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HELDREF PUBLICATIONS

The Personal Attitude Scale: A Scale to Measure Spontaneity

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ABSTRACT. A 70-item measure of spontaneity, innocuously entitled the Personal Attitude Scale (PAS), was tested for its reliability and validity. After an item analysis, 58 items were retained in the final version of the PAS. The internal consistency reliability (Cronbach's α) values were .77 for men and .86 for women, and .86 for both samples combined. Evidence for construct validity of the PAS was mixed. The PAS was (a) uncorrelated with Snyder's Self-Monitoring Scale in both men and women, (b) significantly ($p < .05$) correlated with the Beck Depression Inventory and Zuckerman's Sensation-Seeking Scale (general and subscale scores) in women, and (c) correlated with only the general sensation-seeking score, Thrill and Adventure Seeking and Experience Seeking, in men.

SPONTANEITY, A CONCEPT POPULARIZED BY J. L. MORENO, has been embraced enthusiastically by the psychodrama community. It is a concept that is generally assumed to be essential to the practice of therapy in psychodrama. According to Moreno (1953, 1985), human nature is characterized by an unlimited capacity for spontaneous and creative action. Spontaneity has been linked to learning, creativity, and general mental health (Kipper, 1996; Moreno, 1953). Because of spontaneity, Moreno felt that it was appropriate for therapeutic practices to be proactive and "forward," whereas psychoanalysts like Freud emphasized retrospective analyses. To Moreno, anxiety and spontaneity are inversely correlated, with the end result being panic in the total absence of spontaneity. Spontaneity and creativity go hand in hand: "[w]ithout creativity the spontaneity of the universe would run empty and end abortive; without spontaneity the creativity of the universe would become perfectionism and lifeless" (p. 336). Hollander (1981) regarded spontaneity

as the catalyst for emotions, thoughts, and actions—the more spiritual, emotional, physical, and intellectual channels are open, the greater the ability to be spontaneous and creative. People experience varying degrees of impulsivity, boredom, anxiety, fear, depression, or rage when their spontaneity is low.

Webster's dictionary (1962, p. 1756) defined spontaneity as "acting in accordance with natural feeling, temperament, or disposition, or from a native internal proneness, readiness, or tendency without compulsion, constraint, or premeditation." Moreno (1983) regarded spontaneity as a "state" that is "not pre-existent" or "created by the conscious will" (p. 44). "Spontaneity operates in the present, now and here; it propels the individual toward an adequate response to a new situation or a new response to an old situation" (Moreno, 1953, p. 42).

In a different context from psychodrama, Farthing (1992) defined spontaneity as

> the degree to which images occur and undergo changes in a seemingly automatic manner, without any conscious volition or control. Night dreams and psychedelic hallucinations are very spontaneous, waking reveries are moderately so. But when we use images for memory, planning, and problem solving, we generate and manipulate them voluntarily, and their changes occur with conscious control. Thus the opposite of spontaneity is *control.* (p. 33)

Moreno's use of the term spontaneity is somewhat different from that of Farthing. To Moreno, spontaneity occurred in a problem-solving situation—the occurring response solves the problem. However, although spontaneous response occurs without the involvement of the "conscious will" (Moreno, 1983, p. 44), warm-up facilitates the engagement of spontaneity. According to Moreno (1953), "[t]he warming up process is the 'operational manifestation' of spontaneity" (p. 337). Kipper (1996) argued that Moreno's definition does not imply "lack of control," but rather that "spontaneity is capable of moving in prescribed directions" (p. 106).

A number of scholars have described the characteristics of a spontaneous person, some of which are (a) an ability to express oneself (Kalliopuska, 1992); (b) a lack of self-consciousness (Wyatt, 1988), (c) being childlike (Gordon, 1985), and (d) risk taking without inhibition, guilt, and self-doubt (Johnson, 1987). Others have elaborated on conditions that facilitate the occurrence of a spontaneous response. Blatner (1973) argued for (a) trust and safety, (b) group norms that allow for the inclusion of nonrational and intuitive dimensions, (c) feelings of tentative distance, and (d) movement toward risk taking. Howell (1982) suggested that experts often operate at the level of "unconscious competence"—a point at which one has practiced the skills for so long that they no longer need to think about using them effectively. In this regard, one might relate spontaneity to the Csikszentmihalyi (1975) notion of flow—action with "total involvement. . . . It is the state in which action fol-

lows upon action according to an internal logic which seems to need no conscious intervention" (p. 43). Csikszentmihalyi felt that for the "flow" to occur, a person's skill level should be on par with the challenge. Kellerman (1983) described resistance or defensiveness as a block to spontaneous energy. Hollander (1981) emphasized the need for associating with others to spark one's spontaneity.

Those various conceptualizations suggest that a behavior is spontaneous to the extent that (a) it occurs easily without resistance, effortlessly, or unconsciously; (b) it is appropriate to the situation, and consequently not impulsive; (c) the individual acts with total involvement; and (d) the individual is in control of his or her own actions.

Assessment of Spontaneity

Despite the popularity of the concept of spontaneity within the psychodrama community, and perhaps to a certain extent the field of psychology at large, little effort has been made to investigate the phenomenon of spontaneity systematically. Moreno (1947/1983) might have been the first to develop a method to assess spontaneity. He required participants to give impromptu responses to given situations of varying difficulties, and a jury assessed the responses for spontaneity. A person's response was characterized as (a) maximally spontaneous—creative, (b) optimally spontaneous, (c) manic or excessive, (d) depressed or inadequate, (e) distorted or incongruous, (f) absent, and (g) culturally determined (zero spontaneity). It appears, however, that no efforts were made either by Moreno or other investigators to standardize the scenarios and the scoring system (see Haas, 1949).

The Present Study

In this article, we describe a study conducted in an attempt to develop a self-report measure of spontaneity. The items for the measure came from our interpretations of the characteristics and behaviors of a spontaneous person, described in the previous section. Seventy self-report items were developed through a process of brainstorming about the various characteristics and behaviors of a spontaneous person in everyday life. Some examples of items include "I have a keen sense of humor"; "In familiar situations, I enjoy the unexpected"; and "I have little difficulty adjusting to new situations." An innocuous title, the "Personal Attitude Scale" (PAS), was used to avoid reference to the measurement of spontaneity because that might be considered to be a socially desirable characteristic.

To evaluate the reliability and validity of the PAS, we selected three instruments: the Beck Depression Inventory (BDI) of Beck, Rush, Shaw, and Emery

(1979), Snyder's (1974) Self-Monitoring Scale (SMS), and Zuckerman, Eysenck, and Eysenck's (1978) Sensation-Seeking Scale (SSS).

The BDI was selected because depression is manifested in sadness, negative self-concept, and sleep and appetite disturbances (Kendall, Hollon, Beck, Hammen & Ingram, 1987). Consequently, depression should be expected to interfere with the expression of spontaneous behavior. Thus, it is predicted that depression would be negatively correlated with the spontaneity inventory.

Self-monitoring refers to a person's awareness of how she or he appears to others (Snyder, 1974). Some people are high self-monitors because they are concerned with what is socially appropriate and are sensitive to how others are in social settings. Thus, they are less likely to act out their true feelings. In contrast, low self-monitors are less concerned about their impressions upon other people. They are less likely to alter their behavior to fit their environment. They act out their feelings and ignore situational cues that suggest other behavior might be more appropriate. In other words, low self-monitors are likely to act impulsively. Snyder's Self-Monitoring Scale appears to be a measure of a resistance-impulsivity dimension. Because spontaneous behavior is neither resistant nor impulsive, it would be important to show that the notion of self-monitoring is unrelated to spontaneity in a linear fashion. Rather, an inverted-U relationship between spontaneity and self-monitoring, in the sense that the medium self-monitors are likely to express the greatest amount of spontaneity, should be expected.

The third instrument, the Sensation-Seeking Scale, has been widely researched. A high sensation seeker is characterized by Zuckerman, Eysenck, and Eysenck (1978) as extroverted, thrill seeking, active, impulsive, antisocial or nonconforming, and not anxious. The SSS yields a general scale score (GSS) and the following four subscale scores:

1. Experience Seeking (ES): The desire to engage in a generally nonconforming lifestyle and seek novel experiences through drugs, travel, music, and art.
2. Thrill and Adventure Seeking (TAS): The need to engage in novel, dangerous, high speed, and gravity-defying physical activities.
3. Boredom Susceptibility (BS): The need to avoid repetitive experience, routine work, predictable people, and the finding of such experiences to be aversive.
4. Disinhibition (DIS): The need to engage in uninhibited social activities with or without the aid of alcohol.

The GSS is computed by simply adding the four subscale scores. There is evidence that the general and the four subscale scores predict the extent of drug use (e.g., marijuana, hashish, amphetamines, and psychedelic drugs). The abuse of alcohol is related to all scales but most strongly to the DIS. High,

as opposed to low, sensation seekers are more likely to volunteer for a number of unusual activities (e.g., encounter groups, TM, alpha groups). They also prefer classical or jazz music and seek sexual pleasures from a variety of partners (see Zuckerman, 1979). In a recent study, Kumar, Pekala, and Cummings (1993) found that although BS and DIS are of significance in drug use, they are less so in predicting paranormal beliefs and experiences. In predicting paranormal beliefs and experiences, the GSS, TAS, and ES were most useful. Given these findings, we predicted that the experience-seeking scale (ES) might be positively correlated with spontaneity because it seems to be defined least in terms of impulsive behaviors. Because the other scales might tap the impulsivity dimension, they are expected to be uncorrelated with spontaneity. It is possible that there exists an inverted-U relationship between sensation seeking and spontaneity, in the sense that the medium sensation seekers are likely to express the greatest amount of spontaneity.

Another purpose of our study was to explore gender differences because there were sufficient numbers of men and women participants available for analysis. Considering that the literature on the relationship between spontaneity and gender is insufficient, we are offering no hypotheses about gender differences.

Method

Participants

Students (n = 168) from various sections of an Introduction to Psychology course participated to fulfill a department research requirement. Participation, however, was voluntary in the sense that the students could take part in any other ongoing departmental research project or complete an alternative assignment. Participants could terminate with impunity their participation at any time during the study.

Instruments

Personal Attitude Scale (PAS). The initial tryout spontaneity scale consisted of 70 items. The inventory used both positively and negatively stated items to be rated on a 5-point scale: strongly disagree (1), mildly agree (2), agree and disagree equally (3), mildly agree (4), and strongly agree (5). The inventory is scored so that higher scores reflect higher spontaneity.

