Research Article

Beliefs About Essences and the Reality of Mental Disorders

Woo-kyoung Ahn, Elizabeth H. Flanagan, Jessecae K. Marsh, and Charles A. Sanislow

Yale University

ABSTRACT—*Do people believe mental disorders are real and possess underlying essences? The current study found that both novices and practicing clinicians held weaker essentialist beliefs about mental disorders than about medical disorders. They were also unwilling to endorse the idea that mental disorders are real and natural. Furthermore, compared with novices, mental health clinicians were less likely to endorse the view that there is a shared cause underlying a mental disorder and that one needs to remove the cause to get rid of the mental disorder. Clinicians were polarized on their views about whether mental disorders are categorical or dimensional. These findings reflect current controversies about mental disorders in the field at large.*

Prior to the understanding of sex chromosomes, gender was distinguished on the basis of co-occurrence of surface features (e.g., voice, height; Rosch & Mervis, 1975). Even so, gender categories were almost certainly treated as real and natural: People most likely believed that an underlying, hidden essence made a man a man or a woman a woman, although they did not know what that essence was (Medin & Ortony, 1989). The current understanding of mental disorders presents an analogous situation. That is, knowledge about the etiology of most mental disorders in the current taxonomy is incomplete (e.g., American Psychiatric Association, APA, 2000). Do people nevertheless believe that mental disorders are real, exist naturally, and possess hidden essences?

There are reasons to predict that people believe mental disorders are real and possess essences (e.g., Kendell, 1986). For instance, past research suggests that laypeople have a tendency to essentialize many forms of human groupings, such as racial and ethnic categories (e.g., Hirschfeld, 1995). Furthermore,

Address correspondence to Woo-kyoung Ahn, Department of Psychology, Yale University, 2 Hillhouse Ave., New Haven, CT 06520, e-mail: woo-kyoung.ahn@yale.edu.

proponents of the disease (or medical) models for mental disorders maintain that each disorder is universal and has a biologically based etiology with discrete boundaries (see Haslam, 2000, and Kiesler, 1999, for reviews). If people hold disease models for mental disorders, they would view disorders as real and as having essences.

Clinicians, in particular, may have such a view because of their experience with and knowledge about the domain. For instance, the symptom-level descriptions adopted in the contemporary versions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM; APA, 1980, 1987, 1994) are often deemed (e.g., Kihlstrom, 2002; Kupfer, First, & Regier, 2002) to have been built on the Kraepelinian assumption: "Cases of mental disease originating in the same causes must also present the same symptoms, and the same pathological findings" (Kraepelin & Diefendorf, 1904/1907, p. 117). This assumption, if subscribed to by clinicians, supports an essentialist view of mental disorders.

However, mental disorders instead might be seen as nominal and constructed by culture (e.g., Cohen, 1981; Sedgwick, 1982). The relatively well-known fact that the etiologies of most mental disorders are unknown might make both experts and novices hesitant to endorse even the possibility of essences or reality for these disorders. Furthermore, cultural norms have been known to influence which mental disorders are included in the DSM (e.g., homosexuality).

Clinicians, in particular, would be aware of the fact that the DSM diagnostic procedures include arbitrary inclusion and exclusion rules (e.g., number of criterial features, specified duration for inclusion; see Gold, Marx, Soler-Baillo, & Sloan, 2005, for posttraumatic stress disorder). Clinicians might also have weaker essentialist beliefs about mental disorders than novices do because clinicians have more extensive experiences with variance among people with the same disorder and are aware of varied, multifaceted etiologic pathways.

Thus, it is an empirical question whether or not people believe mental disorders are real and have essences. (See Lilienfeld & Marino, 1995, 1999, and Wakefield, 1992, 1999, for related but

different discussions on beliefs about mental disorders in general.) The current study examined whether and to what extent mental health practitioners and novices believe mental disorders—especially in comparison with medical disorders—are real and possess an essence, "an underlying reality or true nature, shared by members of a category" (Gelman, 2003, p. 8).

To measure beliefs about reality, we asked participants to judge whether mental and medical disorders naturally exist in the real world and therefore need only be discovered, or whether instead they are invented by a culture and decided on by expert consensus (Kalish, 1995; Schwartz, 1979). Of particular interest was whether clinicians and novices would judge mental disorders, such as schizophrenia and dysthymic disorder, to be as natural as medical disorders, such as arthritis and influenza.

