Daily Events and Mood State Among Individuals Living With HIV: Examination of the Within-Persons Approach to Data Collection Using Daily Diary Methodology

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Studies examining the link between stressful events and coping with HIV have relied on a between-persons approach focusing on how individuals differ on some characteristics. Although the between-subjects approach has yielded important information, our goal was to use a within-persons approach, making repeated measurements of the same persons over many days, to examine the impact of changing circumstances on the mood states of those with HIV. A second goal was to determine if asking participants to report their daily experiences via a computerized interactive voice system is a viable way to collect such information. This study collected a variety of trait measures for seven HIV patients and subsequently used a computerized telephone system to collect information regarding daily events and mood states over 21 consecutive days. Several daily measures, including self-esteem, optimism, and positive social interactions were significantly related to daily mood states. Trait measures, with the exception of symptom distress, were ineffective in predicting variations in daily mood states. It was concluded that a computerized telephone system is a viable means of collecting information from HIV patients on a daily basis and within-persons methodology may provide useful information about daily events affecting mood states beyond that generated by a between-persons approach.

Keywords: coping; computerized interactive voice system; HIV patients; mood; optimism; self-esteem

U nderstanding potential stressors and resources for living with HIV disease is important because these variables may affect daily mood states and psychological functioning. These in turn may affect the progression of HIV disease via biological and behavioral pathways, and even the effectiveness of highly active antiretroviral therapy (Leserman et al., 2000). Based on this perspective, our study examined how various psychological states and social interactions, measured on a daily basis, affect daily mood states.

In the present article, the results and methodological limitations of prior quantitative studies linking HIV infection and psychological functioning will be briefly reviewed. These studies rely on a *between-persons approach* to data collection, examining how individuals who differ on some characteristic (e.g., severity of life stress, satisfaction with social support) cope with HIV. Using a daily diary study, it will be demonstrated how collecting data from HIV-positive persons based on a *within-persons approach* (involving repeated measurements on the same persons over many days) may increase our understanding of the link between everyday events and mood state for individuals with HIV and/or AIDS. Another goal of this study was to determine if collecting measures of everyday events using a computerized interactive voice system was a viable approach.

BACKGROUND

Within-Persons Versus the Between-Persons Approach to Data Collection

The strategy in most quantitative studies regarding the link between stressful events and coping with HIV compares individuals who are in different life situations. These studies rely on a between-persons approach, focusing on how individuals who differ on predictor variables such as stressful life events (e.g., Nott & Vedhara, 1995), satisfaction with social support (Leserman et al., 2000), and perceived HIV-related stigma (Derlega, Winstead, Greene, Serovich & Elwood, 2002; Miles, Burchinal, Holditch-Davis, Wasilewski, & Christian, 1997) cope with HIV.

The between-persons approach has provided valuable information about coping with HIV, but this approach has its theoretical and practical limitations (Bolger, Davis, & Rafaeli, 2003; Gable & Reis, 1999). The between-persons approach does not provide information about the reactions of the same individuals given daily changes and fluctuations in life circumstances (e.g., how someone reacts to interacting with others in positive or negative social contexts or how the same individual reacts to the ebb and flow of HIV- or medication-caused physical symptoms each day). The between-persons approach measures the impact of relatively stable personality traits and life circumstances insofar as they affect physical and psychological coping across different individuals. But, as research methodologists Gable and Reis (1999) have noted, "Fluctuations in emotional and physical well-being around an individual's average level might be associated with daily variations in social activity and emotions" (p. 416), which is better examined via a within-persons approach to data collection.

The within-persons approach provides unique insights on the impact of changing circumstances in the lives of persons with HIV. For instance, some events such as negative social interactions or threats to self-esteem may occur only occasionally (Bolger et al., 2003; Gable & Reis, 1999). The within-persons approach, as Bolger, DeLongis, Kessler, and Schilling (1989) noted, allows us to "obtain many repeated measurements

on the same individuals" (p. 809). Hence, the researcher can assess how changes in daily life events (changes in daily physical, psychological, and social conditions) are associated with changes in everyday psychological and/or physical adjustment for the person with HIV.

