Anxiety in youth at clinical high risk for psychosis: A case study and conceptual model

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ABSTRACT

Some individuals identified as being at clinical high risk (CHR) for developing psychosis may suffer substantial anxiety due to a fear of transitioning to psychosis. This can be associated with catastrophic misinterpretation of normal mental experiences, such as a momentary lapse in attention, as markers for psychosis, fueled by hyper-vigilance for mental experiences that may be perceived as signs of impending psychosis. This anxiety may only worsen due to the self-stigma triggered by admission to a psychiatric CHR clinic, independent of whether or not the individual transitions to psychosis. Based on a clinical case study, we propose a cognitive model for this anxiety, an extension of Clark's model of panic. Our model accounts for causal factors of this distress, such as self-stigma and maladaptive core beliefs. It also includes maintaining factors such as hypervigilance for mental experiences and catastrophic misinterpretation of normal mental experiences as anomalous and portending eventual psychosis. We outline assessment and treatment guidelines and offer suggestions for how this model could be empirically validated. We suggest that treatment with this model, under the neural diathesis-stress framework, may have the potential to lower the risk of transition to psychosis and that assessment for such anxiety should be part of standard CHR care.

1. Introduction

Amongst those individuals identified as being in a clinical high risk (CHR) state for psychosis due to either attenuated psychotic symptoms (APS) or brief, limited, intermittent psychotic symptoms (BLIPS), most will not go on to develop psychosis (Fusar-Poli et al., 2012). However, a substantial proportion of CHR individuals report being distressed by their APS or BLIPS and, further, by anxiety, substance use and difficulties in functioning, with the level of this distress being somewhat predictive of transition to psychosis (Rapado-Castro et al., 2015). Thus, when treating CHR individuals, it is important to focus not only on monitoring APS and BLIPS but also on comorbidities that may raise the level of risk of transition to psychosis. In this report, we focus on anxiety in CHR individuals, specifically a fear of transition to psychosis, as a contributing factor to distress for some members of this population. We suggest a cognitive model for this anxiety, based on clinical observations at a CHR clinic. Our proposed model, a generalization and extension of the Clark model of panic disorder (Clark, 1986), also fits into the more general model of anxiety stemming from the misinterpretation of

intrusions into awareness (French and Morrison, 2004; Morrison, 2001; Wells and Matthews, 1994), but highlights the role of self-stigma and focuses specifically on normal mental experiences that are mislabelled by CHR individuals as anomalous. We account for the anxiety experienced by CHR individuals by proposing self-stigma regarding mental illness as a causal factor for, and hypervigilance of mental experiences as a maintaining factor of this anxiety. We also show how to apply the model to assess and treat CHR individuals with cognitive behavioural therapy (CBT), propose avenues for empirical validation of the model and suggest that our approach may have the potential to lower the risk of conversion to psychosis.

The notion that psychosis can be prevented, or at least delayed, in vulnerable individuals is a relatively recent concept in the treatment of psychotic disorders (Fusar-Poli et al., 2013; Yung et al., 1996). In order to be deemed to be in the clinical high risk state for psychosis, an individual must experience a substantial decline in functioning and must meet one of the following criteria: (1) APS such as auditory hallucinations consisting of, for example, noises or unintelligible rather than distinct voices, or paranoid ideation that is fleeting or held with only mild conviction, (2) BLIPS, or full-fledged psychotic symptoms lasting less than 7 days, (3) genetic risk, identified by a close family history of psychosis (Fusar-Poli et al., 2013). Evidence-based interventions for CHR individuals include CBT, family psycho-education, omega-3 polyunsaturated fatty acids, and low doses of antipsychotics; to a greater

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or lesser extent, each appears to have some effect in lowering transition rates (Preti and Cella, 2010).

Due to the growing evidence that CBT can lower transition rates from CHR to psychosis (Müller et al., 2014), it is recommended as the first line of intervention, before pharmacological antipsychotic treatment (Schmidt et al., 2015). In one randomized controlled trial, a CBT intervention, consisting of psychoeducation and targeting of cognitive biases typical of the CHR state (e.g. jumping to conclusions), was associated with a substantial reduction of the risk of transition and the same study found a number-needed-to-treat of nine individuals by up to 6 months of CBT to prevent one transition over 24 months (van der Gaag et al., 2012; Van der Gaag et al., 2013).

