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Intuitive expectations and the detection of mental disorder: A cognitive background to folk-psychiatry

5 Pascal Boyer

10 *How do people detect mental dysfunction? What is the influence of cultural models of dysfunction on this detection process? The detection process as such is not usually researched as it falls between the domains of cross-cultural psychiatry (focusing on the dysfunction itself) and anthropological ethno-psychiatry (focusing on cultural models of sanity and madness). I provide a general model for this “missing link” between behavior and cultural models, grounded in empirical evidence for intuitive psychology. Normal adult minds entertain specific intuitive expectations about mental function and behavior, and by implication they infer that specific kinds of behavior are the result of underlying dysfunction. This suggests that there is a “catalogue” of possible behaviors that trigger that intuition, hence a limited catalogue of possible symptoms that feed into culturally specific folk-understandings of mental disorder. It also suggests that some mental dysfunctions, as they do not clearly violate principles of intuitive psychology, are “invisible” to folk-understandings. This perspective allows us to understand the cultural stability and spread of particular views of madness. It also suggests why certain types of mental disorder are invisible to folk-understandings.*

15
20 *Keywords: Cultural Transmission; Ethnopsychiatry; Intuitive Expectations; Mental Dysfunction; Theory of Mind*

1. Introduction

25 Everywhere in the world, people have some categories and models for what scientists identify as mental disorder. Do the representations in question have similar features

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in different human groups? Is their variation largely unbounded or are they based on some common recurrent principles? If there are underlying principles, where do they come from, and do they influence the supposedly scientific models and categories in psychiatry?

30 Traditionally, two disciplines addressed these questions in very different ways: cross-cultural psychiatry, an offshoot of mainstream psychiatry, on the one hand, and ethno-psychiatry, a branch of cultural anthropology, on the other. Many theoretical difficulties and uncertainties have resulted from this disciplinary division. However, progress in the study of intuitive psychology (or “theory of mind”) and in the
35 psychology of culture allows us to bridge this gap and put forward a synthetic model. In particular, it seems clear that all normal adult minds entertain specific intuitive expectations about normative mental function and behavior, informed by similar principles the world over. Intuitive psychology constrains the *detection* of disorder, because it provides people with definite intuitions that certain specific kinds of
40 behavior are signs of underlying dysfunction. Also, intuitive psychology imposes strong constraints on possible *explanations* of disorder. This would suggest that a few relatively simple common principles may underpin very different cultural conceptions of sanity and mental dysfunction.

2. A Prototypical Scenario and a Question

45 Here is a template for the kind of social interaction we consider in this discussion:

1. A particular person experiences some form of mental dysfunction.
2. That person’s behavior becomes an object of attention for other people:
 - (a) During a specific episode, the person’s behavior triggers in other people the definite intuition of a disruption of expected interaction.
 - 50 (b) The automatic search for a possible explanation or repair does not produce a straightforward or coherent account of the behavior, and/or:
 - (c) Some comparable behavior occurs again, with a similar outcome of interpretative failure.
3. People identify the person’s case, despite particular features, as an instance of *D*,
55 a local category or set of possible categories for this particular type of observable behavior.
4. People entertain a causal model of *D* in terms of a local, personal or culturally widespread explanatory model *M*.
5. People consider an appropriate course of action that would alleviate the problem
60 identified.

The tradition of *cross-* (or *trans-*) *cultural psychiatry* is mainly concerned with step [1]. It tries to identify the extent to which some features of mental dysfunction differ, depending on cultural background (Stein, 1993). By contrast, the tradition of *ethno-psychiatry* is mostly concerned with steps [3–5]. It describes the models or

65 assumptions underlying culturally specific forms of nosography and etiology. It also considers treatment, the role of specialized healers, the techniques used and their results ([Jovanovski, 1995](#)).

Strikingly, neither one of these traditions requires or even suggests a specification of the cognitive processes involved in *detecting* mental disorder (step [2] of the above scenario), that is, recognizing that something is amiss in a person's behavior. This was noticed by a founder of modern ethno-psychiatry, Georges Devereux:

75 The patient appears on scene—on the printed page [in ethno-psychiatric monographs]—as an already recognized and more or less completely diagnosed neurotic or psychotic, with no mention of the manner in which this status—for a status it is!—has been assigned to him. (Devereux, 1980, p. 247)

From history and cultural anthropology, we have a wealth of evidence for local variations in steps [3–5] of the situation described above, but we have no principled model of the extent and scope of variability in the domain of detection (step [2]), or even systematic empirical work on this process.

80 To go further in understanding the detection of mental disorder, we must consider the influence of intuitive, tacit principles that are part of normal cognitive function the world over. This enterprise can be seen as an extension of a broader research program, to do with the understanding of cultural phenomena as bounded variations within limits set by human cognitive capacities ([Sperber & Hirschfeld, 2004](#)).
85 In many domains of cultural knowledge, cognitive scientists and evolutionary anthropologists have found that early developed intuitive principles form a background of expectations that make possible the acquisition of particular cultural norms and concepts, for instance in such domains as folk-biology ([Atran, 1990, 1998](#)), kinship and ethnic categories ([Hirschfeld, 1994b, 1996](#)), racial categories
90 ([Kurzban, Tooby, & Cosmides, 2001](#)), religious beliefs ([Atran, 2002](#)), social interaction ([Cosmides & Tooby, 1992](#); [Fiske, 1992](#); [Tooby & Cosmides, 1996](#)). It would be highly surprising if intuitive psychological principles, by contrast, did not have any effect on what is construed as expected and aberrant behavior ([Gerrans, 2007](#)).

