

If You Want to Know, Consider Asking: How Likely Is It That Patients Will Hurt Themselves in the Future?

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Although self-harming behavior is a common and costly problem for psychiatric inpatients released from the hospital, standardized tools that assess patients' risk for self-harm are rarely used in clinical settings. In this study of dually diagnosed psychiatric inpatients ($N = 147$), we assessed the utility of patients' self-perceptions of risk in predicting self-harm in the community. Patients' self-perceptions of risk predicted self-harm 8 weeks after discharge from the hospital (Lag 1; area under the curve [AUC] = 0.75). Self-perceptions of risk at the 8-week interview also predicted self-harm 2 months later (Lag 2; AUC = 0.72). Self-perceived risk added predictive utility above and beyond scores on a measure of depression and seemed to capture changes in risk state over time. The results suggest that inpatients can accurately perceive their own risk and therefore may be important collaborators in the risk management process.

Keywords: self-harm, risk assessment, self-prediction, suicide-related behaviors

Self-harm may be defined as behavior that causes physical harm to oneself that is motivated by an intent to harm (suicide-related behavior) or kill (suicide attempt) oneself (Nock & Kessler, 2006). Self-harm is prevalent, occurring in approximately one in five psychiatric patients (e.g., Briere & Gil, 1998) and is a strong risk factor for both future self-harm (Borges et al., 2006; Joiner et al., 2005) and completed suicide (Brown, Beck, Steer, & Grisham, 2000; Cooper et al., 2005; Hawton & Fagg, 1988; Owens, Horrocks, & House, 2002).

Mental health clinicians often are viewed as responsible for predicting and preventing self-harm. Although a number of standardized tools have been developed to aid with prediction of self-harm, they are rarely used in a clinical setting (Jobes, Eyman, & Yufit, 1995). Instead, mental health professions tend to rely solely on clinical judgment, which is less accurate than are standardized assessment approaches, generally, or actuarial methods of combining data, in particular (e.g., Meehl, 1954). This study aimed to assess how well inpatients' self-perceptions of their own risk predict self-harm after hospital discharge.

Statement of the Problem

To protect patients who are at risk of engaging in self-harm, clinicians must first be able to predict such behavior. A large body

of research indicates that they do so more accurately when they apply standardized assessment tools than when they rely upon their unaided clinical judgment (Ægisdóttir et al., 2006; Grove, Zald, Lebow, Snitz, & Nelson, 2000; Westen & Weinberger, 2004). In the self-harm domain, over 20 tools are available to improve clinicians' risk assessment accuracy (Russ, Kashdan, Pollack, & Bajmakovic-Kacila, 1999). Well-validated tools include both purpose-built risk assessment tools such as the Suicide Behaviors Questionnaire (Linehan & Neilson, 1981) and measures of theoretically relevant constructs such as Beck's Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974; McMillan, Gilbody, Beresford, & Neilly, 2007). Measures of depression may also be helpful in predicting self-harm, given that this construct is a strong risk factor for such behavior (e.g., Kessler, Borges, & Walters, 1999; Suominen et al., 1996).

Although measures of risk, hopelessness, and depression can improve clinical decision making, there is little evidence that clinicians actually use them. In one of the only relevant surveys of practice, Jobes, Eyman, and Yufit (1995) found that clinicians (i.e., psychologists, psychiatrists, and social workers) typically assessed risk of suicide with open-ended interviews and observations (80%)—very few applied standardized tools to do so (10%). Clinicians may also apply *no-suicide contracts* fairly often to assess and/or manage risk of self-harm. These are written or verbal agreements in which a patient pledges not to harm him- or herself over a specified period of time. Some clinicians may view patients' reluctance to make such an agreement as an indicator of risk. In a survey of 112 Harvard medical school faculty, 61% of psychiatrists and 83% of psychologists reported using no-suicide contracts (Miller, Jacobs, & Gutheil, 1998; see also Mudd, Mandrusiak, & Joiner, 2006). However, there is little evidence that these contracts (or willingness to make them) actually predict self-harm or protect patients from attempting suicide. For example, Mishara and Daigle (1997) coded over 600 calls made to suicide prevention centers

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and found that no-suicide contracts were upheld in 54% of cases and broken in 46% of cases.

