

## How Negative Are Attitudes Toward Persons With AIDS? Examining the AIDS–Leukemia Paradigm

J. A. Skelton  
*Dickinson College*

Reports a meta-analysis of studies published between 1987 and 1996 (combined  $Ns \approx 2100$ ) comparing attitudes toward persons with AIDS versus Leukemia. The major goal was to identify which attitude measures are most sensitive to variation in the target person's disease diagnosis and sexual orientation. Diagnosis had moderate effects on measures of avoidant intentions toward the target in situations of close contact, and very large effects on responsibility attributions and target's perceived dangerousness. Effects on sympathy-hostility measures were much smaller. Target's sexual orientation (controlling for diagnosis) had small effects on responsibility and some avoidant intentions. Discusses implications of effect magnitudes for symbolic rejection versus instrumental avoidance models of the reaction to AIDS, conflicting interpretations by users of the AIDS–Leukemia paradigm, and lessons for the study of illness cognition.

During the second half of the 1980s, news reports frequently appeared in the United States about discrimination against HIV-infected individuals (Altman, 1986; Cook & Colby, 1992). Some legislators and editorialists advocated strict policies, such as quarantine of risk groups and mandatory HIV testing for certain occupations, to manage the threat to the public of HIV infection. Ryan White, an HIV-positive child with hemophilia who was expelled from his public school, became a symbol of the “innocent victims of AIDS” (Schellenberg, Keil, & Bem, 1995). Citing stories such as these and data from opinion polls, Herek and Glunt (1988) characterized the public reaction in the United States to AIDS as an “epidemic of stigma and fear” (also Herek & Capitano, 1993). One response of the health and social science communities was to conduct research documenting attitudes toward persons with AIDS (PWAs)<sup>1</sup> and predictors of those attitudes. The concepts of attitude and stigma are central to psychology's intellectual tradition, so psychologists have been especially active in AIDS attitude research (see, e.g., Pryor & Reeder, 1993).

Victims of many diseases are subject to negative stereotypes, unfavorable attitudes, and discrimination: Sickness is often stigmatized (Crandall & Moriarty, 1995; Gruman & Sloan, 1983; Katz, et al., 1987; Menec & Perry, 1995;

Meyerowitz, Williams, & Gessner, 1987; Weiner, Perry, & Magnusson, 1988). A key question for those concerned with the response to HIV-infected persons is whether such reactions differ in important ways from those to other life-threatening diseases. Some commentators have asserted that the association of AIDS with marginalized social groups (gay men, IV drug users, Haitian immigrants) during early publicity about the disease makes it plausible to regard AIDS as uniquely stigmatizing in contemporary America. Such claims may be tested by comparing attitudes toward PWAs with attitudes toward individuals with other diseases.

Between 1986 and 1995, no fewer than 40 such comparative studies appeared in the medical and social science literatures. Many of these reported statistically significant differences in reported attitudes toward PWAs versus other disease victims. However, it was not standard practice for researchers to include effect size estimates with hypothesis-test results, so the magnitude of negative attitudes toward PWAs remained open to question. A. M. Crawford (1996) conducted a meta-analytic review of 21 comparative experiments, all published before 1992; it remains to date the only review of its kind. She concluded that the average “magnitude of stigma associated with AIDS [compared to other diseases] was  $r = .22$ , a small to medium effect size” (p. 410). Crawford acknowledged that her review was not motivated by a general model of attitudes or a specific analysis of AIDS-related stigma. These limitations are reflected in her effect size estimates: Her first step in deriving an overall estimate of AIDS stigma was to combine the effect

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Correspondence should be addressed to J. A. Skelton, Department of Psychology, Dickinson College, Carlisle, PA 17013. E-mail: skelton@dickinson.edu

<sup>1</sup>The “PWA” abbreviation is ubiquitous in this area of research.

sizes of all attitude-relevant measures reported in each study she reviewed. The effect size for each study thus represented a combination of disparate measures, including stereotypic beliefs, evaluative reactions, and social distance scales. Given so undifferentiated a measure, we cannot determine the extent to which negative attitudes associated with AIDS patients reflect fearfulness (Bishop, Alva, Cantu, & Rittiman, 1991), symbolic rejection (Pryor, Reeder, Vinnacco, & Kott, 1989; Sontag, 1989), assessments of responsibility and deservingness (Menec & Perry, 1995; Weiner et al., 1988), or some combination of all these responses (Herek & Capitanio, 1998). A subset of the research summarized by A. M. Crawford provides a means for weighing these possibilities and is described next.

### THE AIDS–LEUKEMIA PARADIGM

J. A. Kelly, J. St. Lawrence, and associates devised the AIDS–Leukemia paradigm (ALP) to study reactions to PWAs. ALP study respondents read a vignette describing a male target person who has been diagnosed with AIDS or Leukemia. The vignette manipulates sexual orientation by assigning the target person's romantic partner a female or male name (e.g., “Roberta” or “Robert”). Respondents rate seven statements regarding their willingness to have a variety of social contacts with him (Social Interaction Scale: SIS), 12 agree-disagree statements about the target person (Prejudicial [*sic*] Evaluation Scale: PES), and 24 adjective descriptors (Interpersonal Evaluation Inventory: IEI).<sup>2</sup>

When examined individually, Social Interaction Scale and Prejudicial Evaluation Scale items can help differentiate people's attitudinal responses to PWAs. Table 1 lists the seven items from the SIS, each of which is a behavioroid measure of social distance, or *avoidant intentions*. Of 12 PES items in Table 1, one directly taps *responsibility attributions*, two items represent *fear*, and six indicate respondents' *hostile* versus *sympathetic* evaluations of the sick person. The final three PES items lack a clear evaluative direction; agreement might indicate sympathy or hostility toward the patient.<sup>3</sup> Considering the variety of attitudinal constructs represented by these measures, we may obtain a more differentiated view of responses to the epidemic if we do not aggregate the measures but instead ask how much each is affected by the ALP manipulations.