95 3. The Background: Intuitive Psychology Expectations

Intuitive psychology is a convenient term for the set of cognitive capacities that result in the understanding of one's own and others' behavior in terms of unobservable mental states and processes ([Baron-Cohen, 1995](#); [Leslie, 1987](#); [Perner, Leekam, & Wimmer, 1987](#)). Most principles of intuitive psychology operate beyond conscious
100 access. The explicit descriptions we form of other people's behaviors and their possible explanations are the accessible outcome of inferential processes we are not aware of. Intuitive psychology is probably not an integrated system but a suite of distinct situation-specific capacities, which themselves orchestrate a variety of lower-level neural capacities ([Frith, 1996](#)). Perhaps unfortunately, our deepest accounts of
105 intuitive psychology were first derived from cases in which the system does *not* work,

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e.g., in autistic children or in animals from other species. It is only gradually that these different sources of evidence are converging to a (still fairly tentative) integrated description of the capacities involved in normal, adult intuitive psychology.

For the sake of the present argument, we need only focus on the most fundamental
110 intuitive principles involved. Fortunately, despite important theoretical differences
in models of intuitive psychology, there is an impressive consensus on its core
expectations, among which the following:

[1] *Intentional states; representation of current manifest reality.* Intuitive psychology
assumes that there are memories, beliefs, and perceptions “inside” people’s minds,
115 and that these non-physical objects are causally connected to physical reality around
the person in such a way that they constitute some sort of copy or representation
of the surrounding states of affairs. From the age of three, children entertain the
notion that mental representations are not physical objects ([Wellmann & Estes, 1986](#)). Also, there is from that age onwards a gradual refinement in the notion that
120 thoughts include a representation of the current situation surrounding the person, in
the sense that there are *causal* links between manifest states of affairs and mental
representations ([Leslie, Friedman, & German, 2004](#)). We also intuitively verify the
connection between external objects and people’s mental states by indirect cues, e.g.,
the extent to which people’s gaze follows objects and other people’s gaze ([Friesen &](#)
125 [Kingstone, 1998](#)). More generally, the fact that an object orients to another one, and
seems to “attend” to it, gives a powerful signal that the object is an intentional agent
([Johnson, Slaughter, & Carey, 1998](#)).

[2] *Agency as internal causation.* Agents are different from other objects in that their
behavior is internally generated. This is one of the earliest assumptions to appear
130 in infant development ([Baldwin, Baird, Saylor, & Clark, 2001](#); [Rochat, Morgan, &](#)
[Carpenter, 1997](#)). It is based in infants and adults on the specific psycho-physics
of animate motion ([Michotte, 1963](#); [Schlottman & Anderson, 1993](#); [Tremoulet &](#)
[Feldman, 2000](#)) and on other cues that indicate internal causation and generation of
behavior ([Gelman, Durgin, & Kaufman, 1995](#); [Williams, 2000](#)). Intentional agents’
135 actions relate to objects and states in a principled way ([Blythe, Todd, & Miller, 1999](#)),
with trajectories interpreted even by infants as, e.g., *reaching* a particular object of
interest and *avoiding* obstacles ([Csibra, Gergely, Biro, Koos, & Brockbank, 1999](#);
[Gergely, Nadasdy, Csibra, & Biro, 1995](#)). More abstract intention ascription develops
early in children, who imitate successful rather than unsuccessful gestures in the
140 handling of tools ([Want & Harris, 2002](#)) and can use actors’ apparent emotions as a
clue to whether the action was successful or not ([Phillips, Wellman, & Spelke, 2002](#)).

[3] *Memory as a store.* The intuitive notion of memory as a store is widespread
around the world, and seems salient and intuitive enough to inform even some
scientific models of memory processes ([Roediger & Geraci, 2003](#)). Although this has
145 not been the topic of much research, it would seem that intuitive psychology too
assumes that events are somehow “copied” onto a memory store and retrieved
in the form in which they were experienced—an assumption that goes against much

of what psychologists know about human memory (Ross & Wilson, 2000; [Rubin, Schrauf, & Greenberg, 2003](#)).

150 [4] *Inferential and communicative coherence*. Communicative interaction is based on
complex inferential processes and requires that each person's contributions follows
tacit but highly constraining pragmatic principles ([Grice, 1975](#)). Tacit pragmatic
principles develop very early. They underpin communicative development in infants
([Trevarthen & Aitken, 2001](#)) and support the acquisition of new words (Bloom,
155 2000). The interpretation of communicative acts generally requires an understanding
of the interlocutor's intentions, that is, of the specific way in which she is trying to
affect the listener's representations ([Noveck & Sperber, 2004](#); [Sperber & Wilson,
1995](#)). In the course of actual conversations, tacit adjustments and subtle forms
of "repair" help people maintain a roughly similar model of the situation they are
160 talking about.

[5] *Emotion, norms and empathy*. A great deal of information about other people's
mental processes is based on the (largely unconscious) reading of subtle emotional
cues (facial cues, voice, gestures) and their possible causes. The capacity develops
early. For instance, five-month old infants react differently to displays of different
165 emotions on a familiar face ([D'Entremont & Muir, 1997](#)). Development converges
on similar cues in different cultural groups ([Ekman, 1999](#)). Specific neural circuitry
is involved in the detection and recognition of specific emotion types ([Kesler-West
et al., 2001](#)), distinct from the general processing of facial identity.

Intuitive psychological principles also provide expectations about emotional
consequences of states of affairs in the absence of any specific cues. Ordinary "mind-
reading" includes the capacity to predict and simulate other agents' emotional
reactions to specific scenarios. Note that these expectations require a rich data-base
of facts about social relations. For instance, we have definite expectations about
the emotions that inform relationships with kin as opposed to non-kin, friends as
175 opposed to acquaintances, mates as opposed to friends, etc.

A specific form of emotional processes that we assume in others concerns
adherence to cultural and moral norms. Cultural norms are explicit prescriptions for
behavior, bound together with an emotion or attitude ([Nichols, 2002a](#)). In general,
people tacitly expect others in their group to be attached to a range of cultural norms
180 to the same degree as themselves. Expectations about emotions may be explained
as the outcome of a more general capacity for empathy through simulation. For
instance, the perception of others' emotions is based on some form of internal
simulation of similar emotions ([Decety & Sommerville, 2003](#)). In the same way,
intuitive expectations about emotionally relevant hypotheticals (e.g., predicting
185 what is felt by someone whose kin are threatened, whose friends deserted them, etc.)
may be largely based on such simulation ([Gordon & Olson, 1998](#)).