Beck Depression Inventory (BDI). This inventory (Beck, Rush, Shaw, & Emery, 1979) consists of 21 items, and considerable data show that the inventory is a valid and reliable measure of depression (Beck, Brown, Epstein, & Steer, 1988). Higher scores on the BDI reflect greater current depression.

Self-Monitoring Scale (SMS). This scale consists of 25 true or false questions and has demonstrated adequate reliability (Snyder, 1974). Higher scores on the SMS scale reflect greater concern for appearing socially appropriate and making a good impression.

Sensation-Seeking Scale. Sensation seeking was measured with the Sensation Seeking Scale (Zuckerman, Eysenck, & Eysenck, 1978), which consists of 40 items scored in a forced-choice format. Zuckerman (1983) noted that with the exception of the BS scale, other scales showed good factor, internal, and retest reliabilities. Furthermore, the subscales are moderately intercorrelated, suggesting that they are aspects of a broad factor. Higher scores on the scale reflect greater inclination for sensation seeking.

Procedures

Participants were tested in small groups of 30 to 35. Participants signed the informed consent form after they were instructed on the nature of the study and then completed the tests in the following order: PAS, BDI, SMS, and SSS.

Results

Data for three participants had to be dropped because they omitted several items. Consequently, all analyses are based on 165 participants (117 women and 48 men).

Reliability

In the initial analysis, all 70 items of the PAS were subjected to item and reliability analysis. The results showed a Cronbach α of .82 for 165 participants. Our examination of the results of the item analysis resulted in our dropping 12 items that had either near zero item-total correlations or low negative correlations. The dropping of those 12 items increased the reliability to .86. The Cronbach α coefficients for the shortened PAS for men and women were .77 and .86, respectively. All subsequent analyses were based on the 58-item PAS.

Psychometric Characteristics

In Table 1, we present the various summary characteristics of the PAS. A t test for independent groups was performed to test gender differences. The results showed that women scored significantly, $t(163) = 2.16$, $p < .04$, lower than men (women: $M = 191.98$; $SD = 23.88$; men: $M = 200.35$, $SD = 19.19$).

Further analyses were done to see which items significantly differentiated

TABLE 1
Descriptive Characteristics of the PAS

Statistic	Men	Women
Mean	200.35	191.98
Standard deviation	19.20	23.88
Median	201.00	193.00
Mode	204.00	208.00
Range	74.00	155.00
Kurtosis	–.63	1.04
Skewness	.05	–.03

between men and women. Because the number of items was large, we decided to use the alpha level of .001 to establish significance to keep the overall Type I error probability at less than .06. Using analysis of variance, we found that only three items (Items 2, 7, and 16) turned out to be significant.

Validity

Correlational analysis. Evidence for construct validity was gathered by correlating the PAS with the BDI, SMS, and SSS scales. In Table 2, these correlations are presented separately for men and women. Because of the exploratory nature of our study and the smallness of the sample size, especially for men, an alpha level of .05 was chosen to establish significance. In women, the PAS was significantly correlated with BDI (negatively) and GSS (positively) and all the sensation subscales (see Table 2). In contrast, in men, the PAS was significantly correlated (positively) with GSS, TAS, and ES. Furthermore, Z tests, computed to see if the correlations for the men differed significantly from those of the women, showed that for women the correlations for the BDI, TAS, and ES were significantly lower ($p < .01$ in all cases).

Analyses of variance. To test for the possibility of a curvilinear relationship between the PAS and the SMS and GSS scores, we first examined frequency distributions for the latter two scales to form three groups of participants: high, medium, and low. In the formation of the groups, we attempted to select the top and bottom 20% of the participants as high and low groups, and those falling in the middle as the medium group. Our two-way analysis of variance results did not support the assumption of a curvilinear relationship for either self-monitoring or general sensation seeking; thus, those results are not reported in detail here.

TABLE 2
Correlations Between the PAS and Other Scales

Statistic	Women		Men			
	r	*p*	*r*	*p*	*z*	*p* <
Depression	−.19	.047	−.14	.334	2.83	.01
Self-monitoring	.11	.236	.14	.340	−.17	*ns*
TAS	.44	.000	.34	.015	5.82	.01
ES	.47	.000	.29	.045	6.17	.01
DIS	.20	.029	.16	.268	.07	*ns*
BS	.20	.000	.27	.066	−.41	*ns*
General SS	.52	.000	.41	.003	.26	*ns*

Discussion

The results showed reliability values (men = .77; women = .86; both groups = .86) that were well within the range of those found for personality instruments (Borg & Gall, 1973). Aiken (1996) has suggested that a reliability coefficient of at least .85 is required to make judgments about traits of individuals. Given the somewhat lower reliability for the men, the scale appears to have adequate reliability for use in research, but not for diagnosing individual differences in spontaneity. It is not clear why the reliability values for the men and women were different. That finding needs to be replicated with a new group of students.

The results showed that men scored significantly higher than women on the PAS. Because only three items differentiated the men from the women, the overall gender difference does not seem to be related to any systematic selection of gender-biased items. Nonetheless, why women scored lower than men on the spontaneity sale is not very clear. It is possible that the difference may be related to cultural factors that promote greater risk taking by men than by women.

Evidence for the construct validity of the PAS was gathered by correlating it with the SSS (and its subscales), the BDI, and the SMS. As expected, the PAS was positively correlated with ES in both men and women. The GSS and TAS, however, were also significantly correlated (but not curvilinearly) in both men and women (see Table 2). The BDI was significantly and negatively correlated with PAS in women, but not in men. Contrary to expectation, the SMS was not related (linearly or curvilinearly) with PAS for either gender.

In summary, the PAS showed acceptable reliability for use in research. The evidence of construct validity, however, was mixed—somewhat better for women than for men. The intriguing finding of gender differences warrants further study. Research to improve the PAS is under way with another sample.

REFERENCES

Aiken, L. R. (1996). *Rating scales and checklists: Evaluating behavior, personality and attitudes.* New York: Wiley.

Beck, A., Brown, G., Epstein, N., & Steer, R. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56,* 893–897.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression.* New York: Guilford Press.

Blatner, H. A. (1973). *Acting-in: Practical applications of psychodramatic methods.* New York: Springer.

Borg, W. R., & Gall, M. D. (1973). *Educational Research* (2nd ed.). New York: McKay.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety.* San Francisco: Jossey-Bass.

Farthing, G. W. (1993). *The psychology of consciousness.* Englewood Cliffs, NJ: Prentice Hall.

Gordon, R. D. (1985). Dimensions of peak communication experiences: An exploratory study. *Psychological Reports, 57,* 824–826.

Haas, R. B. (1949). *Psychodrama and sociodrama in American education.* New York: Beacon House.

Hollander, S. L. (1981). Spontaneity, sociodrama and the warming up process in family therapy. *Journal of Group Psychotherapy, Psychodrama and Sociometry, 34,* 44–53.

Howell, W. S. (1982). *The empathic communicator.* Belmont, CA: Wadsworth.

Johnson, G. (1987). Ten commandments for long-term maintenance of acceptable self-help skills for persons who are hard-core stutterers. *Journal of Fluency Disorders, 12,* 9–18.

Kalliopuska, M. (1992). Creative way of living. *Psychological Reports, 70,* 11–14.

Kellerman, P. F. (1983). Resistance in psychodrama. *Journal of Group Psychotherapy, Psychodrama and Sociometry, 36,* 30–43.

Kendall, P., Hollon, S., Beck, A., Hammon, C., & Ingram, R. (1987). Issues and recommendations regarding use of the Beck Depression Inventory. *Cognitive Therapy and Research, 113,* 289–299.

Kipper, D. (1996). The emergence of role playing as a form of psychotherapy. *Journal of Group Psychotherapy, Psychodrama and Sociometry, 49,* 99–119.

Kumar, V. K., Pekala, R. J., & Cummings, R. J. (1993). Sensation seeking, drug use, and reported paranormal beliefs and experiences. *Personality and Individual Differences, 14,* 685–691.

Moreno, J. L. (1947/1983). *The theatre of spontaneity.* Ambler, PA: Beacon House.

Moreno, J. L. (1953). *Who shall survive: Foundations of sociometry, group psychotherapy, and sociodrama.* Beacon, NY: Beacon House.

Moreno, J. L. (1985). *Psychodrama* (Vol. 1). Ambler, PA: Beacon House.

Snyder, M. (1974). Self-monitoring of expressive behavior. *Social Psychology, 30,* 526–537.

Webster's new twentieth century dictionary, unabridged (2nd ed). (1962). New York: World Publishing.

Wyatt, T. A. (1988). Spontaneity and naturalness. *Journal of Humanistic Psychology, 28,* 97–107.

Zuckerman, M. (1979). *Sensation seeking: Beyond the optimum level of arousal.* Hillsdale, NJ: Erlbaum.

Zuckerman, M. (1983). A biological theory of sensation seeking. In Zuckerman (Ed.), *Biological bases of sensation seeking, impulsivity, and anxiety* (pp. 37–76). Hillsdale, NJ: Erlbaum.

Zuckerman, M., Eysenck, S., & Eysenck, H. J. (1978). Sensation seeking in England and America: Cross-cultural, age, and sex comparisons. *Journal of Consulting and Clinical Psychology 46,* 139–149.

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The Psychotherapist–Patient Privilege in Group Therapy

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ABSTRACT. Although the principle of confidentiality between psychotherapists and their individual clients is firmly established throughout the United States, the application of the confidentiality principle to group therapy is far less well recognized and understood by therapists. A few states offer explicit statutory protection for disclosures made in group therapy, and some others have judicially recognized such a privilege. In many states, however, neither a statute nor a court case recognizes a group-therapy privilege. As a result, therapists in some jurisdictions may be laboring under the false assumption that client disclosures made in group settings are privileged and thus protected from court-mandated disclosure until an explicit exception applies. A corollary problem arises because, generally, even in those jurisdictions that extend an evidentiary privilege to group disclosures, no mechanism exists to enforce the privilege against group members. In this article, the authors suggest a means for strengthening the group privilege, modeled after the approach used in Washington, DC.