Why do clinicians so rarely use validated tools to assess risk of self-harm? First, it may be that clinicians are unfamiliar with risk assessment tools or with their benefits in improving predictive accuracy (Grove & Meehl, 1996). Second, it may be that the tools are too time-consuming, cumbersome, or foreign to become part of everyday clinical practice. Because risk of self-harm can ebb and flow over time, clinicians must assess risk repeatedly over time. This calls for an assessment approach that is efficient, empirically based, sensitive to change over time, and more consistent with routine therapeutic practice than are standardized testing and measurement.

A Way Forward? Self-Perceptions of Risk

This study takes risk assessment in a new direction by leveraging patient perceptions. Clinicians routinely talk with patients about their behavior and collaborate with them to determine appropriate courses of action (Jobes et al., 1995). This context could easily accommodate a discussion of patients' perceptions of their own risk of self-harm. With a lifetime of experience, individuals may be in a better position than are external evaluators to predict their own behavior. Individuals may well understand their feelings, thoughts, actions, and how these interact with the people and situations in their daily life. The principle of self-perceptions is simple: "If you want information from someone, the best way to get it is to ask them" (Rorer & Widiger, 1983, p. 433).

We define *self-perception of risk* as "an individual's self-reported subjective probability of . . . performing a specified behavior," based on his or her appraisal of individual and situational behavioral determinants and anticipated changes in those determinants (Warshaw & Davis, 1984, p. 111). Self-perceptions of risk differ from affective forecasting (focusing on predicting behavior rather than predicting emotional responses to events). Because they focus directly on idiographic self-predictions, self-perceptions of risk also differ from nomothetic self-report scales that take a group-based approach.

Substantial evidence suggests that self-prediction of behavior performs well when compared with predictions made by psychological tests and by external evaluators such as therapists, mothers, teachers, and peers (Epley & Dunning, 2006; Shrauger & Osberg, 1981, 1982; Shrauger, Ram, Greninger, & Mariano, 1996). Recently, Skeem, Manchak, Mulvey, and Lidz (2010) found that patients' self-perceptions of violence risk performed relatively well in predicting violence after hospital discharge. In this study, interviewers asked psychiatric inpatients about how concerned their therapist should be that they might be involved in violence during the 2 months after hospital discharge. Patients' answer to this single question performed as well in predicting violence (area under the curve [AUC] = 0.74) as would many of the leading (and resource-intensive) violence risk assessment tools. Moreover, self-perceptions outperformed two brief risk assessment screens in predicting violence (AUC = .66 and .59).

Might these findings generalize from violence to the behavior of self-harm? Perhaps. On one hand, Janis and Nock (2008) found that adolescents' self-rating of the likelihood that they would "make an actual attempt to kill yourself . . ." or "purposely hurt yourself without wanting to die" (p. 5) at some unspecified point

in the future significantly ($R = .50$) predicted self-reported suicidal behavior over a 6-month follow-up period. Although self-predictions did not add significant incremental utility to adolescents' self-reported frequency of suicide attempts and self-harm over the past year, both of these variables were extracted from the same self-report measure and were strongly correlated (self-prediction and history, $r = .49$). Monomethod bias, a limited sample size ($n = 50$), and a low base rate of self-harm during the follow-up may have limited the power of this study to detect incremental effects.

On the other hand, other research provides some reason to believe that the utility of self-prediction may generalize from violence to self-harm. First, some research has found that both violence and self-harm relate to depression, hopelessness, impulsivity, and substance abuse (Apter, Van Praag, Plutchik, & Sevy, 1990; Conner, Duberstein, & Conwell, 2003; Hillbrand, 2001; Plutchik, Van Praag, & Conte, 1989). Because some researchers believe that self-harm can be viewed as violence directed against the self, violence and self-harm have been called "two sides of the same coin" (Gillis, 1994, p. 374). Second, conditions that help minimize biases in human judgment may be in play for both self-harm and violence. Like violent incidents, incidents of self-harm are concrete events involving particular people, locations, and situations in one's life. When people predict real, proximate events rather than hypothetical, distal ones, this minimizes optimistic bias, that is, the expectation that one's future will be unrealistically pleasant and happy (Armor & Sackett, 2006). Self-harm is a real and proximate event (e.g., cutting one's arms with a razor in the bathroom on a lonely Friday night). Optimistic bias may be further offset by depressive realism (Alloy & Abramson, 1979, 1988). Shrauger, Mariono, and Walter (1998) posited that people with depression are particularly accurate in making predictions about negative events. People with depression, in turn, are disproportionately represented among psychiatric inpatients.