[6] *Principled motivation*. Intuitive psychology includes a specific model of how
intentions are connected to available information and background preferences
([Malle, 2004](#)). Intuitive psychology also seems to distinguish between desire as a

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190 simple preference state, and intention as the combination of that state with available
information to produce a plan of action (Malle & Knobe, 2001). A fundamental
assumption is that intentions are such that they make the accomplishment of desires
and goals *more* likely. Desires are indeed seen by children as fundamental to the
explanation of behavior, more so than physiological states (Moses, Coon, &
195 Wusinich, 2000). Even young children understand that desires may conflict (Bennett
& Galpert, 1993). This understanding of desire and intention seems to develop before
age three (Wellman, Phillips, & Rodriguez, 2000).

And many other principles. The present list of tacit principles consists of nothing
more organized or profound than a summary of evidence in the domain. There is
200 certainly no established consensus on the general workings of intuitive psychological
capacities. As our knowledge of intuitive psychology principles increases, we may
have to add much more specific expectations to our list. But what matters here are
the empirical findings, which are not the object of much dispute, as far as the above
list is concerned. I will return to the question of the limits of intuitive psychology
205 presently—after providing an illustration of its use in the understanding of mental
disorder detection.

4. Intuitive Catalogue of Detectable Mental Dysfunction

Let us now see how far we can pursue a description of possible types of manifest
mental disorder, on the basis of highly general tacit principles of intuitive psychology.
210 Table 1 below lists a set of assumptions and a set of corresponding behaviors that
make manifest a violation of each intuitive assumption.

This is certainly not exhaustive. The list is mainly intended as a first step and as the
existence proof, as it were, that intuitive psychology does implicitly predict certain
typical forms of mental disorder. Here is a more detailed presentation of the various
215 items, corresponding to the categories given in the previous section:

[1] *Intentional states, representation of current manifest reality.* Our intuitive
assumptions about intentionality are disrupted when a person does not register
any state of affairs (e.g., vegetative states, hebetudes, coma) or fails to react to salient
stimuli (reflexes absent or diminished, failure to gaze at moving objects, general
220 apathy). A similar sense of impairment would be triggered by people whose gaze does
not conform to (culturally appropriate) forms of gaze following and direct gaze.

[2] *Agency as cause of behavior.* Here possible signs of non-normative functioning
would include apparently involuntary motor behavior (e.g. Vitus, tics, alien hand), as
well as any situation in which it would seem that the person did not originate the
225 intention corresponding to the action, e.g., if they registered surprise at their own
actions. Uncontrolled speech that deviates from social norms (e.g., in Tourette
Syndrome) would be noticed in the same way.

[3] *Memory as a store.* The model would predict a conception of memory impairment
as leakage. A failure to retrieve the specifics of recent, mutually manifest experience

Table 1. Some intuitive expectations and corresponding potential violations.

Intuitive assumption	Potential disruption
1a. Intentional states, representation of external states of affairs	Vegetative, unconscious states
1b. Direct perception of what is manifest	Failure to register or react to what's around, illusory perception of non-existent states of affairs
1c. Perception causes belief	Beliefs or other mental states causing perception
2a. Agency: Motor behavior as result of inner intentional states	Apparently unintended gestures or complex behaviors
2b. Agency: Speech controlled by intentions	Talking in strange voices, unexpected changes in intonation
2c. Agency: Self is the origin of intentions	Involuntary action
2d. Unitary self	Dislocation, appearance of different personalities
3a. Memory as a store	Loss of material
3b. Memories caused by experiences	False memories, memories influenced by beliefs
4a. Coherence in inferences from states of affairs	Inferential non-sequiturs, e.g. goals divorced from present situation
4b. Coherence in communication	Conversational non-sequiturs, unexpected changes of topic
5a. Emotions in tune with outcomes	No emotional reaction, emotions not suited to outcomes
5b. Emotional empathy	Failure to empathize
5c. Feelings towards kin	Hostility to kin, neglect
5c. Moral feelings towards non-kin	Behavior not driven by moral imperatives; opportunism; exploitativeness
5d. Feelings about cultural norms, within-group solidarity	Indifference to cultural norms & etiquette, deliberate violation
6a. Motivation towards external goals	Lack of motivation
6b. Motivation in tune with valence of potential outcomes	Desire to bring about negative outcomes/not cause positive ones
6b. Motivation proportional to value of outcomes	Excessive investment in low-value outcomes or converse misjudgment

230 would be seen as a process whereby information is erased, rather than rather than failure of organization or encoding, in contrast to scientific models of forgetting.

[4] *Inferential and communicative coherence.* Any behavior in which conversational coherence cannot be maintained would trigger an intuition of disrupted mental processes. This indeed is largely documented in the clinical descriptions of many forms of mental disorder. One of the most salient symptoms of senile dementia or Alzheimer's is a violation of the principles of pragmatic relevance (Hays, Niven, Godfrey, & Linscott, 2004), such that caregivers gradually learn to adapt to the unusual communicative style of patients, their non-sequiturs and the absence of "repair," or normal strategies to reduce ambiguity or misunderstandings (Orange & Zanon, 2006). The same applies to schizophrenic patients, whose speech generally provides many examples of wrong speech-acts, violations of turn-taking, referential ambiguity (e.g., use of many pronouns without their referents), lack of repair, and

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of course referential incoherence, in which several topics are addressed in the same utterance (Corcoran & Frith, 1996; Meilijson, Kasher, & Elizur, 2004). Patients are also typically impaired in the understanding of figurative speech and proverbs (Brèune & Bodenstein, 2005).

