The Addiction Severity Index (ASI) is a comprehensive, semi-structured interview for the assessment of substance abusing individuals. The instrument provides clinical information regarding an individual's functioning and experience of difficulties in multiple life domains. First introduced in 1980 by McLellan and Colleagues at the University of Pennsylvania, the instrument, now in its 5th edition, is the most widely used substance abuse instrument in the world. It is used clinically by thousands of programs for treatment planning and increasingly by state, county, and city-wide treatment agencies, managed-care organizations, and by clinical and health services researchers. To date, 21 states have mandated the ASI in their licensed treatment programs. Additionally, the ASI is now being employed by agencies outside of the substance abuse field that find its multidimensional focus useful and applicable. These include drug court programs, probation and parole offices and vocational and training agencies. Welfare-to-work programs have been initiated in 21 states at this writing and all of them incorporate the ASI to plan service delivery. Now translated into many different languages, the ASI has been studied extensively, and has demonstrated high degrees of validity and reliability.

Multidimensional instruments such as the ASI can serve a variety of functions such as: (1) providing patients with a means for identifying and specifying areas of concern; (2) providing therapists with information necessary in developing treatment plans; (3) serving as a tool for measuring interim and overall treatment efficacy, on a number of dimensions, rather than simply abstinence or reduction of substance use; and (4) allowing for the broader comparison of treatment and program effectiveness across different approaches, modalities, and milieus.

The numerous advantages of multidimensional assessment, together with the increasing urgency to provide more effective substance abuse services, has increased the demand for training on ASI administration. Naturally, accompanying the increased demand for training is the expectation that training is effective in producing competent administrators. Currently, there are two well specified ASI training methods including: (1) a standard two-day training developed by the University of Pennsylvania (PENN, the developers of the ASI), and a one-day, manualized and videotape assisted NIDA Technology Transfer package. However, while both training methods have been used extensively, neither has been examined experimentally in terms of how well it prepares individuals to administer the ASI instrument. Also, included in the increased demand for training is the desire for increasingly briefer, less time consuming training methods.

The study presented here is intended to address both of these issues. In response to the desire for briefer training, the investigating group has developed a manualized ASI training that could potentially be facilitated by a non-clinician, in a one-day training process. The group also designed a one-day training modeled after the standard two-day ASI training prescribed by PENN, and a 6-hour videotaped training modeled after the 1-day PENN training. The goals of the study are thus two-fold, (1) to determine the effectiveness of various ASI training models in the preparation of competent ASI interviewers, and (2) to examine whether duration and modality of training influences resultant instrument proficiency. These goals have led to the following hypotheses: (1) The two-day PENN facilitated ASI training will occasion the highest levels of ASI proficiency, and (2) there will be a monotonic decrease in resultant instrument proficiency across the following training models: (a) 2-day PENN training, (b) 1-day PENN training, (c) video-taped training, and (d) NIDA Technology Transfer package.

Methods

Sample

Recruitment of programs were recruited in a number of different ways, including (1) a mailing notification to each State Office of Drug and Alcohol abuse, (2) a targeted mailing to treatment program directors, (3) solicitation of programs from the Drug Evaluation Network System (DENS) study, and (4) recruiting programs from the DeltaMetrics substance abuse helpline. In all cases, DeltaMetrics provided a brief description of the research project, explaining that participating sites would be randomly assigned to receive, for free, one of four models of ASI training. The programs would be asked to insure that several members of their program staff would participate in the assigned training sessions.

Attempts were made to obtain geographically diverse sites (ultimately programs from 18 states) as well as to represent the general types of treatment offered (i.e., methadone, inpatient residential, and outpatient). The mailings to the State Offices of Drug and Alcohol Abuse resulted in the enrollment of 29 program sites, of which 24 participated. The targeted mailing to program directors themselves resulted in the enrollment of 9 program sites, of which 8 participated. Only 3 sites were enrolled using the DENS study, of which 3 participated, and use of the help line resulted in 3 enrollments, of which 2 participated. Therefore, out of the 44 substance abuse treatment programs initially enrolled in the study, a total of 37 sites actually participated, with 7 programs withdrawing before the protocol formally began.

A total of 402 program staff representing the 37 participating sites were trained to administer the ASI, according to the model their program was randomly assigned to. One hundred and fifteen participants were trained using the 2-day Penn-VA training, 120 received the 1-day Penn-VA training, 92 received the DeltaMetrics video training, and 75 received the NIDA training. The majority (63%, n = 253) of the sample was female.

The sample had a mean age of 42 (SD = 11.1), with a mean of 16 (SD = 2.2) years of education, and a mean of 8.5 (SD = 6.9) years experience in the field of mental health/substance abuse. Sixty percent (n = 241) of the sample were white, 26% (n = 106) were African Americans, 7% (n = 29) were Hispanic, 1% (n = 3) were Asian, and approximately 6% (n = 23) were of another ethnicity. Sixty nine percent (n = 279) were clinicians, 16% (n = 63%) served in supervisory roles, and 8% (n = 32) served in administrative capacities.