There may be a practical benefit of relying on a within-subject approach that requires participants to complete self-report measurements every day of the week over a course of several weeks. The use of daily measures hopefully reduces concerns about biases and errors in the recall of information (Bolger et al., 2003; Gorin & Stone, 2001). Research participants are less susceptible to errors in recall (e.g., about life events, psychological states, physical symptoms) if they provide this information on a daily basis—close to the time when the event occurred—as opposed to being asked to remember retrospectively what occurred to them in the past several weeks or months. Parenthetically, retrospective self-reports may also pose a problem in interpreting data from qualitative studies because individuals—during interviews—may erroneously reconstruct memories of prior life events (Gorin & Stone, 2001).

Rationale for the Study and Predictions

Based on previous research on the within-person covariation between mood and self-esteem and optimism (e.g., Nezlek, 2005; Nezlek & Plesko, 2003), self-esteem and optimism can be expected to covary positively with positive moods and to covary negatively with negative moods. That is, on days when people's self-esteem is higher or they are more optimistic, their moods will be more positive and less negative. Prior research with HIV and cancer patients suggests that optimism may be a protective factor in coping with chronic disease, especially by promoting problem solving, coping, and lowering denial (Carver et al., 1993; Lutgendorf, Antoni, Schneiderman, Ironson, & Fletcher, 1995; Stanton, Collins, & Sworowski, 2001). Based on previous research on the within-person covariation between mood and social events (e.g., Nezlek, 2005; Nezlek & Plesko, 2003), positive moods can be expected to covary positively with positive social experiences and to covary negatively with negative social experiences.

There have been mixed results about the association between physical symptoms associated with HIV and/or medication side effects and psychological functioning. Ciesla and Roberts (2001), in their meta-analysis of HIV infection and risk of depressive disorders, found no differences between asymptomatic and symptomatic HIV-positive individuals in rates of major depressive disorder. On the other hand, Nott and Vedhara (1995, 1999) reported that events associated with a decline in health predicted emotional distress. The investigators predicted that the more frequent the daily occurrence of physical symptoms associated with HIV and/or medication side effects, the less positive the daily mood state.

METHOD

This study is based on reports of daily life experiences (daily variations in self-esteem, optimism, positive social interactions, negative social interactions, side effects associated with medications and/or HIV, and mood state). The data were collected on a daily basis for 21 consecutive days from seven individuals living with HIV, examining how daily fluctuations in self-esteem, optimism, positive social interactions, negative social interactions, and physical side effects covary with daily mood state.

Participants

Eight participants enrolled in the study, four men and four women. One of the women ceased providing daily reports after three days, so her data were excluded from the analysis. The participants were recruited from HIV/AIDS service organizations as well as an HIV outpatient clinic in Virginia. Participants ranged in age from 36 to 50 years old. Of the seven who completed the study, four participants were African American, and three were European-American. All but one participant had been diagnosed with HIV six or more years ago. Three of the participants reported having been diagnosed with AIDS. All participants were taking combination HIV antiretroviral therapy. Each participant was paid $25 after completing the study.

Recruitment of Participants

Prospective participants first read an advertising announcement about the study on "Issues in coping with HIV." The announcement stated that "There are many issues involved in coping with a chronic disease such as HIV, including its impact on how we feel, what we do everyday, and how we interact with people in our daily life." The research was described as a two-part study. For part 1, participants visited our research location to complete informed consent forms and preliminary questionnaires. They also received training in how to keep a 21-day diary for reporting on daily life events and daily mood states. For part 2, participants maintained a record of daily experiences for 21 consecutive days. The participants individually contacted one of the researchers to obtain further information about the study and to make an appointment to review the informed consent (and to complete preliminary forms if they consented to participate).

Procedures

In part 1, participants completed a 50-item measure of the Big Five factors of personality (including neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) as well as a separate 60-item measure of the five facets of conscientiousness (Goldberg, 1990, 1992; the items are available at http://ipip.ori.org/). The response format consisted of a 5-point scale ranging from "strongly disagree" to "strongly agree." They also completed a 20-item symptoms distress scale, assessing symptoms participants may have experienced during the past four weeks (NIAID Adult AIDS Clinical Trials Group, 1998).

Next, in part 1, participants were given a description of how to complete a telephonic daily diary questionnaire for each of 21 days. Participants were given instructions and a copy of the questionnaires that they would complete at home each evening before going to bed. The instructions included a description of how participants would provide self-report data for each day of the data collection. Participants were told how to phone a computer at the end of each day and respond to recorded questions by pressing the appropriate touch-tone keys on their telephone. The file containing the participants' responses was checked each morning to ensure that they had responded. There were no instances of missing data for the seven participants over the 21-day period.