Even if people are *able* to predict their own self-harm, clinicians might worry that they will not be *willing* to do so. Freedenthal (2007) argued that patients may often fake being good by denying suicidality in order to evade psychiatric treatment, hospitalization, stigma, or shame. Although this concern may sometimes be well placed, there is substantial evidence that individuals often provide accurate self-reports, even when there are incentives to deceive. For example, Loza, Loza-Fanous, and Heseltine (2007) found no differences in scores on a self-report survey of criminality as a function of whether offenders believed the survey would be used for research purposes or to make decisions about their release to the community. Moreover, as suggested earlier, Skeem et al. (2010) found that psychiatric inpatients disclosed relatively accurate self-perceptions of risk for violence.

The Current Study

This study explored the accuracy of psychiatric inpatients' self-perceived risk of self-harm after discharge. We focused on psychiatric inpatients because they are at greater risk of self-harm and suicide than are outpatients (Bostwick & Pankratz, 2000), particularly during the period after hospital discharge (Skeem, Silver, Appelbaum, & Tiemann, 2006). We focused on patients with co-occurring mental illness and substance abuse problems because they are at relatively high risk for self-harm (see Dumais et al.,

2005) and violence, which was another focus of the current study. This study improved upon the design of past research (Janis & Nock, 2008; Skeem et al., 2010) by using collateral informants (i.e., friends or family members who know the patient well) to help assess the criterion of self-harm after hospital discharge; this reduces the likelihood that shared method bias will inflate the relationship between the predictor and criterion.

The aims of this study were to (a) assess how well patients' self-perceptions of risk predict self-harm after hospital discharge (b) evaluate the degree to which patients' self-perceptions of risk add predictive utility above and beyond scores on baseline measures of depression and recent self-harm, and (c) explore whether patients' self-perceptions of risk change over time. Explaining the last aim is important. If self-perceptions of risk change over time, they may be dynamic assessment tools that clinicians can use to monitor risk state or ebbs and flows in risk over time. Capturing changes in risk state over time and across different environments is important for clinicians who wish to monitor risk as patients move through treatment in the hospital and community.

Method

The design was prospective and involved multiple informants. First, interviewers recruited patients in the hospital and administered the measures of risk. Second, interviewers located patients in the community after discharge and interviewed both patients and collateral informants to assess for involvement in self-harm during the 4 months after discharge. Interviewers asked participants about their self-perceptions of future self-harm over two time periods: one time in the hospital, forecasting self-harm during the first 2 months after discharge (Lag 1), and one time in the community, forecasting self-harm during the next 2-month period in the community (Lag 2). The two different lags in this study allowed for the assessment of change in self-perceptions over time.

Participants

The eligibility criteria for the study included (a) a chart diagnosis of a *DSM* Axis I disorder (American Psychiatric Association, 1994) and a diagnosis of a substance use disorder, (b) age 18–40, (c) English speaking, (d) no chart diagnosis or assessment of mental retardation, and (e) competent to consent to research. Participants were also evaluated with the Substance Abuse Subtle Screening Inventory (SASSI; Miller, 1999) to ensure that they met criteria for substance abuse or dependence. We restricted the sample so that only 10% of participants had a diagnosis on the schizophrenia spectrum, given that these individuals were relatively unlikely to engage in violent behavior, which was a focus of the larger study (Gardner, Lidz, Mulvey, & Shaw, 1996; Monahan, et al., 2001).

Of the 164 patients enrolled in the study, 147 (89%) were included in the present analyses because they had completed at least one follow-up interview (128 and 136 patients completed the 8-week and 15-week follow-up interviews, respectively). There were no significant demographic (e.g., gender, age) or clinical (e.g., hospital admission for self-harm) differences between patients who did or did not complete the follow-up interviews. Most of the sample (81%, $n = 117$) completed both follow-up interviews. Collateral informants' reports on self-harm during the full

follow-up were obtained for virtually all (94%, $n = 136$) of these patients.

Of these 147 participants, 63% were men and 37% were women. The average participant age was 28 years old. Participants were White (69%), Hispanic (18%), Asian (5%), African American (4%), and American Indian (3%). The vast majority (77%) had been arrested at least one time and had a previous hospitalization (69%). The majority (52%) were unemployed. The most common Axis I chart diagnosis was bipolar disorder (41%), followed by major depression (29%). According to participants' charts, almost two thirds (65%) had been admitted for a suicidal attempt or suicidal ideation.