#### Importance of the ALP

From 1987 to 1990, Kelly's and St. Lawrence's research team published five studies of different respondent popula-

TABLE 1  
Attitude Items in ALP Studies

SIS Items <sup>a</sup>	
	The patient's lease is up in two months. If you had his landlord, would you renew it?
	If you were a friend of the patient, would you continue the friendship?
	If you met the patient, would you strike up a conversation with him?
	Would you be willing to work in the same office with the patient?
	Would you allow your children to visit the patient in his home?
	Would you attend a party where the patient was preparing food?
	Would you attend a party where the patient was present?
PES Items <sup>b</sup>	
	The patient <sup>c</sup> is responsible for his illness.
	The patient should be quarantined so as not to expose others.
	The patient is dangerous to other people.
	The world would be better off without the patient.
	The patient deserves what happened to him.
	The patient deserves to lose his job.
	The patient deserves to die.
	The patient deserves sympathy and understanding.
	The patient deserves the best medical care possible.
	*The patient's illness has been traumatic for him.
	*The patient has a lot of pain and suffering.
	*Suicide might be the best solution for this patient.

<sup>a</sup>These statements use a seven-point, “Willing–Unwilling” response format. <sup>b</sup>Responses are made on a seven-point, “Agree–Disagree” scale. <sup>c</sup>In most studies, “the patient” is replaced by a specific male name (e.g., “Mark”). \*Omitted from the analyses reported here.

tions, including physicians (Kelly, St. Lawrence, Smith, Hood, & Cook, 1987b), medical students (Kelly, St. Lawrence, Smith, Hood, & Cook, 1987a), nurses (Kelly, St. Lawrence, Hood, Smith, & Cook, 1988), college students (St. Lawrence, Husfeldt, Kelly, Hood, & Smith, 1990), and psychologists (St. Lawrence, Kelly, Owen, Hogan, & Wilson, 1990). These five studies were cited 392 times from 1988 through 2001 in *Social Science Citation Index* (SSCI) or *Science Citation Index* (SCI). They stimulated 11 more ALP experiments that were published by other research teams between 1989 and 1996 (L. A. Cohen & Grace, 1989a, 1989b; I. Crawford, Humfleet, Ribordy, Ho, & Vickers, 1991; Fliszar & Clopton, 1995; Forrester & Murphy, 1992; Haring & Lind, 1992; Johnson & Baer, 1996; McGrory, McDowell, & Muskin, 1990; Poling, Redmon, & Burnette, 1990; Range & Alliston, 1995; Strasser & Damrosch, 1992). These 16 studies account collectively for almost one third of comparative research during the period covered by A. M. Crawford's (1996) review of attitudes toward PWAs. Similarities in their design and measures make the ALP an exceptional source for determining which attitudes are most responsive to target persons' disease diagnosis and sexual orientation.

#### Conflicting Interpretations

Some ALP researchers have interpreted their findings as signifying strongly prejudiced and stigmatizing attitudes toward PWAs. For example, Kelly et al. (1987a) asserted,

<sup>2</sup>In some ALP studies, the IEI is called the Interpersonal Attraction Inventory (IAD). These adjective ratings have not been reported consistently in ALP studies, so they are not discussed further.

<sup>3</sup>In more recent ALP experiments, these three items often are omitted from the PES, so they have been dropped from this analysis.

Medical students view AIDS patients in a highly negative manner ... Some of the findings were quite alarming ... The students' attitudes toward AIDS were paralleled by similarly negative attitudes toward the homosexual patients. (pp. 554-555)

These authors' conclusions, and similar ones expressed by Kelly et al. (1988, p. 78) and I. Crawford et al. (1991, p. 360) are consistent with the "epidemic of stigma" metaphor. Other users of the AIDS-Leukemia paradigm have questioned these conclusions. McGrory et al. (1990) agreed that their Columbia University (NY) medical student respondents rated an AIDS patient as more responsible for his disease and more dangerous than a Leukemia patient; however, McGrory et al. asserted that "responses [to both patients] were generally sympathetic" (p. 430). Poling et al. (1990, p. 66) echoed this sentiment and further noted that their respondents, regardless of condition, tended to select midscale response options for sympathy-related PES items and the social distance items on the SIS and selected "disagree" responses to anger-related PES items. Strasser and Damrosch (1992, p. 126) also drew attention to their participants' tendency to select positive rating scale categories. Commenting on experiments by I. Crawford et al. (1991) and St. Lawrence, Kelly, et al. (1990) in which mental health professionals were participants, Fliszar and Clopton (1995) pointedly observed that "conclusions of these studies appear to have been more negative than justified by the data" (p. 276).

Such disagreements among users of the ALP explicitly raise the question of just how negative are attitudes toward PWAs. There is no doubt some merit in attending to respondents' choices among scale values, but it risks conflating psychometric with psychophysical approaches to measurement (Himmelfarb, 1993). The Likert scales of the PES and SIS indicate relative levels of agreement and willingness to have contact; neither is meant to be interpreted literally. To do so is to ignore systematic response biases (e.g., social desirability) that might affect the scale points individuals choose (I. Crawford, 1998).