To measure essentialism, we asked participants to assess the presence of features proposed to be characteristic of essences (Gelman, 2003; Haslam & Ernst, 2002). First, participants rated whether each disorder has a defining feature (something that is shared by all and only members of that category), regardless of current knowledge. However, having a defining feature is not sufficient evidence for having an essence, because a nominal kind (e.g., "white things") has a definition without an essence. Essences cause things to be the way they are ("causal essence" in Gelman, 2003; see also Locke, 1671/1959; Medin & Ortony, 1989). Although whiteness does not cause the size and shape of "white things," an essence for a natural kind (e.g., cat) is believed to cause surface features (e.g., its appearance). Thus, we asked participants whether the defining features cause symptoms of disorders and whether one needs to get rid of defining features in order to cure the disorders. Finally, participants judged whether disorders are categorical or dimensional (i.e., does one have a disorder 100%, or can one partially have a disorder?). The categorical view has often been associated with essentialism (e.g., Diesendruck & Gelman, 1999) because according to essentialism, possessing an essence determines category membership, and one can either have or not have an essence. Clinicians might be hesitant to endorse the idea that having a mental disorder is an all-or-none matter, because whether classification of mental disorders should be categorical or dimensional is a current controversy (e.g., Clark & Widiger, 2000).

To estimate the extent of these beliefs, we contrasted participants' beliefs about mental and medical disorders with their beliefs about natural kinds (kinds believed to occur naturally in the world, e.g., salmon) and nominal kinds (kinds that are conventionally constructed, e.g., trees planted in 2002). The latter categories served as baselines (e.g., are mental disorders believed to be as culturally invented as nominal kinds are?). In addition, we selected disorders that would be both familiar and unfamiliar to clinicians. Unfamiliar disorders were included to ensure that the results would not be due to specific knowledge a clinician had about familiar disorders, but would be due to the nature of mental or medical disorder.

METHOD

The expert participants were 10 psychiatrists, 10 psychologists, and 10 clinical social workers in New Haven County, Connecticut, who had been licensed at least 10 years in Connecticut at the time of the study ($M = 26$, $SD = 12.9$). The experts reported their orientations as cognitive/cognitive-behavioral ($n = 8$), eclectic ($n = 7$), psychoanalytic-dynamic ($n = 7$), or "other" ($n = 8$). No significant interaction effects involving orientation, profession, or years of experience were found in any of the reported analyses. The novice participants, who had no extensive clinical training, were 30 undergraduate students at Yale University. Eight novices who had temporary experience working in a field related to mental health did not show results significantly different from those of the other novices. In return for participating, the psychiatrists, psychologists, social workers, and undergraduate students were paid $100, $85, $70, and $10 per hour, respectively, following typical pay scales. The experiment was self-paced and lasted 45 to 300 min ($Mdn = 90$).

The experiment was a 2 (familiar or unfamiliar) × 2 (medical or mental disorder) × 2 (expert or novice) factorial design, with the first two variables being within subjects. Fifty-one disorders (see the appendix) were selected from the text revision of the fourth edition of the DSM (DSM-IV-TR; APA, 2000) on the basis of the familiarity ratings obtained in another study (Flanagan & Ahn, 2006). These disorders consisted of familiar diagnostic (26) and higher-order (7) categories, and unfamiliar diagnostic (10) and higher-order (8) categories. Unless noted, all reported analyses comparing mental and medical disorders used only the data from the diagnostic-level categories. Twenty disorders (10 familiar and 10 unfamiliar; see the appendix) were selected from the *Merck Manual of Medical Information* (Beers et al., 2003) on the basis of 21 undergraduates' familiarity ratings in a separate pretest. For broader sampling, we included obviously dimensional disorders (e.g., high blood pressure), as well as disorders with multiple causes (e.g., pneumonia) and unknown causes (e.g., arthritis). Finally, five natural and five nominal kinds (see the appendix) were selected through pretesting.

For the disorders, six questions were developed:

1. Although people who have X might have similarities and differences, there is something that is shared by ALL people who have X—whether or not we currently know what this is.

2. Out of all the things that are shared by all people who have X, there is something that ONLY people who have X share—whether or not we currently know what this is.

3a. This thing that is shared by all and only people with X CAUSES or determines the symptoms these people display.

3b. This thing that is shared by all people with X CAUSES or determines the symptoms these people display.

4. The only way that someone could no longer have X is if we get rid of the thing that causes the symptoms of this disorder. Removing only the symptoms is not sufficient.

5. If a person has X, s/he has X 100%, even if s/he has strange or unusual symptoms. People may be confused or have a hard time telling, but a person does not partially have X.

6. Some categories are natural categories that exist in the real world and someone has to discover what they are. Other categories are invented by a culture and decided upon by experts. Rate these statements for X.

For the natural and nominal kinds, we created corresponding statements with as little modification as possible. The first five questions were answered using a 7-point scale from −3, *strongly disagree*, to +3, *strongly agree*; the scale for Question 6 was anchored by *culturally invented* (−3) and *naturally exist* (+3).