Collateral Informants

Collateral informants were nominated by participants at the baseline interview. Participants were asked to nominate someone who knew them well and would have regular contact with them after discharge from the hospital. Of the 136 collateral informants interviewed 15 weeks after the participants' discharge from the hospital, the majority (66%) were women, and 60% had known the participant his or her entire life. Collateral informants were the participant's mother (30%), female friend (13%), sister (9%), father (9%), brother (7%), or male friend (5%).

Procedures

Interviewers completed a 2-day training seminar on the study protocol that emphasized rapport building and advanced interviewing skills. The entire baseline protocol took approximately 1.5 hr to complete. After the training, interviewers shadowed interviews on five or more occasions and conducted two interviews monitored by senior study team members. Weekly meetings were held with all study staff to maintain interview quality and troubleshoot problems.

Interviewers invited eligible patients on the units of two psychiatric hospitals in a western state to participate in the study. Patients completed the informed consent process (including a multiple-choice test assessing competence to consent to research), provided written consent to review their medical records, and nominated a collateral informant to interview at the follow-up. Baseline interviews were conducted in private rooms. After the interview, participants provided detailed contact information.

Eight weeks after discharge, interviewers located patients in the community and conducted a telephone interview to identify any self-harming incidents that took place after discharge and to reassess self-perceptions of risk for harm over the next 2 months. This interview was brief (approximately 20 min) and was conducted by the same study team member who interviewed the participant in the hospital to maximize rapport. Patients who had no access to telephones were interviewed in person.

Fifteen weeks after discharge, interviewers met patients in their home or a public location of their choice to conduct an in-person interview (approximately 45 min) that included questions related to whether self-harming behavior had occurred since their telephone interview. Collateral informants were also interviewed in person 15 weeks after the patients' discharge and asked about whether and how the patients had engaged in self-harm since their release from the hospital. Patients and collaterals were interviewed

at separate times and locations. Each was paid for his or her participation.

Measures

Depression. Depression was assessed at baseline using the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983), a 53-item self-report measure of current psychological distress. The BSI includes a six-item Depression subscale (that taps feeling worthless, hopeless, lonely, blue, not interested, and having thoughts about ending one's life). The scale manifested high internal consistency in the development samples ($\alpha = 0.85$; Derogatis & Melisaratos, 1983) and in the present sample ($\alpha = 0.89$). In this sample, BSI depression score means ranged from 0 to 4, with a mean score of 2.6 ($SD = 1.2$), which is significantly higher than normative data reported for psychiatric inpatients ($M = 1.8$, $SD = 1.2$; Derogatis & Melisaratos, 1983). Depression is one of the four factors that repeatedly emerges across factor-analytic studies of the BSI (Gavazzi, Julian, & McKenry, 1996; Hafkenscheid, 1993; Hayes, 1997). Correlations between the BSI and similar symptoms on the Symptom Checklist—90—R (Derogatis, 1975) are between 0.92 and 0.99, demonstrating good congruent validity (Derogatis & Melisaratos, 1983).

Self-perceptions of risk. Self-perceptions of risk for self-harm were assessed during the course of the baseline interview and over the phone with the following two sentences: "We define self-harm as any act that is committed with the intent to physically harm yourself or end your life. Given a scale of 1 to 5, where 1 is 'no concern' and 5 is 'greatly concerned,' how concerned should your therapist be that you might cause physical harm to yourself in the next 2 months?" In keeping with Skeem et al. (2010), patients were asked to (a) express their self-perceived risk in terms of a "therapist concern" in an effort to prime conceptions of the therapeutic alliance and decrease reporting bias and (b) focus on "the next 2 months" in an effort to increase the proximity and concreteness of predicted event(s). Participants were also asked to rank the confidence of their answer on a scale of 1 (*not at all confident*) to 5 (*completely confident*) and to answer an open-ended question about the basis of their risk assessment (i.e., "What is the basis for your answer?"). Because this question was asked in a research context, the degree of concern reported by a participant did not have an effect on his or her course of treatment.