On the other hand, statistically significant differences between ratings by AIDS versus Leukemia respondents do not *per se* support claims that attitudes toward PWAs are highly negative. Levels of statistical significance depend on the size of the difference between conditions and sample size. Small differences can be "highly" significant with sufficiently large *N*. Nor is it appropriate to claim that, because ratings of several PES and/or SIS items differ significantly between conditions, this constitutes evidence about the extent of prejudice against PWAs; such claims are implicit in Crawford (1991), Kelly et al. (1987a; 1987b), and St. Lawrence, Husfeldt, et al. (1990). The limits of this "box score" approach to statistical decision making and interpretation are well-documented (Schmidt, 1996), so the present study uses quantitative estimates of the magnitude of attitude differences demonstrated in studies employing the ALP, independently of sample sizes and scale values.

## Symbolic Rejection Versus Fear

A final issue addressed in this review is the relative contributions of HIV infection and sexual orientation to attitudes toward PWAs. These attitudes are thought by many to serve a mix of instrumental (e.g., self-interested avoidance of infectious persons) and value-expressive goals (e.g., symbolic rejection of homosexual men and IV drug users). The strenuous efforts of health educators to persuade the public that HIV can infect anyone indicate how widely accepted the belief is that mainstream reactions to the epidemic signify hostility toward and rejection of homosexual men. Among social psychologists, this interpretation is reflected in applications of functional attitude theories to AIDS-related prejudice (e.g., Herek & Capitano, 1998). However, some studies show that sexual orientation has smaller effects than might be expected.

Bishop et al.'s (1991) participants rated their willingness to interact with a patient with a fictitious disease, Meyer-Zweig syndrome, which was described as either contagious or noncontagious and as common among homosexuals or not. Participants were most avoidant when Meyer-Zweig was described as contagious ( $r = .61$ ), whereas the effect of the disease's association with gay men was much smaller ( $r = .16$ ). In terms of variance in avoidant intentions, contagiousness had almost 15 times the effect of sexual orientation. Crandall, et al. (1997) reported five studies reinforcing this general conclusion. Such examples raise two questions. First, what are the relative effects of disease status and sexual orientation on attitude measures *besides* avoidant intentions? Second, and more generally, do ALP experiments show that AIDS-related attitudes are more strongly affected by instrumental or by symbolic functions?

Analysis and reporting conventions in ALP studies permit us to evaluate the separate contributions of disease characteristics and sexual orientation. In most ALP research, the analytic strategy is to conduct multivariate, factorial analyses of variance (MANOVAs) on the PES and SIS item sets, and to follow up significant multivariate effects with univariate analyses of each item. Usually, only the significant univariate *F*s are reported; often, not even the means are reported for nonsignificant effects. This approach sacrifices statistical power to control Type I errors, makes it unlikely that univariate interactions involving only one or two measures will be detected, and fails to distinguish small, nonsignificant differences from zero differences. Nonetheless, it establishes a hierarchy for interpreting effect magnitudes. If a study reports a significant multivariate effect for AIDS versus Leukemia but a nonsignificant multivariate effect for patient sexual orientation, then effects of the disease factor, on average, are relatively greater than those of sexual orientation. Alternatively, when univariate effects of both factors are reported for a measure, we can validly reach conclusions about their relative magnitudes because each statistical effect is independent of the other.

TABLE 2  
Studies in the Meta-Analysis, by Publication Year

<i>Authors</i>	<i>Year</i>	<i>N</i>	<i>Population (State or Region)</i>	<i>Response Rate</i>
Fliszar & Clopton	1995	266	Psychology doctoral students (US)	48%
Strasser & Damrosch	1992	120	Masters' nursing students (MD)	NA
Haring & Lind	1992	81	Dental hygiene students (OH)	NA
I. Crawford et al.	1991	185	Psychologists & social workers (13 US cities)	35%
St. Lawrence, Husfeldt et al.	1990	300	College students (MS)	NA
St. Lawrence, Kelly et al.	1990	126	Psychologists (US)	37%
McGrory et al.	1990	103	Medical students (NY)	69%
Cohen & Grace	1989b	399	Dental students (MD)	NA
Cohen & Grace	1989a	112	Dental school faculty (MD)	NA
Kelly, St. Lawrence et al.	1987b	157	Urban MDs (TN, AZ, OH)	32%
Kelly, St. Lawrence et al.	1987a	119	Medical students (MS)	NA

## SUMMARY AND PURPOSE

The only existing meta-analysis of comparative AIDS stigma research (A. M. Crawford, 1996) showed small-to-moderate effects of disease diagnosis upon aggregated measures of respondents' attitudes toward the sick. If we do not distinguish among AIDS-relevant attitude components such as attributions, affective responses, and behavioral intentions, we cannot say which attitude components differ with respect to persons with AIDS versus other patient groups or the magnitude of any such differences. Research reports using the AIDS–Leukemia paradigm (ALP) can be analyzed to address these issues. The meta-analysis presented here may also facilitate an understanding of conflicting interpretations by ALP researchers. Finally, a close look at ALP research can help us to assess the relative weight of respondents' contagiousness beliefs and their feelings about a marginalized group, gay men, in attitudes toward persons with the disease. This assessment can in turn shed light on theoretical perspectives that emphasize value-expressive versus self-interest functions of attitudes (Herek & Capitano, 1998).

