

The Utility of Understanding Adolescent Egocentrism in Designing Health Promotion Messages

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This article proposes a product of adolescent development, egocentrism, as an important factor in developing health promotion messages. The relations between egocentrism, an outgrowth of adolescent cognitive development, and several persuasive outcomes related to adolescent risk behavior are explored. Two measures of egocentrism—imaginary audience (IA) and personal fable (PF)—are described as they relate to adolescents' risk related behaviors and other variables. The relations between egocentrism, gender, and age are also discussed. Data are presented briefly to illustrate the theoretical argument. Given the importance of influencing adolescents' risk behaviors, egocentrism is important, as understanding PF and IA can influence design of health messages. Implications and directions for future research are discussed.

Perhaps in no other group is the efficacy of past health promotion messages more questionable than in the adolescent population. Adolescents' own risk-taking behavior is one of the greatest threats to their development (Levitt, Selman, & Richmond, 1991). Statistics for drunk driving, premarital sex without contraception, illegal drug use, and crime show that adolescents are far overrepresented (Arnett, 1989).

Enhancing knowledge and positive beliefs have been the primary goals of most health education programs (DiClemente, Zorn, & Temoshok, 1987; Koopman, Rotheram-Borus, Henderson, Bradley, & Hunter, 1990). Programs to prevent adolescent high-risk behavior (many state-mandated and classroom-based) generally assume that lack of knowledge about potential negative consequences is the best explanation for risk-taking behavior. Increases in education, however, may not necessarily reduce risk taking because increased knowledge can neither control nor predict behavior (Hochhauser, 1988).

Another wave of health education programs focused on developing social skills or context. For example, the much critiqued yet popular "Just Say No" program teaches general refusal skills, yet some evidence indicates this program may do the exact opposite of what it was intended to do (Kim, McLeod, & Shantizis, 1989). Even increased knowledge and skills will not ensure change, though knowledge and social skills may be prerequisites for mature decision making about risk-taking behavior (Levitt et al., 1991).

The antecedents of adolescent risk-taking behavior are much more complex than merely a lack of knowledge or social skills (Melton, 1988). Some adolescents are aware of risk for HIV infection, drug addiction, or pregnancy, yet choose not to modify their behavior (Rogers, 1975). Most adolescents have the capacity to perceive risk accurately but do not necessarily weigh these risks in their decision making (Levitt et al., 1991). The risk-taking behavior of adolescents may simply reflect cognitive-social immaturity (Melton, 1988). Previous health message development efforts have largely ignored developmental aspects of adolescent information processing.

Processes of normal adolescent development may lead to activities that place adolescents at risk (Sunenblick, 1988). Adolescents, more than other groups, may not feel at risk or vulnerable, and low perceived risk of a targeted behavior can reduce the effectiveness of persuasive messages (Rogers, 1975). Absence of perceived susceptibility is conceptually similar to the phenomenon of egocentrism in adolescence. What has not been thoroughly examined is how specific developmental processes affect adolescents' behavior. Understanding characteristics of adolescent development should lead to more effective targeting of messages for adolescents. There is clearly a need for more research examining audience characteristics and strategies for tailoring messages to audiences (Palmgreen et al., 1991). The purpose of this article is to explore the utility of a developmental characteristic, egocentrism, in designing adolescent health messages.

DEVELOPMENTAL VARIABLES AND HEALTH RISK MESSAGES

Egocentrism is most generally located in theories of cognitive development. Adolescents' level of cognitive development is important in determining how adolescents are taught about health issues (Orr & Ingersoll, 1991)—that is, it would be considered inappropriate to deliver a highly abstract message to an adolescent who is still in concrete operations and is not developmentally ready for abstract thought. There is less familiarity with the implications of egocentrism which occurs as a by-product of transition from one cognitive stage to the next. A developmental perspective has been acknowledged as a valuable way to understand how children process media messages (Ward, Wackman, & Wartella, 1977; Wartella, 1979), but it has not been explored with respect to adolescents or health messages in particular.

Egocentrism is, very generally, an overall focus on self, and it refers to a lack of differentiation in some area of subject-object interaction (Piaget, 1929, 1958). Each of the four stages in cognitive development described by Piaget has its own developmental tasks, and the egocentrism that arises at the beginning of each of the stages is directly related to these tasks. Elkind (1967, 1978) argued that egocentrism emerges at each of the transitions between stages of cognitive development. In the course of each cognitive stage, egocentrism is decreased as the child gains skill with new cognitive abilities. As the skills associated with a cognitive stage consolidate, the egocentrism associated with transition to that stage is diminished. With consolidation, the child is ready for the next stage and is again captured in a new form of egocentrism (Lapsley, Milstead, Quintana, Flannery, & Buss, 1986). For young adolescents, the egocentrism of interest occurs during the transition from concrete to formal operational thought.

Egocentrism in the Transition to Formal Operations

The dominant theoretical explanation of adolescent egocentrism was articulated by Elkind (1967, 1978). There has been one major alternative proposed to Elkind's explanation for the onset of adolescent egocentrism. Lapsley (1991, 1993) contended that ego development, not cognitive development, is the developmental phenomenon associated with egocentrism. In his reconceptualization, Lapsley and Murphy (1985) argued for a different underlying developmental mechanism, not for a difference in behavioral or attitudinal outcome of development during early adolescence. The importance of egocentrism as a significant aspect of development during adolescence is not altered by competing developmental explanations. Although we acknowledge Lapsley's position, we are inclined to accept the cognitive explanation of egocentrism in early adolescence.