[5] *Emotion cues.* People notice situations in which the person seems either indifferent to emotional cues on other people's faces and in their speech, or themselves display incoherent emotional cues. Dementia for instance results in a reduced control over emotional expression (Smith, 1995). Schizophrenic patients are generally impaired in the detection and interpretation of emotional cues, and so are autistic children, even high-functioning or Asperger patients (Teunisse & Gelder, 2001). The detection of emotional cues presents autistic patients with a difficult challenge (Adolphs, Sears, & Piven, 2001), compounded by their difficulty in understanding the possible reasons for other people's different emotions. Also, any violation of cultural norms or other expectations about emotion should be attention-grabbing. Obviously, a violation of etiquette, for instance, is not necessarily detected in terms of non-standard mental processes—it could be described as aggression or as a result of the wrong kind of upbringing. But repeated violations without a clear explanation of this kind can then be seen as evidence of disorder (see Clement, 1981, for a description of this phenomenon in Samoan notions of madness). Violations of expectations about kin-directed behavior (e.g., violence towards kin, failure to protect them, neglect) would also count, barring more salient possible causes, as evidence for underlying dysfunction.

[6] *Motivation.* Behaviors whose motivations appear self-contradictory, or behaviors that seem to go against the person's own preferences would probably register as a disruption of cognitive functioning. Also, states in which motivation is generally diminished ("apathy") or, on the contrary, manic states in which all goals are emotionally over-invested, would be prime candidates for detection. It is a familiar finding that schizophrenic patients perform below normal in all motivation scales, and this also extends to high-risk children (Watt, Grubb, & Erlenmeyer-Kimling, 1982). In the same way, one early symptom of Alzheimer's is a general decrease in motivation beyond the normal effects of aging (Ready, Ott, Grace, & Cahn-Weiner, 2003).

Note that the above table should not be mistaken for a list of possible *categories of mental disorder*. As we said above, we focus at this stage on the situations or behavioral incidents that would give rise to a specific *intuition* of non-standard mental processes. We have no *a priori* assumption on whether such intuitions pick up natural kinds or, more modestly, some valid exemplars of mental disorder.

280

5. An Illustration: Mohave Cases

The dysfunction-detection model is proposed here as a missing link between a variety of observed behaviors and an intuition of dysfunction. To illustrate the process,

285 it may help to consider cases reported by George Devereux in his classic *Mohave ethnopsychiatry and suicide* (1961). The study is exceptional in that it lists a number of case-histories and keeping the details of these cases distinct from both local and Devereux's own interpretations. That is very rare in ethno-psychiatric ethnography, and allows us to see how behaviors are first detected as special and then construed as instances of culturally specific models of dysfunction. Table 2 below is an exhaustive

Table 2. List of symptoms mentioned in Devereux's case-studies. First column, case-study number; second column, page in (Devereux, 1961). Third column, quotation from the case-study. Fourth column, principles from table 1 that may be violated in that case.

Case	p.	Description	#
C2	40	A certain man would get sudden fits of rage, take a stick and beat up people. He lived apart from others.	5a
C6	73	During one of his atcoo: r hanyienk seizures he fell into the fire, burning his hand quite badly. He did not seem to have any feeling (sensitivity) when he burned himself.	1b
C7	74	Suddenly he got up and made a choked, panting noise, which sounded like "ak".	2a
C12	75	Suddenly he saw him fall down on the sidewalk and "act crazy."	2a
C13	78	When one spoke to her, she could not keep her head still, but kept looking around.	2a
C14	79	I was told that even in her old age Nyortc still "copulated around," and that she was ya tcahaetk, i.e., a nymphomaniac. She just did these things without knowing it; although sometimes she did know it.	5d
C19	87	One night, for no known reason, Uto: h cohabited with [had sex with] his younger daughter.	5d
C20	96	He became angry and began to say that he was constantly thinking of killing. [...] He painted his face black, like a warrior going on a warpath, and actually seemed to believe that he was going to war.	4a 1c
C21	96	He cut off his long braids of hair, the way mourners do, and painted his face black. He declared that he would kill anyone who tried to come in.	4a
C23	97	She picked up a stick and went to her former husband's new residence and "just beat up everybody in that damn place."	4a 5c
C25	114	She just had a tired feeling all the time. She had no appetite.	6a
C31	142	Periods of excitement, during which it was necessary to chain or tie her to her bed.	2a
C32	144	While she was insane her father and her mother came to her. First they called her, and then they ran away. My mother ran away, people immediately ran after her. They must have been the ones she mistook for big balls that seemed to be chasing her.	1c
C33	144	One day this old woman ran away from her daughter's house, went down to the riverbank, fell into the mud, and remained there for 2 days.	6b
C34	145	He was sane right up to his death and did no insane talking. He could not move at all.	2a
C35	146	He was unable to get around. He said just anything; sometimes he would even call out the names of all his dead relatives. He would try to get up and pick up anything with in reach and would then throw these objects around.	2a

(continued)

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Table 2. Continued.

Case	p.	Description	#
C36	147	He dreamed that he was visiting his father and his mother, who had died, and toward the end of the dream he even ate food prepared by his dead relatives. Every time he ate anything, he would vomit it out again.	6b
C37	148	People who saw him asked him why he cried, but he replied that he did not know.	5a
C38	149	She began to talk- about anything at all-and kept on raving for about half an hour. At times she rose from her bed as though she were well, and then suddenly tore off her clothes.	4a
C52	203	The charm brought him luck for a while, but, in the end, it “turned against him,” and paralyzed his tongue.	4b
C53	205	One of them became so indignant that he got drunk, came back to where his oldest brother kept his vigil and stabbed him.	5c
C58	207	He could no longer speak. He was in a kind of daze. He never acted as though he knew or understood what was going on. He just sat there.	1a
C61	218	She just kept on laughing and seemed unable to stop. We just watched her and let her laugh, until she sat down and fell asleep.	5a
C62	218	A Pueblo Indian girl of 17 began to laugh hysterically and could not stop laughing, even when people slapped her and told her to stop it. She didn't even seem to hear what was said to her.	5a 4b
C68	247	He had a tic since childhood. It consisted of occasional spastic movements of the face.	2a

290 list of the symptoms reported as part of case-studies. This selection omits all details
of each individual case except those *reported behaviors* actually mentioned by
participants other than the ethnographer or other investigators.