## METHOD

### Search Strategy and Inclusion Criteria

The goal of the search was to identify all published ALP studies. The reference list in A. M. Crawford's (1996) meta-analysis provided nine. Primary search resources for identifying additional studies were the *Social Science Citation Index* and the *Science Citation Index*. All volumes for 1988 through 2004 were scrutinized for references to the ALP experiments reviewed by Crawford (1996). Abstracts were retrieved for articles that cited one or more of these experiments. Nonempirical articles were excluded from further consideration, as were empirical articles having neither an AIDS versus Leukemia manipulation nor a manipulation of the patient's implied sexual orientation. Four studies that used ALP manipulations and measures but reported full-

scale scores instead of per-item results were excluded (Dowell, Ito Presto, & Sherman, 1991; Forrester & Murphy, 1992; Range & Alliston, 1995; Stewart, 1999).<sup>4</sup> Two manipulated either the patient's disease or his sexual orientation, but not both (Johnson & Baer, 1996; Poling et al., 1990), one manipulated only patient gender (Sundby, Morrow, DeVries, & Poling, 1996), and two used the ALP stories but not the measures (Berger & O'Brien, 1998; Vermette & Godin, 1996). Twelve studies meeting the inclusion criteria are listed in Table 2, which shows year of publication, number of participants, and the population from which participants were obtained. Six of the 12 were conducted by sending vignettes to prospective respondents, who then mailed back completed questionnaires; for these, the response rate is shown in a separate column of Table 2.

### Computing and Combining Effect Sizes (ESs)

**Overview.** For each study, an effect size (ES),  $r$ , was estimated for each reported SIS and PES item.<sup>5</sup> Each  $r$  was coded so that positive values indicate greater stigma toward PWAs. This process was repeated to estimate ESs for target's sexual orientation; here, positive values denote greater stigma toward the target person with a male partner.

#### *Conventions for estimating effect sizes (ESs).*

Where possible, ESs were calculated directly from reported  $F$ -ratios, means and SDs, or exact significance ( $p$ -) levels. I applied these estimation rules when such data were not available in print or from study authors: (1) Items reported only as "significant" were estimated using  $F$ -ratio imputation, with  $F$  set according to reported  $N$ s and  $p = .05$ . (2) Items reported explicitly as "not significant," or not reported among "signif-

<sup>4</sup>I was unable to obtain per-item means from these investigators.

<sup>5</sup>In the context of meta-analysis,  $r$  is the point-biserial correlation between a dummy-coded independent variable and a dependent variable (Rosenthal, 1994).

TABLE 3  
Social Interaction Scale (SIS) Disease Effects

SIS Item	N	Mean <i>r</i>	SD	95 % Confidence Limits		Fail-safe <i>k</i> <sup>a</sup>	Median <i>r</i>	IQR <sup>b</sup>	$\chi^2$ GOF <sup>c</sup>	df <sup>d</sup>	<i>p</i>	Imputed <i>r</i> <sup>e</sup>
				Lower	Upper							
Eat food he's prepared	2134	.445	.238	.314	.560	1579	.372	.198	96.94	11	.000	1
Let kids visit him	1868	.437	.238	.297	.559	1162	.354	.242	84.29	10	.000	1
Share an office	2134	.311	.199	.191	.422	831	.311	.307	83.13	11	.000	2
Continue friendship	1868	.291	.173	.180	.394	539	.267	.243	49.41	10	.000	2
Renew his lease	1868	.266	.201	.135	.388	426	.233	.306	58.82	10	.000	3
Attend a party w/him	2134	.223	.181	.110	.330	361	.191	.297	62.63	11	.000	4
Strike up conversation	2134	.169	.196	.045	.288	189	.059	.269	65.63	11	.000	5

<sup>a</sup>Number of nonsignificant studies needed to render the average effect size nonsignificant. <sup>b</sup>Interquartile range (middle 50%) of the set of *r*s for this measure. <sup>c</sup>Goodness-of-fit test for homogeneity of effect sizes. <sup>d</sup>Degrees of freedom vary because some studies omitted certain SIS items. <sup>e</sup>Number of studies reporting nonsignificant results for this item, requiring imputation of *r* = 0.

icant” items (implicitly nonsignificant), were estimated by imputing *r* = 0.<sup>6</sup>

In articles that failed to report *N* per cell, it was assumed that these were equal.

## RESULTS

### Analysis Strategy

Per-item meta-analyses were conducted with the goal of determining which respondent attitudes are affected by disease diagnosis (AIDS vs. Leukemia) and target's partner (male vs. female). For items where goodness-of-fit tests indicated significant heterogeneity of effect sizes among studies (set at *p* < .01, to compensate for the variance-reducing effects of imputed ESs), a follow-up analysis was performed contrasting effect sizes in studies whose authors interpreted their results as signifying highly negative attitudes toward persons with AIDS with those of studies whose authors asserted that attitudes were only a little different, if at all.

This analysis strategy rejects the suggestion that all measures be aggregated before performing the meta-analysis (Rosenthal, 1994), for reasons that already have been given. It necessarily results in many nonindependent tests, but the stepdown approach (follow up only those measures that exhibit significant heterogeneity) helps limit the sheer number of tests.

Results are presented in three subsections. The first two report the outcomes for disease diagnosis and target's partner, respectively. The third shows follow-up comparisons between “pessimist” and “critic” studies.

<sup>6</sup>Imputation of missing ESs is a controversial topic in meta-analysis (Bushman & Wang, 1996; Lipsey & Wilson, 2001). Imputation rule (2) is likely to underestimate both the population value of *r* and its variability. The latter, in turn, causes confidence intervals around mean *r*s to be too narrow and tests of homogeneity among sets of *r*s to be too sensitive. Because this study focuses on a specific population of ALP studies, these shortcomings seem tolerable.

