Elucidating the Cognitive Mechanisms Underpinning Behavioural Activation

Mecanismos cognitivos que sustentan la activación conductual

Liam Myles1,⋆, Emanuele Merlo2.

1 Department of Psychology, University of Cambridge. Cambridge, UK.
2 Department of Adult and Childhood Human Pathology, University of Messina. Messina, Italy.

Abstract.
Depression represents a pervasive and devastating psychological difficulty. It affects over 21% of the population at some point in their lives and can have an unimaginable impact on both individuals and society. Behavioural activation represents a popular intervention for depression and is commonly used by psychologists internationally. Despite its popularity, the cognitive mechanisms underpinning the efficacy of behavioural activation remain elusive. This paper will review the literature on this intervention and propose an account of the cognitive mechanisms underlying its therapeutic efficacy. Specifically, it is argued that behavioural activation is effective because it increases both the density of outcomes in one's environment and the density of highly salient action-outcome contingencies, which may otherwise be absent due to reduced motivation. The clinical implications are subsequently discussed, with reference to future research.

Keywords.
Depression, Behavioural Activation, Associative Learning.

Palabras Clave.
Depresión, Activación comportamental, Aprendizaje asociativo.
1. Introduction

Depression is characterised by persistent low mood, de-

despondency and loss of interest in activities that were pre-

viously pleasurable (APA, 2013); such experiences can

be accompanied by weight loss, physical and cognitive fa-

tigue, feelings of worthlessness and suicidal thoughts/ide-

ation. This psychological difficulty affects over 21% of

the population at some point in their lives (Auerbach et

al., 2018) and can have incalculable large ramifications on

both individuals' lives and society as a whole.

Contemporary approaches in clinical psychology strongly

advocate the use of cognitive behavioural therapy

(CBT) as an intervention for depression (Westbrook et

al., 2011). This involves exploring the relationship be-

tween psychological distress and one's thoughts, behavi-

ours, emotions, and physical sensations, as well as tak-

ing action to alter the context of the respective facets in

an endeavour to improve wellbeing (Johnstone & Dallos,

2013; Myles & Merlo, 2021; Tarrier et al., 2000; West-

brook et al., 2011). Behavioural Activation (BA) rep-

resents a popular intervention for depression and is fre-

quently incorporated into CBT protocols (Veale, 2008);

however, despite its popularity and significant empirical

support, the cognitive mechanisms underpinning the ef-

cicacy of BA remain elusive. Previous theorists have pos-

ulated that behavioural activation serves to reduce de-

pressive symptomology by promoting engagement with

avoided activities and developing clients' understanding

of the functional basis of their avoidance (Martell et al.,

2001; Veale, 2008). This paper will review the litera-

ture on BA and propose an account of the cogni-

tive mechanisms underlying the therapeutic efficacy of

this intervention. For clarity, cognitive mechanisms are

defined as the conscious and unconscious psychological

mechanisms that encode information, process information,

and produce cognitive or behavioural output (see Myles,

2021a).

2. Behavioural Activation

Behavioural activation is a popular and empirically well-

supported therapeutic technique that is often used to

alleviate noxious experiences associated with a diagno-

sis of depression. It consists of scheduling value-guided

activities, particularly those that one may be avoiding,

into one’s diary and ensuring adherence to the respective

activities (Veale, 2008). Additionally, BA often involves

identifying activities that one could be doing better or

more of, such as exercise (Myles, 2020a), and engaging

in them accordingly. For example, individuals that pre-

viously enjoyed and derived meaning from sailing, but

stopped due to feelings of low mood, may be prompted

by therapists to re-engage with the sport. There are in-

creasingly complex variations of BA that have been tai-

lored to specific psychological difficulties; however, dis-

cussion of these variations is beyond the scope of this ar-
ticle and can be found elsewhere in the literature (Hopko

et al., 2016; Martin & Oliver, 2019; Martínez-Vispo et

al., 2018; Welsh et al., 2016).

Contemporary literature strongly advocates the use of

BA as an intervention for depression, with demonstra-
tions that engaging in BA is associated with a reduction in

depressive symptomology (Chartier & Provancher, 2013;

Kanter et al., 2012; Masterson et al., 2014; Tindall et

al., 2017; Veale, 2008). Indeed, meta-analytic data has

also ascertained evidence for the efficacy of BA as an in-
tervention for people with a diagnosis of depression (Ek-

ers et al., 2014; Mazzucchelli et al., 2009; Orgeta et al.,

2017), with indications that its efficacy is comparable to,
or even greater than, antidepressants (Dimidjian et al.,

2006; Ekers et al., 2014; Moradveisi et al., 2013) and

cognitive behavioural therapy (Dimidjian et al., 2006;

Jacobson et al., 2001; Richards et al., 2016). Despite

significant empirical support for the efficacy of BA and

its extensive use as an intervention for depression, dis-

cussion in the literature has focused largely on the role

of positive reinforcement in increasing the frequency of

behaviours (Kanter et al., 2012). Accordingly, the other

cognitive mechanisms underpinning the efficacy of BA

have been neglected and thus remain elusive. Examining

these cognitive mechanisms is of critical importance in
developing both models of psychological difficulties

and improved psychological interventions for individuals

with a diagnosis of depression (Myles, 2021a, 2021b).