Both continuous and dichotomous forms of self-perceived risk were used in this study. With respect to continuous scores, the average rating of self-perceived risk at baseline and 8 weeks was 2.4 (corresponding to "slight-minimal concern"; $SD = 1.4$) and 1.65 ("no-slight concern"; $SD = 1.05$), respectively. The modal rating of confidence was "completely confident" (50% & 55%, respectively). Very few participants (less than 5%) reported that they were "not at all confident" in their response.

The raw 5-point continuous ratings of concern about future self-harm behavior were also dichotomized into "no concern" (i.e., ratings of 1) and "any concern" (i.e., ratings of 2 or greater) because decisions related to risk of self-harm often are dichotomous (i.e., should this patient be hospitalized or not?). As described later, an AUC analysis was used to identify the cut point for dichotomization, which was comparable to that used by Skeem et al. (2010) in their study of self-perceived violence risk (i.e., into ratings of 0–2 and 3–5) and comparable to that applied by Lidz,

Mulvey, and Gardner (1993) in their study of clinicians' concerns about patients' violence risk (i.e., ratings of 0–2 and 3–5).

Self-harm. There were two sources of information for the criterion measure of self-harm during the follow-ups: patients and collateral informants. For patients, we assessed self-harm at the baseline, 8-, and 15-week follow-up interviews by asking, "Have you done anything to cause harm to yourself in the past 2 months?" If "yes," a series of follow-up questions were asked, including, "How did you try to hurt yourself?" "Where were you?" and "Were you trying to kill yourself when you did this?" At the baseline interview, 42.9% of participants reported engaging in self-harm during the 2 months prior to hospital admission, which is termed *recent self-harm* in the remainder of this article.

At the follow-up interviews, 16.3% and 15.0% of participants reported self-harm at the 8-week and 15-week interviews, respectively. The most common reported behavior was cutting, followed by swallowing pills. In 26% of reported incidents, patients endorsed an intent to die. For collaterals, we assessed self-harm at the 15-week follow-up interview by asking, "Has ____ done anything to hurt him-/herself in the past 3.5 months?" At the follow-up interview, 18.4% of collaterals reported patient self-harm.

There is compelling evidence that the sensitivity and accuracy of measuring aggressive incidents increase when multiple sources of information are combined (e.g., records, collateral informants, patient self-report; Steadman et al., 1998). In the present study, the degree of agreement between patient and collateral reports of self-harm was fair (80%, $\kappa = .46$; Fliess, 1981). For these reasons, we combined patient and collateral reports into a single, multi-informant index of self-harm. Under the assumption that self-harm is likely to be underreported (because of patient self-presentation concerns, collateral informants' incomplete knowledge, etc.), self-harm was coded as having occurred when either informant (not necessarily both) indicated that it had occurred.

Specifically, both patient and collateral reports were referenced to indicate whether self-harm occurred during the first follow-up (up to 8-week interview) and during the second follow-up (between 8- and 15-week interviews). When we could not precisely determine whether self-harm reported by collaterals occurred during Lag 1 or Lag 2 (i.e., for two incidents), the report was randomly assigned to one of the two lags. This strategy was adopted because collateral interviews covered the full 15-week recall period, and the dates of incidents, which would allow them to be assigned to a follow-up, were not always elicited. Our random assignment strategy was conservative in that it was likely to introduce noise into the criterion that would lead to underestimates of the accuracy of self-perceptions. Using this state-of-the-art, multi-informant index of self-harm, we determined that the base rate at 8 weeks and 15 weeks was 19.5% and 16.9%, respectively (as shown in Table 1).

Results

The analyses used to address each of the three study aims—along with their results—are described below. All statistical analyses were performed in SPSS Version 16.0.

Aim 1: To assess how well patients' self-perceptions of risk predicted self-harm behavior over 2-month follow-up periods.

Table 1
Self-Perceptions of Risk and Self-Harm at 8 Weeks (Lag 1) and 15 Weeks (Lag 2)

Self-perception of risk	Self-harm at follow-up		No self-harm at follow-up		Total	
	Lag 1	Lag 2	Lag 1	Lag 2	Lag 1	Lag 2
Any concern about self-harm	22	14	52	25	74	39
No concern about self-harm	3	7	51	70	54	77
Total	25	21	103	95	128	116