### Effect of AIDS Versus Leukemia on SIS and PES Items

**Social Interaction Scale items.** Table 3 presents summary statistics for each SIS item (mean *r*s, SDs for the effect sizes, and 95% CIs based on the *t*-distribution; median *r*s and interquartile ranges), “fail-safe” values representing the number of unpublished contradictory studies needed to render the mean *r* nonsignificant, the results of overall, chi-square tests for homogeneity of effect sizes (Rosenthal, 1991) across the set of ALP studies, and the number (out of 12) studies for which *r* = 0 was imputed. Table rows are sorted in descending order of the magnitude of the mean *r*s per item. The items, “Attend a party where the patient prepared food” and “Allow children to visit him,” had the largest average differences between AIDS and Leukemia conditions. Their magnitude be illustrated with the heuristic, the Binomial Effect Size Display (BESD; Rosenthal & Rubin, 1982). An *r* of .445 indicates that about 72% of AIDS participants made higher-than-average food avoidance ratings, compared to only 28% of Leukemia participants.<sup>7</sup> Alternately, *r* can be transformed into Cohen's *d*. The mean *r* (.445) is equivalent to a *d* of 0.99; that is, avoidance ratings average .99 standard deviations greater for AIDS than for Leukemia. The food avoidance rating of an average AIDS participant would be expected to be 84 percentile points (the normal curve area associated with *d* = 0.99) above that of an average Leukemia participant. Corresponding values for “Allow children to visit him” ratings are 72% versus 28% (BESD), *d* = 0.97, and 83 percentile points. Using J. Cohen's (1988) proposed conventions for evaluating effect magnitudes, AIDS–Leukemia differences for these two items are large. Mean *r*s for the remaining items ranged from .169 to .311 (*d*s = .34 to .65). None included zero in its 95% confidence interval, and all SIS effect sizes exhibited significant between-study heterogeneity.

**Prejudicial Evaluation Scale items.** Summary information for nine PES items is in Table 4. The items, “The

<sup>7</sup>These values computed from the formula,  $100 \times (.500 \pm r/2)$ .

TABLE 4  
Prejudicial Evaluation Scale (PES) Disease Effects

PES Item	N	Mean r	SD	Lower CL	Upper CL	Fail-safe k	Median r	IQR	$\chi^2$ GoF	df	p	Imputed rs
Responsible	2134	.572	.215	.471	.657	2724	.561	.179	80.19	11	.000	0
Dangerous	2134	.527	.174	.442	.603	2344	.513	.148	55.91	11	.000	0
Quarantine	1868	.353	.261	.188	.500	733	.387	.363	93.02	10	.000	3
Deserves what happened	2134	.249	.191	.131	.361	469	.295	.364	63.07	11	.000	4
Deserves sympathy	2134	.151	.310	-.052	.341	NA	.000	.128	170.96	11	.000	7
Better off without him	1748	.123	.112	.043	.201	60	.061	.168	16.28	9	.061	5
Deserves to lose his job	1868	.119	.190	-.010	.244	NA	.000	.227	49.19	10	.000	5
Deserves to die	1748	.032	.064	-.013	.078	NA	.000	.000	6.03	9	.737	8
Deserves best medical care	2134	.028	.093	-.031	.087	NA	.000	.028	17.01	11	.108	8

patient is responsible for his illness” and “The patient is dangerous to others,” evinced very large mean *rs* (corresponding *ds* = 1.32 and 1.25, respectively). For remaining items, means ranged from .028 to .353 (*ds* of .06 to .76), indicating small-to-moderate disease effects. Four included zero within the 95% confidence intervals for the mean *r* (“The patient deserves sympathy and understanding,” “He deserves to lose his job,” “Deserves to die,” and “Deserves the best medical care”). For seven of nine PES items, between three and eight of the 12 studies provided too little data for direct calculation of ESs, forcing the use of imputed *rs* as mentioned earlier. Their confidence intervals and homogeneity tests should therefore be viewed cautiously.

### Effect of Target's Romantic Partner on SIS and PES Items

Of the seven partner mean *rs* for SIS (avoidance intentions) items, two were greater than zero: “Allow children to visit the patient” ( $r = .148$ ;  $d = .30$ ), and “Eat food the patient prepared” ( $r = .077$ ;  $d = .15$ ). Only the former evinced sufficient heterogeneity in between-study ESs to warrant follow up,  $\chi^2(10) = 33.25$ ,  $p < .001$ . Imputed ESs of  $r = 0$  were used for at least half the studies per item, so caution is again warranted.

Mean *rs* for two PES items, The patient is responsible for his illness ( $r = .121$ ;  $d = .24$ ) and The patient deserves what happened ( $r = .091$ ;  $d = .18$ ), were significantly greater than zero, and both were heterogeneous between studies,  $\chi^2(11) \geq 25.2$ ,  $ps < .01$ . Mean *rs* for the other PES item ranged from .000 to .032, and all included zero in their 95% CIs. For every item, the majority of ESs (at least 7 out of 12 studies) were imputed as  $r = 0$ .

### Contrasting Interpretations of Study Findings

Authors of five studies expressed such gloomy conclusions regarding the implications of their findings for AIDS-related stigma (I. Crawford et al., 1991; Kelly et al., 1988; Kelly et al., 1987a, 1987b; St. Lawrence, Kelly et al., 1990) that

authors of three other studies specifically criticized these pessimistic readings of the data (Fliszar & Clopton, 1995; McGrory et al., 1990; Strasser & Damrosch, 1992). If these different interpretations are data-based, then effect sizes in experiments conducted by “critics” should be smaller than in those conducted by “pessimists.”

Table 5 shows Z-tests (Rosenthal, 1991) comparing AIDS versus Leukemia mean effect sizes for qualifying items. Considering contrasts for SIS items first, the differences between mean *rs* for Pessimist authors versus Critics ranged from .25 (“Eat food the patient prepared”) to .39 (“Share an office with him”); the average difference in mean *rs* was .32. Participants in Pessimist-authored studies showed much larger avoidance intentions toward a target person with AIDS than one with Leukemia than was the case for Critic-authored studies.