In the first section of the experiment, participants' responses dictated which questions they were asked to answer. Only participants who endorsed the idea of a necessary feature in Question 1 received Question 2. Question 3a and Question 3b were presented only to those who endorsed the idea of a defining feature or a necessary feature, respectively. Question 4 was presented only when a person endorsed the idea of an underlying cause in Question 3a or 3b. Finally, all participants were presented with Questions 5 and 6. More than 80% of participants were presented with all six questions (counting Question 3 as either 3a or 3b) for the familiar disorders. The questions pertaining to the same stimulus item (e.g., same disorder) were presented sequentially from Question 1 to 6.

During the first section of the experiment, the questions about natural and nominal kinds were presented first, to encourage participants' calibration of the scales with extreme cases. Participants then answered the questions about the disorders. The experiment was run using the experimentation program RSVP (Williams & Tarr, n.d.) or Web-based SurveyMonkey (Finley, 1999). The order of the stimuli within each set was randomized across participants when RSVP was used, and three randomized lists were used with Survey Monkey.

Upon completion of the first section, participants judged familiarity for all the disorders on a 7-point scale from 1, *very unfamiliar*, to 7, *very familiar*. In the third section of the experiment, participants judged each disorder as a medical or a mental disorder; they also had the option to indicate, "I don't know." Novices and experts judged the DSM-IV-TR disorders used in the study to be mental disorders 65.2% and 69.8% of the time, respectively.

RESULTS

Figure 1 shows the mean ratings for each of the six questions used in this study, broken down by participants' expertise and stimulus type. We describe three sets of statistical analyses we conducted and then present specific results for each question.

First, each of the means displayed in Figure 1 was tested against zero using a one-sample t test. Through these analyses, we examined whether participants' opinions were significantly polarized (e.g., did they endorse or deny that a mental disorder has a necessary feature?). All differences were significant at $\alpha = .05$ ($p_{rep} > .88$) except for those marked as nonsignificant in Figure 1.

Second, for each of Questions 1, 2, 3, 5, and 6, we carried out a separate 2 (familiarity) × 2 (disorder type: mental or medical) × 2 (expertise) mixed-design analysis of variance (ANOVA), with the first two variables being within subjects. In each of these ANOVAs, participants' own ratings of familiarity and disorder type were used to create the two levels for the first two variables. For the first variable, ratings greater than 4 (the scale's midpoint) were coded as "familiar," and those less than 4 were coded as "unfamiliar." Disorders that received a 4 for the familiarity rating or "I do not know" for the mental-versus-medical-disorder judgment were not included in these analyses. Missing values were replaced with the group's (expert or novice) mean. (The pattern of results did not change without this replacement.) Because participants could answer only either Question 3a or Question 3b, responses to these questions were collapsed and treated as Question 3 in all analyses. For Question 4, we carried out a 2 (disorder type) × 2 (expertise) mixed-design ANOVA on only familiar disorders because of the large amount of missing data for unfamiliar disorders: Seventy percent of experts were not given Question 4 for unfamiliar mental disorders because they did not endorse the idea that there is an underlying cause (Question 3) for any unfamiliar mental disorder. Only the effects significant at $\alpha = .05$ ($p_{rep} > .88$) and germane to the main issues are reported in the main text.

A third set of statistical analyses was conducted to determine if each type of disorder differed from either natural or nominal kinds. For each question and within each expertise group, we carried out paired t tests comparing each of the four disorder types (familiar or unfamiliar, medical or mental disorder) with natural kinds and nominal kinds. Because multiple t tests inflate Type I error, we used $\alpha = .01$ (or $p_{rep} > .95$) as the level of significance.

Question 1: Necessity

Experts and undergraduates agreed that mental disorders ($M = 1.61$, $SD = 1.08$) and medical disorders ($M = 1.80$, $SD = 0.91$) have necessary features. Yet necessity ratings for mental disorders were lower than those for natural kinds and did not differ from those for nominal kinds. In addition, necessity ratings were significantly lower for mental disorders than for medical disorders, $F(1, 58) = 6.77$, $\eta_p^2 = .11$.[1]