Rates of transition to psychosis range from 17% to 28% one year after admission to CHR clinics (Fusar-Poli et al., 2012). Regardless of eventual outcome, the distress in this population is substantial, with CHR adolescents reporting lower health-related quality of life, including diminished quality in the domains of school and friendships, compared to non-CHR adolescents seeking help for mental health issues (Granö et al., 2014). CHR individuals also have lower levels of social functioning, including greater social withdrawal, compared to controls (Addington et al., 2008) and greater levels of and sensitivity to stress (Trotman et al., 2014). Thus, even though most people treated at a CHR clinic will not go on to develop psychosis, this population could benefit from psychological interventions to relieve distress and increase functioning. This distress may worsen due to self-stigmatizing beliefs about psychosis and magnification of the risk of transition, which can be addressed in CBT by normalizing and challenging beliefs (Müller et al., 2014).

Other CBT techniques that have proven useful in treating CHR individuals include generating alternative explanations for anomalous mental experiences such as paranoid ideation or hallucinations. Individuals' initial explanations for these phenomena are often related to "going insane", for example, and can lead to intense distress (French and Morrison, 2004). Getting CHR clients to understand the role of selective attention in maintaining these interpretations, such as by using behavioural experiments, is also important (French and Morrison, 2004).

1.1. Self-stigma

Attitudes towards people with mental illness are generally negative and particularly so for psychosis, which is viewed by many as the most stigmatizing of mental disorders, with sufferers seen as more likely to be dangerous and unpredictable compared to individuals with mood or anxiety disorders (Wood et al., 2014). Mental illness stigma can lead to unjust treatment with regard to housing, work, school and even health care and people with psychosis also report instances of verbal and physical abuse related to having a mental illness (Dinos et al., 2004).

In addition to these overt effects of public stigma, individuals with mental illness may internalize these same discriminatory beliefs once they label themselves as mentally ill (Corrigan and Watson, 2002). One study found that 36% of individuals with severe mental illness had elevated levels of self-stigma (West et al., 2011). Self-stigma is also present in the CHR population and has been associated with depression and social anxiety in this population (Pyle et al., 2015) but research results regarding the effect of the CHR label on self-stigma are mixed (Uttinger et al., 2018; Yang et al., 2015). There is also evidence that CHR individuals who perceive social stigma related to mental illness as harmful, are at elevated risk for conversion to psychosis (Rüsch et al., 2015). Further, CHR individuals who label themselves as mentally ill are more likely to experience stigma stress, a self-perceived inability to cope with stigma, and this will, in turn, negatively affect their well-being (Rüsch et al., 2014). In sum, even the possibility of a diagnosis of psychosis is associated with self-stigma in the CHR population, which then, likely due to the heightened stress sensitivity characteristic of CHR (Pruessner et al., 2017; Trotman et al., 2014), becomes a risk factor for a first psychotic episode. Thus, targeting self-stigma in treatment could lower a CHR individual's risk of transition.

2. A cognitive model of anxiety in CHR

We propose that the fear of transition to psychosis amongst some CHR individuals is a substantial source of distress that can be modeled in a way that is analogous to the cognitive model of panic disorder (1986), thus offering a guide to a CBT intervention that could have the potential to lower the risk of transition. Clark (1986) made the critical observation that experiencing physiological symptoms of a panic attack is not sufficient to induce a panic attack. However, if an individual has "catastrophic misinterpretations" of these physiological sensations, then a panic attack will occur, for example, when a racing heart and sweating are believed to be dangerous signs of an imminent heart attack in a medically healthy individual. Thus, Clark distinguished between the physiological and cognitive components of a panic attack. The Clark model also accounts for external and internal triggers of panic. An external trigger might be any event, positive or negative, that triggers sensations of arousal that are also associated with panic, or any situation that has been previously associated with panic attacks. An internal trigger might be anomalous but benign bodily sensations or thoughts or images of such sensations, of past panic attacks, of imagined heart attacks or of losing control. The co-occurrence of the physiological and cognitive components of panic leads the individual into an escalating cycle of anxiety, culminating in a panic attack. CBT treatment for panic is well known, consisting of psychoeducation, interoceptive exposures to panic symptoms in which the individual learns that nothing dangerous will happen as a result of experiencing these symptoms, and cognitive restructuring of catastrophic misinterpretations of physiological sensations (e.g. Barlow and Craske, 2007).

