How emotion-cognition interactions drive affective bipolarity

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Abstract

Affective bipolarity is observed in a large group of people falling within the broad bipolar spectrum. Here, we propose a model of how emotion-cognition cycles drive affective bipolarity in the general case, and when these cycles may spiral into excessive forms. Our account specifies how emotion-cognition interactions produce two distinct epistemic modes: a behaviorally engaged, externally oriented mode of phenomenal exploration and a behaviorally disengaged, internally oriented mode of conceptual rumination. Affective bipolarity is viewed as a ubiquitous phenomenon underlying epistemic progress, which explains why mood fluctuations can be observed in many psychiatric disorders. The model explains why individuals with bipolar tendencies exhibit polar asymmetries in emotion, cognition and behavior, and are at risk for excessive affective bipolarity when their epistemic activities are guided by immutable and stable core beliefs.

Keywords: emotion, cognition, bipolar, confirmation, falsification.

1. Introduction

Bipolar disorder is a mood disorder characterized by alternating periods of depression and mania. Apart from the disorder, affective bipolarity is also seen in a large group of people falling within the broad bipolar spectrum and those with cyclothymic and hypomanic personality traits (Lam, Jones & Hayward, 2010). Common depressive features include: pessimism, decreased activity, loss of interest or pleasure, low self-esteem, decreased sociability and increased rumination, whereas common manic features include: optimism, increased activity, increased interest or pleasure, high-self-esteem, increased sociability and
sensation-seeking\textsuperscript{1}. Paradoxically, affective bipolarity is characterized by radical shifts in epistemic activities depending on whether people are experiencing a depressive or manic episode. For example, during manic episodes individuals often lose themselves in activities such as socializing, working on projects, purchasing or collecting items or engaging in creative endeavors, whereas during depressive episodes they refrain from these activities (see Basco & Rush, 2005).

The goal of the present paper is to provide an explanation for these shifts in terms of interactions between emotional and cognitive mechanisms. Both for manic and depressive episodes it has been proposed that changes in emotional processing influence cognition and behavior, which in turn again influence emotion in a vicious cycle (Basco & Rush, 2005). Here, we present a model of how these cycles drive affective bipolarity in the general case, and under what conditions these cycles may spiral into excessive forms. The model aims to explain why individuals with bipolar tendencies exhibit polar asymmetries in emotion, cognition and behavior (e.g. Leahy, 1999; Leahy & Beck, 1988), and show high goal striving and a strong motivation for achievement (e.g. Johnson et al., 1999; Lam, Wright & Smith, 2004).

2. An emotion-cognition model of affective bipolarity

The model attempts to formulate a high-level mechanistic description of the emotion-cognition interactions that drive affective bipolarity (see Herschbach & Bechtel, 2015). The idea is that the orchestration of emotional and cognitive processes can result in two distinct modes of epistemic activity (see Piaget, 1985): An assimilative mode that is characterized by phenomenal exploration (called the manic or M-mode) and an accommodative mode that is characterized by conceptual rumination (called the depressive or D-mode). Like previous models (e.g. Newman et al., 2002), our approach proposes that an individual’s conceptual interpretations interact with perceptual experiences, and that these interactions drive goal-directed behavior during M- and D-modes. Conceptual interpretations reflect people’s folk-theoretical understanding of the world, themselves, other people, their goals and expectations (see Beck, 1996).

During an M-mode, an individual is engaged in an external search for perceptual experiences aimed at confirming an unexplored conceptual interpretation (i.e. a conjecture). In this phase, experiences become assimilated to interpretations. This is analogous to when a child explores perceptual phenomena in order to confirm a conjecture (e.g. pointing out instances of large four-legged animals as examples of “horses”). During a D-mode, an individual is engaged in an internal search for conceptual interpretations aimed at accounting for an unexplained phenomenal experience (i.e. an anomaly). In this phase, interpretations become accommodated to experiences. This is analogous to when a child ruminates on conceptual interpretations in order to account for an anomaly (e.g. interpreting a camel as a “lumpy horse” or a “large dog”). The critical assumption of the present proposal is that affective bipolarity both drives and is driven by an individual’s epistemic activities.
2.1. The M-mode of phenomenal exploration