TABLE 5  
Contrasts of Disease-Related Effect Sizes in Pessimist versus Critic Studies<sup>a</sup>

	<i>k</i> <sup>b</sup>	Pessimists Mean r (Median)	Critics Mean r (Median)	Z
SIS Item				
Share an office	8	.426 (.496)	.034 (.000)	6.50
Allow children to visit	7	.530 (.604)	.164 (.149)	5.45
Strike up conversation	8	.300 (.355)	-.043 (.000)	5.80
Continue friendship	7	.340 (.354)	.031 (.029)	4.06
Renew his lease	7	.352 (.391)	.072 (.066)	3.98
Attend a party w/him	8	.351 (.403)	.075 (.000)	5.32
Eat food he's prepared	8	.545 (.601)	.294 (.320)	5.73
PES Item				
Quarantine	7	.395 (.423)	.096 (.088)	4.41
Deserves sympathy	8	.274 (.122)	.009 (.000)	4.59
Deserves to lose job	7	.155 (.000)	-.092 (-.103)	3.09
Deserves what happened	8	.330 (.363)	.165 (.133)	2.70
Dangerous	8	.580 (.620)	.488 (.481)	2.63
Responsible	8	.610 (.661)	.537 (.487)	2.86

Note. Positive mean *rs* indicate harsher attitudes toward the patient in the AIDS condition than in the Leukemia condition. For all Zs above,  $p \leq .004$ .

<sup>a</sup>Five studies were classified as Pessimists and three as Critics (see text).

<sup>b</sup>When  $k = 7$ , one of the Critic studies did not include this item among its measures.

Disease effect sizes for PES items differed less, on average, between Pessimist and Critic studies, ranging from .07 (“The patient is responsible for his illness”) to .30 (“He should be quarantined”); the average difference between mean  $r$ s was .19. As indicated earlier in Table 2, some authors did not administer all PES items; contrasts could not be conducted for the items, “He deserves to die” and “The world would be better off without him.”

Turning to the effects of the target person’s partner, participants in Pessimist-authored studies manifested more avoidance toward the gay target person than did Critic participants for “Allow children to visit” (Means  $r$ s = .176 vs. 0, respectively,  $Z = 2.25, p = .012$ ). In Pessimist-authored studies, participants believed the target whose partner was male was more responsible for his disease than the target whose partner was female, whereas those in studies authored by Critics did not assign responsibility on the basis of partner gender (Mean  $r$ s = .18 vs. 0,  $Z = 2.88, p = .002$ ). The final PES item for which partner evinced differences in Pessimist- and Critic-authored studies was “He deserves what happened” (Mean  $r$ s = .18 vs. 0,  $Z = 2.53, p = .006$ ).

## DISCUSSION

### Which Attitudes Differ Between Conditions, and by How Much?

**Avoidant intentions.** Across the studies reviewed here, mean AIDS–Leukemia effect sizes were consistently greater than zero for SIS items. These were largest for participants’ willingness to eat food prepared by the target person and to allow their children to visit him. Partner-related effects were much smaller; for example, the disease-related proportion of variance in the item, “Allow children to visit him” (.437<sup>2</sup>), was almost nine times greater than for the partner effect (.148<sup>2</sup>)—and this was the largest partner  $r$  of any SIS item. In their national telephone survey, Herek and Capitanio (1998) found ratios of similar magnitude for their measure of avoidance of PWAs. The food avoidance item had the largest AIDS–Leukemia  $r$ ; 33 times greater than its corresponding partner  $r$ . The smallest ratio of Disease-to-Partner  $r$ s was 7.5 (“Strike up a conversation”), the largest was almost 140 (“Renew lease”), and the median was 18.4.

**Hostile attitudes.** Most PES statements tap a sympathy-hostility dimension of attitudes toward the target person. Statements of extreme antipathy, such as “He deserves to die” and “The world would be better off without him,” were not differentially endorsed in AIDS versus Leukemia conditions; nor were participants more likely to agree that a target person with Leukemia is more deserving of the best medical care or of sympathy than the PWA. Average disease-related effects were in the range, .03 to .15, for the aforementioned items. On the other hand, respondents thought a PWA de-

serves what happened and should lose his job more than a target person with Leukemia. Partner effects were nonsignificant for sympathy-hostility statements except “Deserves what happened”; for the latter, however, the partner effect size was about one eighth that of the corresponding disease effect. The median Disease-to-Partner ratio for these items was 13.8.

**Attributions.** The diagnosis of AIDS versus Leukemia strongly affected PES ratings of the patient’s responsibility for the disease and his dangerousness ( $r$ s = .572 and .527, respectively) and to a lesser extent the appropriateness of quarantine ( $r = .353$ ). Responsibility attributions also evinced a significant partner effect size ( $r = .121$ ) in the meta-analysis. Thus, knowing the target person’s romantic partner was male added to responsibility ratings, beyond information about his disease diagnosis. Still, the mean disease effect for Responsibility was 22 times larger than the partner effect, echoing Weiner’s findings (1995, ch. 4) that the sexual orientation of a PWA had a reliable but much smaller effect on judgments about the controllability of HIV infection than did a concrete description of how the infection was transmitted.

These results point to three main conclusions:

1. Participants in ALP studies wished to avoid a target person with AIDS across a broad range of situations, and most strongly when there was a risk of close personal contact or contact with their children.
2. Participants regarded PWAs as more responsible for their condition than persons with Leukemia, more dangerous to others, more suitable candidates for quarantine, and more deserving of what happened. Attitude statements reflecting extreme hostility evinced no effects.
3. The target person’s romantic partner added little to avoidant intentions, sympathy-hostility, or attribution measures, compared to the much stronger effects of disease diagnosis.