Regarding previous knowledge of the ASI, only 12% (n = 48) of the sample had received any previous training on the ASI, of these 42% (n = 20) reported having been trained in 1-day, 38% (n = 18) in a half-day, and 21% (n = 10) in 2-days. While only 12% were previously trained, 25% (n = 99) reported previously conducting ASI interviews.

Procedures

Following recruitment into the study, training dates were coordinated with and scheduled at the participating programs. A total of 37 training sessions were conducted, 1 at each participating program. The number of trainees at each training session ranged from 3 to 18, with a mean of 11. All participants were mailed a pretraining packet consisting of the published article entitled, The Fifth Edition of the Addiction Severity Index (McLellan et al, 1992); a copy of the 5th edition of the ASI, and a brief written overview of the ASI. At each training event, all participants received a comprehensive set of ASI materials including relevant publications and the detailed ASI Manual and Users Guide.

Pretraining materials were distributed to each participant prior to the training in order to provide useful, orienting information within which to contextualize the training. The investigative group also developed a brief, 10-item ASI pre-training quiz, which focused primarily on the structure and content of the instrument. The purpose of these quizzes was to determine pretraining baseline knowledge of the ASI. Quizzes were completed immediately prior to the beginning of training. The four training conditions were structured as follows:

Two-day training The first day of the standard 2-day training consisted of an introduction to the ASI, a discussion of the reasons for its development, followed by an item-by-item explanation of the rationale, coding rules, and conventions documented in the ASI Manual and User's Guide. The second day of the training consists of a series of exercises and in-depth discussions designed to reinforce information provided on day one. Exercises include scripted role plays, severity rating vignettes, and coding quizzes. Trained, DeltaMetrics trainers were provided with a binder that included a training agenda, audiovisual materials, and instructions for all exercises.

One-day training The one-day training, actually an abridged version of the standard 2-day training, consisted of an introduction to the ASI, followed by an item by item explanation of the rationale, coding rules, and conventions documented in the ASI Manual and User's Guide. To cover all the material in a single day, discussions were limited. However, role-play exercise was included. Again, trained, DeltaMetrics trainers were provided with a binder that included a training agenda, audiovisual materials, and instructions for all exercises.

Videotaped training Delta Metrics produced four 1-1 ½ hour videotapes from a scripted outline gleaned from the One-day training. Thus the 6 hour training video, which is designed as a stand-alone training model, is essentially a slightly abbreviated version of the one-day training. In planning the production, staff developed a scripted outline of the material to be covered, including the level of detail in which each coding convention would be discussed, a list of specific examples to reinforce coding rules and exceptions, and a selection of points to be presented through graphics. While the video was recorded over two days, only the most concise explanations of relevant topics remained in the final program. Actors were hired to portray ASI trainees. Typical ASI questions were scripted for each of the trainees. The videotape was produced as a stand-alone package to include all of the information covered in an ASI training. In conjunction with a subsequent review of the ASI Manual and Users Guide the training was intended to provide all the information necessary to conduct an ASI interview.

NIDA Technology Transfer Package The NIDA Technology Transfer Package was initially developed to introduce and orient clinical staff to the ASI rather than to train them in its use. However the package has been used widely by practitioners and others to train themselves on ASI administration. For the purposes of this study, the investigative group developed specific guidelines to assist a treatment program staff member in getting the most out of the package. For example, suggesting which pages would be most helpful as transparencies, and telephone consultation to assist the facilitator in using the materials.

Following the completion of training all participants were asked to complete a series of measures designed to assess a variety of skills relevant to the competent administration of the ASI. These skills: (1) understanding the coding procedures, (2) accurate documentation, coding, and rating, and (3) use of effective interviewing skills, were assessed through a series of post-training competency measures. These measures were as follows:

Post-test 1 and 2: Knowledge Test: Administered immediately following training and 2 months later, this 29-item multiple choice, paper and pencil test was designed to measure knowledge about, and coding rules for each of the ASI sections and selected items.

Video Coding Procedure: Three months following training, participants were asked to observe and code an entire videotaped ASI interview. The participants essentially watched a mock ASI interview and coded all responses along with the interviewer. The 241 items on the completed ASI were than scored against an expert consensus answer key which determined whether items were accurately recorded and coded.