How does this work? During an M-mode an individual is predominantly engaged in external perceptual searches for phenomenal experiences. These searches are triggered by focusing attention on conjectures: interpretations that are not yet supported by experiences. A conjecture guides the perceptual search process by acting as a task set (e.g., see Bocanegra & Hommel, 2014; Schneider & Shiffrin, 1977; Wolfe, 2012). When a search attempt succeeds at finding a matching phenomenal experience, this is called a confirmation event. A confirmation event elicits a transient positive emotional response. If a conjecture points to many potentially relevant phenomenal experiences it has the capacity to elicit multiple confirmation events, and when it does, positive responses may build-up and induce a positive emotional mood. An overall positive mood, in turn, will increase the attentional salience of confirmation events due to their mood-congruent affective valence. In this way, a positive mood will act as a confirmation heuristic, which sustains the M-mode by focusing attention on the episodic instances that involve the conjectures. This will increase the probability of following-up a series of successful search attempts with more search attempts. If the M-mode starts to generate fewer confirmations over time, the number of positive responses will decrease and the global mood will become more negative. In this case, attention may gradually shift from the conjectures to newly discovered experiences that were not associated with positive responses. In other words, attention shifts to those experiences that were not consistent with the conjectures. This attentional shift may trigger a new phase of activity called a D-mode.

2.2. The D-mode of conceptual rumination

During a D-mode an individual is predominantly engaged in internal memory searches for conceptual interpretations. These searches are triggered by focusing attention on anomalies: experiences that are not yet accounted for by interpretations. An anomaly initiates the memory search process by acting as a retrieval cue (e.g., see Bocanegra & Hommel, 2014; Davelaar & Raaijmakers, 2012; Sternberg, 1969). When a search attempt fails to retrieve a matching conceptual interpretation, this is called a falsification event. A falsification event elicits a transient negative emotional response. If an anomaly points to many potentially relevant conceptual interpretations it has the capacity to elicit multiple falsification events, and when it does, negative responses may build-up and induce a negative emotional mood. An overall negative mood, in turn, will increase the attentional salience of falsification events due to their mood-congruent affective valence. In this way, a negative mood will act as a falsification heuristic, which sustains the D-mode by focusing attention on the episodic instances that involve the anomalies. This will increase the probability of following-up a series of failed search attempts with more search attempts. If the D-mode starts to generate fewer falsifications over time, the number of negative responses will decrease and the global mood will become more positive. In this case, attention may gradually shift from the anomalies to newly generated interpretations that were not associated with negative responses. In other words, atten-
tion shifts to those interpretations that were not inconsistent with the anomalies. This attentional shift may then trigger a new M-mode and the cycle may repeat.

2.3. Coupled feedback mechanisms underlying M- and D-modes

The overall configuration of emotional and cognitive processes is in the form of feedback mechanisms, which can result in phases of phenomenal exploration and conceptual rumination as well as bistable oscillations between these two phases of activity. Within the model, emotion-cognition interactions are implemented across local and global levels of processing. On a local level, confirmation and falsification events cause transient positive and negative emotional responses. On a global level, positive and negative emotional moods cause sustained confirmation and falsification heuristics (see Figure 1).

![Figure 1](image-url)
The action across local and global levels drives two feedback cycles, an M-mode cycle and a D-mode cycle. During a D-mode cycle, a negative mood promotes falsification events by focusing attention on anomalies, and falsification events sustain a negative mood by eliciting negative emotional responses. During an M-mode cycle, a positive mood promotes confirmation events by focusing attention on conjectures, and confirmation events sustain a positive mood by eliciting positive emotional responses. The action of the M-mode will have an inhibitory effect of the action of the D-mode, and vice versa: A negative mood will tend to impede phenomenal exploration by focusing attention on anomalies, whereas a positive mood will tend to impede conceptual rumination by focusing attention on conjectures.