Since Devereux reported these utterances in the context of the case-studies, one
may presume that people volunteered the descriptions of behaviors as relevant
information, as what made the particular person a “case,” in other words what
295 signaled underlying dysfunction or problems. So it is striking that a great majority of
that information consists in clear violations of intuitive psychological expectations
(table 2 identifies the specific principles violated in each case, referring back to
table 1). As discussed above, psychological violations are often accompanied with
other norm-violations—but this list also suggests that the former are invariably
300 mentioned as relevant. For instance, a woman is described as nymphomaniac (case-
study 14)—but note that a relevant feature of the situation, for the Mohave observer,
is that she did not always *know* what she was doing. In the same way, the familiar
phenomenon of loss of consciousness during epileptic fits (case-study 6) is made
salient by the fact that the patient did not register pain. An anti-social person (case-
305 study 20) is also described as deluded (“he seemed to believe he was going to war”).

This obviously is not meant as compelling evidence for the violation-detection
model. That would require a thorough analysis of case-studies from a variety of
cultural environments, which is beyond the scope of this contribution. My point here
is to illustrate how central violations of psychological expectations are to detection of
310 putative dysfunction. Indeed, of all the cases reported by Devereux, in one instance

only (case-study 23), does the evidence consist in non-standard or inappropriate behavior (beating one's in-laws) that could accommodate interpretations other than psychological violations.

6. Scope and Limits of Intuitive Psychology Principles

315 We know that intuitive psychology is a set of crucial inferential mechanisms
whose effortless and generally transparent operation provides is with an interpre-
tation of observed behavior in terms of beliefs, intentions, and emotional states.
The argument here is that, by the same token, intuitive psychology can provide us
with the intuition that a particular individual's mind is dysfunctional, because
320 that person's behavior violates some intuitive psychology expectations in a way that
cannot be easily explained otherwise. In this model, intuitive psychological
expectations do most of the causal work, as it were. So it may be of help to specify
some of their properties.

Are the principles universal? Now the obvious question, before we go any further,
325 is whether these principles are found in similar form the world over. Do people
in different cultures have the same intuitive psychology? Obviously, many aspects of
our understanding of behavior depend on local norms and ideas about how people
should and do behave. As a consequence, there are great differences in people's
explicit conceptions of mind (Lillard, 1997; Vinden, 1998), when they bother to
330 formulate one. But there is no evidence for corresponding differences in the actual
tacit principles of intuitive psychology. That is to say, there is no evidence in the
ethnographic literature that people in a particular community either fail to entertain
the principles listed above (table 1) or that they entertain widely different principles
(Leslie, 1994; Sperber & Hirschfeld, 2004). Most empirical studies in the domain have
335 focused on the developmental aspects. They tend to show a great similarity in the
nature of early intuitive psychology principles (Astuti, 2001; Avis & Harris, 1991;
Tardif & Wellman, 2000; Yazdi, German, Defeyter, & Siegal, 2006), in their
developmental timing (Callaghan et al., 2005; Wellman & Fang, 2006) and their
connections to other mental processes (Chasiotis, Kiessling, Hofer, & Campos, 2006).
340 This is not too surprising if we consider the overwhelming evidence for early
development of brain structures that support intuitive psychology (Frith, 1996;
Luo & Baillargeon, 2007).

Are intuitive principles an assumption of rationality? Psychological expectations
should not be taken as a theory of rationality, or confused with a general assumption
345 that "people generally behave rationally." All the evidence suggests that intuitive
psychology is a collection of extremely precise, context specific expectations and
inferences, emphatically not a deductive theory of how people behave. For instance,
the evidence shows that even young children expect people to form beliefs as a
consequence of their perceptions, not perceptions as a consequence of beliefs
350 (Leslie et al., 2004), a principle that creates particular expectations (e.g., "X saw a
banana here, X now believes there's a banana here"). There is no evidence that such

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a principle is connected (as it could have been) to an over-arching assumption that people are rational in their use of information. Indeed, in many situations one intuitively expects others to behave irrationally. For instance, it is a rather common
355 assumption in many cultures that angered individuals will say and do things they will later regret, and that many other circumstances lead people to act against their own best interests.

Intuitive principles are not absolute. Psychological expectations can always be strengthened but also defeated by further information about a particular case. For
360 instance, infants assume that if there is an object a in front of them, then everyone present will believe a is there—but even infants can block this inference, if it is clear that some other object prevented people to see a ([Luo & Baillargeon, 2007](#)). Generally, intuitive psychological interpretation of behavior is a specific example of relevance processes, whereby a complex chain of inferences can provide an optimal
365 interpretation of the manifest evidence ([Sperber & Wilson, 1995](#)). So the principles are not absolute. There are indefinitely many special circumstances in which people may for instance see x but not believe x, or believe x but not remember x, or remember x but act on the basis of non-x, etc. The principles of intuitive psychology only create default expectations—“all else being equal” clauses ([Leslie, German, & Polizzi, 2005](#)).
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Obviously, this should also apply to the intuition of dysfunction triggered when expectations are violated, which is why there may be many cultural and historical differences in the details of behaviors that may trigger such intuitions. For instance,
375 talking out loud in public, in the absence of interlocutors, used to suggest some form of dysfunction, in many places in the world, whereas the behavior is now expected, with the assumption that the person is probably making a phone call. The intuition of mental dysfunction is the outcome of complex inferential processes, which may or may not result in strengthening the original intuition.