---

[1]There was also a significant main effect of familiarity, $F(1, 58) = 17.58$, as well as a significant interaction effect between familiarity and disorder type, $F(1, 58) = 5.22$.
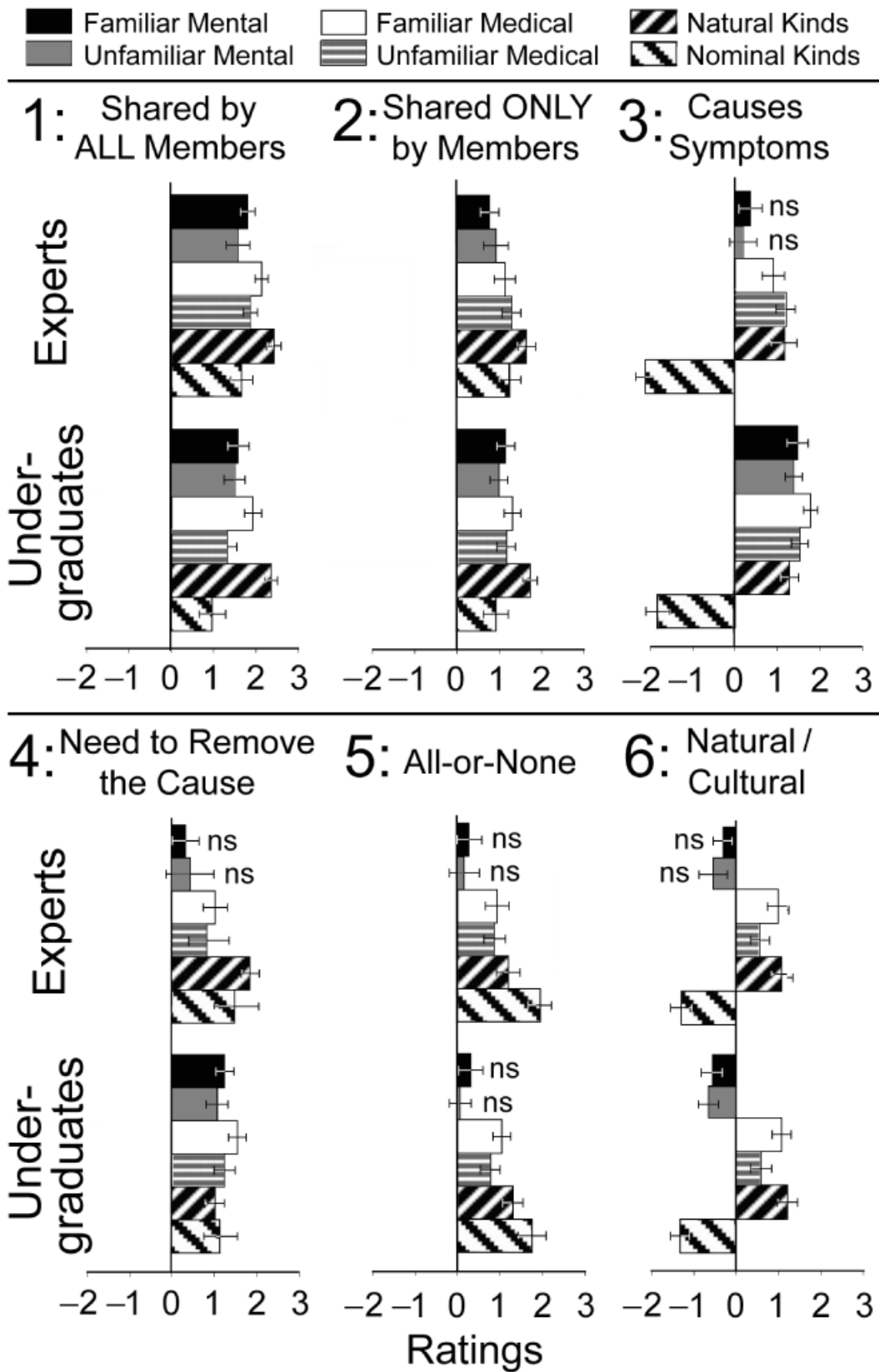
Fig. 1. Mean ratings of experts and undergraduates for familiar and unfamiliar mental and medical disorders, natural kinds, and nominal kinds. The scales for the first five questions ranged from −3, *strongly disagree*, to +3, *strongly agree*; the scale for Question 6 ranged from −3, *culturally invented*, to +3, *naturally exist*. Error bars indicate ±1 *SEM*. ns = nonsignificant.