Sustained phases are made possible by facilitatory feedback between an emotional mood and responses of the same valence: (a) a positive mood facilitates the generation of positive responses, and the build-up of positive responses increases mood positivity, and (b) a negative mood facilitates the generation of negative responses, and the build-up of negative responses increases mood negativity. Bistable oscillations are made possible by double inhibitory feedback between emotional moods and responses of the opposite valence: (a) a positive mood inhibits the generation of negative responses, and the build-up of negative responses decreases mood positivity, and (b) a negative mood inhibits the generation of positive responses, and the build-up of positive responses decreases mood negativity.

2.4. Empirical evidence for coupled feedback mechanisms

The model assumes a local-to-global mood-induction mechanism whereby emotionally valenced thoughts enhance moods that have a congruent valence and suppress moods that have an incongruent valence. Also, it assumes a global-to-local mood-congruence mechanism whereby emotional moods facilitate the processing of emotionally congruent thoughts and inhibit the processing of emotionally incongruent thoughts. Consistent with these assumptions, there is considerable evidence suggesting that a person’s mood biases which aspects of the environment are perceived as salient and what is remembered about past events, (Lewis & Critchley, 2003) and that perceiving events as well as episodic retrieval of past events have a strong influence on overall mood (Martin, 1990). It has been shown that the attentional availability of an individual’s thoughts depends on whether they match or mismatch the valence of mood (see Mayer, Gaschke, Braverman & Evans, 1992), and that attending to thoughts with emotional connotations can influence overall mood depending on whether these thoughts match or mismatch its affective valence (see Westermann, Spies, Stahl & Hesse, 1996). Also, mood-congruence effects have been directly linked to the induction of mood, and play a role in the development of mood states that persist over time (Blaney, 1986). Feedback mechanisms have been used to explain mood perpetuation, a phenomenon where a person’s mood will tend to facilitate the recall of events that match the mood’s valence, and these memories feedback to intensify and prolong the mood in a vicious cycle (e.g. Bower, 1981).
Importantly, individuals in manic phase show positive mood-congruent attentional biases, whereas those in depressive phase show negative mood-congruent attentional biases in verbal tasks (Murphy et al., 1999), and RT-tasks (García-Blanco, Pere & Livianos, 2013). Also, event generation and recall in autobiographical memory shows mood-congruent biases in both manic and depressed states (Eich, Macauley & Lam, 1997). In non-clinical populations, the retrieval of past successes is also more likely to occur during a positive than a negative mood, whereas the retrieval of past failures is more likely to occur during a negative than a positive mood (Mayer et al., 1995). In a study described by Bower (1992), subjects were given either positive or negative performance feedback on a series of tasks, and were subsequently given a free recall task. Whereas positive-mood subjects recalled more successes than failures, negative-mood subjects showed the opposite pattern of results. It has been suggested that recall of successes and failures in performance exhibit this selectivity because of the way they give rise to strong emotional responses (Kavanagh & Bower, 1985). Interestingly, it appears that individuals with bipolar tendencies are more sensitive both to environmental signals of success which promote behavioral engagement as well as signals of failure which promote disengagement (Lam et al., 2010).

The present proposal’s emphasis on the general biasing effect of mood on on-going information processing is consistent with models positing that people selectively attend to mood-congruent information and retrieve mood-congruent information from memory despite being unrelated to their immediate task (e.g. Lerner & Keltner, 2000). However, whereas these accounts tend to focus on the characteristics and consequences of mood-congruence effects (in our terminology: global-to-local effects), the present model integrates both (global-to-local) mood-congruence mechanisms and (local-to-global) mood-induction mechanisms.

It is important to point out that global-to-local and local-to-global mechanisms will naturally lead to alternating M- and D-modes, and that affective bipolarity is posited to be a general feature of epistemic progress in individuals. However, under specific circumstances, M- and D-modes may persist and lead to the behavioral excesses and deficits that characterize bipolar patients. In the next sections we will characterize information processing during M- and D-modes and describe how individuals may become entrenched in M- and D-modes.