Intuitive principles are not necessarily accurate. It is an open question in philosophy whether the constructs postulated by our psychological expectations (beliefs, intentions, emotions, etc.) are “really real”—in other words whether our intuitive psychology has scientific value ([Churchland, 1981](#)). This debate is largely irrelevant here. We are concerned with how intuitive psychology operates, not with how right it is to do so. It is important to keep this in mind when turning to our intuitions of
385 dysfunction. The intuition of dysfunction triggered by a specific person’s behavior in a specific context—one guesses that the person’s mind is not functioning properly—may well be wrong. More generally, the class of behaviors that produce such intuitions in people may well be a disparate collection of behaviors that a proper neuro-psychology or psychiatry would group in exclusive categories. What is
390 detected as dysfunctional by intuitive psychology may only have a limited overlap with what is actually dysfunctional. Indeed, as we will see below, we can predict that entire classes of cognitive or emotional impairments are probably “invisible” to intuitive psychology.

Is putative dysfunction the same as norm-violation in general? One may wonder
395 whether people who detect something untoward in others’ behaviors are reacting to

the violation of psychological expectations, as suggested here, or to a broader class of violations of social norms. After all, someone who fails to answer your question is not just violating a psychological expectation but also breaking conversational etiquette; the sociopath who feels no pang of regret after inflicting pain on others is both processing information in an odd, counter-intuitive way, and violating social rules on the use of violence; similarly, one would guess, for many other instances of mental dysfunction.

However, this simpler, domain-general interpretation (people detect norm-violation in general, not specifically intuitive psychology violations) goes against the grain of much of the empirical evidence. Behavioral, developmental neuropsychological and neuroscientific studies suggest that intuitive psychology is a domain-specific competence—that is, it operates on a specific set of inputs and is informed by a specific set of principles, different from the inputs and principles of other mental systems ([Blakemore & Decety, 2001](#); [Frith, 2001](#); [Leslie et al., 2004](#)). By contrast, there is no compelling evidence for cognitive mechanisms that would monitor norms (and their violations) *in general*. What psychologists have observed are highly specific mechanisms that monitor, for instance, violations of moral imperatives as distinct from social conventions ([Haidt, Kesebir, Plessner, Betsch, & Betsch, 2008](#); [Turiel, Eisenberg, Damon, & Lerner, 2006](#)); violations of exchange principles and economic fairness ([Cosmides & Tooby, 1992](#); [Kurzban, 2001](#)); violations of incest revulsion ([Lieberman, Tooby, & Cosmides, 2007](#)); betrayal from the tacit requirements of friendship ([Hess & Hagen, 2006](#)); violations of status and manners ([Nichols, 2002b](#)). Each type of violations occurs in a specific class of situations, as a result of specific kinds of intentions. There seems to be no general mental mechanism that tracks their common properties, if any.

Given the specificity of intuitive psychology, it seems highly plausible that observed violations of its expectations result in a specific kind of “dysfunction intuition” that is distinct from the violation of other norms. Obviously, such a specific intuition may well be fed, strengthened, modified or distorted in actual cases, by the fact that other, non-psychological expectations are also being violated. Equally obviously, there should be many cases in which we (as social scientists) do not know, not does the person know either, whether she judges a particular person “non-standard” by virtue of the psychological or non-psychological violations.

7. Prediction of “Invisible” Conditions

Our intuitive psychology is a set of assumptions that, on the whole, provide us with an efficient way of understanding and predicting other agents’ behavior in most ordinary circumstances. But it is not a full-blown, exhaustive description of how and why intentional agents behave. First, note that intuitive psychology is entirely about conspecifics. Most animals’ motivation and thoughts diverge profoundly from our intuitive expectations (see [Grandin & Johnson, 2005](#), for striking illustrations).

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Even among conspecifics, our intuitive psychology is often at a loss, for instance when trying to make sense of the behavior of infants. Even toddlers' conversation can be baffling—why they reach particular conclusions given particular information is often mysterious.

440 If intuitive psychology only covers *part* of mental function, it should follow that it will be “blind” to impairment of systems for which it has no specific expectations. This seems indeed to be the case, in particular when the pathology affects limited aspects of cognition, apart from reasoning, planning and decision-making.

445 For instance, consider prosopagnosia, a failure to associate the visual stimulus of a person's face with memory information about the person ([de Renzi, Faglioni, Grossi, & Nichelli, 1991](#)). The impairment is specific to the global visual trace of the face, not to face-details or other features of a person ([Farah, Levinson, & Klein, 1995](#)). As a result patients compensate the deficit by paying close attention to facial features, voice, gait and other details to maintain appropriate social interaction. Now it is very unlikely that such a symptom could be noticed *as such* on the basis of intuitive psychology. The condition only results in an abnormal delay in reacting appropriately to people's presence. This is either difficult to detect or could be misconstrued as a general visual or memory impairment, or as some social interaction issue, e.g., a reluctance to engage with others. This would apply, *mutatis mutandis*, to most types of visual agnosia, in which the patient can experience confusion when asked to name and describe common kinds of objects or animals ([Dixon, 2000](#)).

460 In general, specific neuro-psychological disorders will likely trigger the intuition of a disorder of *some* kind, which is difficult for intuitive psychology to pin down in specific terms. So for instance Tourette's syndrome results in gross violations of etiquette that are detected to the same degree in otherwise different cultures ([Staley, Wand, & Shady, 1997](#)), although they are generally *not* interpreted as a pathology of cognitive control, as the very notion of separate neural processes and control loops between them is alien to our intuitive psychology. For similar reasons, aphasia may often be interpreted as a form of insanity, on the basis of inferential and communicational non-sequiturs, as the words coming out of the patient's mouth do not seem to make any sense. Since intuitive psychology does not include a specific description of the complex causal connections between thought and verbal speech, any disturbance of the latter is often interpreted as evidence of disturbed thought.

8. From Intuitions of Disorder to Folk-Models

The processes involved in the detection and interpretation of mental disorder are best described in terms of causal connections between dysfunction, its behavioral outcomes, detection of behaviors governed by intuitive psychology, and selection of models through cycles of acquisition and communication. These connections are summarized in Figure 1 below.

