive Therapy in reducing depressive symptoms. However, the advantage was only evident during, and directly after therapy, and was restricted to self-reported depressive symptoms and two functional outcomes. When unmasked interviews were excluded, the functional advantage of Behavioural Activation was not retained. Satisfaction, credibility and working alliance were high and did not differ between conditions. The rate of adverse events was equally high in both groups.
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A doctoral dissertation from the Faculty of Medicine, Uppsala University, is usually a summary of a number of papers. A few copies of the complete dissertation are kept at major Swedish research libraries, while the summary alone is distributed internationally through the series Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine. (Prior to January, 2005, the series was published under the title “Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine”.)