Question 2: Sufficiency

For both medical and mental disorders, participants agreed that, of the necessary features for a given disorder, there is something unique to that disorder. Yet their beliefs in such sufficient features were weaker for mental disorders than for natural kinds, and judgments for mental disorders did not differ from those for nominal kinds. In addition, the ratings were lower for mental disorders ($M = 1.07$, $SD = 1.18$) than for medical disorders ($M = 1.38$, $SD = 1.13$), $F(1, 58) = 9.19$, $\eta_p^2 = .14$.[2]

Questions 3 and 4: Causes and the Need to Remove Them

Medical disorders received higher ratings than mental disorders in response to both Question 3, $F(1, 58) = 19.76$, $\eta_p^2 = .25$, and Question 4, $F(1, 58) = 11.65$, $\eta_p^2 = .17$. Critically, effects of expertise were found. Experts did not endorse the view that mental disorders have causal essences (Question 3—necessary or defining features cause the symptoms; $M = 0.26$, $SD = 1.23$), whereas novices did ($M = 1.38$, $SD = 0.99$). The main effect of expertise was significant for Question 3, $F(1, 58) = 12.26$, $\eta_p^2 = .17$, and so was an interaction between expertise and disorder type, $F(1, 58) = 5.90$, $\eta_p^2 = .09$.[3] Even when they endorsed the view that disorders have causal essences, experts did not believe that these causes needed to be removed in order to get rid of the disorder (Question 4; $M = 0.37$, $SD = 0.96$), whereas novices did ($M = 1.16$, $SD = 1.02$). The main effect of expertise was reliable for Question 4, $F(1, 58) = 6.98$, $\eta_p^2 = .03$. For medical disorders, however, experts endorsed causal essences ($M = 1.02$, $SD = 1.07$; this mean is almost as high as the mean for natural kinds) and indicated that these causes needed to be removed in order to get rid of the medical disorders ($M = 0.92$, $SD = 1.08$).

Question 5: All-or-None Membership

Experts and undergraduates agreed that one has a medical disorder 100% and not partially ($M = 0.89$, $SD = 1.13$); this mean was almost as large as the one for natural kinds. However, neither experts nor undergraduates endorsed the view that having a mental disorder is an all-or-none matter ($M = 0.19$, $SD = 1.35$). The main effect of disorder type was significant, $F(1, 58) = 49.85$, $\eta_p^2 = .46$.

Interestingly, experts (but not undergraduates) showed a bimodal distribution of responses for mental disorders (but not for medical disorders). Thirty percent of experts (but only 17% of novices) gave negative ratings (i.e., indicated that one can partially have a mental disorder, a dimensional view) for more than 80% of the mental disorders, whereas 33% of experts (but only 17% of novices) gave positive ratings (i.e., indicated that if one has a mental disorder, one has it 100%, a categorical view) for more than 80% of mental disorders.

Question 6: Discovered or Decided On?

Both experts and undergraduates agreed more strongly that medical disorders exist naturally in the real world (i.e., are something to be discovered; $M = 0.83$, $SD = 1.14$) than that mental disorders exist naturally in the real world ($M = -0.53$, $SD = 1.20$), $F(1, 58) = 84.25$, $\eta_p^2 = .59$.[4] Although participants believed that familiar medical disorders (e.g., flu) are "discovered," as natural kinds are, their ratings of mental disorders were in the same direction as their ratings of nominal kinds.

Item Analyses for Mental Disorders

Table 1 presents the experts' mean ratings for the 20 DSM-IV-TR disorders judged to be most familiar in this study. The disorders are listed in descending order of their means on Question 6. Although the means varied somewhat within this group of 20, trends observed in the overall analyses still held. For instance, 16 of these disorders received negative mean ratings on Question 6. Adjustment disorder, narcissistic personality disorder, and borderline personality disorder, as well as the general category of personality disorders, were reliably judged to be decided on by experts. The three mental disorders that had profiles closest to those of medical disorders were Bipolar I disorder, major depressive disorder, and schizophrenia, although their means were still much lower than the mean for medical disorders.

Correlations Among Various Beliefs

Do various measures of essentialist beliefs correlate with one another? Within each participant, we obtained all pair-wise correlations of responses to the six questions across the 71 disorders. (To be conservative, we did not include natural and nominal kinds because they would inflate correlations because of their extreme values.) These correlations were Fisher transformed, averaged across participants, and inverse transformed. All pair-wise correlations were positive, ranging from .25 to .66, indicating convergence.

Do measures of essentialist beliefs correlate with measures of beliefs about how biologically based a mental disorder is? Flanagan and Ahn (2006) measured clinicians' beliefs about the biological bases of mental disorders (e.g., any genetic or psychophysiological factors that contribute to or cause the disorder). Mean ratings from that study for 36 diagnostic-level mental disorders included in the current study correlated significantly with the experts' responses to Question 6 (i.e., whether or not a mental disorder exists naturally), $r(34) = .64$, $p < .01$, and to

---

[2]There was a significant interaction effect between familiarity and expertise, $F(1, 58) = 4.91$.

[3]For Question 3, there was also a significant interaction effect among expertise, familiarity, and disorder type, $F(1, 58) = 4.60$.

[4]There was an additional main effect of familiarity, $F(1, 58) = 16.54$.