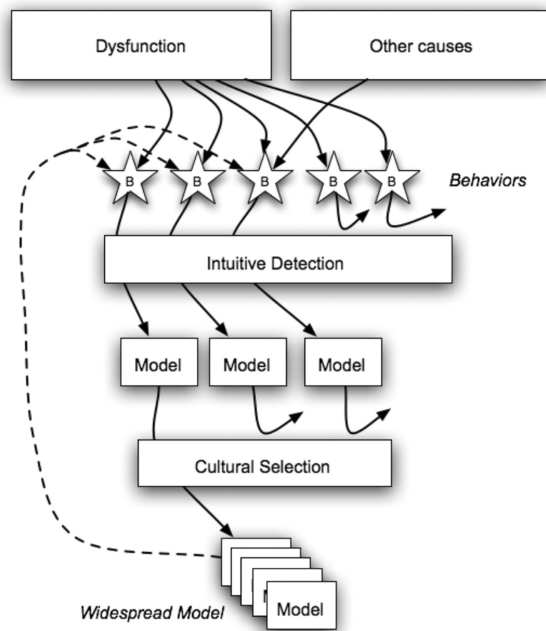


Figure 1. A simplified model of cognition of mental disorder.

Dysfunction triggers behaviors (stars), only some of which are detectable as violations of intuitive psychology (others “bounce” off intuitive detection). Note that
 480 in some instances detection may be wrong (causes other than dysfunction triggered the behavior). Detection in turn informs and constrains people’s models, not all of which make it through cycles of acquisition and communication. (Unsuccessful models ‘bounce off’ transmission). Frequently activated models may have feedback (“looping”) effects, indicated by dotted lines, both on models themselves
 485 (transmission biases) and on some people’s behaviors.

8.1. *What Makes Folk-Models “Folk”?*

So far, we have mostly emphasized the ways in which intuitive psychology selects certain kinds of behaviors as worthy of attention because of expectation-violations. Let us now proceed to the question, does this detection process lead to culturally
 490 shared notions of mental illness?

This requires a detour through recent anthropological models of the transmission of cultural knowledge. Our question is what makes it natural and effortless to share particular models within a group. In current anthropological theory, this kind of question is addressed in *cultural selection* frameworks (Boyd & Richerson, 1985;
 495 Durham, 1991; Sperber, 1985). An important assumption is that cultural transmission, like other forms of human communication, does not consist in “downloading”

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concepts from one mind to another. It requires inferential processes, whereby people attend to cues in other people's behavior, infer their communicative intentions and build concepts on the basis of what they inferred (Sperber 1996; Tomasello, Kruger & Ratner, 1993). As a result, people constantly create variants of other people's representations. Communication and inference are highly entropic—creating many different representations in different minds—so that the existence of commonalities, of “cultural” information, requires a special explanation (Sperber, 1985). To call some representations “cultural” is to point to a relative similarity between representations held by members of a particular group. The similarity suggests that some concepts and norms were *selected* in the transmission process, against a whole variety of variants that were forgotten, discarded and modified.

The recurrence of particular concepts and norms is partly explained by cognitive predispositions (Sperber & Hirschfeld, 2004). Recent cognitive anthropology integrates the wealth of findings and models from experimental and developmental psychology, linguistics, neuro-psychology and the neurosciences, converging to demonstrate the influence of cognitive predispositions that make certain kinds of concepts and inferences particularly likely to occur. Some common principles, most of which are not available to conscious inspection, complement and organize incoming information. So some kinds of inferences tend to go in particular directions, no matter where you start from. They result in what Sperber and colleagues call statistical “attractors” in the population dynamics of cultural transmission (Claidière & Sperber, 2007; Sperber & Hirschfeld, 2004).

8.2. A Basis for Dysfunction Intuition

My contention here is that a large part of culturally transmitted folk-understandings of mental disorder can be traced to the influence of cognitive dispositions on cultural transmission. This cognition-based perspective suggests that intuitions about mental disorder depend on a cognitive system that is, to a large degree, cross-culturally invariant. This stands in contrast to traditional assumptions of ethno-psychiatry. The detection of non-standard behavior is often described as intrinsically “cultural” (Gaines, 1992; Jovanovski, 1995) and therefore, presumably, highly variable. As Anthony Marsella puts it: “mental disorders cannot be understood apart from the [culturally specific] concept of self, because it is the nature of the self which serves to identify ‘reality’ for a given cultural group and *which dictates the definition of what constitutes a symptom* [italics added]” (1981, p. 362; see also Good, 1994; Sadowsky, 2003 for similar points).

It may be of help to unpack this statement. In this context the term “symptom” is ambiguous—it may denote either “behaviors that people think are triggered by the mental dysfunction” or, in a richer sense, “behaviors triggered by the mental dysfunction *and explicitly integrated in some model of mental dysfunction*”. Marsella seems to be using this second, richer sense, and understood that way his statement makes perfect sense. What we call “cultural models” of mental dysfunction are certainly culturally variable—within bounds as we shall see presently. But it certainly

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would be misguided to infer that local models “dictate” what behaviors are or are not detected as possible evidence of mental dysfunction.

Indeed, a whole variety of behaviors described above (from failures of relevant communication to failure of motor control, from incoherent emotions to self-damaging behaviors) may trigger the intuition that something is probably amiss in a person’s mind, regardless of whether a local cultural model provides either description or explanation of the behaviors. This in a way is a very familiar phenomenon. To any European or Western individual not conversant with psychiatry, a Tourette patient’s gestures are certainly evidence of *some* dysfunction, even though the person generally has no idea what the impaired function might be. The same applies in other cultures, where a whole variety of behaviors (and organic symptoms too, of course) are noticed as non-standard or pathological, yet are not covered by any local symptomatology or etiology.