A CENTRAL TENET OF THE PRACTICE OF PSYCHOTHERAPY is the obligation of the therapist to maintain the confidentiality of client communications. It is a widely held and traditional belief among therapists that unless clients are promised confidentiality, they are less forthcoming in therapy, particularly when they perceive their information to be embarrassing or of a sensitive nature. For example, Principle 5 of the American Psychological Association's *Ethical Principles of Psychologists* (1989) states:

> Psychologists have a primary obligation to respect the confidentiality of information obtained from persons in the course of their work as psychologists. They reveal such information to others only with the consent of the person or the person's legal representative, except in those unusual circumstances in which not to do so would result in clear danger to the person or to others. Where appropriate, psychologists inform their clients of the legal limits of confidentiality.

Similarly, the Code of Ethics of the American Association for Marriage and Family Therapy (AAMFT) includes as one of its eight guiding principles a

statement on confidentiality: "Marriage and family therapists have unique confidentiality concerns because the client in a therapeutic relationship may be more than one person. Therapists respect and guard confidences of each individual client" (AAMFT Code of Ethics, 1991). That section of the AAMFT Code of Ethics expressly prohibits therapists from disclosing client confidences except in instances in which disclosure is mandated by law or prevents a clear and immediate danger to others. Disclosure is also permitted if the therapist is a defendant in an action or other proceeding arising from the therapy and if a client has waived his or her rights to confidentiality.

The professional obligation of psychotherapists to respect a client's confidences and protect them from unauthorized disclosure has been augmented in many states by statutes that create a legal privilege that gives clients the right to protect the confidentiality of their communications in legal proceedings (Baird & Rupert, 1987). Where such statutes apply, neither a client nor his or her psychotherapist can be compelled to testify about communications made in confidence, unless certain exceptions apply. Those are state statutes; no analogous federal statute exists. In *Jaffee v. Redmond* (1996), however, the U.S. Supreme Court ruled that under the Federal Rules of Evidence, a psychotherapist–patient privilege exists that protects confidential communications and applies in federal cases.

In most states, the issue of confidentiality and privilege in group therapy is not clear. Most state laws do not specifically mention group therapy. Indeed, according to most state statutes, no privilege exists, unless disclosures by a patient are made with a reasonable expectation of privacy. In group therapy, of course, communications made by any member of the group are disclosed not only to the therapist present but also to all other members of the group. That fact may negate any expectation of privacy. Thus, in the vast majority of states, there appears to be no psychotherapist–patient privilege for disclosures made in group therapy (Appelbaum & Greer, 1993).

In a few states, privilege statutes provide that a patient's expectation of privacy is not violated even when third parties are present, as long as their presence is necessary to further the interest of the patient in the therapy. Examples include the statutes of California, Cal. Evidence Code § 1012 (1970 & Supp. 1996); Illinois, Mental Health and Developmental Disabilities Confidentiality Act, 740 Ill. Comp. Stat. Ann. § 110/2 (Supp. 1996); Kentucky, Kentucky Rules of Evidence § 507 (a) (3) (1992); and Minnesota, Minn. Stat. Ann. § 593.02 (g) (Supp. 1997). In some jurisdictions, such as Colorado, Kansas, New Mexico, and the District of Columbia, the following statutes apply specifically to group therapy: Colo. Rev. Stat. Ann. § 13-90-107 (1989); Kan. Stat. Ann. § 65-5602 (1992); New Mex. Stat. 1978 A. § 61-9A-27 (Supp. 1996); 4 D.C. Code § 6-2001 (1996).

In some states, such statutes have been interpreted by courts to apply to

group therapy. For instance, in *State v. Andring* (1984), the Supreme Court of Minnesota held that the psychotherapist–patient privilege in that state applies to communications made in group-therapy settings. The court reasoned that because effective group therapy requires social interaction within the group, a rule that would exclude group therapy from the scope of the privilege "would seriously limit the effectiveness of group psychotherapy as a therapeutic device" (*State v. Andring,* 1984, p. 134). Other states in which courts have made similar rulings include California (*Lovett v. Superior Court,* 1988), Georgia (*Sims v. State,* 1984), and Indiana (*Daymude v. State,* 1989).

Whereas such judicial interpretations are helpful in protecting patients' communications to therapists, they suffer from various limitations. First, such rulings are always subject to reinterpretation. In at least two states, for example, the ruling court was not the state's highest court, leaving open the possibility of a different result in the future.

Second, under those statutes, there are no legal consequences if members of the group violate confidentiality. Thus, even when a privilege is recognized, it may be very difficult to enforce.

It is regrettable that so few states have extended an evidentiary privilege to disclosures made in group therapy when changing trends in mental health care, prompted in part by financial considerations, have led to the increasing use of group psychotherapy as a primary mode of treatment. As the number of patients in group psychotherapy increases, the problem of patient confidentiality will grow correspondingly. The failure of state legislatures to apply the protections of an evidentiary privilege to group therapy threatens to compromise patients' rights.

The problem is compounded by the fact that many therapists appear to be unfamiliar with the evidentiary rules. Some studies have shown that a significant percentage of therapists fail to discuss the limits of confidentiality with their group patients (Appelbaum & Greer, 1993).

Perhaps that failure results, at least in part, from the mistaken belief that communications made in group therapy are protected in the same manner as disclosures made in individual therapy. We recently surveyed 300 members of the CaliforniaAssociation of Marriage and Family Therapists and discovered that although an overwhelming percentage (87%) of the 83 respondents believed (correctly) that communications made in group therapy in California are privileged, virtually none of the respondents was able to identify the legal basis for the privilege. We concluded that our findings support the hypothesis that therapists are poorly informed about the limits of confidentiality in group settings.

One approach that holds promise is being used in Washington, DC, where a portion of the Health & Safety Code expressly prohibits disclosures of "mental health information" relating to a client either by mental health pro-

fessionals or by other clients in a group session. The statute, 4 D.C. Code § 6-2001 et seq. (1996), further provides for both civil and criminal sanctions against those who violate the code.

Such an approach serves two important goals: It explicitly recognizes by statute that group communications are confidential and thus protected from disclosure by an evidentiary privilege (except in various statutorily defined exceptions), and it prohibits disclosures of such confidential communications not only by therapists but also by other members of the group. Because studies have shown that violations of group confidentiality occur frequently, statutes such as this could serve as a deterrent to breaches of confidentiality (Roback, Ochoa, Bloch, & Purdon, 1992).

Given the increasing use of group therapy as a therapeutic modality, it seems essential for all jurisdictions to extend more formal protection to patient disclosures made in group settings. Only in that way can the value of this modality of psychological treatment be fully realized.

REFERENCES

American Association for Marriage and Family Therapy. (1991). *Code of ethics.*

American Psychological Association. (1989). *Ethical principles of psychologists.* Washington, DC: Author.

Appelbaum, P. S., & Greer, A. (1993). Confidentiality in group therapy. *Hospital and Community Psychiatry, 44,* 311–313.

Baird, K. A., & Rupert, P. A. (1987). Clinical management of confidentiality: A survey of psychologists in seven states. *Professional Psychology, 11,* 276–282.

Cal. Evidence Code § 1012 (1970 & Supp. 1996).

Colo. Rev. Stat. Ann. § 13-90-107 (1989).

Daymude v. State, 540 N.E.2d 1263 (Ind. App. 1989).

4 D.C. Code § 6–2001, 6-2002 (1996).

Jaffee v. Redmond, 116 S. Ct. 1923 (1996).

Kan. Stat. Ann. § 65-5602 (1992).

Kentucky Rules of Evidence § 507 (a) (3) (1992).

Lovett v. Superior Court, 203 Cal. App. 2d 521 (1988).

Mental Health and Developmental Disabilities Confidentiality Act, 740 Ill. Comp. Stat. Ann. § 110/2 (Supp. 1996).

Minn. Stat. Ann. § 595.02 (g) (Supp. 1997).

New Mex. Stat. 1978 Ann. § 61-9A-27 (1996).

Roback, H. B., Ochoa, E., Bloch, F., & Purdon, S. (1981). Guarding confidentiality in clinical groups: The therapist's dilemma. *International Journal of Group Psychotherapy, 42,* 81–103.

Sims v. State, 251 Ga. 877 (1984).

State v. Andring, 342 N.W.2d 128 (Minn. 1984).

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Enhancing Teamwork in Complex Environments Through Team Training

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ABSTRACT. Although the importance of team training has become widely recognized, research is needed to more clearly understand what instructional strategies actually lead to enhanced teamwork and performance. This research incorporates a theoretical framework, based on the work of J. A. Cannon-Bowers, S. I. Tannenbaum, E. Salas, and C. E. Volpe (1995), to guide the systematic development of training that targeted specific team competencies (i.e., knowledge, skills, and attitudes). The theoretically designed training was delivered to 42 male aviators from an undergraduate naval aviation community. A comprehensive evaluation of this training was conducted using a multiple-measurement approach. Results provide strong support for the effectiveness of this team training in improving critical team competencies.

THE VITAL ROLE PLAYED BY TEAMS in accomplishing many modern-day organizational tasks has become unquestionable (Salas, Dickinson, Converse, & Tannenbaum, 1992; Sundstrom, De Meuse, & Futrell, 1990). The use of teams in the workplace, in terms of quality circles, product management teams, and ad hoc work groups, can only be expected to grow in the future. Given the established importance of teams to organizational success, the concomitant requirement for effective team training becomes readily apparent. This need for team training is especially critical in work environments that place workers in dynamic, rapidly changing conditions, which impose the need for effective teamwork among team members to achieve task success (Cannon-Bowers, Salas, & Converse, 1993).

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However, despite recent advancements in the area, two problems remain. First, there is a lack of clear understanding of what the effective instructional strategies for enhancing teamwork are. Second, there are few systematic evaluations of the effectiveness of particular team-training efforts. These are nontrivial issues that must be addressed to provide guidance on the design and delivery of team training. Research is greatly needed to derive theoretically-driven, empirically-based prescriptions, guidelines, and specifications for use by practitioners who must actually develop team training systems. Furthermore, several authors (Cannon-Bowers et al., 1989; Kraiger, Ford, & Salas, 1993) have indicated that the only means of identifying why and how training works is through a systematic and comprehensive evaluation approach. The purpose of the current effort was to expand existing knowledge of team training by testing the efficacy of a theoretically-driven team training intervention that was aimed at enhancing teamwork skills in a complex environment (i.e., an aviation cockpit setting). To provide the reader with greater insight into what we mean by how teamwork can be enhanced and how the impact of team training can be effectively evaluated, we first address what we mean by teamwork and explain how teamwork can enhance performance.

What Is Teamwork?