This method of data collection is based on interactive voice response (IVR) technology (see Janda, Janda, & Tedford, 2001, for a description of the software program to collect data via phoning a computer). IVR allowed the research participants to provide data on a daily basis by interacting with a computer system from their touch-tone telephones. Using Goldberg's (1990) 60-item measure of the Big Five dimensions, Tedford and Janda (1998)

found that coefficient alphas for each dimension were in the .80s for both the paper-and-pencil and IVR format and that the correlations between each dimension across the two formats were similar to coefficient alphas. Several studies have demonstrated that IVR can be used to collect both reliable and valid data (Baer, Brown-Beasley, Sorce, & Henriques, 1993; Baer, et al., 1995; and Mundt, Perrine, Searles, & Walter, 1995).

Instruments

With the exception of the daily measure of physical symptoms, the following measures are similar to those used by Nezlek and his colleagues in several studies that have elucidated the role of daily events with respect to a number of outcome variables (Nezlek, 2001a; Nezlek, 2001b; Nezlek, 2002; Nezlek & Gable, 2001; Nezlek & Plesko, 2001; Nezlek & Plesko, 2003; Nezlek, Feist, Wilson, & Plesko, 2001). This line of research has demonstrated that constructs measured using only a few items can be both reliable and valid.

Self-Esteem. Each day participants completed a two-item measure of self-esteem. The items were "Today how satisfied were you with yourself?" and "Today how much did you feel like a failure?" These items, based on items in Rosenberg's (1965) global self-esteem scale, have been used successfully in previous studies of daily variability in self-esteem (e.g., Nezlek & Gable, 2001). Response to these items, and to all daily measures, were made on five-point scales, with endpoints labeled "not at all" and "very much so." Scores on the second item were reversed, and daily self-esteem was defined as the sum of the two items. High scores indicated high levels of self-esteem.

Optimism. Daily optimism was measured by two items based on Beck's triadic theory of depression (e.g., Beck, 1967). The items were "Today how satisfied did you feel about your life in general?" and "Today how optimistic were you about the future?" These items have been used successfully in previous studies (e.g., Nezlek & Gable, 2001). Daily optimism was defined as the sum of the two scores, with high scores indicating high levels of optimism.

Social Events. Positive and negative social events were measured using eight items taken from the Daily Events Survey (Butler, Hokanson, & Flynn, 1994). Five items measured positive social events: "I had rewarding interactions/times with friends or family," "I did something special for someone I liked," "Someone complimented me on how well I did something," "Someone reassured me that things were going to be all right," and "Someone helped me do something, helped me solve a problem, or gave me something I needed." Three items measured negative social events: "I had a fight or argument with someone," "I had plans to spend time with someone special fall through," and "Someone criticized me about how I did something." Responses to the five positive event items were summed to create positive event scores, with higher scores reflecting more positive social interactions. Responses to the three negative event items were summed to create negative event scores with higher scores on this scale reflecting more negative social interactions.

Physical Symptoms. Participants completed a three-item scale about their concern with daily physical symptoms. The items were: "Today I felt sick to my stomach," "Today I had headaches," and "Today I had trouble sleeping." Participants indicated their level of concern with these physical symptoms. (The physical symptom items were adapted from the Symptoms Distress Module prepared by the NIAID Adult AIDS Clinical Trials Group, 1998.) The scores across the three items were summed. The higher the participant's score, the higher the concern about physical symptoms on a daily basis.

Mood. Daily mood was measured with eight items, two from each of the four quadrants of the affective circumplex (Feldman-Barrett & Russell, 1998). Participants indicated how happy, enthusiastic (Positive-Active [PA]), depressed, disappointed (Negative-Deactive [ND]), relaxed, peaceful (Positive-Deactive [PD]), nervous, and upset (Negative-Active [NA]) they felt each day. A summed score for the two items was created for each of PA, PD, NA, and ND. Thus, higher scores on the PA and PD mood measures indicate more positive moods while higher scores on the NA and ND scales indicate more negative moods. In Table 1 some summary statistics are provided of the daily measures included in this study. The variation statistics in Table 1 follow the approach of Raudenbush and Bryk (2002, p. 46). Specifically, between-person variation is a measure of the variation in the mean of a measure from person to person. Also, within-person variation (which accounts for the largest percentage of total variation) is a measure of the day-to-day variation in a measure.