We assessed the utility of both continuous and dichotomized self-perceptions of risk in predicting violence. To assess the utility of continuous ratings for Lags 1 and 2, we performed receiver operating characteristic (ROC) analyses, which plot the specificity (or true positive rate) by one-specificity (or false positive rate) of self-perceptions across all possible rating points. This yields an AUC, which describes the accuracy of self-perceptions in predicting violence across a range of possible thresholds. The AUC for Lag 1 was 0.75, which may be interpreted as a relatively large effect (Kraemer & Kupfer, 2006). This means that there was a 75% chance that a randomly selected participant who harmed him- or herself perceived him- or herself as at higher risk than would a randomly selected participant who did not harm him- or herself. For comparison purposes, the simple bivariate correlation (η) between self-perceptions of risk and self-harm for Lag 1 was 0.38. The AUC for Lag 2 was 0.72, which may also be interpreted as a large effect (Kraemer & Kupfer, 2006). As in Lag 1, the simple bivariate correlation (η) for Lag 2 was 0.38.

To assess the utility of dichotomized self-perceptions of risk, we computed five classic epidemiological decision statistics for each lag: (a) sensitivity (true positives/true positives + false negatives); (b) specificity (true negatives/true negatives + false positives); (c) positive predictive value (true positives/true positives + false positives); (d) negative predictive value (true negatives/true negatives + false negatives); and (e) predictive efficiency, or the percentage of patients who were correctly classified at follow-up using patients' self-perceptions of risk (true positives + true negatives/total). The results are shown in Table 2. There was no clear pattern for sensitivity and specificity (as the former exceeded the latter in Lag 1 but not in Lag 2). However, for both lags, self-perceptions demonstrated greater negative predictive power than positive predictive power, meaning that patients who believed their therapist should have "no concern" about self-harm were more likely to be right than were patients who perceived themselves as at "some risk" (which ranged from being slightly concerned to greatly concerned) for self-harm. Given the range of

Table 2
Decision Statistics for Self-Perceptions of Risk of Self-Harm at Baseline and 8 Weeks

Decision statistic	Lag 1	Lag 2
Sensitivity	.88	.67
Specificity	.50	.74
Positive predictive power	.30	.36
Negative predictive power	.94	.91
Overall predictive efficiency	.57	.72

ratings collapsed into "any risk," however, we believe that the AUC estimates were the most trustworthy for assessing the utility of self-perceptions.

Aim 2: To assess whether patients' self-perceptions of risk added incremental utility beyond BSI Depression scores and recent self-harm in predicting self-harm.

Logistic regression was utilized to determine whether self-perceptions significantly predicted self-harm for Lags 1 and 2, above and beyond baseline BSI Depression scores and recent self-harm. (We did not include such characteristics as gender because they did not significantly predict self-harm at either lag.) As a prelude to addressing this study aim, we conducted basic logistic regressions to ensure that BSI Depression scores and recent self-harm predicted self-harm, as expected. This was the case for depression. For every 1-point increase on the BSI Depression subscale at baseline, the odds of engaging in self-harm increased by 16% during the first 8 weeks after discharge, $\chi^2(1) = 13.22$, $p < .001$, Nagelkerke $R^2 = .16$, and by 10% during the second follow-up period, $\chi^2(1) = 6.81$, $p < .01$ Nagelkerke $R^2 = .08$. However, this was not the case for recent self-harm, which did not predict self-harm over either Lag 1 or Lag 2. For this reason, recent self-harm was excluded from further analyses.

Next, we conducted two hierarchical logistic regressions in which self-perceptions of risk (as continuous variables) were entered as a predictor after BSI Depression scores. For Lag 1, adding self-perceptions of risk at baseline (in Block 2) to depression scores at baseline (in Block 1) significantly increased utility in predicting self-harm at 8 weeks, $\chi^2(2) = 20.27$, $p < .001$, $\Delta R^2 = .07$. For every 1-point increase in patients' perceptions of risk, the odds of engaging in self-harming behavior at the 8-week follow-up increased by 67%, controlling for depression scores. For Lag 2, adding self-perceptions of risk at 8 weeks (in Block 2) to depression scores at baseline significantly increased utility in predicting self-harm at 15 weeks, $\chi^2(2) = 14.40$, $p = .001$, $\Delta R^2 = .11$. For every 1-point increase in patients' perceptions of risk, the odds of engaging in self-harming behavior at the 15-week follow-up increased by 77%, controlling for depression scores.