Although a great number of researchers have investigated issues related to teams, only recently has an understanding of teamwork begun to emerge. A problem that has plagued team research is that literature in the area has been difficult to integrate and interpret. Part of this problem is that there has been a lack of consensus among researchers concerning the definitions of *teams* and *teamwork* (Nieva, Fleishman, & Rieck, 1978. In fact, it has been suggested that the majority of studies in the area would be more appropriately labeled *group* studies than team studies (Brannick, Roach, & Salas, 1991). In short, the use of the term *team* in research investigations has been ambiguous at best, often resulting in confusing and conflicting results. A clear definition of *teams* is needed to set some boundaries and provide a focus. It is only by setting such boundaries that an understanding of research findings will result.

Several authors have offered definitions of what a team is (Boguslaw & Porter, 1962; Brigs & Naylor, 1964; Dyer, 1984; Hall & Rizzo, 1975; Morgan, Glickman, Woodard, Blaiwes, & Salas, 1986; Nieva et al., 1978; Salas et al., 1992). All these definitions have in common the need for team members to share and engage in cooperative action. It is this requirement for interaction (i.e., interdependency) that seems to truly define a group of individuals as a team. Therefore, for the purposes of this study we defined or conceptualized a team as

> a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership. (Salas et al., 1992, p. 4)

It is equally true that a set of two or more individuals who are expected and required to interact dynamically, interdependently, and adaptively to accomplish their goals but do not are still a team—they are simply an ineffective team. Thus, the crux of teamwork is for the team members to use a collection of processes, strategies, and actions that allow them to effectively and efficiently perform. Recently, Cannon-Bowers, Tannenbaum, Salas, and Volpe (1995) explained that this is made possible when team members possess and use required team competencies. These authors explained that team competencies are comprised of relevant knowledge, skills, and attitudes (KSAs) that can be distinguished from individual KSAs. To delineate these team KSAs, Cannon-Bowers et al. reviewed and integrated the team training literature.

Knowledge competencies are the knowledge that team members need to possess to execute their team tasks and include an understanding of team member roles and responsibilities, cue-strategy associations, and shared mental models. Skill competencies are what enable team members to actually carry out required functions and actions. Through a thorough review of previous research on teamwork, Cannon-Bowers et al. (1995) identified eight skill dimensions underlying the teamwork construct, each with subskills. These skill dimensions are adaptability, situational awareness, performance monitoring and feedback, leadership and team management, interpersonal relations, coordination, communication, and decision making. Attitude competencies are beliefs that team members have about performing team tasks and include attitudes toward teamwork, collective orientation, collective efficacy, and cohesion (see Cannon-Bowers et al., for a more complete description of knowledge, skill, and attitude competencies). Therefore, teamwork can be seen as members of the team having and using these competencies to accomplish their goals, tasks, objectives, and missions. That is, teamwork encompasses a set of KSAs that team members use to optimize team performance and to adapt to task demands. Given a better understanding of what constitutes teamwork, it is important to consider whether better teamwork leads to better team performance.

Does Teamwork Enhance Performance?

In recent years, researchers have sought to test the impact of teamwork on performance empirically (Brannick, Roach, & Salas, 1993; Leedom & Simon, 1995; McIntyre & Salas, 1995; Oser, McCallum, Salas, & Morgan, 1989; Stout, Salas, & Carson, 1994). Results from these efforts have provided posi-

tive evidence of the effect of teamwork on performance. These studies have primarily focused on aviation team tasks, using varying levels of fidelity of tasks and populations of differential operational relevance. Also, all of these efforts investigated how skill competencies, as defined by Cannon-Bowers et al. (1995), related to team performance, and each examined a range of skill competencies.

Researchers have also explored how the specific skills and subskill competencies of Cannon-Bowers et al. (1995) influence team performance. These studies have also been predominately conducted with aviation-related tasks of varying levels of fidelity and with populations having different degrees of operational relevance. One specific skill competency that has endured a long history of study has been communication. Research in the area of team communication has been plagued by mixed results, with some studies showing generally positive relationships between communication and team performance (Federman & Siegel, 1965; Foushee, Lauber, Baetge, & Acomb, 1986; Foushee & Manos, 1981; Jensen, 1986; Kanki, Lozito, & Foushee, 1989; Krum & Farina, 1962; Lanzetta & Roby, 1960; Orasanu, 1990; Oser, Prince, Morgan, & Simpson, 1991) and some showing generally negative relationships (Briggs & Naylor, 1965; Johnston, 1966; Johnston & Briggs, 1968; Naylor & Briggs, 1965; Williges, Johnston, & Briggs, 1966). Other, more recent research has found support that specific skill competencies, such as leadership, lead to more effective performance (Tannenbaum, Smith-Jentsch, & Behson, 1997). Thus, taken as a whole, studies on teamwork and performance have suggested that teamwork can indeed enhance performance. Given the importance of effective teamwork to team performance, it is critical to determine how to improve teamwork.

How Can Teamwork Be Enhanced?

As indicated by Salas and colleagues (Salas et al., 1992; Salas, Bowers, & Cannon-Bowers, 1995; Salas & Cannon-Bowers, 1997), researchers are only beginning to understand what comprises effective team training. This is due to the fact that it is much more common for studies to investigate behaviors of individual team members in a team setting than to focus on team-level behavioral change resulting from training. The complex nature of team phenomena, including the wide variety of tasks that must be accomplished and the diversity of variables that are of interest, especially in real-world environments, contributes to this problem.

The recent work by Cannon-Bowers et al. (1995), already discussed for understanding what teamwork is, also provided theoretical guidance regarding team-training design. These authors explained that instructional strategies for improving teamwork can only be understood by considering the compe-

tencies required for effective teamwork, as well as the context in which the teamwork is being performed.

According to Cannon-Bowers et al. (1995), each of the KSAs or competencies suggests differential instructional strategies depending on the context, the task, and the team. For example, in many aviation cockpits, team members must complete the same tasks or missions over a course of time, yet they may frequently be required to do their jobs with different crew complements. Cannon-Bowers et al. referred to this type of team situation as task contingent, in which competencies such as leadership, feedback and performance monitoring, assertiveness, planning, communication, and situational awareness are critical.

Cannon-Bowers et al. (1995) also derived several propositions regarding which instructional strategies would be most appropriate for developing task-contingent competencies. They suggested that, among these, lecture-based training may serve as a first step toward building task-contingent competencies, passive demonstrations may be helpful for enhancing these competencies, and task simulations should be highly effective at improving task-contingent competencies. In other words, instructional strategies following an information, demonstration, and practice and feedback format should improve teamwork skills or competencies such as communication, assertiveness, and situational awareness, as well as the requisite knowledge and attitudes associated with performing these skill competencies. Also, the emphasis provided by Cannon-Bowers et al. on considering the context in which teamwork is being performed suggests that skills underlying teamwork must be further broken down to determine the specific behaviors (for each dimension) required to attain effectiveness in the task environment of interest. Developmentally, it may seem that information and demonstration most closely aid the acquisition of knowledge and attitude competencies, whereas hands-on practice and feedback are probably necessary for learning skills and how to use them to complete complex tasks. However, certainly lectures and demonstrations provide a foundation for the acquisition of skill competencies, and practice and feedback also instill and reinforce knowledge and attitude competencies. Thus, our position is that a combination of information, demonstration, and practice is needed to develop KSA competencies.

Providing additional insight into how instructional strategies should be derived, Salas and Cannon-Bowers (1997) indicated that instructional or training strategies are a collection of tools, methods, and content. Thus, the only way to develop effective instructional strategies within a given team domain is to use a tiered approach to first understand the construct to be trained, such that competencies or KSAs can be delineated. Next, measurement tools and methods can be identified. Finally, combining the understanding of the KSAs with tools and methods, training strategies for enhancing the skill domain can

be developed. Salas and Cannon-Bowers also suggested that effective methods for team training are information-based lecture, video-based demonstration, and practice, including guided practice. Given this discussion as a theoretical basis for understanding the appropriate application of instructional strategies for enhancing teamwork, we now turn to the second problem hindering advancement in the area of team training: the deficiency in systematic evaluation efforts.

How Can the Impact of Team Training Be Evaluated?

The only means of identifying whether a particular team training effort is effective is to conduct a systematic evaluation of the training that is designed and delivered. A systematic evaluation is one that is multifaceted and considers several levels of evaluation, including trainee reactions, extent of learning, extent of performance change, and impact on organizational effectiveness (Cannon-Bowers et al., 1989; Kraiger et al., 1993; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). Unfortunately, surveys of training departments have suggested that not only is training evaluation infrequently performed (Ralphs & Stephan, 1986; Saari, Johnson, McLaughlin, & Zimmerle, 1988), but those evaluations attempted focus principally on available or convenient criteria (see, e.g., Schmitt, 1989). For example, in a survey of Fortune 500 companies, nearly all training directors reported using some form of trainee reaction measures, but fewer than one fifth used posttraining knowledge tests or measures of resultant on-the-job behaviors (Ralph & Stephan, 1986).

Teamwork in the Cockpit

The aviation cockpit is a work environment in which teamwork and team training are essential (Helmreich & Foushee, 1993). This is also an arena that has seen a proliferation in the development of training programs aimed at increasing teamwork on the part of crew members (Wiener, Kanki, & Helmreich, 1993). However, even though training in this area is ripe with activity, there is a dearth of available empirical data on how well these training programs actually work and why they work (Cannon-Bowers et al., 1989; Helmreich, Chidester, Foushee, Gregorich, & Wilhelm, 1989; Leedom & Simon, 1995; Prince, Chidester, Cannon-Bowers, & Bowers, 1992).

A notable exception is a recent effort conducted by Leedom and Simon (1995) that made a case for behavior-based training of team coordination skills using military (U.S. Army) examples. These researchers demonstrated that programs that specifically focused on training team coordination behaviors, required in the aviation context, led to improved performance of these

desired behaviors among the aircrews studied. However, this research had several limitations, including a lack of (a) a theoretical framework guiding the design of the training, (b) a comprehensive evaluation approach, (c) a control group, and (d) raters who were unaware of condition. Therefore, our study expanded on existing research that has investigated the effectiveness of team training within the aviation environment. The training was developed to target specific KSAs necessary to perform effectively as a crew member in the aviation community studied. More specifically, in our study, we extended information on the effectiveness of team training beyond the Leedom and Simon research by including the use of the four factors listed above.