Reliability and Validity of Daily Measures

The reliability of coefficients are calculated automatically by HLM and are defined as the ratio of true to total variance of an effect (see Raudenbush & Bryk, 2002, for a discussion of the rationale of this method of estimating reliability). As can be seen in Table 1, a majority of the coefficients were acceptably high but the coefficients for Negative Active, Negative Deactive, and Negative Social Interactions were, at best, modest. It seems likely that these modest coefficients were a result of the low within-person variability of these measures. To provide additional information about the reliability of the daily measures, coefficient alphas were calculated for each participant across the 21 days for which data were collected. Table 1 presents the median value for coefficient alpha.

The discriminant validity among the constructs was addressed. For traditional cross-sectional data, a common test of discriminant validity is that the confidence interval around the sample correlation between any two of the constructs does not include 1. For the multilevel data analyzed in this study, this approach was adapted as follows. First, such confidence intervals for each pair of constructs were computed separately for each of the subjects in the study. None of these 252 confidence intervals contained 1, and so, in every instance discriminant validity was supported according to this criterion. The median of each of these sets of correlations across participants can be found in Table 2.

RESULTS

Statistical Models

As noted earlier, this study uses a within-persons approach to data collection in that data on the outcome variable, mood, and its predictors have been collected daily for the same subject in addition to considering multiple subjects. Consequently, a series of multilevel random coefficient models (MCRM) have been used to analyze the data (Nezlek, 2001c). Such models use a multilevel approach to modeling predictors of the outcome variable. Specifically, for this study, level 1 variables include any of those that are measured daily on each subject such as self-esteem, positive social interactions, and optimism. Level 2 variables refer to those that were measured on a single occasion prior to the collection of the daily measure for each participant. In this study, level 2 variables that were measured include Symptom Distress, Neuroticism, Agreeableness, Extraversion, Openness to

TABLE 1. Summary Statistics of Daily Measures

	Mean	Between-Person Variance	Within-Person Variance	Within Variance as % of Total Variance	HLM Reliability Coefficients	Median Coefficient Alphas
Positive-Active mood	3.16	0.278	1.598	85.2%	.780	.912
Positive-Deactive mood	3.40	0.429	1.450	77.2%	.858	.875
Negative-Active mood	1.69	0.028	0.913	97.0%	.385	.650
Negative-Deactive mood	1.70	0.055	1.046	95.0%	.517	.900
Self-esteem	4.07	0.194	0.755	79.6%	.840	.694
Optimism	3.80	0.216	0.799	78.7%	.847	.738
Positive interactions	2.75	0.132	0.555	80.8%	.829	.711
Negative interactions	1.37	0.006	0.299	98.0%	.276	.448
Physical symptoms	1.60	0.124	0.696	84.9%	.785	.660

TABLE 2. Median Correlation Across Subjects

	Positive-Active	Positive-Deactive	Negative-Active	Negative-Deactive	Self-Esteem	Optimism	Positive Social Interactions	Negative Social Interactions
Positive-Deactive	.57							
Negative-Active	-.50	-.58						
Negative-Deactive	-.56	-.72	.73					
Self-esteem	.74	.71	-.63	-.75				
Optimism	.70	.69	-.35	-.66	.86			
Positive social interactions	.63	.46	-.25	-.26	.42	.48		
Negative social interactions	-.11	-.15	.32	.22	-.11	-.11	-.02	
Symptoms	-.44	-.50	.34	.50	-.50	-.49	-.37	.17

Experience and the five facets of Conscientiousness. In order to set a baseline to assist in testing the hypotheses identified in the previous sections, the so-called unconditional model was initially fitted. This model uses no predictors at either level 1 or level 2. More formally, the unconditional model uses:

$$Y_{ij} = B_{0j} + r_{ij}$$

and

$$B_{0j} = \gamma_{00} + U_{0j}$$

In these equations, i represents the day and j represents the subject. Thus, Y_{ij} is the i'th mood measurement for the j'th subject. Notice that in this model, there are no predictors of Y_{ij}. This accounts for the reference to an unconditional model. The term B_{0j} represents the average mood for subject j. This intercept term is treated as a random effect, that is, the mean mood for subject j represents one value within a population of such mean mood for all subjects (Schwartz & Stone, 1998, p. 12). The term r_{ij} is an error term that measures the deviation from the j'th subject's mean mood on the i'th day. In this model, the subjects in the study are viewed as a random sample from a population of subjects. As such the second model equation models how the i'th subject's mean mood is related to characteristics of this population. Specifically, the error term, γ_{00}, represents the mean mood for the population of subjects and so U_{0j} measures the deviation of the mean mood for subject j from this population mean. Note that, within this model, the variance of r_{ij} is a measure of the day-to-day variation in mood *within* subjects and the variance of U_{0j} is the variation in mood from subject to subject (*between* subjects). These are the variability measures tabulated in Table 1.