These analyses suggest that self-perceptions add incremental utility to depression scores in predicting future self-harm. A separate but related issue is whether self-perceptions are *more* useful in predicting self-harm than are depression scores. We found that self-perceptions do not have significant differential validity from depression scores (e.g., for Lag 1 self-harm, there was no significant difference between effect sizes for self-perceptions, $r = .37$, and depression, $r = .30$).

Aim 3: To assess whether patients' self-perceptions of risk change over time.

To explore change in self-perceptions of risk of self-harm over time, we computed the intraclass correlation coefficients (ICC) for self-perceptions at baseline and 8-weeks. Unlike basic correlations, ICCs assess the reproducibility of both a participant's score level and rank order in the group. The ICC for self-perceptions between the two time points was 0.35, indicating only a fair degree of correlation (0.80 or above is considered excellent; Fliess, 1981). Thus, it seems that self-perceptions of risk manifest some change over time.

To supplement these analyses, we computed basic bivariate correlations among self-perceptions and self-harm at the two time points. The results are shown in Table 3. Like the association between perceptions of self-harm over time, the association between self-harm during the two follow-up periods was small to medium ($\phi = .25$, Cohen, 1988). Recall, however, that self-perceptions for risk at baseline were quite predictive of self-harm during Lag 1 (AUC = 0.75) and that self-perceptions of risk at 8 weeks were quite predictive of self-harm during Lag 2 (AUC = 0.72). This suggests that, although self-perceptions of risk and self-harm were changing over time, self-perceptions were relatively good predictors of proximate self-harm. Although preliminary, these results are consistent with the notion that self-perceptions of risk may be useful for monitoring changes in risk state for self-harm over time.

Discussion

This study is among the first to assess the utility of patients' perceptions of their own risk in forecasting self-harm after discharge. The participants were a particularly high-risk group; nearly two thirds (65%) had been admitted to the hospital following a suicidal behavior or ideation. This is precisely the type of group for whom a clinically feasible method of predicting self-harm is most needed. Generally, the results suggest that patients are an important source of information about risk, perhaps because they have built the most comprehensive experience base for predicting their behavior across a range of familiar contexts. Specifically, the results suggest that self-perceptions of risk (a) significantly predict self-harm, yielding effect sizes that are comparable to those of standardized assessment tools; (b) add predictive utility to measures of depression and recent self-harm; and (c) may capture change in risk state over time, meaning that they could be useful to clinicians interested in monitoring ebbs and flows in the risk of self-harm as they work with a particular patient.

Table 3
Correlation Matrix for Self-Perceptions of Risk and Self-Harm at 8 Weeks (Lag 1) and 15 Weeks (Lag 2)

Predictor and outcome variables	Self-perceptions: baseline	Self-perceptions: Lag 1	Self-harm: Lag 1
Self-perceptions: Lag 1	.37		
Self-harm: Lag 1	.38	.60	
Self-harm: Lag 2	.32	.38	.25

Before discussing the implications of these findings, we note the study's limitations. First, although this study's retention rates for a high-risk group were relatively good, a sizeable minority of patients were lost to follow-up. Although we detected no differences between those who were lost and those retained (across a range of demographic and clinical variables), it is possible that there are differences on some unobservable variable that render our sample less representative of the target high-risk population than we would like. Second, the date of self-harming incidents was not reliably collected from collateral informants. Because collateral informants (unlike patients) completed one follow-up interview, it was sometimes impossible to determine whether the incident occurred during Lag 1 or Lag 2. Our random distribution of these incidents across lags likely introduced "noise" into the criterion variable of self-harm. Despite this limitation, however, both self-perceptions of risk and depression scores significantly predicted self-harm across both follow-up periods, suggesting that enough "signal" was left to detect. Third, although it seems highly unlikely that patients would be sufficiently motivated and able to both (a) remember their answer to a single self-perception question within a 1.5 hr interview during an eventful hospital stay and then (b) conform their behavior to that answer over a 4-month period in the community, it is theoretically possible that they did so. Fourth, given the eligibility criteria for this study, the extent to which the results will generalize to dual-diagnosis patients with specific diagnoses of schizophrenia is unknown. Finally, because hopelessness was not measured in this study, it is unclear whether the incremental utility of self-perceptions will generalize from depression to hopelessness. In our view, the study limitations are offset by its strengths, which include the use of multiple sources of information to assess the criterion of self-harm and a multiple time-point, prospective design.