To conduct a comprehensive evaluation, we used the multimeasurement evaluation hierarchy presented by Cannon-Bowers et al. (1989) and Kraiger et al. (1993). This approach contends that support at different levels for the effectiveness of training that is being evaluated provides different information, and concurrent support from multiple levels makes a stronger case for the value of the training. Moreover, the approach posits that as evidence at increasingly higher evaluation levels indicates that the training being evaluated is effective, confidence increases that the training will have a positive impact on performance at transfer (Tannenbaum & Woods, 1992). The levels of evaluation studied in the current effort included assessments of (a) pretraining attitudes toward team coordination training, (b) reactions to training, (c) attitudes toward teamwork in the cockpit (i.e., a modified version of the Crew Resource Management Questionnaire, or CMAQ, which was developed by Helmreich and colleagues; Helmreich, 1984; Helmreich, Wilhelm, & Gregorich, 1988), (d) learning (i.e., a multiple-choice knowledge test), and (e) behavioral change (i.e., in a simulator exercise). We expected that our theoretically based training, which targeted knowledge, attitude, and context-specific skill competencies, would produce positive effects on each of these types of competencies as evidenced by results at each of the levels of evaluation.

Method

Participants

Student pilots in the Navy T-44A Advanced Maritime curriculum participated in the research effort.[1] All participants were male. Data were obtained

[1]In the Navy, all aviators first receive primary undergraduate aviation training in the T-34 aircraft before being provided with secondary undergraduate aviation training. Those who enter the maritime flight track (vs. jets or helicopters) then receive secondary undergraduate aviation training at the T-44 community before platform-specific training (e.g., P-3).

from a total of 42 students, 20 of whom comprised the trained group and 22 of whom comprised the control group. Participants were randomly assigned to condition. Trained group participants had been in the military for an average of 3.5 years with a mean of 155 total flight hours, and control group participants had been in the military for an average of 4.3 years with a mean of 362.4 total flight hours. Two of the control group participants had previously served as aircrewmen in Navy helicopters, which skewed the data. Thus, the median flight hours for the trained and control group participants were 151.5 and 152.5, respectively. Mean flight hours in the previous 6 months were 53 for the trained group participants and 55 for the control group participants.

Training

Trainees participated in a newly developed team training program in their undergraduate aviation community. Control group participants received this training as part of their T-44 training syllabus within 1 week after participating in this research effort. Both trained and control group participants were at the beginning phase of learning radio instruments for the T-44 aircraft. This is the point in the training syllabus where the team training program was inserted. Thus, up to this point, all participants had completed T-34 primary undergraduate aviation training and training on basic instruments of the T-44. All training received before that used in this research consisted of an instructor working with a student, with emphasis on making the trainee an individually qualified aviator. Previous training had not focused on teaching the trainee how to work effectively with a fellow trainee as a team member.

The team training developed for and studied in this research lasted for 2 days and was organized into four modules: introductory concepts, communication, assertiveness, and situational awareness. Communication and situational awareness are two of the skill dimensions that represent the construct of teamwork, as identified by Cannon-Bowers et al. (1995), and assertiveness is one of the subskills of their interpersonal relations skill dimension. The content of the team training was based on a task/needs analysis of teamwork behaviors and skills required in the community of interest (Prince & Salas, 1993). In other words, although other skill dimensions were important to this training community, the skills of communication, assertiveness, and situational awareness were found to be most critical and were most heavily emphasized in the training. The training was provided by instructors of the T-44 community, who helped us develop lecture material, demonstrations, role-plays, and the simulator scenarios.

Also, as a first step in deriving context-specific behaviors associated with each skill dimension, generic behaviors appropriate across a variety of aviation tasks were identified through a series of needs analyses with several com-

munities (Prince & Salas, 1993). Generic behaviors related to each of the three skill dimensions studied here are depicted in Table 1.

The training included lectures, demonstrations (i.e., videotapes and case study analyses) of the critical teamwork concepts, and practice and feedback administered by means of role-plays and a simulator exercise. Therefore, it followed the propositions of Cannon-Bowers et al. (1995) for training task-contingent competencies.

For the simulator exercise, we designed a scenario to specifically concentrate on the three skill areas. The training scenario developed for the research effort lasted approximately 30 min. Essentially, it involved several problems for the crew to deal with, including a problem with their navigational system, interruptions by controlling agencies, an electrical system malfunction, and an inability of air traffic control to locate them with radar, requiring more com-

TABLE 1
Generic Teamwork Behaviors Related to Three Skill Dimensions—Subskill Dimensions Identified by Cannon-Bowers et al. (1995)

Skill dimension	Generic behaviors
Communication	Made no response (negative)
	Acknowledge communication (OK, roger)
	Provided information as required
	Provided information when asked
	Repeated information
	Used standard terminology
	Asked for clarification of a communication
	Conveyed information concisely
	Verbalized plans for procedures or maneuvers
	Used nonverbal communication appropriately
Assertiveness	Asked questions when uncertain
	Made suggestions
	Stated opinions on decisions and procedures
	Confronted ambiguities and conflicts
	Maintained position when challenged
Situational awareness	Commented on deviations
	Provided information in advance
	Identified problems or potential problems
	Demonstrated awareness of task performance of self and others
	Verbalized a course of action
	Demonstrated ongoing awareness of mission status

munications with air traffic control. All of these situations required the crew to be situationally aware, to implement correct standard operating procedures, to use appropriate communications with each other and outside agencies, and to delegate tasks and communications among one another to properly handle the scenario problems. Also, responding to interruptions from controlling agencies required assertiveness. In addition, the team had a number of decisions and considerations to make on the basis of scenario events, such as where to land, what type of approach to execute, how to handle the electrical system malfunction, and what the ramifications of the electrical system malfunction were. Thus, through the combination of information and demonstration in the classroom, and practice and feedback administered through role-plays and this simulation exercise, training was geared toward improving the skill–subskill competencies targeted in this investigation and the knowledge and attitudes associated with these skills.

As a second step at deriving context-specific behaviors related to each skill competency, we used the targeted acceptable responses to generated events or tasks (TARGETs) approach (Fowlkes, Lane, Salas, Franz, & Oser, 1994). Briefly, following this approach, events were built into the scenario to serve as cues for team members to exhibit critical coordination behaviors. Acceptable and expected responses to each scenario event were identified *a priori* through a number of sources, including subject-matter expert opinion, task analyses, and a review of standard operating procedures. This approach is further described in the *Performance Assessment* section. We used the same approach to develop both the training and the evaluation scenarios. However, in the former case, if a trained crew did not perform a context- or scenario-specific desired action, they received feedback on this, whereas in the latter case, an absence of desired or more effective behaviors was used to evaluate the performance of both trained and control group crews. Table 2 illustrates, for the evaluation scenario, how targeted competencies are linked to generic behaviors (as listed in Table 1), which are in turn linked to scenario-specific desired behaviors.

Trainee reactions questionnaire. We used a 5-point Likert-type questionnaire to assess trainee reactions to the team training. Items assessed the extent to which trainees agreed with the following (with 1 = *strongly disagree* and 5 = *strongly agree*): (a) information provided in this simulator training was helpful for practicing team coordination skills, (b) information provided in this simulator training is an essential aspect of team coordination training, (c) the feedback that was given was helpful, and (d) I would like to fly more scenarios. In addition, the questionnaire asked, "If the skills practiced in the training were implemented, what would be the overall value of team coordination training in the areas of mission accomplishment . . . for flight safety?" (on

TABLE 2
Examples of Links Between Targeted Skill Competencies and Evaluation Scenario

Targeted competency	Generic behavior	Scenario-specific behaviors observed
	Ice buildup on the wings	
Communication	Acknowledge communication	Acknowledge passenger who observed ice buildup
Situational awareness	Identify problems or potential problems Verbalize a course of action Demonstrate awareness of task	Discuss implications of icing Ask air traffic control about icing Consult flight handbook
	Air traffic control provides complicated clearance	
Assertiveness	Control ambiguities or conflicts Requirement for navigation	Request direct clearance
Situational awareness	Provides information in advance	Report distance to navigation status Report outbound headings

these last two items, 1 = *no value* and 5 = *essential*). The questionnaire also included several free-response items, such as asking the trainee to list ways in which he planned to use the information presented in the course.

Attitudinal questionnaire. The primary source for the attitudinal questionnaire was the CMAQ (Helmreich, 1984; Helmreich et al., 1988). The CMAQ is a 25-item form designed to measure attitudes toward cockpit resource management (Gregorich, Helmreich, & Wilhelm, 1990). This questionnaire was mentioned by Cannon-Bowers et al. (1995) as being pertinent to team attitude competencies. A factor analysis of responses to the CMAQ revealed three factors that were stable across three samples of aircrews from national air carriers (Gregorich et al.). These factors were (a) Communication and Coordination, reflecting attitudes toward task delegation, communication, and awareness of other crewmembers; (b) Command Responsibility, reflecting attitudes toward leadership and crew member responsibilities; and (c) Recognition of Stressor Effects, reflecting attitudes toward stressor effects.

For the current effort, all of the CMAQ items were retained, with minor changes in phrasing for some items. We also obtained items from the Army Aviation Crewmember Questionnaire (AACQ; Dynamics Research Corporation, 1990), an adaptation of the CMAQ for Army aviation. Finally, some items were added to enhance the relevance of the attitudinal measure to the concepts taught in the team coordination training course, thus tying this measure more closely to training objectives.

Multiple-choice knowledge test. Participants were asked to complete a 17-item multiple-choice test that assessed their learning of major concepts taught in the team coordination training course. Examples of these items included requiring the students to choose which item best described the major objective of team coordination training, which best summarized the process activities required to maintain situational awareness, and which was not an example of an assertive behavior. Thus, this measure assessed the declarative knowledge competency as defined by Cannon-Bowers et al. (1995).

Performance assessment. We developed an evaluation scenario and supporting materials to assess each team's performance by means of the TARGETs approach, which looks at the team as the unit of analysis. As described and illustrated in Table 2, with this approach, team competencies or skill dimensions and the generic behaviors related to these skill dimensions were made task and context specific for the scenario that was performed, resulting in a list of specific effective teamwork behaviors. Therefore, as indicated above, we focused on the generic skills of communication, situational awareness, and assertiveness in this evaluation only by identifying specific behav-

iors associated with these skills in the specific context studied (i.e., the aviation scenario used).