**2.5. Information processing during M- and D-modes**

Information processing (attention, recognition, recall, and report) during an M- and D-mode is under the influence of confirmation and falsification heuristics, respectively. During the D-mode, a negative mood focuses attention on falsification events and reduces an individual’s ability to attend to confirmation events which would offer opportunities for engaging with the external world to pursue goals. When in this state, an individual is likely to interpret a falsification event as one in a series of inevitable failures and a confirmation event as a trivial aberration. Memory retrieval is biased towards events of loss, rejection or
failure and attention is focused on the current possibility of a negative outcome (e.g. an otherwise neutral smile may be interpreted as patronizing). If the coupled feedback between global and local levels perpetuates long enough, individuals will come to adhere to a conceptual interpretation of the self as highly defective, worthless and whose future prospects are very bleak. This is consistent with individuals in a depressed state describing themselves as being beset with doubt and indecision (Beck et al., 1979). They are over-pessimistic, ignore gains, abhor losses to the point of misery, underestimate their abilities, believe their endeavors are destined to fail and become unable to recognize positive outcomes of their actions.

During the M-mode, a positive mood focuses attention on confirmation events and reduces an individual’s ability to attend to falsification events which would offer them opportunities to disengage from the external world. When in this state, an individual is likely to interpret a confirmation event as one in a series of inevitable successes, and a falsification event as a trivial aberration. Memory retrieval is biased towards events of gain, acceptance, or success and attention is focused on the current possibility of a positive outcome (e.g. an otherwise neutral smile may be interpreted as idolizing). If the coupled feedback between global and local levels perpetuates long enough, individuals will come to adhere to a conceptual interpretation of the self as highly competent, valuable and whose future prospects are very promising. This is consistent with individuals in a manic state describing themselves as lacking any doubt or indecision (Beck et al., 1979). They are over-optimistic, ignore losses, savor gains to the point of euphoria, overestimate their abilities, believe their future plans will inevitably come to fruition and become unable to recognize the negative consequences of their actions.

Consistent with our model, Leahy and Beck (1988) have suggested that the cognitive bias displayed during manic episodes can be viewed as the “mirror” image of that which occurs during depressive episodes. Leahy (1999) has argued that individuals in a depressed state engage in a negatively biased information search for eventualities of loss, mistake or regret. They hold assumptions of low utility for gains and high disutility for losses, are inclined to blame themselves for failures and less likely to internalize success. On top of this, when in this state, individuals continuously maintain their negative mood by retrieving events that have a negative implication for their goals (e.g. “Considering event X, I’m a total loser; I will never succeed; everybody will believe I failed”). On the other hand, individuals in a manic state engage in a positively biased information search for possibilities of gain, opportunity and satisfaction. They hold assumptions of high utility for gains and low disutility for losses, are inclined to internally attribute successes and less likely to internalize failures. On top of this, when in this state, individuals continuously maintain their positive mood by retrieving events that have a positive implication for their goals (e.g. “Considering event X, I’m a complete success; I will never fail; everybody thinks I’m great”). In sum, our model provides a mechanism that could instantiate Leahy’s
account of bipolar information processing (Leahy, 1999; Leahy & Beck, 1988).

Our model explains why, during an M-mode, individuals tend to be activated and engaged in goal-directed behavior, whereas during a D-mode, they tend to be behaviorally inhibited and disengaged. A confirmation heuristic will facilitate evidence accumulation for positive satisficing criteria, whereas a falsification heuristic will facilitate evidence accumulation for negative satisficing criteria (see Leahy, 1999; Simon, 1979). How does this work? A positive satisficing criterion amounts to asking the question: “Is it possible I might succeed?”, then, retrieving instances of past events as evidence, and finally, taking action when the majority of instances suggest the answer is “yes”. Given that a confirmation heuristic will bias retrieval towards past instances of confirmation events, this will increase the probability that an individual will decide in favor of taking action during an M-mode. On the other hand, a negative satisficing criterion amounts to asking the question: “Is it possible I could fail?”, then, retrieving instances of past events as evidence, and finally, refraining from action when the majority of instances suggest the answer is “yes”. Given that a falsification heuristic will bias retrieval towards past instances of falsification events, this will increase the probability that an individual will decide against taking action during a D-mode.