What are the implications of our results? At the most basic level, this study challenges the dominant view that "people are either unable or unwilling to provide valid information about themselves" (Osberg & Shrauger, 1986, p. 1044); a view that may be particularly prominent among clinicians working with patients at risk of self-harm (see Freedenthal, 2007). In keeping with the findings of Janis and Nock (2008), we found that patients' answer to a single question that leverages their self-perceived risk significantly predicts proximate self-harm. This single question differed substantially from both clinical judgment and an assessment tool in that patients were assessing themselves. Still, self-perceptions of risk seem to perform as well as the best the field has to offer (but rarely applies), that is, standardized measures of risk and risk-relevant constructs. For example, Beck's Hopelessness Scale (BHS; Beck, Brown, Berchick, Steward, & Steer, 1990) has consistently been found to be a powerful predictor of suicide. The utility of self-perceptions of risk in predicting self-harm in this study (AUC = .72-.75) was comparable to that of the BHS in McMillan et al.'s (2007) meta-analysis (AUC = .64). Similarly, in this study, self-perceptions added predictive (if not differential) utility above and beyond the known risk factors of depression and self-harm history (cf. Janis & Nock, 2008).

Although actuarial methods of synthesizing data quite consistently outperform clinical methods for doing so (Ægisdóttir et al., 2006; Grove & Meehl, 1996; Meehl, 1957), Jobes et al. (1995) found that only 10% of clinicians and social workers use validated tools to assess suicide and self-harm risk. Self-perceptions of risk

may find more traction in applied settings than previous tools have thus far and may improve clinicians' ability to forecast self-harm. Asking patients about their perceived risk of self-harm fits comfortably in the context of what clinicians already do, that is, talk with patients. Self-perceptions of risk could easily be elicited in the context of a relevant clinical interview or treatment session. These perceptions hold promise not only for predicting self-harm but also for monitoring changes in risk state over time.

Before assessments of self-perceptions of risk of self-harm are implemented in clinical settings, future research is needed both to replicate these findings and determine the conditions under which they best predict self-harm. With respect to the latter point, it is quite possible that asking patients an even simpler self-perception question than that used in this study (e.g., "How likely are you to hurt yourself?") would yield comparable results (see Janis & Nock, 2008). It is also possible that baldly asking patients a single question to elicit self-perceived risk (without building context or rapport) would yield accurate self-predictions, but this is very much an open question. In this study, self-perceptions were elicited after interviewers discussed a range of relevant topics with patients, including treatment, drug and alcohol use, behavior over the past 2 months, and social support. It is possible that this discussion—which may be much like one a therapist would have with a client—made the prediction task more concrete and "psychologically closer," facilitating predictive accuracy (see Trope & Liberman, 2003). In keeping with this notion, this study suggests that patients may reference recent relevant discussions to ground their predictions—reports of recent self-harm were strongly correlated with self-perceptions of future risk ($\eta = .60$; see Table 3) at the 8-week follow-up, when interviewers discussed both topics with patients. In future research, it will be important to determine whether this kind of cognitive "scaffolding" is necessary for patients to accurately predict self-harm. Even if it is, the rapport and discussions that characterize scaffolding seem very much in keeping with routine clinical practice.

A second condition that may affect the utility of self-perceptions of risk is the role of the person eliciting those perceptions. It is possible that patients will be less forthcoming about high self-perceived risk with a clinician who has some control over their future. However, several studies have indicated that people often provide accurate self-reports, even when there is incentive not to do so (Loza, Loza-Fanous, & Heseltine, 2007; Walters, 2006). Although it would seem that patients would be forthcoming with clinicians with whom they have established rapport, this remains a subject to address in future research.

The overarching goal for research and practice is to predict and prevent self-harm among high-risk patients. Self-perceptions of risk are a novel, clinically feasible, and promising approach for improving practitioners' everyday, ongoing evaluations of these patients. Although they should not be used as a sole method of assessment, questions about self-perception of risk may substantially enhance existing practice, which tends to rely heavily upon unstructured clinical judgment. Beyond enhancing predictive accuracy, the process of eliciting self-perceptions may foster rapport and treatment engagement: Patients are made partners through this process and are treated as experts in their own lives, which may help build a collaborative relationship with their treatment provider. The results of this study suggest that patients are willing and

able to provide accurate information about themselves; we may need only to ask the right questions.

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