The evaluation scenario contained both similar and different types of task events as the training scenario. The evaluation scenario lasted approximately 46 min and consisted of a bad weather front requiring diversion, icing conditions with buildup on the wings, interruptions from controlling agencies (although different from those in the training scenario), and an engine system malfunction (i.e., left engine flameout caused by the icing conditions). Thus, although the scenario was designed to specifically concentrate on the three skill areas mentioned earlier, other team skills identified in previous research (Prince & Salas, 1993) were also relevant to performance in the scenario.

Procedure

We collected data from a total of two team training courses over a 1-month period, with control group participants attending the newly developed training course within 1 week after data collection in each case. All students in the trained group received the attitudinal questionnaire immediately before training. The reactions questionnaire and the knowledge test were administered immediately after the training. In addition, the attitudinal questionnaire was administered a second time after the training to obtain a posttraining measure of learning, as compared with the pretraining assessment. We then assessed the performance of trained group participants in the simulation evaluation flight. Students in the control group completed the attitudinal questionnaire and the knowledge test immediately before their simulation evaluation flight. They received the attitudinal questionnaire once again after this scenario. Behavioral data in the simulation evaluation were obtained from 10 trained and 11 control teams. Therefore, the measures completed for the control group participants were the same as those for the trained group participants, with the exception that there was no assessment of reactions to training (given that no team training was received by this group at the time of data collection) and that pre–post attitude assessments were collected before and after the simulation–evaluation flight.

Videotapes of all 21 scenarios were obtained. Using these videotapes, two trained observers who were unaware of condition independently scored the tapes offsite using the same TARGETs form as used by instructors (who were also unaware of condition), who made their assessments of all of the teams on-line. Three of the videotapes from trained teams and two of the tapes from control teams were inaudible; therefore, trained raters were able to score only 16 of the tapes. All observers (i.e., on-line instructors and trained raters) determined whether a team demonstrated or missed each behavior on the TARGETs form. Trained observers agreed on 83% of the items for the teams

on the 16 tapes that were audible. When considering the performance of just these 16 teams, on-line instructors agreed on 86% of the items with the first trained observer and 78% of the items with the second trained observer. This suggests fairly high agreement between raters regardless of source.

Results

Trainee Reactions to Training

Trainees (n = 20) indicated that the information provided in this simulator training was helpful for practicing team coordination skills (M = 4.55, SD = 0.51) and was an essential aspect of team coordination training (M = 4.75, SD = 0.44), that the feedback that was given was helpful (M = 4.50, SD = 0.76), and that they would like to fly more scenarios (M = 4.90, SD = 0.31). Perhaps more important, when asked about how valuable the training would be for mission accomplishment and flight safety, the mean responses were 4.35 (SD = 0.67) and 4.90 (SD = 0.31), respectively Finally, when trainees were asked to list ways in which they planned to use the information, each provided examples, suggesting that trainees perceived the training as useful to their job performance. Examples included "plan to verbalize thoughts even when not asked," "ensure that cockpit duties are delineated clearly," and "I plan to talk to the other crew member more about everything I'm doing and thinking rather than simply analyzing the situation for myself."

Attitudes

We analyzed overall attitude scores (for all items, including those added from the AACQ and those added for the specific purpose of this research) by using mixed-model analyses of variance with administration (i.e., pre- and postadministration) as the within-subjects independent variable and group (i.e., trained versus control) as the between-subjects independent variable. Results, shown in Table 3, revealed that the expected increase in positive attitudes for the trained group over the control group was obtained, $F(1, 40)$ = 6.50, $p < .01$. In addition, the responses for the CMAQ subscales were also similarly analyzed. As shown in Table 3, results indicated that the expected increase in positive attitudes for the trained group as compared with the control group occurred only for the Communication and Coordination subscale, $F(1, 40) = 9.83$, $p < .01$.

Knowledge Test Scores

The mean number of correct responses to the 17-item multiple-choice knowledge test was 11.9 (n = 20) for the trained group and 9.95 (n = 22) for

TABLE 3
Attitude Scores and Results

Group	*M*	*SD*	*F*(1, 40)
	Overall attitude scores		
Trained			
Pre	4.09	0.21	
Post	4.26	0.20	
Control			6.50*
Pre	3.98	0.28	
Post	3.96	0.36	
	CMAQ: Communication & coordination		
Trained			
Pre	4.39	0.26	
Post	4.57	0.18	
Control			9.83*
Pre	4.45	0.32	
Post	4.34	0.37	
	CMAQ: Command responsibility		
Trained			
Pre	3.86	0.59	
Post	4.08	0.55	
Control			2.24
Pre	3.63	0.67	
Post	3.53	0.85	
	CMAQ: Recognition of stressor effects		
Trained			
Pre	2.91	0.61	
Post	3.42	0.69	
Control			3.70
Pre	2.94	0.70	
Post	3.19	0.81	

Note. CMAQ = Crew Resource Management Questionnaire.
*$p \leq .01$.

the control group. A between-groups t test showed that this was a significant difference, $t(40) = 2.81$, $p < .008$, revealing that trained participants scored higher on this knowledge test.

Behavioral Performance Effect

Using the TARGETs approach, we calculated performance scores on the basis of the percentage of TARGETs "hit," which was interpreted as the proportion of scenario events correctly managed by the team. For on-line instructor assessments, a test for the difference between proportions showed that trained teams (overall proportion = .66) performed significantly better than control teams (overall proportion = .53, $Z = 4.09$, $p < .0001$).

We also analyzed TARGETs ratings obtained from the trained raters on the subset of usable tapes, as well as those of the instructors for this subset of 16 teams. This was done to determine the interrater reliability of these ratings, as well as whether the judgments of trained raters were in agreement with those of instructors. In both cases, results were the same as when we analyzed the performance of all teams, as assessed by the instructors. That is, trained teams outperformed control teams as judged by trained raters ($Z = 2.12$, $p < .04$) and as judged by instructors ($Z = 2.93$, $p < .004$). Figure 1 graphically depicts the performance results for each of the comparisons described above.

We also conducted more specific analyses of the TARGETs data for on-line instructor assessments of all teams, given that this data set was most complete and in agreement with the results obtained from other rating sources. Table 4 shows that the trained group outperformed the control group on items related to each of the specific skill competencies focused on in this study. For example, a total of 24 items were related to the communication generic behaviors of acknowledge–repeat communications and provided information as required–requested. The trained group hit 75% of these, whereas the control group hit only 66%. Table 4 also shows that trained group participants correctly managed a greater proportion of events requiring higher level coordination (i.e., assessing the implications of icing).

Discussion

The results of this team training study provide strong support for the effectiveness of the methodology of behavior-based, systematic training that targets team competencies required in a specific context. These results are in keeping with the evaluation of behavior-based training conducted by Leedom and Simon (1995). However, this effort extends previous work in several respects. First, we used the theoretical framework provided by Cannon-Bowers et al. (1995) to guide the context-driven team training. Second, we used a

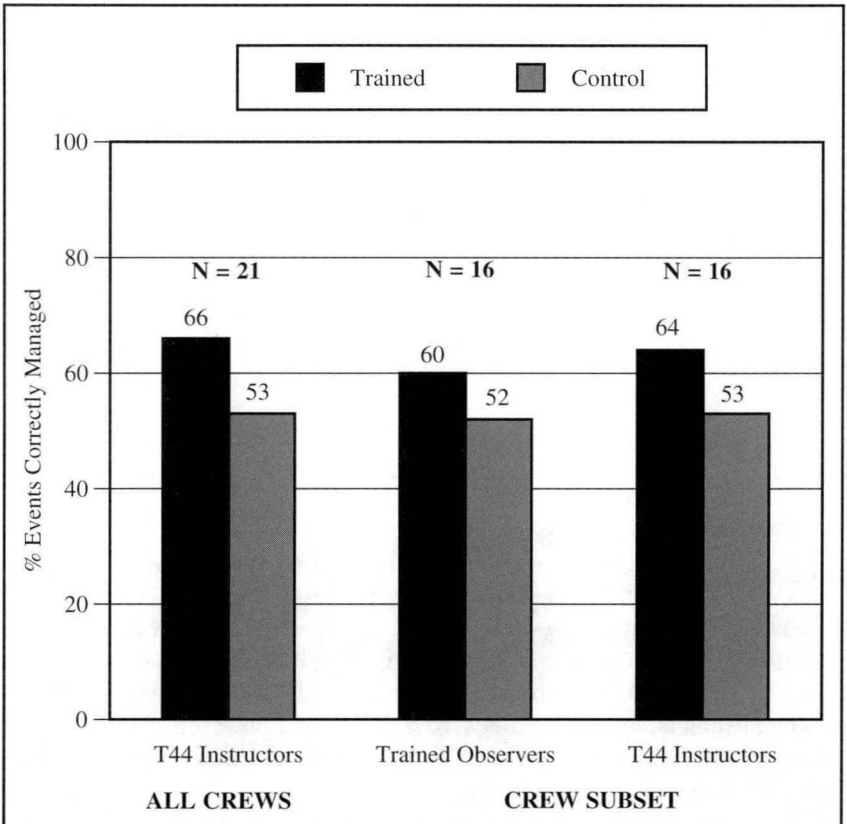

Figure 1. TARGETs Team Performance Scores for All Teams Observed by the Instructors (n = 21) and for the Subset Scored by the Trained Observers and the Instructors (n = 16).

Note. TARGETs = targeted acceptable responses to generated events or tasks.

comprehensive evaluation approach. Multiple measures of course success tied to training needs and established training objectives were obtained, increasing the usefulness and diagnosticity of the evaluation results. Third, we used control conditions in an attempt to link the findings to the training. Fourth, we assessed the behavioral impact of the training by means of an approach with a generally high reliability and sensitivity (Fowlkes et al., 1994). This is significant because although the importance of behavior-based training has been suggested, there are few performance measurement approaches available for their evaluation.

TABLE 4
TARGETs Team Performance Scores on a Subset of Specific Skills and Subskill Competencies for All Teams Observed by Instructors (n = 21)

Item set	No. items	% TARGETs score		Z	p
		Trained	Control		
Communication	24	75	66	2.21	.027
Assertiveness	4	68	34	3.11	.002
Situational awareness	22	57	41	3.44	< .001
Other high-level team-work behaviors	5	0.26	0.09	2.31	.021

Note. TARGETs—targeted acceptable responses to generated events or tasks.

Our results strongly suggest that team training equates to providing trainees with necessary KSAs (i.e., team competencies) to engage in cooperative behavior and to efficiently interact with one another to attain effectiveness. First, the results suggest that the trainees perceived the team training to be useful to their ability to do their jobs and that it was important for mission accomplishment and flight safety. We should note, however, that these reaction data are somewhat difficult to interpret given that they are not compared with reactions to some other form of training.