Phone test: Four months following training, participants were asked to conduct an abbreviated ASI interview with a DeltaMetrics staff member, by telephone. The shortened, scripted interview included only 4 of the 7 problem severity areas: (1) medical, (2) alcohol, (3) drug, and (4) psychiatric. The measure was used to assess trainees' ability to conduct an ASI interview and elicit and code correct information. The interview, which encompassed 94 scorable items, determined whether or not each question was: (1) introduced, (2) accompanied by an example, (3) paraphrased, and (4) probed.

Global Skills test: Immediately following the phone test, the experienced ASI interviewer who had role-played the scripted ASI completed a 12-item measure which rated the trainees' overall interviewing skills, such as appropriate probing, building rapport, handling patients' questions, etc…

Scale Development

A similar approach was followed in addressing the structure of scales for the 6 competency measures including the: (1) Pre-quiz, (2) Post- test 1 & 2, (3) Video test, (4) Phone test, and (5) Global Skills test. In each case the scaling process began with an examination of the distribution of total scores, to determine overall skewness and kurtosis, and determine if the scores were unequally distributed around the mean. The next step involved a reliability analysis, examining the alpha coefficients for the scales of each measure. This was done to determine overall intercorrelation between all items in a measure. Each measure was analyzed in this fashion, with the final items set being determined by an agreed upon level of inter-relatedness and normality.

Pre-quiz: The pre-quiz, was shortened from 10 to 8 items with the exclusion of 2 items (5 & 8) that had inter-item correlations less than .10.

Post-test 1& 2: The post-training knowledge-test was abbreviated from 29 to 21 items with the exclusion of 8 items (#'s 1, 4, 5, 8, 11, 20, 25, & 28).

Video test: The post-training video test was abbreviated from 241 to 153 items.

Phone test: The post-training phone test was abbreviated from 94 to 49 items.

Global Skills test: The 12-item post-training Global skills test was left unmodified.

Results

Baseline characteristics

Examination of baseline characteristics indicated no significance between group differences in gender, age, whether or not participants are in recovery, years working in field of substance abuse, whether or not they are certified in substance abuse, and current position held in the field of substance abuse. A Chi-square analysis identified significance between group differences on race, χ^2 (6, 396) = 19.5, $p = .003$, (see Table 1). Analysis of Variance (ANOVA) identified significant between group differences on total years of education F (3, 397) = 5.61, $p = .001$. Post-hoc analysis using the Scheffe procedure indicated that individuals attending the video training had significantly more years of education than those attending the NIDA training (see Table 1). ANOVA also identified significance between group differences on Pre-quiz scores, F (3, 356) = 3.01, $p = .030$. Post-hoc analysis using the Scheffe procedure indicated that individuals attending the one-day training had significantly higher scores on the pre-quiz measure than individuals receiving NIDA training (see Table 1). This suggests a significant a between group baseline difference on ASI knowledge.

(Insert Table 1 about here)

Attrition

While significant measures were implemented to improve compliance and maintain follow-up rates, substantial rates of attrition occurred across the series of competency assessments. Beginning with a sample size of 402, a total of 359 (89%) completed Post-1. The total dropped to 312 (68%) by the administration of Post-test 2. Two hundred and twenty seven (57%) of the trainees participated in the video-test at 3 months post-baseline, and only 124 (31%) participated in the phone-test 4 months following baseline.

Competency

Examining the intercorrelations between the six competency measures revealed universally positive and significant associations between all instruments, with Pearson correlation coefficients ranging from r = .20 (for the Post-test 2 with the Global Skills test) to r = .61 (for the Post-test 1 with Post-test 2) (see Table 2).

(Insert Table 2 about here)

Using ANOVA, significance between group differences were found on Post-test 1, F (3, 356) = 10.12, $p = .000$ (see Table 3 for Means and SDs). Post-hoc comparisons, using the Scheffe procedure revealed that participants who received the 2-day training had significantly higher (better) scores than participants receiving any of the other models of training (see Figure 1).

(Insert Table 3 about here)

Analysis of Post-test 2 also revealed significance between group differences F (3, 309) = 10.32, $p= .000$ (see Table 3 for Means and SDs). Post-hocs indicate that those who received the 2-day training remained significantly superior to those who had received the Video or NIDA training packages, but the 2-day training was no longer significantly better than the 1-day training. Furthermore, individuals who had received the 1-day training had significantly higher scores than those who had received the NIDA training (see Figure 1).

(Insert Figure 1 about here)

Video test results also indicated significance between group differences F (3, 224) = 9.22, $p = .000$ (see Table 3 for Means and SDs). Post-hocs indicate that participants who received the 2-day, 1-day, and video trainings all scored significantly better than those who received the NIDA training (see Figure 1).

Results of the Telephone test similarly revealed significance between training-model differences F (3, 121) = 6.67, $p = .000$ (see Table 3 for Means and SDs). Post-hocs again indicated that participants who received the 2-day, 1-day, and video trainings all scored significantly better than those who received the NIDA training (see Figure 1). No significant differences were found on the Global Skills test.