Clark (1986) observed that individuals can also misinterpret mental experiences in catastrophic ways, such as believing that one is about to "go mad" after "moments when their mind suddenly goes blank". In our clinical experience of treating youth identified as being at clinical high risk of developing psychosis, we have observed a pattern of anxiety that may have begun with an experience of anomalous mental experiences such as APS or BLIPS but continues as a reaction to a normal range of mental experiences such as brief memory and attention lapses. These individuals suffer from how they view their own mental experiences, to the point that such experiences frighten them, they become hypervigilant in monitoring their mental experiences, and they catastrophize over the implications of having such experiences. In our clinical experience with this population, we have also found that self-stigma can fuel a catastrophic misinterpretation of normal mental experiences and thus is an important focus of our psychotherapy work with CHR clients. In such cases, we have focused psychological interventions on getting patients to restructure their beliefs about their own mental experiences. In the present report, we describe a cognitive model of this phenomenon (Fig. 1) and illustrate how it can be used to guide treatment.

As many as 60% of CHR individuals have a history of being bullied (Mayo et al., 2017) and this, combined with the social withdrawal observed in the CHR population (Addington et al., 2008), suggests that dysfunctional cognitive schema such as defectiveness/shame and social isolation/alienation (Young et al., 2003) may be prevalent in this population and be a risk factor for the development of self-stigma long before individuals arrive at a CHR clinic. Admission to such a clinic and treatment by a psychiatrist may only serve to confirm the worst fears of these individuals, who by this time may have developed the belief that they are "crazy" or "not normal". From this belief stems a rule similar to "If I have an anomalous mental experience, then I am not normal" and a broad categorization of otherwise normal mental experiences as anomalous. Given the danger that CHR individuals thus associate with certain mental experiences that are not, strictly speaking, anomalous (such as unusual intrusive thoughts, déjà vu moments or brief lapses in memory), they begin to closely monitor their thought processes, hypervigilant for evidence that confirms their fear of "going crazy" or transitioning to psychosis, especially since similar, but more extreme,
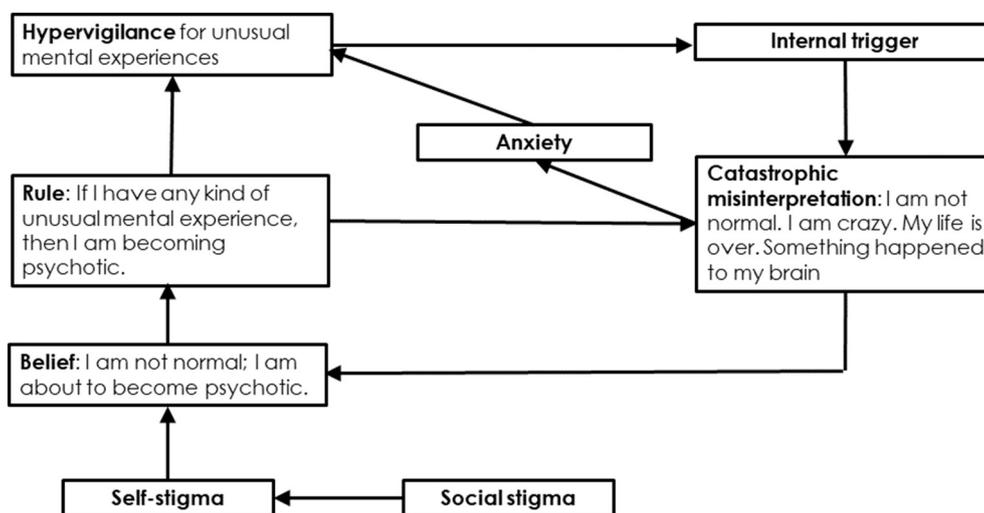
Fig. 1. A cognitive model of anxiety in youth at clinical high risk of psychosis.

experiences led to their admission to the CHR clinic. This hypervigilance alone will be distressing but once they perceive such an experience (the internal trigger), it will lead to a mislabelling of the experience as anomalous and a catastrophic misinterpretation of what the experience means, fuelled by the stigmatizing beliefs about mental illness that are so prevalent in society and which they have internalized. Whereas they once would have dismissed such experiences as meaningless, if they noticed them at all, these experiences now trigger a cascade of catastrophizing thoughts that increase their anxiety, strengthen their core maladaptive belief and heighten their hypervigilance. (See Fig. 1.)