Next, regarding the learning of teamwork principles, positive evidence was provided from both attitudinal responses and knowledge test scores. In terms of attitudinal scores, positive attitude changes were found for trainees on the subscale related to task delegation, communication, and awareness of other crew members, all of which were heavily emphasized in the training and were focused on much more so than elements pertaining to the other subscales of the CMAQ. These positive changes in attitudes, coupled with reaction data indicating that trainees perceived the training to be relevant to their operations, suggest a willingness to use teamwork behaviors on the job.

In terms of knowledge scores, the trained group performed better than the control group on the multiple-choice knowledge test, in which an understanding of the basic principles taught in the team training course was measured. Given an implied greater willingness to use teamwork competencies on the job as a result of the training provided, this result suggests that individuals who received the training would also better understand how to implement these competencies.

Finally, the results of the behavioral evaluation provide direct evidence that

the team training had a behavioral impact on pilot performance. This was demonstrated by using scenarios that were tailored specifically to evaluate whether teams performed critical scenario-specific teamwork behaviors related to more general teamwork constructs or competencies. The scores indicated that trained crews executed, on average, 8% (for trained rater assessments of the subset of 16 teams) to 13% (for on-line instructor assessments of all teams) more required teamwork behaviors than control or untrained teams. Combining this result with the assumed greater willingness and better understanding to use teamwork behaviors in operational settings suggests that those who received the training are better prepared to use these skills. Results of specific analyses related to targeted competencies further support this contention. Also, results that showed that trained group participants were better at assessing the implications of one of the key events inserted into the scenario (i.e., icing) suggest that those individuals who received our training are better prepared to use team competencies to diagnose and comprehend the cause and effect of complex problems.

We should point out that although there was a significant difference in knowledge scores between groups, control group participants, on average, still got more than half of the items correct. Although we did not perform an item analysis of the questionnaire, it is possible that some items were fairly intuitive or related to general world knowledge about teamwork. It may be that particular items accounted for the significant difference between groups. Alternatively, these results suggest that although having adequate knowledge may be a prerequisite to skilled performance, simply knowing facts about teamwork does not equate to demonstrating skill competencies, so behavioral metrics must also be used to determine the overall effect of training. This underscores the importance of collecting multimeasures to increase the diagnosticity of the effects of training. In other words, if we had not found that trained group participants outperformed control group participants, we would want to determine why and would turn to knowledge scores to identify whether they could perhaps be a delimiting factor. Our results suggest that, on average, obtaining a knowledge score of 70% is sufficient to enable the implementation of skill competencies. Future research will use more sensitive measures that tap deeper levels of knowledge, which may lead to stronger results.

Interestingly, the results of the current research also provide further information on the utility of the TARGETs approach. As in previous work (Fowlkes et al., 1994), satisfactory interrater reliability and sensitivity were obtained. However, this research permitted investigation of a previously unanswered question. In prior work, performance scores had been produced only by trained observers using videotapes. These individuals had worked with instructor subject-matter experts in developing the observation checklists and were knowledgeable about the types of behaviors to look for in the particular

scenario being flown. Indeed, part of the development rationale for TARGETs was to design an approach in which pilot subject-matter experts were not absolutely necessary for scoring performance, because they are not generally available. However, the question of whether pilot subject-matter experts would observe the same differences as the trained raters remained. The results of this research suggest that scores obtained by the two divergent rating sources are comparable using this approach. This was supported by the high agreement between scores produced by the trained raters and pilot subject-matter experts, as well as by the general magnitude of the difference as a function of condition (although the pilots appeared to observe a slightly greater difference between groups). Thus, the use of a highly structured observation format for scoring by trained observers appears to be viable.

In summary, this research provides rather robust and reliable evidence that teamwork can be trained. This training works because it is theoretically derived, systematically developed, and focused on specific, required KSAs. The result is not only the impartment of positive reactions and knowledge regarding teamwork constructs but also the provision of better teamwork skills. The implication is that enhancing trainees' task-contingent team competencies through requisite KSAs suggests that team members receiving our team training will be better prepared to use effective teamwork with other crew members in the cockpit in the future. Future efforts should determine the effectiveness of our team training methodology in other task environments in which task-contingent competencies are crucial. In addition, future work is needed to test the effectiveness of instructional strategies for enhancing other team competencies, as discussed by Cannon-Bowers et al. (1995). It is important to determine whether providing teams with information, demonstration, and practice and feedback through task simulation is appropriate for instruction on other competencies as well and whether there are more parsimonious strategies that can be used with equivalent results. Moreover, although we assessed knowledge, we did so using a standard multiple-choice test. Thus, only simple declarative knowledge was measured. The importance of other knowledge competencies, such as mental models or knowledge structures, was indicated by Cannon-Bowers et al., and the need for measures to assess these competencies has been called for (Kraiger et al., 1993). Therefore, research is needed to determine the impact of these more cognitive factors on teamwork and task performance and how they should be trained. Finally, owing to the complex environment studied in this research and the multiphasic approach to training and evaluation that we used, it is not possible to determine what specific aspect of training enhanced which specific competency. Given that this investigation supports that team training works, perhaps future research can be designed to determine which aspects of this training are most and least effective and influential.

REFERENCES

Boguslaw, R., & Porter, E. H. (1962). Team functions and training. In R. M. Gagne (Ed.), *Psychological principles on systems development* (pp. 337–416). New York: Holt, Rinehart & Winston.

Brannick, M. T., Roach, R. M., & Salas, E. (1991, April). *Understanding team performance: A multimethod study.* Paper presented at the meeting of the Society of Industrial and Organizational Psychology, St. Louis, MO.

Brannick, M. T., Roach, R. M., & Salas, E. (1993). Understanding team performance: A multimethod study. *Human Performance, 6,* 287–308.

Briggs, G. E., & Naylor, J. C. (1964). *Experiments on team training in a CIC-type task environment* (NAVTRADEVCEN Tech. Rep. No. 1327-1). Port Washington, NY: United States Naval Training Device Center.

Briggs, G. E., & Naylor, J. C. (1965). Team versus individual training, training task fidelity, and task organization effects on transfer performance by three-man teams. *Journal of Applied Psychology, 49,* 387–392.

Cannon-Bowers, J. A., Prince, C., Salas, E., Owens, J. M., Morgan, B. B., Jr., & Gonos, G. H. (1989). Determining aircrew coordination effectiveness. *Proceedings of the 11th Interservice/Industry Training Systems Conference, Washington, DC, 1,* 128–136.

Cannon-Bowers, J. A., Salas, E., & Converse, S. A. (1993). Shared mental models in expert team decision making. In N. J. Castellan, Jr. (Ed.), *Current issues in individual and group decision making* (pp. 221–246). Hillsdale, NJ: Erlbaum.

Cannon-Bowers, J. A., Tannenbaum, S. I., Salas, E., & Volpe, C. E. (1995). Defining team competencies and establishing team training requirements. In R. Guzzo & E. Salas (Eds.), *Team effectiveness and decision making in organizations* (pp. 333–380). San Francisco: Jossey-Bass.

Dyer, J. L. (1984). Team research and team training: A state-of-the-art review. In F. A. Muckler (Ed.), *Human factors review: 1984* (pp. 285–323). Santa Monica, CA: Human Factors Society.

Dynamics Research Corporation. (1990). *Development of measures of crew coordination* (Tech. Rep. DAHC35-89-D-0030, Del. Order 0001). Ft. Rucker, AL: Army Research Institute.

Federman, P. J., & Siegel, A. I. (1965). *Communications as a measurable index of team behavior* (NAVTRADEVCEN Tech. Rep. No. 1537-1). Wayne, PA: Applied Psychological Services Science Center.

Foushee, H. C., Lauber, J. K., Baetge, M. M., & Acomb, D. B. (1986). *Crew factors in flight operations: III. The operational significance of exposure to short-haul air transport operations* (NASA Technical Memorandum 88322). Moffett Field, CA: NASA–Ames Research Center.

Foushee, H. C., & Manos, K. L. (1981). Information transfer within the cockpit: Problems in intracockpit communications. In C. E. Billings & E. S. Cheany (Eds.), *Information transfer problems in the aviation system* (NASA Tech. Paper 1875, pp. 63–71). Moffett Field, CA: NASA–Ames Research Center.

Fowlkes, J. E., Lane, N. E., Salas, E., Franz, T., & Oser, R. L. (1994). Improving the measurement of team performance: The TARGETs methodology. *Military Psychology, 6,* 47–61.

Gregorich, S. E., Helmreich, R. L., & Wilhelm, J. A. (1990). The structure of cockpit management attitudes. *Journal of Applied Psychology, 75,* 682–690.

Hall, E. R., & Rizzo, W. A. (1975, March). *An assessment of U.S. Navy tactical team training* (TAEG Report No. 18). Orlando, FL: Training Analysis and Evaluation Group.

Helmreich, R. L. (1984). Cockpit management attitudes. *Human Factors, 26,* 583–589.

Helmreich, R. L., Chidester, T. R., Foushee, H. C., Gregorich, S., & Wilhelm, J. A. (1989). *How effective is cockpit resource management training? Issues in evaluating the impact of programs to enhance crew coordination* (Tech. Rep. 89-2). Austin: NASA–University of Texas.

Helmreich, R. L., & Fouchee, H. C. (1993). Why crew resource management? Empirical and theoretical bases of human factors training in aviation. In E. L. Wiener, B. G. Kanki, & R. C. Helmreich (Eds.), *Cockpit resource management* (pp. 3–45). San Diego, CA: Academic Press.

Helmreich, R. L., Wilhelm, J. A., & Gregorich, S. (1988). *Revised versions of the Cockpit Management Attitudes Questionnaire (CMAQ) and CRM seminar evaluation form* (NASA/UT Technical Report 88-3). Austin: NASA–University of Texas.

Jensen, R. S. (1986). *The effects of expressivity and flight task on cockpit communication and resource management* (NASA Final Tech. Rep. No. APL 86-1). Moffet Field, CA: NASA–Ames Research Center.

Johnston, W. A. (1966). Transfer of team skills as a function of type training. *Journal of Applied Psychology, 50,* 102–108.

Johnston, W. A., & Briggs. G. E. (1968). Team performance as a function of team arrangement and workload. *Journal of Applied Psychology, 52,* 89–94.