TABLE 1

Experts' Mean Ratings of the 20 Mental Disorders Judged to Be Most Familiar

Disorder	Question 1: necessity	Question 2: sufficiency	Question 3: causes	Question 4: cause-cure	Question 5: all-or-none	Question 6: discovered
Bipolar I disorder	2.10*	0.93*	0.60*	0.76	0.57	0.40
Major depressive disorder	1.83*	1.11*	0.69*	0.71	0.27	0.37
Schizophrenia	1.87*	0.93*	0.70*	1.00*	0.60	0.33
Psychotic disorders	1.87*	1.22*	0.42	0.47	0.10	0.07
Schizoaffective disorder	1.73*	0.65	0.28	0.62	0.23	−0.03
Alcohol dependence	1.77*	0.92*	0.35	0.29	0.40	−0.07
Mood disorders	1.83*	0.71*	0.30	0.07	0.03	−0.20
Obsessive-compulsive disorder	1.97*	0.93*	0.26	0.43	0.07	−0.20
Substance dependence disorder	1.90*	1.33*	0.63	0.37	0.77*	−0.20
Obsessive-compulsive personality disorder	1.80*	0.81*	0.46	0.57	0.20	−0.27
Posttraumatic stress disorder	2.00*	1.30*	0.85*	−0.15	0.47	−0.27
Generalized anxiety disorder	1.87*	0.50	0.26	−0.29	0.07	−0.33
Dysthymic disorder	1.90*	0.55	0.14	0.23	0.07	−0.43
Anxiety disorders	1.73*	0.74*	0.22	0.00	0.03	−0.47
Substance abuse	1.63*	0.84*	−0.04	0.55	0.23	−0.50
Alcohol abuse	1.80*	1.04*	0.30	0.60	0.23	−0.57
Personality disorders	1.57*	0.76*	−0.13	0.60	0.20	−0.77*
Narcissistic personality disorder	1.93*	0.25	0.44	1.07*	0.27	−0.87*
Borderline personality disorder	1.90*	0.48	−0.11	1.10	0.23	−0.93*
Adjustment disorder	1.27*	0.60	0.00	−0.17	−0.37	−1.17*
Average	1.81	0.83	0.33	0.44	0.23	0.31
Average SD	1.15	0.73	1.59	1.87	1.74	1.65

Note. Higher-order disorders are in italics. Asterisks indicate a significant difference from 0 at $\alpha = .05$.

Question 1 (i.e., whether there is something shared by all people with a mental disorder), $r(34) = .36$, $p < .05$. No other correlation was significant.

Levels of Mental Disorders

We also conducted t tests comparing the experts' mean ratings for diagnostic-level (e.g., schizophrenia) and higher-order (e.g., psychotic disorders) mental disorders. In Question 3, experts endorsed the view that disorders have causal essences more strongly for diagnostic-level disorders ($M = 0.35$, $SD = 0.27$) than for higher-order disorders ($M = 0.18$, $SD = 0.29$), $t(49) = 2.04$, $p_{rep} > .88$, Cohen's $d = 0.61$. Also, in Question 5, they indicated more strongly that membership is all-or-none for diagnostic-level disorders ($M = 0.25$, $SD = 0.21$) than for higher-order disorders ($M = 0.12$, $SD = 0.15$), $t(49) = 2.19$, $p_{rep} > .88$, $d = 0.71$.

DISCUSSION

Across all six measures used in this study, both experts and undergraduates essentialized mental disorders less than medical disorders. Participants endorsed the existence of defining features and causal essences less strongly for mental than for medical disorders. They did not necessarily agree that having a mental disorder is an all-or-none matter. They tended to believe that mental disorders are decided upon and invented by experts, rather than that mental disorders exist naturally in the real world. Familiarity with disorders had no influence on this overall pattern. All of these results support the idea that experts and novices are less willing to hold essentialist beliefs about mental disorders than to hold such beliefs about medical disorders.

Yet beliefs about mental disorders did not appear to be completely devoid of essentialism. For instance, although Cantor, Smith, French, and Mezzich (1980) argued for nonexistence of defining features in mental disorders, both experts and novices in our study believed in defining features for mental disorders, whether or not those features are currently known. Furthermore, experts' beliefs about mental disorders at times reflected more essentialism than their beliefs about nominal kinds, as shown by their responses to Questions 3 and 6 (Fig. 1). Also, experts did not unanimously deny that having a mental disorder is an all-or-none matter; about one third of expert participants consistently endorsed a categorical view. Thus, the current findings show that experts do not consent to the view that mental disorders are entirely continuous, socially constructed, and culturally variable.