3. Behavioural Activation and Perceived

Control

In order to understand the cognitive mechanisms af-
fected by BA, one must understand the relationship be-
tween perceived control and depressive symptomology.

Seminal theoretical models of depression argued that

the perceived absence of the ability to modulate contin-
gencies in one’s environment culminates in a perceived

absence of control, resulting in the manifestation of de-

pressive symptomology (Abramson et al., 1978; Cohen

et al., 1976; Abramson et al., 1989; Seligman, 1975). Early

experimental evidence for this comes from demon-

strations that individuals with a diagnosis of depression

perceive the contingency between their actions and an

outcome to be lower than individuals without a diagno-
sis of depression (Alloy & Abramson, 1979), indicating

that individuals with depression maintain a lower per-
ception of control (Seligman, 1975). Indeed, this repre-
sents a robust finding and has been well substantiated

in subsequent research (Alloy et al., 1985; Martin et al.,

1984; Vázquez, 1987).

Contemporary literature continues to support the no-
tion that perceived control maintains a critical role in

psychological welfare. Evidence for this comes from a

multitude of studies reporting that the extent to which

individuals perceive that they are in control over their

activities, particularly those that one may be avoiding,
lives is inversely related to symptoms of depression, such that those with greater perceived control exhibit reduce depressive symptomology (Bjørkløf et al., 2013; Crandall et al., 2018; Kleinberg et al., 2013; Myles et al., 2020; Myles et al., 2021; Volz et al., 2018). Furthermore, longitudinal data indicates that the relationship between perceived control and depressive symptomology may be causal, with evidence that decrements in perceived control precede the manifestation of depression (Bjørkløf et al., 2018; Hamilton & Abramson, 1983; Myles, 2020a, 2020b; Tobin & Raymundo, 2010). The concept of perceived control has been extended to ‘locus of control’, pertaining to a generalised belief system regarding the extent to which individuals perceive they have control over their lives (Lefcourt, 1991; Visdómine-Lozano, 2015). Accordingly, perceived control is not limited to isolated events and instead represents a generalised perception of control over one’s life. These results strongly advocate the critical role of perceived control in maintaining one’s psychological welfare.

4. The Cognitive Mechanisms Underpinning the Therapeutic Efficacy of Behavioural Activation

There are three distinct but related cognitive mechanisms that may underly the therapeutic efficacy of BA. The first mechanism relates to the influence of BA on ‘outcome density’, referring to the frequency with which an outcome occurs in a series of action-outcome contingencies. Behavioural activation encourages individuals to undertake a greater number of actions in their environment (Veale, 2008), which will, by definition, increase the number of action-outcome contingencies. Whilst this may not influence the extent to which the outcome is contingent upon one’s actions, it will increase the density of outcomes that occur (Haselgrove & Hogarth, 2013). Evidence for the importance of outcome density in perceived control comes from a study by Baker et al. (2013, p. 160), who asked individuals with a diagnosis of depression to estimate the perceived contingency between pressing a button (action) and the illumination of a light (outcome). In one phase, there was a high outcome density, such that there were a greater number of outcomes (light illuminations). In the other phase, there was a low outcome density, such that there were a fewer number of outcomes (light illuminations). Critically, the contingency between the action and the outcome was equal in both experiments. The authors reported that participants with a diagnosis of depression perceived a greater contingency, and consequently maintained a superior perception of control (Abramson et al., 1978; Abramson et al., 1989; Seligman, 1975), between their action and the outcome in the high outcome density condition than in the low outcome density condition. Thus, one can assume that a greater number of outcomes in one’s environment, irrespective of the contingency between one’s actions and outcomes, manifests an elevated perception of control.

These results indicate that BA is effective because it encourages individuals to undertake a larger number of actions in their environments, resulting in a greater density of outcomes. Whilst this may not impact the true contingency between actions and outcomes, it culminates in an elevated perception of control and consequently reduced depressive symptomology (Bjørkløf et al., 2016; Bjørkløf et al., 2018; Cheng et al., 2013; Crandall et al., 2018; Hamilton & Abramson, 1983; Kleinberg et al., 2013; Myles, 2020a; Myles, 2020b; Myles et al., 2020; Tobin & Raymundo, 2010; Volz et al., 2018). Moreover, if this elevated perception of control generalises to other activities, it may serve to perpetuate an increasing sense of empowerment across aspects of the individual’s life (Lefcourt, 1991; Visdómine-Lozano, 2015).