M- and D-modes share critical features with Beck’s processing modes (Beck, 1996). Processing modes include cognitive and emotional components, epistemic strategies, behavioral tendencies and relate to an individual’s goals. Within a mode, attention and memory retrieval is focused on information that matches the content of the mode and generated interpretations and accrued experiences are highly biased, which leads to systematic epistemic errors (e.g. dichotomous thinking, overgeneralization and personalizing). Beck (1996) describes both positively and negatively valenced modes which are content specific (e.g., related to romantic bonding, the acquisition of wealth, avoiding social exclusion, etc.), which under our account would be subsumed as specific instances of M- or D-modes.

2.6. Entrenchment in M- or D-modes

The mechanism described in our model explains how an individual can potentially get trapped or entrenched in an M- or D-mode. When the reciprocal action across local and global levels is strong, the coupling of facilitatory and inhibitory feedback within the system can cause it to move into a sustained self-perpetuating state (see Bocanegra, 2017). It then becomes very difficult for an individual’s mood to naturally dampen and fluctuate toward neutral equilibrium (see Ferrell, 2002). When M- or D-modes persist for an extended period of time this can be very problematic because, over time, they can induce and reinforce polarized interpretations which makes individuals vulnerable to systematic and debilitating epistemic errors. Leahy (1999; p. 98) has examined several of these errors. These include, for example, lack of differentiation (e.g. “I will fail at everything” vs. “I will succeed at everything”), leaps of inference (e.g. “If I fail at this, then I can’t do anything” vs. “If I succeed at this, then I can do anything”), over-attributing to self (e.g. “I could never make any relationship
work, no matter what I do” vs. “I can make any relationship work, if I want to”), jumping to conclusions (e.g. “She doesn’t like me, therefore I’m a loser” vs. “She likes me, therefore I’m the best”), overgeneralization (e.g. “I’m a complete idiot” vs. “I’m the ultimate genius”), and faulty inductive reasoning (e.g. “If I fail at this, then I’m a complete failure” vs. “If I succeed at this, then I’m a complete success”).

Importantly, our model explains that, under normal circumstances, M- and D-modes are not necessarily dysfunctional: epistemic errors are naturally avoided if an individual is able to periodically transition between M- and D-modes. Transitioning between modes allows an individual to evaluate and integrate evidence for and against beliefs and allows a better weighing of pros and cons pertaining to decisions. In the absence of entrenchment, experiences and interpretations from one mode can be readily corrected by experiences and interpretations generated in a subsequent mode. On the other hand, entrenchment, by its very nature, prevents individuals from comparing, evaluating and integrating, one the one hand, a self-assured optimistic perspective developed during an M-mode, and on the other hand, a self-critical pessimistic perspective developed during a D-mode.

What increases the risk of entrenchment during M- or D-modes? Our model suggests that M- and D-modes can perpetuate when epistemic activities are guided by an elaborate and extensive conceptual structure (Bocanegra, 2017), which contains a hard-core of cohesive, immutable assumptions that stay constant over time (see Lakatos, 1970). The more elaborate and cohesive a conceptual structure is due to this hard-core, the more ways it could potentially be confirmed during an M-mode or falsified during a D-mode, thus making it amenable to entrenchment.