8.3. An Illustration: Haslam’s Model of Folk-Psychiatry

In most human groups, people emphasize some forms of behavior as typical of mental dysfunction, creating a more or less systematic symptomatology. They also speculate on the causal processes whereby such dysfunction occurs, creating a local etiology. These two steps in the understanding of dysfunction are the traditional domain of ethno-psychiatry (Kleinman, 1988). The discipline perhaps suffers from an overly “culturalist” approach to culture, in which culture is thought of as an external system of representations, to be studied in the abstract, independently from actual cognition (Jovanovski, 1995). As a result, there is very little systematic study of the cognitive processes involved.

An exception is a series of theoretical and empirical papers by Haslam and colleagues that put forward a psychological account of Western “folk-psychiatry” (Giosan, Glovsky, & Haslam, 2001; Haslam, 2005; Haslam & Giosan, 2002). Their model specifies four dimensions along which judgments of particular behaviors can vary: [1] *pathologizing*, that is, the extent to which the behavior is construed as abnormal, mainly on the basis of rarity, and as a result of the failure to explain the behavior; [2] *moralizing*, considering the behavior as under the person’s control and as having a particular moral valence; [3] *medicalizing*, considering the behavior as the direct result of some underlying organic condition; [4] *psychologizing*, considering the behavior as mentally caused but not intentional—as the result of some mental dysfunction—so that the focus is on causes not reasons, with diminished moral judgment (Haslam, 2005). Haslam and colleagues also documented notable cultural differences in the relative importance of these dimensions. US participants tend to favor a more “internal” view of mental disorder (with an emphasis on “psychologized” intra-psychic conflict) while Romanian and Brazilian students emphasize external causation (Giosan et al., 2001).

The model constitutes a useful starting-point for investigating the cognitive processes underlying Western folk-understandings of madness. It also constitutes a template for the kind of empirical research that should begin where traditional

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ethno-psychiatry left off, that is, in the description of the actual cognitive processes engaged when people think about mental dysfunction. At this stage it would be premature to delineate this novel field of inquiry. But we know at least the way to proceed—that is, to acknowledge rather than ignore the fact that pan-specific features of human minds likely influence these cultural models.

8.4. “Looping Effects” from Models to Behaviors

In a series of detailed studies of historically specific “ways of being mad,” Ian Hacking has demonstrated the complex set of causal connections between pathology, its cultural context of appearance, its typical manifestation given that context, its popular categorization, and its scholarly description (Hacking, 1995a, 1998). There is an important “looping effect” whereby the adoption of particular symptoms as central to scientific nosology orients people towards typical manifestations of mental disorder. This occurred in Western psychiatry in the scholarly identification, and subsequent cultural spread, of such presentations as female hysteria, long-lasting fugue states and multiple-personality disorder (Hacking, 1995b). This analysis of looping effects builds on the rich literature on historical and cultural processes in the manifestations as well as models of disorder (see for instance, Porter, 1987, 2004).

These feedback loops may be better understood against the background of feed-forward connections between the various processes outlined above. What Hacking says about notions of mental disorder is in fact a general conclusion of “epidemiological” models of cultural transmission. The very fact that a particular representation is widespread in a particular group has predictable effects on its subsequent transmission. The simplest of these effects is a simple “frequency bias,” whereby people are more likely to adopt and transmit representations that are already widespread (Boyd & Richerson, 1985). In the case at hand, occurrences of dysfunctional behavior *explicitly recognized by others as dysfunctional* are likely to be, all else being equal, more attention-grabbing and better recalled than other deviant behaviors. In this as in other domains of cultural transmission, behaviors that fit a pre-existing schema enjoy a clear advantage in terms of comprehension and recall (Bartlett, 1932), while other forms of deviant or unexpected action may just be dismissed as behavioral “noise.” In recent cognitive anthropology, the looping effect of such widely shared concepts and norms has been documented in the domain of “race” concepts (Hirschfeld, 1994a), religious and supernatural beliefs (Boyer, 1994) and many other domains (see e.g., Hirschfeld & Gelman, 1994).

9. Conclusion

Models of what is wrong with some people’s behavior are culturally specific creations, just like narratives, scholarship, etiquette, politics, cuisine, musical traditions or religious rituals. Just like these different kinds of cultural creations, they are heavily influenced by mental dispositions that form part of our common

cognitive architecture (Sperber, 1996). This is why I propose that intuitive psychology should be taken into account as the major source of tacit expectations about other agents' behaviors and therefore a major factor in producing the intuition that a person's mental processes may be impaired. Intuitive psychology by itself does not specify *what* is wrong in a behavior or *why* it occurs, but it creates an empty place-holder for a causal process that would lead to this specific dysfunction. The place-holder may or may not be filled by some model of madness held by other people in our cultural group. Because not all dysfunctions are noticeable, and because some kinds of causal models are more intuitively plausible than others, intuitive psychology imposes a twofold constraint on the way people construct culturally widespread notions of mental illness.

One aim of this model is to provide the "missing link," as it were, between the occurrence of particular behaviors (some of them caused by mental dysfunction), on the one hand, and widespread cultural models of mental dysfunction, on the other. Most cross-cultural psychiatric thinking tends to focus on mental dysfunction as such, without providing us with the tools to understand why some forms of dysfunction are readily detected and not others, or why some of the detected oddities but not others are the object of culturally transmitted models. Conversely, most ethno-psychiatric thinking tends to assume that the cultural models provide the conceptual grid, outside of which one simply cannot detect any behavior as odd or symptomatic. But that is surely not the case. As we observed above, there are on the contrary many forms of aberrant behavior for which people in a given community simply have no shared model (indeed in many cases no model at all). The most parsimonious explanation is that this intuition of dysfunction is triggered by observed (repeated, otherwise inexplicable) violations of tacit psychological expectations.

Whether the hypothesis can explain a large amount of the variance in individual and shared conceptions of mental dysfunction is yet to be demonstrated. The assumption here is that it is surely a good strategy to consider intuitive psychology, given that we have massive empirical evidence for these complex, early-developed, generally tacit principles, when trying to describe and understand the complex causal connections between madness and cultural representations.

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