The second mechanism that may underpin the therapeutic efficacy of BA concerns the particularly high salience of action-outcome eventualities in contingency experiments. Four eventualities can influence the true relationship between an action and an outcome: firstly, actions can be followed by an outcome, referred to as ‘action-outcome’ events; secondly, actions can be followed by the absence of an outcome, referred to as ‘action-no outcome’ events; thirdly, an outcome can occur in the absence of the action, termed ‘no action-outcome’ events; finally, both the action and outcome can be absent, termed ‘no action-no outcome’ events. Clearly, action-outcome and no action-no outcome events increase the contingency between the action and the outcome, whereas action-no outcome and no action-outcome events reduce the contingency between the action and the outcome. However, participants do not necessarily perceive the true contingency and there are various factors that influence the extent to which participants view the outcome to be contingent upon the action, one of which is the salience of the respective eventualities. Contemporary literature indicates that the salience of action-outcome eventualities is greater than the salience of other eventualities (Haselgrove & Hogarth, 2013; Vallée-Tourangeau et al., 1998; Wasserman et al., 1990). As stimulus salience is critical for learning, such that more salient stimuli acquire greater associative strength (Mackintosh, 1975; Miller et al., 1995; Pearce & Hall, 1980; Rescorla, 1972; Wagner, 2014), then one might assume that the occurrence of action-outcome eventualities has a disproportionately large influence over one’s perception of the extent to which outcomes are contingent upon the action.

As previously discussed, BA increases the density of outcomes, which necessitates increasing the number of action-outcome occurrences. As action-outcome events are particularly salient and consequently disproportionately weighted when evaluating the contingency between actions and outcomes, a greater density of outcomes re-
sults in a stronger perceived contingency between one’s actions and the outcome. This will manifest an elevated perception of control for the aforementioned reasons (Abramson et al., 1978; Abramson et al., 1989; Seligman, 1975), resulting in a reduction in depressive symptomology (Bjorklof et al., 2016; Bjorklof et al., 2018; Cheng et al., 2013; Crandall et al., 2018; Hamilton & Abramson, 1983; Kleinberg et al., 2013; Myles, 2020a; Myles, 2020b; Myles et al., 2020; Tobin & Raymundo, 2010; Volz et al., 2018).

Finally, motivation to undertake actions also influences the extent to which individuals perceive they are in control of their environment. Baker et al. (2013, p. 170) reported that participants classified as ‘depressed’ undertake fewer actions in the aforementioned contingency experiments, resulting in fewer overall action-outcome contingencies. These results indicate that individuals that display greater depressive symptomology possess a lower motivation to initiate action in their environments. Indeed, this conclusion is supported by more ecological data, with evidence that individuals experiencing symptoms of depression display a reduced motivation to act in their environments (Burns et al., 2013; Grahek et al., 2019; Sherdell et al., 2012; Westbrook et al., 2011). This will culminate in a lower density of outcomes, which will have a maladaptive impact on psychological welfare, as previously described.

5. Clinical Implications and Future Research

The clinical implications of this literature are clear: use BA as an intervention to reduce depressive symptomology. Behavioural activation combats each of the cognitive mechanisms that have been hypothesised to underlie experiences of depression by increasing the density of outcomes, the salience of one’s own control over the environment, and the number of actions one undertakes, even in the absence of motivation. Whilst the authors are reluctant to extend the implications for therapeutic practice beyond the data, there are numerous adaptations clinicians may find helpful when undertaking therapy. Specifically, it may be helpful for clinicians to emphasise to clients that engagement with tasks, regardless of whether they are ‘successful’ in achieving a desired goal, can be therapeutic, as task engagement leads to increments in outcome density, even in the absence of motivation; however, such approaches should be undertaken at the clinicians discretion. Furthermore, clinicians may find it helpful to draw attention to instances when clients engage in tasks that culminate in the production of the desired outcome (Merlo et al., 2022), thereby further enhancing the salience of action-outcome contingencies. More generally, understanding the cognitive mechanisms underpinning the efficacy of psychological interventions is critical for both understanding the nature of depressive symptomology and developing novel interventions to better support individuals with psychological difficulties. Accordingly, it is critical that therapists utilise BA as an intervention for individuals with symptoms of depression.

However, it is important to note that this paper does not indicate that therapists should not utilise other therapeutic tools, such as cognitive therapy, as there is significant supportive evidence for the efficacy of such interventions (Johnstone & Dallos, 2013; Tarrier et al., 2000; Westbrook et al., 2011). Instead, it is advisable that therapists utilise these tools in conjunction with BA, to provide a more holistic form of support for service-users.

6. Concluding Comments

Behavioural activation represents a remarkably effective intervention for individuals with symptoms of depression. However, to date, the literature has lacked a comprehensive account of the cognitive mechanisms underpinning the therapeutic efficacy of this intervention. This paper posits that greater outcome density, action-outcome salience, and initiation of actions, emulating elevated motivation, represent the distinct, but related, cognitive mechanisms underpinning the therapeutic efficacy of BA. It is critical that clinicians continue to utilise this invaluable intervention to support individuals with symptoms of depression.

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