What does this mean in terms of the personal beliefs of individuals with bipolar tendencies? Beliefs pertaining to personal identity are often referred to as core beliefs. Core beliefs consist of the most intrinsic and immutable beliefs of the self-concept (who am I, what is my goal in life, what place do I occupy in the world), which guide our conceptual understanding of, and our experiential interactions with the world. They are accepted as a-priori truths, are difficult to change and remain stable over time (see Beck, 1996). Conceptual interpretations concerning life-goals and self-identity relate to a large set of potentially relevant experiences compared to simple conceptual interpretations concerning more mundane goals and situation-specific conceptualizations of the self. Therefore, if goal-directed behavior is driven by core-beliefs, this is predicted to increase the risk for entrenchment.

Consistent with this, individuals whose achievement goals are linked to their identity are likely to experience manic or depressive symptoms following a confirmation or falsification event, respectively (Francis-Ranier et al., 2006). It has been shown that individuals with bipolar tendencies show a high preoccupation with personal identity, autonomy and goal attainment (Andreasen, 1989; Lam et al. 2010), and often have attitudes reflecting perfectionism (e.g. “If I try hard enough, I would excel in anything I attempt”; “A person should do well at everything he undertakes”, see Lam et al,
2004). Individuals whose goal-directed behavior is driven by their identity are inclined to overwork and become anxious if they take time to relax or socialize. These tendencies can then spiral them in to a subsequent episode of depression. After recovering from an episode of depression, they frantically try to ‘catch up’ or ‘make up for lost time’, which spirals them into a subsequent episode of mania (Lam et al., 2004; 2010; Scott et al., 2000; 2001; Wright et al., 2005).

Interestingly, bipolar disorders tend manifest themselves at the age when young adults first become unconstrained and start to engage in epistemic activities aimed at pursuing personal goals (Merikangas et al., 2011). Also, it appears that the incidence of bipolar disorders is higher in cultures that promote personal pursuit of achievement-related goals (Johnson & Johnson, 2014).

3. Applying the model

Cognitive therapies are increasingly being used as treatment for bipolar disorder in conjunction with medication. The idea behind these therapeutic approaches is that patients should develop basic skills in managing social and work routines, engage in thought-monitoring, and challenge dysfunctional assumptions (e.g. Basco & Rush, 2005; Beck, 1996; Lam et al., 2010; Newman et al., 2002).

3.1. The logic of cancellation

Beck (1996) proposes three ways to treating dysfunctional processing modes: deactivation, modification of content and structure, or priming more adaptive modes that neutralize them. In the case of bipolar patients, beliefs may be challenged and modified so as to help them to refrain from engaging in the epistemic activities that drive manic and depressive episodes. Individuals may be encouraged to resist seeking rewards at the onset of mania and resist staying inactive at the onset of depression. Also, they may be encouraged to engage in behavior that is opposite to their current inclination: individuals in a manic state are encouraged to take time off work, engage in calming activities, restrain excessive behaviors and reduce number of tasks, whereas individuals in a depressed state are encouraged to keep working, seek mastery activities, keep organized and busy and increase number of tasks. In sum, the logic behind many cognitive-behavioral approaches is one of cancellation.

A problem encountered by therapists is the unwillingness of patients to challenge their beliefs and modify their behavior. Bipolar patients often believe that therapists and relatives are needlessly discouraging them from pursuing their life goals and react with mistrust and non-compliance (Newman et al., 2002). To them, efforts to curtail their manic activities are often interpreted as attempts to ‘spoil their good feelings’ (Lam et al., 2010). Pursuing goals based on core beliefs may become a liability when individuals become completely immersed in their successes or failures, and fail to perceive significant risks to their health, financial standing and social reputation.

3.2. The logic of substitution

If we start from the premise that affective bipolarity plays a role in epistemic activities generally (i.e. not just those related to core beliefs, see Bocanegra, 2017), this suggests
that individuals with bipolar tendencies may be able to channel energy into endeavors that are less central to their identity. In contrast to cancellation, this may be described as an approach based on a logic of substitution. The first step would be to identify an individual’s core beliefs and determine how they are driving epistemic activities. Then, the individual can be guided to engage in epistemic activities based on more peripheral beliefs within the context of a 'side-project'.