To estimate the parameters in this and other MCRMs, HLM5 was used (Raudenbush, Bryk, Cheong, & Congdon, 2000). For each of the outcome variables, Var(r_{ij}) is much larger than Var(U_{0j}). Thus, the proportion of the variation in mood that can be attributed to day-to-day differences within subjects is large. For example, when PA is the outcome variable, this proportion is 1.598/(1.598 + .278) = .852 or 85.2%. Similar percentages for the other outcome variables are included in Table 1. Thus, in trying to explain variation in mood, predictors of day-to-day variation will play a more important role than predictors of subject-to-subject variation. In the language of MCRM, level 1 predictors should receive greater emphasis than level 2 predictors. In this study, the focus is on self-esteem, positive social interaction, negative social interaction, optimism, and physical symptoms as level 1 predictors to be evaluated.

Next, the model defined in (1) was expanded by adding a single level 1 predictor. See Raudenbush and Bryk (2002, p. 33) for the precise multilevel model equations. This model was fitted separately for each of the level 1 predictors and for each of the outcome variables. Table 3 lists the results of this analysis, including the coefficients of the predictor along with the corresponding t statistic and p value. All of these coefficients are significant at least at the .10 level, except for negative social interaction when the outcome variable is Positive-Active or Positive-Deactive. In fact, all of the others are significant at the .05 level, except for negative social interaction when the outcome variable is Negative-Deactive and positive social interaction when the outcome variable is Negative-Active. Each of the coefficients has a similar interpretation, namely, the estimated change in the outcome measure for a unit increase in the predictor. For example, using self-esteem and Positive-Active, a 1-unit increase in the measure of self-esteem is associated with a .83-unit increase in the Positive-Active measure. Notice that the

TABLE 3. Within-Person Relationships Between Outcome Variable and Daily Predictor

Outcome Variable	Predictor	Coefficient	t	p Value
Positive-Active	Self-esteem	.83	3.54	.015
	Optimism	.86	8.94	.000
	Positive social interactions	.93	6.86	.000
	Negative social interactions	-.12	-0.42	.690
	Symptoms	-.57	-4.44	.004
Positive-Deactive	Self-esteem	.94	9.40	.000
	Optimism	.81	7.69	.000
	Positive social interactions	.71	4.74	.003
	Negative social interactions	-.28	-1.16	.288
	Symptoms	-.58	-4.68	.003
Negative-Active	Self-esteem	-.57	-6.13	.001
	Optimism	-.39	-4.43	.004
	Positive social interactions	-.93	-2.07	.084
	Negative social interactions	.64	3.51	.013
	Symptoms	.42	2.53	.045
Negative-Deactive	Self-esteem	-.83	-5.94	.001
	Optimism	-.70	-8.97	.000
	Positive social interactions	-.48	-3.24	.018
	Negative social interactions	.43	2.08	.083
	Symptoms	.49	3.14	.020

coefficients of negative social interaction and physical symptoms are negative with respect to the positive affective states as expected because increases in these measures can be anticipated to lead to lower values of the positive outcome variables.

The analysis also was expanded to consider the joint impact of sets of level 1 predictors. These results are summarized in Table 4. In this summary, the model results are reported including the "best" set of predictors. The best was defined to be the model where all predictors are significant and the unexplained variation is as small as possible. The results show that self-esteem and positive social interactions consistently were found to be significant predictors of the outcome variables. Consistently, higher self-esteem and more positive social interactions were related to higher levels of Positive-Active and Positive-Deactive mood states and lower levels of the Negative-Deactive mood state. Lower self-esteem and more negative social interactions were related to higher levels of the Negative-Active mood state. Some of the other predictors do not appear in these models because of the substantial correlation among the daily measures.

Data also were collected on a number of traits and self-reported physical symptoms for the 20 days preceding the collection of the daily measures for the seven subjects. In the language of MCRM, these are labeled as level 2 variables. The level 2 variables that were considered included: Symptoms Distress, Neuroticism, Extraversion, Agreeableness, Openness to Experience, and Conscientiousness. In order to assess the potential effects of these variables on subject-to-subject variations in mood, the following MCRM was tested.