Discussion

The comparison of four standard ASI training models demonstrated clear superiority of ASI knowledge immediately following the most intensive 2-day training events. However, several months following training, measures that assessed more "hands on" ASI knowledge (e.g., coding, precise interviewing), were not significantly different among three training models (2-day, 1-day, Video) that shared a core description of the ASI and elucidation of the intent and coding items. However, the implementation of the NIDA Technology Transfer ASI Package as a training vehicle was significantly less successful. Overall, results indicate that effective, brief and cost efficient ASI training models can be implemented.

These new training models are now available for use in the field of substance abuse depending on the specific needs and preferences of the user. All three models have been shown to be effective in providing trainees with the skills necessary to administer the ASI in a competent fashion.

This project has allowed us to develop several alternative ASI training packages. Apart from the NIDA Technology Transfer Package, which overall appeared to be the least effective training vehicle, the three products/services that were produced as part of this project include:

(1) A standard 2-day manualized ASI training model

(2) An abbreviated 1-day ASI training model

(3) A 6-hour, stand-alone ASI training video.

The project has further allowed us to develop several new measures for assessing the overall and specific competencies of trained ASI interviewers. Such measures can be used to establish an acceptable level of competency, and to identify interviewers who will be capable of administering the ASI in a reliable and valid fashion. The various competency measures developed through this project include:

(1) A 29-item Post-training Knowledge Test. (Final item set = 21)

(2) A 241-item Post-training Video-test. (Final item set = 153)

(3) A 94-item Post-training Phone-test. (Final item set = 49)

(4) A 12-item Post-training Global Skills Test (Final item set = 12)

As of the writing of this report there has already been some demonstrated demand for the alternate training packages and for the competency measures used to identify qualified interviewers following training by these packages. Future research will focus on additional ways to improve upon these ASI training models and competency measures, in order to ensure that the field is provided with qualified interviewers capable of administering this highly valuable instrument.

TABLE 1

Participant Characteristics Across Four Training Models

Variable	1-Day Training (n = 115)	2-Day Training (n = 120)	Video Training (n = 92)	NIDA Training (n = 75)		
	M(SD) or %	M(SD) or %	M(SD) or %	M(SD) or %	p	
Sex						NS
Male	39%	38%	34%	36%		
Age	41.3 (9.7)	41.1 (12.3)	43.01 (10.3)	42.77 (12.1)	NS	
Race						*
White	58%	61%	63%	57%		
African American	35%	17%	27%	28%		
Hispanic	4%	13%	4%	7%		
Asian/Pacific Islander	1%	2%	0%	0%		
Other	3%	8%	5%	8%		
Yrs of Education	15.9 (2.4)	16.1 (2.1)	16.7 (2.2)	15.4 (2.1)	***	
In D & A Recovery	34%	25%	25%	40%		NS
Yrs D & A Experience	7.52 (5.9)	8.48 (7.2)	8.96 (7.5)	9.40 (7.3)	NS	
Certification in D & A	37%	35%	50%	52%		NS
Current Position						NS
Clinical	78%	63%	71%	65%		
Supervisory	15%	18%	13%	16%		
Administrative	4%	8%	10%	13%		
Previous ASI Training	15%	9%	15%	8%		NS
Pretraining Quiz	.60 (.21)	.65 (.17)	.62 (.18)	.56 (.19)		*

* $p < .05$
** $p < .01$
*** $p < .001$
NS not significant

TABLE 2

Intercorrelations Between Competency Measures

Variable	Post-Test 1 (n = 359)	Post-Test 2 (n = 312)	Post-Test 2 (n = 227)	Video Test (n = 124)	Phone Test (n = 124)	Global Skills Test
Pre-Test	.40**		.33**	.26**	.32**	.34**
Post-Test 1			.61**	.43**	.55**	.45**
Post-Test 2				.38**	.29**	.20*
Video Test					.50**	.49**
Phone Test						.53**

* $p < .05$
** $p < .01$
*** $p < .001$
NS not significant

TABLE 3

Competency Measure Scores by Training Model: Mean Percent Correct (SD)

Variable	1-Day Training (n = 115)	2-Day Training (n = 120)	Video Training (n = 92)	NIDA Training (n = 75)	P
Post-Test 1	66 (17)	73 (18)	64 (18)	59 (18)	***
Post-Test 2	68 (18)	73 (16)	60 (19)	59 (18)	***
Video Test	77 (10)	78 (14)	82 (11)	67 (22)	***
Phone Test	60 (15)	65 (15)	62 (18)	44 (12)	***
Global Skills	37 (08)	37 (09)	42 (09)	36 (08)	NS

* $p < .05$
** $p < .01$
*** $p < .001$
NS not significant

Figure 1:
Competency by Training Model