Side-projects are analogous to what Beck defines as minor modes (Beck, 1996). Whereas major modes concern vital issues related to the self, minor modes consist of more mundane activities, which are not highly energized, and more amenable to conscious control. A side-project should avoid pertaining to core beliefs while at the same time involve the same type of epistemic activities. The idea is to help individuals separate core beliefs from the practice of engaging in epistemic activities. In this manner, the individual would be able to “ride out” the natural time-course of positive and negative episodes while decreasing the risk of entrenchment. Due to the novelty of the substitute domain, the individual would learn to explore experiences and ruminate on ideas that are less central to his/her self-concept.

An analogy may be able illustrate these distinctions. Imagine the individual with bipolar tendencies as a scientist who is devoted to constructing and testing a comprehensive theory within a certain empirical domain (i.e. a consistent set of core beliefs; see Bocanegra, 2017). All the scientist’s epistemic activities relate to this theoretical structure and are executed within the empirical domain (i.e. exploring data based on conjectures derived from theory, and restructuring theory based on anomalies derived from data). A therapist helps the scientist develop a side-project (i.e. based on more peripheral beliefs) which would keep him/her motivated and capable of executing epistemic activities, while at the same time being distinct enough so that it would not pertain to the theory. Ideally, a side-project is methodologically similar (so that the scientist is able to engage in the usual epistemic activities), but theoretically unrelated to his/her work (see Lakatos, 1970; for an analysis of core and peripheral beliefs in terms of the distinction between theory and methodology). Critically, due to the novelty of the side-project, the scientist is unlikely to interpret confirmation events as major victories, or falsification events as devastating failures.

Of course, this analogy is only meant to explain the core-periphery distinction in terms of epistemic activities. The difficulty would lie in identifying how an individual’s real-world beliefs and epistemic activities contribute to entrenchment, and proposing a suitable side-project. Indeed, there are as many real-world examples of epistemic activities involving phenomenal exploration and conceptual rumination as there are individuals (e.g. thinking up money-making schemes, pursuing romantic relationships, engaging in religious practices, organizing and participating in social events, purchasing desired products, pursuing vocational goals in the entertainment industry, politics, sports, business, the creative arts, etc.: see Basco & Rush, 2005; Lam et al., 2010).

Consistent with the current proposal, it appears that individuals with bipolar
tendencies are naturally inclined to intermittently deflect their affective bipolarity into alternative domains, presumably in order to create a release for the build-up of manic or depressive episodes. During periods of successful recovery, bipolar patients engage in activities, experience emotions and have thinking patterns that are qualitatively—though not quantitatively-similar to those they have during full-blown episodes (Judd et al., 2002). Interestingly, Newman et al. (2002) recommend framing and structuring between-session tasks in a way that relates to the individual’s preferred epistemic activities. For example, instead of assigning a “homework” exercise, one can frame it as “practice” in the case of an athlete, “rehearsal” in the case of an actor or musician, or “experiment” in the case of a scientist. This is consistent with the idea that bipolar patients are more likely to engage in, and adhere to, exercises when their therapeutic goals are implemented within a methodological structure that individuals are already proficient in.

In sum, the goal of a side-project is to teach individuals how to engage in epistemic activities without their personal identity being at stake, in order to cope adequately both with momentary successes and failures. If this succeeds, an increase in the number of transitions between exploration and rumination will naturally allow individuals to correct epistemic errors. This is especially important in the context of treatment adherence and compliance, where epistemic errors are known to play a critical role (Bosco & Rush, 2005).

4. Conclusion

In the present paper we propose an account of the emotion-cognition interactions underlying affective bipolarity that specifies how polar asymmetries in affective responses and mood (positive vs. negative), cognitive focus (external vs. internal), cognitive operations (perceptual vs. memory search), cognitive heuristics (falsification vs. confirmation), goal orientation (success vs. failure), and behavior (activation vs. inhibition) are linked up to each other. The model proposes that, during an M-mode, individuals are behaviorally engaged in an externally oriented search for phenomenal experiences aimed at confirming conjectures, whereas during a D-mode, individuals are behaviorally disengaged due to an internally oriented search for conceptual interpretations aimed at explaining anomalies.