3. Composite case report

A young adult female, whom we shall call Jane, was treated at the Clinic for Assessment of Youth at Risk (CAYR), a CHR clinic located in the Douglas Mental Health University Institute in Montreal, Canada. Individuals between the ages of 14 and 35 years are admitted to CAYR if they meet CHR criteria, as determined by the Comprehensive Assessment for at Risk Mental States (CAARMS), a semi-structured interview (Yung et al., 2005). Clients are offered psychiatric monitoring and family psycho-education. They are also offered, as needed, anxiolytic and antidepressant medications (but not anti-psychotics), case management, and CBT. Over a 10-year period, 81% of clients were admitted on the basis of APS (Pruessner et al., 2015).

Jane was admitted to CAYR on the basis of BLIPS followed by a five-month period of APS, consisting of paranoid ideation held with only mild conviction, and decline in functioning, including social isolation and a reduction in activities of daily living. The brief psychotic episode may have been triggered by a period of heavy substance use and was possibly linked to a history of psychosocial stressors over several years prior to admission to our clinic. Jane also had a history of social anxiety dating back to early adolescence. Her treating psychiatrist in CAYR prescribed anxiolytics as needed and referred Jane to a psychologist in the same clinic, who treated her with CBT.

The first two sessions of CBT consisted of establishing rapport and engaging the client by listening to her narrative of the events that led to her CHR admission, as well as an assessment with the goal of constructing a case conceptualization and treatment plan. Her attenuated psychotic symptoms had mostly resolved but she still had intermittent paranoid ideation related to former high school classmates following her online and in person, which she was generally able to dismiss. Her main source of distress was a preoccupation with "going crazy". Jane revealed that certain mental experiences, such as lapses in memory and attention and déjà vu moments, triggered substantial anxiety because of a belief she held that her BLIPS had permanently damaged her brain

and any mental experiences that she deemed unusual were signs of the imminent onset of psychosis. She also described how family members spoke disparagingly of mental illness. She had also read of cognitive impairments associated with psychosis and began to worry that innocuous experiences such as a lapse in attention or memory were, in fact, indicators of psychosis. At the end of the first session, Jane was asked to track these troubling mental experiences over the following week.

In session two, the mental experiences that troubled Jane were reviewed. For the most part, they consisted of suspicious thoughts, momentary lapses of attention or memory, strange dreams, and feelings of deja-vu. Although they were clearly within the normal range of mental experiences, they triggered a level of anxiety so intense that she sometimes found herself freezing in fear whenever they occurred and avoiding situations associated with these experiences. She had also developed a hypervigilance with regard to her own thinking processes, continually monitoring them for evidence that she was "going crazy". Once it was established that Jane's anxiety fit the cognitive model (Fig. 1), the model and how it could explain her anxiety were discussed.

In subsequent sessions, the psychologist and Jane explored the meaning of her troubling mental experiences, how they activated a self-stigmatizing fear that she was "crazy" and her life was forever changed for the worse. She recounted how she saw a mental health professional in the community prior to her admission to our clinic and how troubled she was when the clinician told her that she likely had schizophrenia. The fact that she was now being treated as an out-patient in a psychiatric hospital confirmed to her that she must be "crazy". Her idea of "crazy" was challenged, the meaning of the CHR state was reviewed, along with the relatively low risk of transition to psychosis.

Therapy sessions also focused on her hypervigilance of her mental experiences and on her catastrophic misinterpretation of the meaning of these experiences. In classic CBT fashion, Jane was asked to track these experiences as well as her cognitive and emotional reactions to them. She came to understand how hypervigilance maintained her anxiety and that she likely had had such experiences all her life, just like everyone else. For example, déjà vu experiences are quite common and generally benign (Adachi et al., 2006). However, Jane saw advantages to maintaining this hypervigilance, chiefly early detection of mental illness. Through collaborative exploration, she was able to identify several disadvantages: Worrying about her own thinking only added to her distress; when she focused her attention on her own thinking, it was difficult to attend to other things and thus her hypervigilance was likely contributing to her attention lapses; she found it exhausting and frustrating.