We also found interesting effects of expertise even though such effects are notoriously difficult to obtain in the domain of mental health practice (e.g., Garb, 1998). Novices endorsed the idea that mental disorders have causal essences, perhaps assuming that there must be etiologic bases behind the current taxonomies, thereby trusting experts' judgments (Putnam, 1975). Ironically, mental health experts did not endorse this belief. Furthermore, this difference between experts and nov-

ices was unique to mental disorders: Experts and novices alike endorsed the idea that medical disorders have causal essences. A possible explanation of this pattern of results is that experts' knowledge about symptom-oriented treatment plans or the lack of agreed-upon etiology might have made them more skeptical about mental disorders. Another possible explanation is that experts might construe mental disorders as being complexly caused (e.g., Carson, 1996; Kiesler, 1999). That is, experts might believe that people with the same disorder may have different combinations of multiple causes, so that a disorder does not have a single etiology common to all patients. A third possible explanation is that the level of DSM-IV-TR diagnostic categories might not be the level at which clinicians believe a common etiology exists (e.g., Gorenstein, 1992). Instead, clinicians might believe, for instance, that the paranoid subtype of schizophrenia has an essence.

The current study provides the first evidence that practicing clinicians are unwilling to commit to essentialist beliefs about mental disorders. Future research should more directly investigate possible implications of these findings for clinicians' expectations about prognosis and treatment efficacy. For instance, if a clinician is reluctant to ascribe an essence to personality disorders, he or she might impose unreasonable liability on a person with a personality disorder, such as blaming the person for having the disorder or for not recovering from it. Alternatively, believing that a mental disorder is not based on an immutable essence might shield clinicians from stigmatizing people with mental disorders (e.g., Allport, 1954).

Another clinical implication of the present results concerns possible effects of discordance between the beliefs of clinicians and patients. If our results for novices are representative of patients' views, patients, unlike their therapists, may believe a single thing can be changed to cure their mental disorders and therefore might not follow multifaceted treatment plans developed by clinicians believing in complexly caused mental disorders.

REFERENCES

Allport, G. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Beers, M.H., Fletcher, A.J., Jones, T.V., Porter, R., Berkwitz, M., & Kaplan, J.L. (Eds.). (2003). *The Merck manual of medical information* (2nd ed.). Whitehouse Station, NJ: Merck Research Laboratories.

Cantor, N., Smith, E.E., French, R., & Mezzich, J. (1980). Psychiatric diagnosis as prototype categorization. *Journal of Abnormal Psychology*, *89*, 181–193.

Carson, R.C. (1996). Aristotle, Galileo, and the DSM taxonomy: The case of schizophrenia. *Journal of Consulting and Clinical Psychology*, *64*, 1133–1139.

Clark, L.A., & Widiger, T.A. (2000). Toward DSM-V and the classification of psychopathology. *Psychological Bulletin*, *126*, 946–963.

Cohen, H. (1981). The evolution of the concept of disease. In A.L. Caplan, H.T. Engelhardt, Jr., & J.J. McCartney (Eds.), *Concepts of health and disease: Interdisciplinary perspectives* (pp. 209–220). Reading, MA: Addison-Wesley.

Diesendruck, G., & Gelman, S.A. (1999). Domain differences in absolute judgments of category membership: Evidence for an essentialist account of categorization. *Psychonomic Bulletin & Review*, *6*, 338–346.

Finley, R. (1999). SurveyMonkey [Computer program]. Available http://www.surveymonkey.com/

Flanagan, E.H., & Ahn, W. (2006). *Clinicians' familiarity with and beliefs about the causal bases of mental disorders*. Unpublished manuscript, Yale University, New Haven, CT.

Garb, H.N. (1998). *Studying the clinician: Judgment research and psychological assessment*. Washington, DC: American Psychological Association.

Gelman, S.A. (2003). *The essential child: Origins of essentialism in everyday thought*. New York: Oxford University Press.

Gold, S.D., Marx, B.P., Soler-Baillo, J.M., & Sloan, D.M. (2005). Is life stress more traumatic than traumatic stress? *Anxiety Disorders*, *19*, 687–698.

Gorenstein, E. (1992). *The science of mental illness*. San Diego, CA: Academic Press.

Haslam, N. (2000). Psychiatric categories as natural kinds: Essentialist thinking about mental disorder. *Social Research*, *67*, 1031–1058.

Haslam, N., & Ernst, D. (2002). Essentialist beliefs about mental disorders. *Journal of Social and Clinical Psychology*, *21*, 628–644.

Hirschfeld, L.A. (1995). Do children have a theory of race? *Cognition*, *54*, 209–252.