TABLE 4. Within-Person Relationships Between Outcome Variable and Joint Daily Predictors

Outcome Variable	Joint Predictors	Coefficient	t	p Value
Positive-Active	Self-esteem	.63	3.54	.015
	Positive social interactions	.59	8.94	.000
Positive-Deactive	Self-esteem	.85	9.40	.000
	Positive social interactions	.36	4.74	.003
Negative-Active	Self-esteem	-.55	-6.13	.001
	Negative social interactions	.59	3.51	.013
Negative-Deactive	Self-esteem	-.66	-5.94	.001
	Positive social interactions	-.23	-3.24	.018

$$Y_{ij} = B_{0j} + r_{ij}$$

and

$$B_{0j} = \gamma_{00} + \gamma_{01}Z_j + U_{0j}$$

Here, Z refers to the particular level 2 variable included in the model. In every case except for Symptoms Distress, these level 2 predictors proved ineffective in that there was not evidence of a significant association between the trait and outcome variable. However, when Symptoms Distress was used, there was a significant association with both PA and NA (both ps $< .05$) but not with PD and ND. Greater levels of symptoms distress were associated with lower Positive-Active and higher Negative-Active mood states.

DISCUSSION

The purpose of this study is twofold: (1) to evaluate if using a within-persons approach would be useful in learning more about the psychological states that are associated with changes in mood in HIV patients, and (2) to determine if the methodology using a computerized interactive voice system to have the participants report their daily experiences via a touch-tone telephone was a viable way to collect such information.

With respect to the first question, it was found that predictors of day-to-day variation played a much more important role in explaining variations in mood than did predictors of person-to-person variation. As can be seen in Table 3, self-esteem, optimism, positive social interactions, and physical symptoms were significantly related to all four mood states. Negative social interactions were significantly and positively related to the Negative-Active and Negative-Deactive mood states. However, this latter finding must be viewed with caution considering the modest reliabilities associated with these constructs. Furthermore, it was found that, taken together, self-esteem and positive social interactions were the best predictors of daily mood states.

Only one of the trait variables, namely Symptoms Distress (the physical symptoms participants had experienced in the 20 days prior to completing the scale), was found to have a significant effect on reducing the unexplained between-subjects variation in Positive-Active and Negative-Active daily moods. This finding is consistent with the results of Domanico and Crawford (2000), who reported that, among Latino males, those

with a greater number of HIV physical symptoms experienced greater psychological distress. It should be pointed out that the failure to find that any of the other trait variables were associated with a reduction in unexplained variation in daily mood does not indicate that these variables are unimportant, given the small number of participants and consequently the extremely modest statistical power. But the results of this study do indicate that the inclusion of daily variables along with trait variables does make it possible to explain more of the daily variation in moods.

Although this study appears to be the first to use a within-persons approach to examine the relationship between daily psychological state variables and mood with HIV patients, Nezlek and Plesko (2001) have conducted a similar study with college students. They had 103 students provide reports using the Internet twice a week for up to 10 weeks. Each day's report included information about their self-esteem state, self-concept clarity, positive and negative social interactions, and daily mood states. The results of the present study are consistent with Nezlek and Plesko in that the latter reported higher self-esteem states were associated with more positive daily mood states.

The present study also indicates that the use of a computerized interactive voice response system is a viable approach to collecting daily data. As Mundt and colleagues (1995) have pointed out, there are several advantages to this approach. The collection of data is automated, reducing the demands on the experimenter's time, and the only equipment required for participants is a touch-tone telephone. Although other diary researchers have used more technologically advanced techniques such as the Internet and hand-held electronic devices, such equipment is expensive and not available to all potential participants. Four of the seven participants, for instance, did not own a computer and hence did not have easy access to the Internet. Without exception, the participants reported that they preferred reporting their data by telephone as opposed to the traditional pencil-and-paper format.

This study documents the feasibility and effectiveness of using a daily diary approach to data collection with HIV patients. The participants were able to provide a record of their daily life experiences over the 21 days of the study. The findings demonstrate that higher self-esteem and more positive social interactions measured on a daily basis predicted higher positive and lower negative mood states. In addition, individual differences in symptom distress (based on an overall rating of symptom distress for 20 days preceding the study) were also associated with lower Positive-Active and higher Negative-Active mood states. Finally, daily diary studies may hold promise in understanding important issues faced by patients with HIV. For instance, daily adherence to HIV medications may be affected by daily events, including the ebb and flow of self-esteem and the quality of social interactions.

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