She and her psychologist worked on shifting her appraisal of her troubling mental experiences using psychoeducation to normalize

these experiences, challenging her ideas of "crazy" versus "normal" and eventually exploring what it meant for her to be at clinical high risk for psychosis. Her beliefs about CHR and psychosis revolved around catastrophizing thoughts such as "My life is over" and "I will never have a career or a boyfriend or an independent life". They discussed social stigma in a realistic manner, acknowledging widely held prejudicial beliefs about mental illness and schizophrenia in particular. They also discussed counterexamples to her belief that her life would be over if she received a diagnosis of a psychotic disorder, and challenged her self-stigma. When confronted with troubling mental experiences that triggered anxiety, Jane used relaxation breathing and coping statements summarizing her in-session work to effectively control her anxiety and shift her appraisal of these experiences from negative to neutral. By the end of therapy, the strength of Jane's belief that her brain was damaged and she would develop psychosis declined from 80% prior to treatment to 30%.

4. Discussion

Based on clinical observations, a cognitive model and CBT intervention for treating anxiety in individuals identified as CHR has been proposed. This model focused on anxiety related to individuals' own mental experiences, consisting of catastrophic misinterpretation of mental phenomena that fall within the normal range of experience, such as a brief attention or minor memory lapse, as signalling imminent psychosis. It was suggested that this anxiety is rooted in self-stigmatizing beliefs and maintained by hypervigilance for such experiences. An intervention was described that focused on psychoeducation about the cognitive model, building awareness of maladaptive hypervigilance for mental experiences, and challenging self-stigmatizing beliefs. The intervention also included techniques and strategies to better cope with the physiological symptoms of anxiety. Given the high level of distress in the CHR population, the model and intervention presented here can be of use in giving individuals valuable coping skills, particularly since stigma stress is a risk factor for conversion from CHR to psychosis (Rüsch et al., 2015). More generally, interventions such as the one we propose have the potential to reduce the risk of conversion to psychosis, given the sensitivity of the CHR population to stress (Pruessner et al., 2017; Trotman et al., 2014).

Existing measures could be used to assess the validity of this model, as well as the progress of individual clients during the course of treatment. We propose several measures (Table 1) which can be used to this end. A worksheet for recording mental experiences that are threatening to the client can be given at the end of the first session, for the client to use during the next week to collect data on the content of their disturbing experiences, their reactions to them, and their frequency. Additionally, we propose two standardized measures. French and Morrison (2004) suggest using the Metacognitions Questionnaire (MCQ) (Cartwright-Hatton and Wells, 1997) as an aid in assessing metacognitive beliefs in CHR individuals. We suggest that, in particular, the cognitive self-consciousness subscale of the MCQ, or its short form, the MCQ-30 (Wells and Cartwright-Hatton, 2004), could be used to capture hypervigilance for mental experiences. The MCQ is related to Wells' metacognitive model of psychological disorders (Wells, 2000) and the cognitive self-consciousness subscale consists of questions related to attentiveness to and appraisal of one's thought processes and thought

content. MCQ scores have been shown to be elevated across all subscales in individuals with psychosis compared to healthy controls (Sellers et al., 2017). CHR individuals have similarly elevated MCQ scores and higher scores on some subscales, including the cognitive self-consciousness subscale, have been associated with greater emotional distress and poorer functioning (Cotter et al., 2017). Based on our model, we predict diminished cognitive self-consciousness as an outcome of treatment.

It follows from our model that levels of self-stigma should decline following treatment, associated as they are with the core belief "I am not normal; I am crazy; There is something wrong with me" and ensuing assumptions such as "If I have a mental illness, then my life is over." The Internalized Stigma of Mental Illness (ISMI) scale (Ritsher et al., 2003), or its brief version the ISMI-10 (Boyd et al., 2014) measure different aspects of self-stigma, including cognitive aspects such as "stereotype endorsement" and behavioural aspects such as "social withdrawal" and are good candidates for use as pre- and post-treatment measures.