Kalish, C.W. (1995). Essentialism and graded membership in animal and artifact categories. *Memory & Cognition*, *23*, 335–353.

Kendell, R.E. (1986). What are mental disorders? In A.M. Freedman, R. Brotman, I. Silverman, & D. Hutson (Eds.), *Issues in psychiatric classification: Science, practice and social policy* (pp. 23–45). New York: Human Sciences Press.

Kiesler, D.J. (1999). *Beyond the disease model of mental disorders*. Westport, CT: Praeger.

Kihlstrom, J. (2002). To honor Kraepelin . . . : From symptoms to pathology in the diagnosis of mental illness. In L.E. Beutler & M.L. Malik (Eds.), *Rethinking the DSM: A psychological perspective* (pp. 279–303). Washington, DC: American Psychological Association.

Kraepelin, E., & Diefendorf, A.R. (1907). *Clinical psychiatry; a textbook for students and physicians* (7th ed.). New York: Macmillan. (Original work published 1904)

Kupfer, D.J., First, M.B., & Regier, D.A. (2002). *A research agenda for DSM-V*. Washington, DC: American Psychiatric Association.

Lilienfeld, S.O., & Marino, L. (1995). Mental disorder as a Roschian concept: A critique of Wakefield's "harmful dysfunction" analysis. *Journal of Abnormal Psychology, 104*, 411–429.

Lilienfeld, S.O., & Marino, L. (1999). Essentialism revisited: Evolutionary theory and the concept of mental disorder. *Journal of Abnormal Psychology, 108*, 400–411.

Locke, J. (1959). *An essay concerning human understanding* (Vol. 2). New York: Dover. (Original work published 1671)

Medin, D.L., & Ortony, A. (1989). Psychological essentialism. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179–195). New York: Cambridge University Press.

Putnam, H. (1975). The meaning of "meaning." In H. Putnam, *Mind, language and reality*: *Vol. 2. Philosophical papers* (pp. 215–271). Cambridge, England: Cambridge University Press.

Rosch, E., & Mervis, C.B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology, 7*, 573–605.

Schwartz, S.P. (1979). Natural kind terms. *Cognition, 7*, 301–315.

Sedgwick, P. (1982). *Psycho politics*. New York: Harper & Row.

Wakefield, J.C. (1992). Disorder as harmful dysfunction: A conceptual critique of DSM-III-R's definition of mental disorder. *Psychological Review, 99*, 232–247.

Wakefield, J.C. (1999). Evolutionary versus prototype analyses of the concept of disorder. *Journal of Abnormal Psychology, 108*, 374–399.

Williams, P., & Tarr, M.J. (n.d.). RSVP: Experimental control software for MacOS [Computer software]. Retrieved March 25, 1998, from http://www.tarrlab.org/rsvp/ (no longer available)

APPENDIX: STIMULUS CATEGORIES

The familiar mental disorders used as stimuli included the 20 disorders listed in Table 1 plus the following (higher-order mental disorders are in italics):

- specific phobia
- social phobia
- anorexia nervosa
- bulimia nervosa
- antisocial personality disorder
- schizoid personality disorder
- attention-deficit/hyperactivity disorder
- conduct disorder
- oppositional defiant disorder
- mental retardation
- *eating disorder*
- *substance-related disorder*
- *disruptive behavior disorder*

The following unfamiliar mental disorders were used as stimuli (higher-order mental disorders are in italics):

- developmental coordination disorder
- rumination disorder
- stereotypic movement disorder
- syspareunia (not due to a general medical condition)
- sexual aversion disorder
- circadian rhythm sleep disorder
- breathing-related sleep disorder
- nightmare disorder
- undifferentiated somatoform disorder
- dissociative amnesia
- *disorder usually first diagnosed in infancy, childhood, or adolescence*
- *sexual disorder*
- *dissociative disorder*
- *somatoform disorder*
- *cognitive disorder*
- *impulse-control disorder*
- *sleep disorder*
- *factitious disorder*

The 10 familiar medical disorders used as stimuli were

- high blood pressure
- allergies
- influenza
- chickenpox
- asthma
- arthritis
- osteoporosis
- appendicitis
- leukemia
- pneumonia

The 10 unfamiliar medical disorders used as stimuli were

- tularemia
- barotrauma
- exophthalmos
- nephritic syndrome
- bundle branch block
- Goodpasture's syndrome
- tropical sprue
- babesiosis
- tinea versicolor
- fibroadenoma

The natural kinds used as stimuli were cows, eggplants, pieces of gold, roses, and salmon. The nominal kinds used as stimuli were documents photocopied yesterday, dogs whose names begin with *F*, songs with five words in the title, people whose social security numbers end with an even number, and trees planted in the year 2002.