

SELF EFFICACY AS A NOVEL PHENOTYPE FOR PSYCHIATRIC GENETICS

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BACKGROUND

The concept of self-efficacy – gaining insight in human motivation

The concept of self-efficacy was introduced by Bandura in 1977 and is considered crucial in explaining behavioral phenomena like motivation, learning, self-regulation and accomplishment. Self-efficacy beliefs describe to what extent a person believes to have the competence and the possibilities to complete a specific task or to reach a specific aim. Thus it is related to the concept of “perceived control” over a situation.

Self-efficacy beliefs affect many areas of human behavior, among others the area of the health behavior of a person, on the one hand regarding choices affecting health in general and on the other hand more specifically the dealing with an actual illness. The concept of self-efficacy is fairly often discussed in the context of chronic diseases like chronic pain. As regards psychiatric illnesses, self-efficacy-related research is rather scarce and focuses on addiction and major depression. Here we present a project addressing self-efficacy beliefs in bipolar disorder (BD) patients.

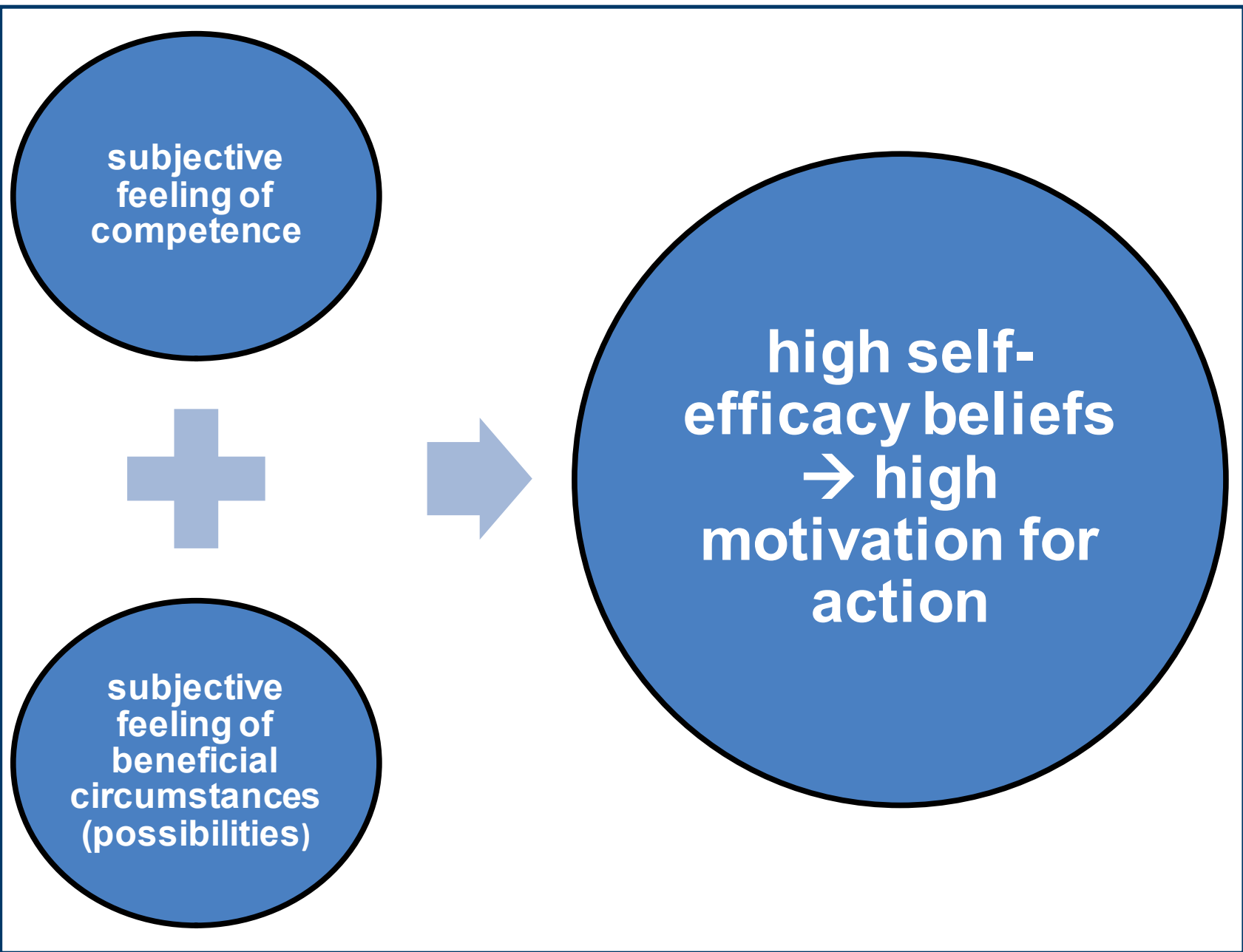
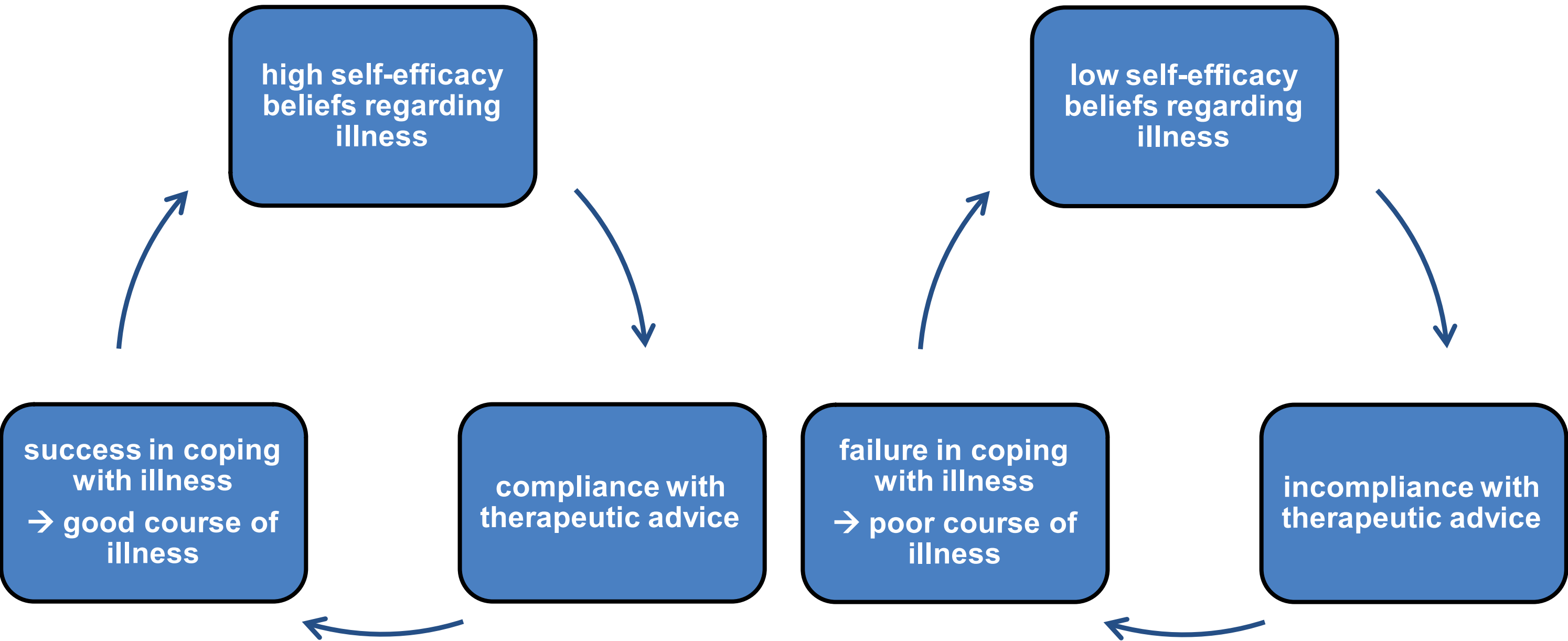


Figure 1: Basics of self-efficacy beliefs

PART I – SELF-EFFICACY BELIEFS AND THE COURSE OF BD

Working in the field of mental illness, one of the major challenges for clinicians is to achieve a patient’s compliance with the treatment regimens. It is well known that the course of the illness can be dramatically impaired by incompliance (increased risk of relapses; increased severity of episodes), but psychotropic medication may cause unpleasant side effects and behavioral changes are hard to be consistently implemented. Psychoeducation and cognitive-behavioral psychotherapeutic interventions in general aim at increasing the patient’s self-efficacy regarding his illness and therefore his compliance.