Treatment can be broken down into four key components (see Table 2). The format is by no means prescriptive and, although the order in which the components are presented here generally mirrors the chronological order in which they are presented in therapy, clinicians should expect that components will overlap during treatment. Psychoeducation regarding the cognitive model generally follows assessment. This can include psychoeducation about CBT, if the client is naïve to the basic CBT model. The mental experiences worksheet given to the client in a prior assessment session will be helpful in explaining the model, as it can serve to illustrate how the model applies to the client's own experiences. Psychoeducation regarding the CHR state can aid in later work that focuses on challenging clients' catastrophic misinterpretations of their mental experiences, as well as their maladaptive core beliefs. It is important for clients to learn about the prevalence of attenuated psychotic symptoms amongst youth and their generally benign nature. The prevalence of other troubling mental experiences can also be discussed. For example, déjà vu moments are highly prevalent in the general population and may, in fact, be less prevalent amongst individuals with psychosis (Adachi et al., 2006). Teaching relaxation techniques, such as diaphragmatic breathing, will be helpful for the client who suffers anxiety so intense that they may be unable to apply cognitive techniques when triggered by their own mental experiences. Finally, with regard to cognitive restructuring, the goal is to shift the client away from their catastrophic misinterpretation of their own mental experiences, thus breaking their ongoing cycle of anxiety (Fig. 1) and weakening maladaptive beliefs. This will include a discussion of the stigmatizing cognitive distortions inherent in such statements as "I'm not normal" and typical thoughts and images that clients bring to mind regarding a dismal future as a "crazy person". It is important to acknowledge the reality of social stigma while at the same time, reminding clients about the relatively low conversion rates from the CHR state and educating clients about recovery from mental

Table 1
Assessment.

Assessment target	Measure
Mental illness self-stigma	ISMI or ISMI-10
Hypervigilance for mental experiences	MCQ or MCQ-30 Cognitive self-consciousness subscale
Content and frequency of and cognitive, emotional and behavioural reactions to mental experiences	In vivo tracking over 1 week

Table 2
Components of treatment.

Intervention	Goal
Psychoeducation regarding the cognitive model	Build awareness of maintaining factors in clients' anxiety, namely the roles of hypervigilance, self-stigma and catastrophic misinterpretations.
Psychoeducation regarding the CHR state	Learning facts about CHR symptoms, such as prevalence and the high probability that they are benign, will help to normalize the client's experience. Useful for cognitive restructuring.
Relaxation techniques	Give the client tools to manage more intense distress to facilitate application of cognitive techniques in the moment of distress.
Cognitive restructuring	Shift interpretation of mental experiences from catastrophic to neutral.

illness. At the end of treatment, clients should be reassessed with the MCQ and ISMI scales.

4.1. Future research to empirically validate the model

Given that our model is based solely on clinical observation, the next step is empirical validation of the model and numerous avenues suggest themselves. Individuals for whom this model fits would be expected to show high pre-treatment scores of anxiety and self-stigma. Additionally, they would be expected to hold beliefs about their own thinking that would lead to appraisal of normal mental experiences as threatening, as well as to a hypervigilance for such experiences. If self-stigma is, indeed, a causal factor in our model, then treatment consisting exclusively of targeting self-stigma should lower post-treatment scores of anxiety, hypervigilance and negative appraisal of normal mental experiences. A manualized formalization of our approach, evaluated with a randomized control trial, is an important next step. Further, follow-up data to determine rates of conversion to psychosis subsequent to treatment will be important to consider. The conjectured maladaptive cognitive schema of defectiveness/shame and social isolation/alienation (Young et al., 2003) should also be substantially weakened and behavioural changes related to improved social functioning are expected post-treatment. Additionally, although our model is focused on misinterpretation of normal, benign mental experiences, it will be important to test whether the occurrence of APS is related to the anxiety, maladaptive belief systems and self-stigma described here. For example, a research question to answer is whether APS are correlated with the anxiety modeled here and whether APS decline over time, as anxiety declines with treatment based on our model.

In conclusion, the cognitive model presented here can serve as a guide for assessment and intervention to treat anxiety in CHR individuals. We have suggested several ways in which the model's validity can be verified. Further, given the role of stigma stress as a contributing factor to conversion to psychosis (Rüsch et al., 2015), we propose that treatment guided by this model could have the potential to reduce the risk of conversion.

Conflicts of interest

All authors declare that they have no conflicts of interest.

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