Kanaki, B. G., Lizito, S., & Foushee, H. C. (1989, January). Communication indices of crew coordination. *Aviation, Space, and Environmental Medicine, 60,* 56–60,

Kraiger, K., Ford, J. K., & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology, 78,* 311–328.

Krum, R. L., & Farina, A. J. (1962). *Effectiveness of integrated flight simulator training in promoting B-52 crew coordination* (MRL Tech. Documentary Rep. 62-1). Wright Patterson Air Force Base, OH: Aerospace Medical Research Laboratories.

Lanzetta, J. T., & Roby, T. B. (1960). The relationship between certain group process variables and group problem solving efficiency. *Journal of Social Psychology, 52,* 135–148.

Leedom, D. K., & Simon, R. (1995). Improving team coordination: A case for behavior based training. *Military Psychology, 7,* 109–122.

McIntyre, R. M., & Salas, E. (1995). Team performance in complex environments: What we have learned so far. In R. Guzzo & E. Salas (Eds.), *Team effectiveness and decision-making in organizations* (pp. 9–45). San Francisco: Jossey-Bass.

Morgan, B. B., Jr., Glickman, A. S., Woodard, E. A., Blaiwes, A. S., & Salas, E. (1986). *Measurement of team behaviors in a Navy environment* (Tech. Rep. No. NTSC TR-86-014). Orlando, FL: Naval Training Systems Center, Human Factors Division.

Naylor, J. C., & Briggs, G. E. (1965). Team training effectiveness under various conditions. *Journal of Applied Psychology, 49,* 223–229.

Nieva, V. F., Fleishman, E. A., & Rieck, A. (1978). *Team dimensions: Their indentity, their measurement and their relationships* (Tech. Rep. No. DAH1978-C-0001). Washington, DC: Advanced Research Resources Organization.

Orasanu, J. M. (1990). *Shared mental models and crew decision making* (CSL Tech. Rep. No. 46). Princeton, NJ: Princeton University, Cognitive Science Laboratory.

Oser, R. L., McCallum, G. A., Salas, E., & Morgan, B. B., Jr. (1989). *Toward a definition of teamwork: An analysis of critical team behaviors* (Tech. Rep. No. NTSC 89-004). Orlando, FL: Naval Training Systems Center, Human Factors Division.

Oser, R. L., Prince, C. W., Morgan, B. B., Jr., & Simpson, S. S. (1991). *An analysis of*

aircrew communication patterns and content (Tech. Rep. No. NTSC 90-009). Orlando, FL: Naval Training Systems Center, Human Factors Division.

Prince, C., Chidester, T. R., Cannon-Bower, J. A., & Bowers, C. (1992). Aircrew coordination—Achieving teamwork in the cockpit. In R. W. Swezey & E. Salas (Eds.), *Teams: Their training and performance* (pp. 329–353). New York: Ablex.

Prince, C., & Salas, E. (1993). Training and research for teamwork in the military aircrew. In E. L. Weiner, B. G. Kanki, & R. L. Helmreich (Eds.), *Cockpit resource management* (pp. 337–366). Orlando, FL: Academic Press.

Ralphs, L. T., & Stephan, E. (1986). HRD in the Fortune 500. *Training and Development Journal, 40,* 69–76.

Saari, L. M., Johnson, T. R., McLaughlin, S. D., & Zimmerle, D. M. (1988). A survey of management training and education practices. *Personnel Psychology, 41,* 731–743.

Salas, E., Bowers, C., & Cannon-Bowers, J. A. (1995). Military team research: Ten years of progress. *Military Psychology, 7,* 55–75.

Salas, E., & Cannon-Bowers, J. A. (1997). Methods, tools, and strategies for team training. In M. A. Quing and education practices. lm*Training for a rapidly changing workplace: Applications of psychological research* (pp. 249–279). Washington, DC: American Psychological Association.

Salas, E., Dickinson, T. L., Converse, S. A., & Tannenbaum, S. I. (1992). Toward an understanding of team performance and training. In R. W. Swezey & E. Salas (Eds.), *Teams: Their training and performance* (pp. 3–29). Norwood, NJ: Albex.

Schmitt, N. (1989). Construct validity in personnel selection. In B. J. Fallon, H. Pfister, & J. Brebner (Eds.), *Advances in industrial and organizational psychology* (pp. 331–341). Amsterdam: Elsevier.

Stout, R. J., Salas, E., & Carson, R. (1994). Individual task proficiency and team process behavior: What's important for team functioning? *Military Psychology, 6,* 177–192.

Sundstrom, E., DeMeuse, K. P., & Futrell, D. (1990). Work teams: Applications and effectiveness. *American Psychologist, 45,* 120–133.

Tannenbaum, S. I., Mathieu, J. E., Salas, E., & Cannon-Bowers, J. A. (1991). Meeting trainees' expectations: The influence of training fulfillment on the development of commitment, self-efficacy, and motivation. *Journal of Applied Psychology, 76,* 759–769.

Tannenbaum, S. I., Smith-Jentsch, K., & Behson, S. (1997). *Training team leaders to facilitate team learning and performance.* In J. A. Cannon-Bowers & E. Salas (Eds.), Decision making under stress: Implications for training and simulation. Manuscript in preparation.

Tannenbaum, S. I., & Woods, S. B. (1992). Determining a strategy for evaluating training: Operating within organizational constraints. *Human Resource Planning Journal, 15,* 63–82.

Wiener, E. L., Kanki, B. G., & Helmreich, R. L. (1993). *Cockpit resource management.* San Diego, CA: Academic Press.

Williges, R. C., Johnston, W. A., & Briggs, G. E. (1966). Role of verbal communication in teamwork. *Journal of Applied Psychology, 50,* 473–478.

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Book Review

Interactive Acting: Acting, Improvisation, and Interacting for Audience Participatory Theatre. Jeff Wirth. Fall Creek Press. Fall Creek, Oregon: 1994. 214 pages, paperback, $14.95.

Moreno developed several stages of improvisational theater: First, he offered a theme and other actors and invited audience members to take and improvise certain parts. Next he had a troupe that improvised on a theme given by the audience. Then he had a mixture of troupe and actors who improvised both theme and content. Finally, the audience became the group—no special actors—improvising theme and content. And even at that stage, it could be further refined: If the group theme continued to involve many interactions among the group members, it was sociodrama. If an individual's life situation could represent the group's interest, then it shifted more to psychodrama proper.

Jeff Wirth, the author of this practical and stimulating book on interactive acting, notes further variations of the same basic vision Moreno had in his earlier years—that of a rejuvenated, more-involving theatrical process. Environmental theater is like those murder mysteries in which much of the plot and many of the actors are predetermined and the audience is invited to blend in with the action. Augusto Boal's "Theatre of the Oppressed" used a format with a proscenium arch, with the actions progressing until members of the audience (who have been instructed to intervene when they feel so moved) finally jumped up and entered the scene to demonstrate how they would handle the problem. I have seen some "mental health players" groups and also some roleplaying in management or sales seminars operate with similar elements.

Wirth describes "theatrical freestyle" in which the theme and some of the actors are predetermined and there is a proscenium arch, but the plays are structured enough so that audience members can take roles in them. My impression is that this latter approach seems to be the special method of the author who offers practical clues for developing character and engaging in improvisational acting. This book is a must for anyone who wants to develop more specific improv/interactive acting and for those who like the process enough to become an audience aficianado. Other activities, which also partake of this "act hunger," include classes in improvisation, theater games, theater sports, and the integration of such methods in therapy.

One of my goals is to see the development of improvisational dramatic skills (as contrasted with play production, with memorized scripts and rehearsals) as a basic element in the curriculum. This is spontaneity training, a way to strengthen students' capacities for communications, problem solving, and self-awareness. it is a way of developing "emotional intelligence." To this end, *Interactive Acting* is a meaningful contribution to a growing literature, and the growth of interactive acting theater in this country also is heartening.

I accept that different audiences and individual audience members are capable of different degrees of involvement. In time, I hope people will have enough options to choose the mode of dramatic participation that fits their tastes. This book will aid people in acquiring the practical techniques they will need for what I believe may become a more prevalent form of participatory recreation.

Finally, psychodramatists must open to the hunger for nonclassical approaches, sociodrama, Playback Theatre, integrations with Boal's Theatre of the Oppressed (Feldhendler, 1994), and various drama therapy approaches, as well as integrations with other therapies and creative arts activities (dance, opera, music, costume, poetry, art). We must avoid tendencies to overvalue the "classic" forms as a cultural conserve and encourage further developments and innovations. Jeff Wirth's book is an important contribution to this end.

For further information about Wirth's methods and activities, write to the *Improv Theatre News* (ITN), P.O. Box 1099, Fall Creek, OR 97438 or call 541–744–0938.

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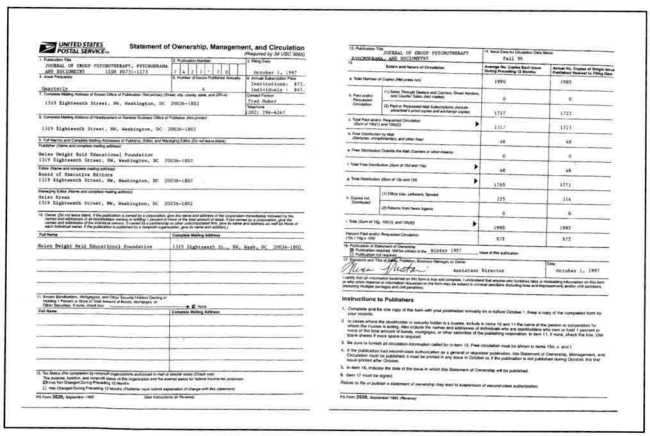

Journal of
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Spring 1996 Through Winter 1997

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The *Journal of Group Psychotherapy, Psychodrama and Sociometry* features articles on the theory and application of action methods in the fields of psychotherapy, counseling, social and personal skill development, education, management, and organizational development. It chiefly welcomes articles bridging research and practice appropriate to clinical and educational simulations, behavior rehearsal, skill training, and role playing within group settings. The focus is on action interventions, psychodrama, and sociometry. The journal publishes theme issues, main articles, and brief reports on small research studies, case studies, and empirically tested new action techniques.

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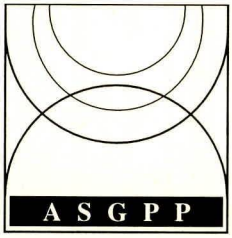

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