Figure 2: Circles of self-efficacy beliefs



Therefore we plan on testing the following **hypothesis**:

- There is a positive association between the course of the illness in BD patients and their amount of self-efficacy beliefs with regard to their own illness.

Project plan

- development of a self-efficacy scale for BD on the basis of prototypes from major depression (see Fig.3)
- analysis of the impact of self-efficacy on longitudinal functioning and course of BD in a German longitudinal sample of BD patients
- candidate gene analysis

SEQ-DA

Name: Date:

- If you were feeling depressed, how sure are you that you could manage doing your favourite activity or hobby?

1	2	3	4	5
Really sure I couldn't	Probably couldn't	Maybe	Probably could	Really sure I could
- If you were feeling sad, how sure are you that you could help yourself feel less sad?

1	2	3	4	5
Really sure I couldn't	Probably couldn't	Maybe	Probably could	Really sure I could
- If you couldn't be bothered eating or if you wanted to eat too much, how sure are you of being able to eat a healthy amount (i. e. not too much and not too little)?

1	2	3	4	5
Really sure I couldn't	Probably couldn't	Maybe	Probably could	Really sure I could
- If you had difficulty sleeping (i. e. too much or too little), how sure are you that you could bring this under control?

1	2	3	4	5
Really sure I couldn't	Probably couldn't	Maybe	Probably could	Really sure I could

Figure 3: Extract of the Self-Efficacy Questionnaire for Depression in Adolescents by Tonge et al.

PART II – THE GENETICS OF SELF-EFFICACY BELIEFS

Self-efficacy beliefs have traditionally been seen as a learned trait rather than a genetic one, but this assumption has been challenged recently by twin studies.

Table 1: Twin studies on self-efficacy

Reference	Design/ sample	Estimated heritability of self-efficacy
Greven et al., 2009 (Psychol Sci)	<ul style="list-style-type: none">3,785 twin pairs (age: 9 years)Twins Early Development Study (TEDS) from the United KingdomPerceived Abilities in School Scale	<ul style="list-style-type: none">51% of variation in academic self-efficacy due to additive genetic effects2% due to shared environment
Waaktaar & Torgersen, 2013 (Twin Res Hum Genet)	<ul style="list-style-type: none">1,394 adolescent twin pairsnational Norwegian Medical Birth RegistryChildren's Perceived Self-Efficacy Scale	<ul style="list-style-type: none">75% of variation in general self-efficacy due to additive genetic factorsno effect of shared environment