### Functions of Attitudes Toward Persons With AIDS

A parsimonious interpretation of the preceding conclusions is that attitudes toward PWAs primarily express participants’ instrumental contagion fears. With our greater knowledge about HIV transmission than was available in the early days of the epidemic, we recognize such fears were exaggerated. Arguably, the U.S. public has not faced a similar health threat since the polio scares of the 1950s, so the reaction to AIDS seemed unprecedented to commentators in the 1980s and early 1990s. The perspective provided by reactions to more recent disease outbreaks (e.g., Ebola, BSE, foot-and-mouth, SARS) makes it evident that the AIDS epidemic was not exceptional but rather resurrected a typical mode of response to health threats, including primitive beliefs about contagion

(Gladwell, 1995; Joffe & Haarhoff, 2002; Rozin, Markwith, & McCauley, 1994). Attitudes toward PWAs, as measured in ALP studies, served as symbolic expressions of values associated with gay men far less than might have been expected.

Partner ESs were probably underestimated in this review. A large proportion of ESs were imputed as zeroes, which could mask marginal differences in ratings between male versus female partner versions of ALP vignettes.<sup>8</sup> I reanalyzed the data after replacing all zero ESs with values that would have been obtained if every partner difference were positive and barely nonsignificant ( $p = .06$ ). For items measuring avoidant intentions (SIS), the average partner  $r$  increased from .069 to .099, and the median ratio of Disease-to-Partner  $r$ s decreased from 18.4 to 9.4. For five sympathy-hostility items from the PES, the average partner  $r$  when zero was imputed for nonsignificant results was .037; reestimation yielded  $r = .078$ . The median Disease-to-Partner ratio dropped from 13.8 to 3.8. Finally, for attributions about responsibility and dangerousness, reestimation caused Disease-to-Partner ratios to change respectively from 22 to 15 and from 275 to 52. Thus, imputation methods may account for some of the disparity in the relative effects of disease diagnosis and the patient's partner. However, even when partner effects are deliberately inflated, the disparity remains quite large.

Did preexisting stereotypes about PWAs mitigated the effect of the partner manipulation in ALP research? Bishop et al. (1991) argued that the association between AIDS and gay men is so entrenched that attitudes toward PWAs are inevitably confounded; hence, their creation of the fictitious Meyer-Zweig syndrome. However, the Disease-to-Partner ratios for SIS items in this review are quite similar to those noted earlier for Bishop et al., where Meyer-Zweig's contagiousness accounted for almost 15 times the variance in avoidant intentions as did its association with homosexuality. This is not what we would expect if the ALP paradigm artifactually weakened the symbolic functions of attitudes toward persons with AIDS.

Attitude functions are thought to differ between individuals. For some people, attitudes toward PWAs mostly serve instrumental purposes, whereas for others the value-expressive function is more salient. Evidence for the role of individual differences in attitudes toward PWAs comes from studies in which measures of homophobia or similar constructs are obtained (Pryor, Reeder, & Landau, 1999; Pryor et al., 1989), where it is typically found that individuals who admit prejudice also express more negative attitudes toward PWAs. One experiment in this meta-analysis (I. Crawford et al., 1991) used such a measure, but it was not analyzed to separate its effects from the disease and partner factors. Thus, the ALP has not been rigorously applied in an individual-differences framework.

The evidence reported in this review is consistent with the proposal by Crandall et al. (1997) that symbolic functions are less important for serious diseases. According to the "disease characteristics" model, the rejection experienced by PWAs has more to do with pragmatic avoidance of infection. That said, however, personal experiences of rejection are no less real when they flow more from instrumental than symbolic concerns.

### Reconciling Conflicting Interpretations About the Extent of Stigma

The meta-analytic comparison between Pessimist- and Critic-authored studies (Table 5) shows that Disease ESs differed for many PES items and for all SIS items. Partner effects for responsibility attributions and "Deserves what happened" were also greater in Pessimist studies, and participants expressed more reluctance to let children visit a patient with a male romantic partner. So, there were real differences in outcomes between studies that reached pessimistic conclusions and their critics about the magnitude of AIDS-related stigma.

Such variation probably has many sources. The body of ALP research consists largely of atheoretical demonstrations documenting attitudes of different subpopulations (medical students, nurses, psychologists, dentists, etc.). Subpopulation differences, therefore, may account for some of the disparate conclusions; for example, participants in two of the earliest ALP experiments were health professionals in a Deep South state (Kelly et al., 1988; Kelly et al., 1987a).<sup>9</sup> In addition, most Pessimist studies were published before the earliest of the Critic experiments. Various sources confirm that punitive, exclusionary attitudes toward PWAs decreased during the period represented by the studies sampled here (Herek, Capitanio, & Widaman, 2002). The unfolding history of the AIDS epidemic—its portrayal in the news, actions of governments, safe-sex campaigns—surely influenced public attitudes (Cook & Colby, 1992).

Besides these objective differences, it seems likely that conflicting interpretations have roots in misapplications of statistical reasoning. No studies reviewed here reported effect sizes in their results, so authors relied on heuristics such as significance levels and box scores to reach conclusions about the extent of stigma demonstrated in their findings. If several measures showed "highly significant" differences, then authors took these as indicating much stigmatization. However, if measures were correlated (as one would expect with SIS items, or between SIS items and PES items such as "Dangerous," "Should be quarantined," and "Deserves to lose job"), then multiple, significant differences may only reflect redundant item content. Conversely, when few measures evinced significant differences, authors might conclude

<sup>8</sup>An anonymous reviewer suggested this possibility.

<sup>9</sup>Confounding of sample characteristics and publication dates in this relatively small set of studies makes a mediation analysis impractical.

there was little evidence for stigmatization. These possibilities underscore the need for researchers to report ESs and consider them in interpreting findings (Wilkinson & Task Force on Statistical Inference, 1999).