According to our model, individuals are at risk for entrenchment during M- and D-modes when they are guided by an elaborate and cohesive conceptual structure containing immutable and stable core-beliefs (i.e. a consistent set of beliefs concerning life-goals and self-identity). This cohesive conceptual structure is then periodically evaluated from opposite perspectives through a selective focus on confirming vs. conflicting evidence. This accounts for the currently unexplained phenomenon that the conceptual schemas driving M-modes are often identical to those driving D-modes (see Beck, 1996). Indeed, Leahy and Beck (1988) have shown that there is a systematic relationship between the conceptual schemas that drive manic and depressive episodes: A self-concept of “social incompetence” during a
D-mode (e.g. the individual feels miserable when attending a social event), will manifest as a self-concept of “social overcompetence” during an M-mode (e.g. the individual feels euphoric at the prospect of singing in public). Consistent with our account, this suggests that the conceptual structure that drives goal-directed behavior during a manic episode is the very same that drives behavior during a depressive episode (Leahy, 1999).

Our model starts from the premise that affective bipolarity is a ubiquitous phenomenon that underlies epistemic progress in general (see Bocanegra, 2017), which explains why fluctuations in mood can be observed in many if not most of psychiatric disorders (Baldessarini, 2000). The model claims a fundamental codependence between the phenomenal exploration that occurs during an M-mode and the conceptual rumination that occurs during a D-mode. Critically, these two modes of epistemic activity elicit and sustain each other over time. Our model proposes that local-to-global and global-to-local interactions between emotion and cognition constitute a coupled feedback mechanism which is responsible for the entrenchment of M- and D-modes (see also Basco, 2010), and determines the dynamics and temporal dependencies between these modes. Given that mode switches are part of the natural time-course of disorders (Lewis & Winokur, 1982), it would be interesting for future approaches to attempt implementing cognitive-behavioral treatments with the explicit aim of preserving endogenous cyclicity.

The new perspective gained from our model is that healthy forms of affective bipolarity are what make epistemic progress possible in the first place, and conversely, dysfunctional epistemic strategies are what cause entrenched forms of affective bipolarity. Indeed, given that affective bipolarity is associated with setting life goals and ambitions, creativity and achievement (Jamison, 1996), it is important to treat excesses in a way that conserves the benefits it has for the individual. Although its pathological form is a serious debilitating disorder, viewing affective bipolarity as an extreme form of a general and ubiquitous mechanism may be useful to develop new interventions.

Given that cognitive-behavioral approaches have the explicit aim to assist individuals with bipolar tendencies to develop strategies that will help them manage their emotions, our account highlights an interesting paradox concerning the implementation of therapeutic approaches. On the one hand, the therapist needs to promote epistemic change in order to prevent affective bipolarity from spiraling out of control. On the other hand, we claim, affective bipolarity is necessary in order to accomplish long-lasting epistemic change in the first place. One way of balancing these two objectives may be through the use of side-projects, which aim to prevent excessive forms of affective bipolarity, while at the same time allowing moderate forms of affective bipolarity to train individuals to manage their epistemic activities more successfully.

References


Footnote

1. It is important to note that this is a very broad phenomenological characterization of subclinical affective bipolarity which overlaps with but does not coincide with formal diagnostic criteria for the disorder. Both the DSM-5 (American Psychiatric Association, 2013), as well as the ICD-10 (World Health Organization, 1992) characterize bipolar disorder as a spectrum of disorders on a continuum. DSM-5 differentiates between the subtypes, Bipolar I Disorder (where individuals have experienced at least one manic episode), Bipolar II Disorder (where individuals have not experienced manic episodes, but have experienced one or more hypomanic episodes, and one or more major depressive episodes), and Cyclothymia (where individuals have a history of hypomanic episodes with periods of depression that do not meet the criteria for major depressive disorder).