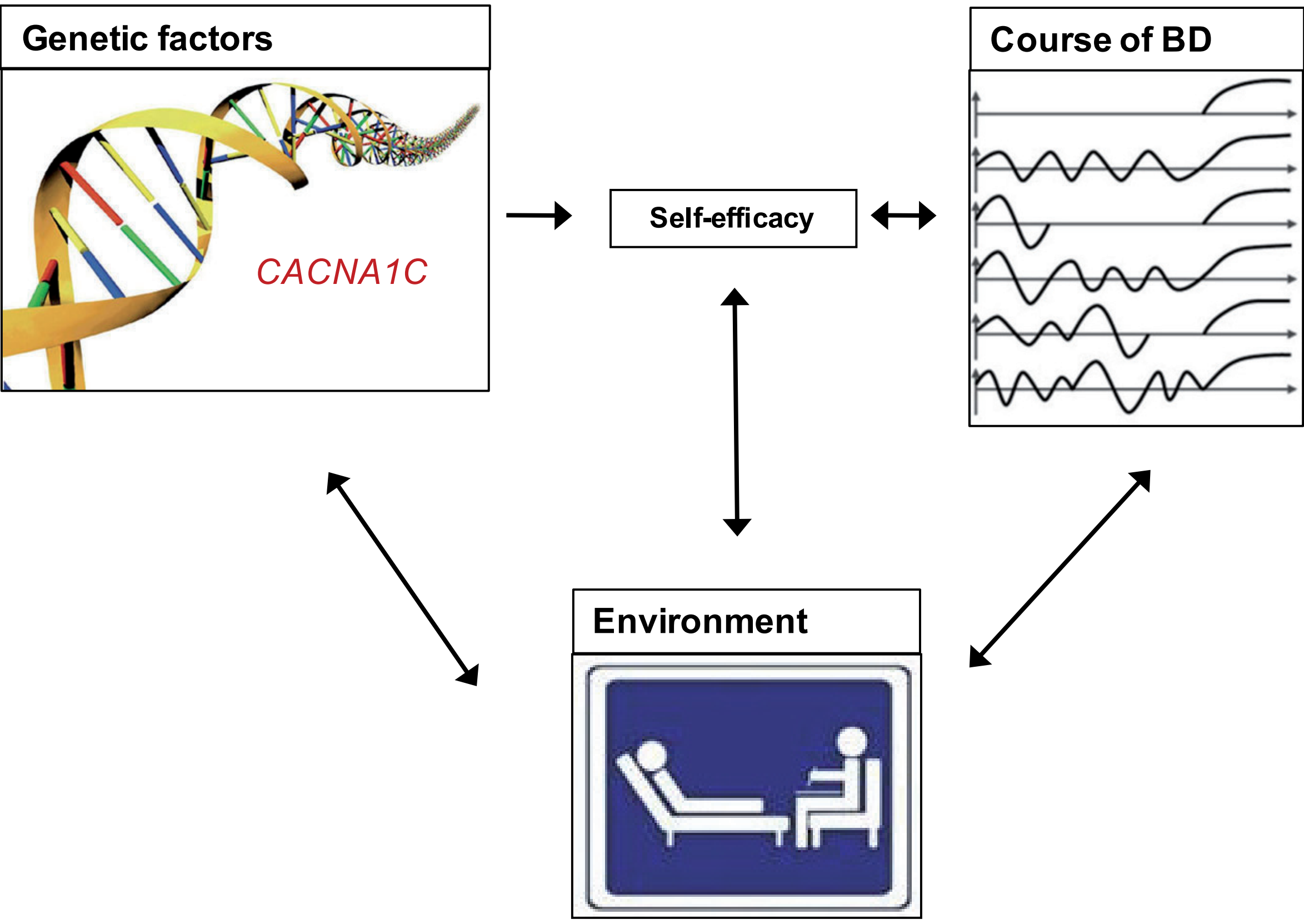
Possible candidate genes

Low to moderate correlations with self-efficacy have been reported for resilience factors like optimism or sense of coherence. Thus, we will concentrate on candidate genes that show associations with these resilience factors.

Table 2: Possible candidate genes for self-efficacy

Gene	Associated resilience factor	Reference
CACNA1C	sense of coherence; optimism	Strohmaier et al., 2013
MR-Haplotype	optimism	Klok et al., 2011
BDNF	sense of coherence	Surtees et al., 2007

Figure 4: The postulated relationship between genetic resilience factors, self-efficacy, and the course of BD



Self-efficacy – a promising phenotype for psychiatric genetics?

- probably associated with the course of illness which has been neglected so far
- cross-diagnostic phenotype
- resilience factor

REFERENCES

- Bandura, Psychol Rev, 1977.
- Greven et al., Psychol Sci, 2009.
- Klok et al., Transl Psychiatry 2011.
- Surtees et al., J Psychiatr Res, 2007.
- Strohmaier et al., Mol Psychiatry, 2013.
- Tonge et al., Eur Child Adolesc Psychiatry. 2005.
- Waaktaar & Torgersen, Twin Res Hum Genet, 2013.

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DISCLOSURE

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