Some of the most pessimistic conclusions do not bear up under scrutiny, particularly about the effects of sexual orientation. Kelly et al. (1987a) asserted that their medical student sample held “parallel ... negative attitudes” toward both PWAs and gay patients. However, these authors reported only three nonzero Partner effects for PES items: “Responsible for the illness,” “Dangerous to others,” and the problematical “Has a lot of pain and suffering”; these Partner effects were no greater than one sixth those of the corresponding Disease effect sizes. For all but two SIS items in this experiment, the Partner effect was no more than half as large as the Disease effect. Only in Kelly et al.’s (1988) study of nurses did Partner ESs on the PES approach the magnitude of Disease effects—and even here it was only for “Responsible for the illness” and “Deserves what happened.” Fewer SIS items evinced nonzero Partner effects than in the 1987 study of medical students, and their magnitude was one third to one tenth that of Disease effects on the same items.

### Responsibility and Lifestyle Risk Factors

Compared to persons with Leukemia, the target person with AIDS was regarded as much more responsible for his illness. Does this finding betoken unique stigmatization of PWAs? The design of most ALP research makes it impossible to know. Only one ALP experiment (Strasser & Damrosch, 1992) manipulated transmission modes for AIDS. In one condition, the PWA was described as hemophiliac, making it plausible that he contracted HIV from a blood transfusion; here, participants did not assign more responsibility to the PWA than to a person with Leukemia, but they did rate the PWA as more dangerous and expressed greater avoidance than in the Leukemia condition. Other, non-ALP research demonstrates that people distinguish levels of responsibility for HIV infection, and that such distinctions contribute to evaluative attitudes and helping intentions (Dooley, 1995; Forrester & Murphy, 1992; McBride, 1998; Menec & Perry, 1998; Peters, den Boer, Kok, & Schaalma, 1994; Weiner, 1995). Because ALP studies confound disease labels with perceived preventability, they may exaggerate the extent of AIDS-related stigma for attributions of responsibility and related constructs. Had the comparison disease not been Leukemia but rather lung cancer associated with smoking versus inadvertent radon exposure, the conclusions of early ALP research might have been different.

More generally, the concept of “responsibility” is troublesome not just for making sense of AIDS but for all of illness cognition (Brownell, 1991; DePalma, Madey, Greenberg, Wheeler, & Stillings, 1998; Lau, Bernard, & Hartman, 1989; Marks, 2002). Describing the polio epidemics in the United States during the early 20th century, Rogers (1992) writes,

“Defining and assigning responsibility is an essential element in making sense of an epidemic” (p. 3). Western (and especially American) medicine is highly individualistic, and beliefs about controllability of health outcomes are central to people’s everyday thinking about illness (Lau et al., 1989). Health problems identified as having behavioral roots can elicit attributions about individual negligence, indiscipline, or worse (R. Crawford, 1977); even when disease onset is not laid upon the individual, she or he is certainly obliged to act in ways that mitigate disease and restore health. In short, the rhetoric of health promotion and disease prevention presupposes high levels of individual responsibility.

From this standpoint, AIDS is a prototypic lifestyle disease. HIV may be transmitted through tainted transfusions, accidents, or *in utero*, but we associate transmission with voluntary acts. The prevalence of HIV in certain groups seemingly supports this characterization. Even our clichés support it: Schellenberg et al. (1995) observe that the category, “innocent AIDS victim,” shadows the default category, “patient whose own behavior placed him/her at risk.” Shortcomings of lifestyle explanations, however, rarely attract discussion. For example, why does only a subset of individuals whose behavior regularly exposes them to a given health risk actually develop diseases supposedly “caused” by those behaviors? Far from being unique, public attitudes toward persons with AIDS reflect a pervasive ideological orientation toward illness, including its contradictions (Tesh, 1988).

### Evaluating the AIDS–Leukemia Paradigm

The AIDS–Leukemia paradigm has been useful for documenting stigmatizing attitudes toward PWAs, but it may also have had the paradoxical effect of exacerbating the sense of isolation experienced by PWAs. For example, HIV-infected individuals attribute to the public more negative attitudes than are actually expressed by members of the public (Green, 1995). More generally, people with a physical stigma may overestimate its impact on how others respond to them (Kleck & Strenta, 1980; Strenta & Kleck, 1985); so may subjects who merely observe interactions between stigmatized individuals and other persons.

In common with most research on responses to PWAs, the ALP emphasized attitudes more than the actions of people whose attitudes it documented. There is a need for research that addresses overt behavior toward PWAs, such as the quality of care accorded by nurses toward the HIV-infected versus general medical patients (Siminoff, Erlen, & Sereika, 1998), landlords’ reports that advertised rental properties are available to prospective lessees who mention versus do not mention having received treatment for AIDS (Page, 1999), and the interpersonal distance and quality of nonverbal behavior displayed by interviewers who believe they are conversing with a PWA (Le Poire, 1994; Mooney, Cohn, & Swift, 1992). There are many constraints on both self-reports and behavioral expressions of attitudes (Crandall &

Eshleman, 2003). Claims about the uniqueness of AIDS-related attitudes should be tested using a broader range of measures and comparison conditions than afforded by the AIDS–Leukemia paradigm.

Finally, the public response to AIDS needs to be placed in the broader context of how human beings conceptualize and react to health threats they only partly understand. The truly difficult questions we need to ask are about the links between attitudes toward and treatment of the sick, historic continuities in reactions to epidemic diseases, and the consequences of viewing illness through the peculiar lens of an ideology that assigns individual responsibility for disease.

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