Elkind (1967, 1978) proposed the emergence of two expressions of egocentrism in adolescence: (a) *imaginary audience (IA)*, where an inability to differentiate the object of thought leads to thinking that others are preoccupied with you because you are preoccupied with yourself; and (b) *personal fable (PF)*, where new ability to think about thoughts leads to a fascination with one's own thoughts that are surely different from the thoughts of others, and thus a belief in one's uniqueness and invulnerability.

IA and PF, theoretically, should emerge around age 11 or 12 with the beginning of the transition to formal operational thought. Depending on the rate of development, both should begin to decline about age 16 or 17, possibly as young as 15, with more experience with formal operational thought. This corresponds with the onset of experimentation with risk-taking behavior in adolescence. It is important to recognize that cognitive development does not occur independent of social interaction. At all ages, social experience facilitates cognitive development. Indeed, social interaction, when combined with growing cognitive ability eventually results in the demise of this form of developmental egocentrism.

EXPRESSIONS OF ADOLESCENT EGOCENTRISM

Research investigating PF and IA has taken different paths, each of which is considered in turn.

PF

PF is the tendency for adolescents to believe they are so unique that no one else can understand their problems or ever have their experiences. PF reflects adolescents' overdifferentiation of feelings: "This belief, of being special and not subject to the natural laws that pertain to others, is what I call the personal fable. It is a story we tell ourselves about ourselves, but it isn't true" (Elkind, 1978, p. 131). PF is characterized by the inability to imagine the self as the same as others, resulting in extreme individuation. As an outcome of PF ideation, individuals emphasize differences instead of similarities between themselves and others. For adolescents who experience high levels of PF, it is easy to ignore warnings in health promotion messages regardless of source because they feel unique, not at risk, or believe health promotion messages do not apply to them.

This separation or differentiation process is taken to an extreme in adolescence when feelings of uniqueness are so high that personal mortality is questioned. This impairs adolescents' judgment in critical situations because it provides a false sense of power (Blos, 1962) or invincibility. PF has explained reckless behavior such as adolescent drug use and failure to use contraceptives (Cvetkovich, Grote, Bjorseth, & Sarkissian, 1975; Irwin & Millstein, 1986). For example, PF would lead

adolescents to believe that the probability of getting pregnant is cumulative across incidents of intercourse and not an independent event (Cvetkovich et al., 1975).

The possible implications for these developmental phenomena on design of health messages are significant, especially during early and middle adolescence. For PF, adolescents may believe that they are incapable of contracting AIDS, becoming pregnant, or getting another pregnant and take no preventive measures based on this reasoning. For example, a girl may be sexually active and not use birth control (specifically condoms), believing that, because she has had intercourse infrequently, she cannot become pregnant or contract AIDS (Kreipe, 1985).

Most adolescents understand messages about contraceptive use and pregnancy risk and respond to questions about these topics correctly, yet many still engage in risk-taking behavior (Chilman, 1983; Cvetkovich et al., 1975; Herz, Goldberg, & Reis, 1984). One study (Gershenson & Handler, 1985) reported adolescents were knowledgeable about risks concerning pregnancy and contraceptive use, but still reported engaging in risky behavior. In this study of 22 African American (8th grade) inner city girls, participants were asked to rate risks for themselves and for friends' behavior in response to sexual pressure. Participants steadfastly maintained that what happens to others will not happen to them. Thus, some adolescents may understand their risk but not be motivated to change their behavior. Adolescents simply do not identify themselves with high-risk groups, though they have clearly been identified as such by health experts.

IA

Adolescents' IA rests on the false assumption that others are preoccupied with thoughts about them (Elkind, 1967). Adolescents tend to anticipate the reactions of others to themselves and believe that others are paying more attention to them than is actually the case (Enright, Shukla, & Lapsley, 1980). The IA, then, is a product of the adolescent's own self-absorbed cognitions or imagination than of reality.

IA, like PF, is a manifestation of overdifferentiation of self combined with underdifferentiation of object of thought. It occurs at the developmental stage at which adolescents are beginning to reflect on others' cognitions. Thus, it is an extension of preoccupation with self—that is, adolescents are preoccupied with thoughts about themselves, and they assume that others are thinking about them, too. IA is characterized by a worry about others, but it is egocentric because it is worry about others' thoughts about self.

IA is different from legitimate self-consciousness in the logical assumptions about what knowledge could be available to others. For example, concern over a spot on a shirt that could be seen by others is logical and therefore is a legitimate form of self-consciousness. A tear in underwear cannot be seen by others; embar-

rassment or self-consciousness over something that cannot be seen or known by others is a function of IA. Unfortunately, IA is often operationalized as self-consciousness in measurement instruments, particularly in Elkind and Bowen's (1979) IA Scale (IAS). All people occasionally have moments of heightened self-consciousness, but this is not generally characteristic of their perceptions, as it is in adolescence. The phenomenon of IA properly involves knowledge that is impossible for another to have (e.g., one's thoughts).

In relation to sexuality, the adolescent focuses on the reactions of others to her or his sexual behavior (perhaps condom use) and decisions are made about behavior based on what adolescents think others are thinking about them. In this regard, IA serves as a sort of peer pressure, but it is in the imagination of the adolescent rather than in the intentions of friends or others (Cvetkovich et al., 1975). Thus, IA has some explanatory power in describing how adolescents make decisions about risk behavior. Depending on whether peer pressure is perceived as encouragement to engage in cautious or risky behavior, IA is a potentially powerful source of perceived peer pressure and could be a positive or negative force for health promotion. The behaviors and expectations of the mentally constructed IA are likely to be consistent with the behaviors and expectations of friends or parents—that is, the relevant reality peer group. The importance of educating adolescents to expect health behavior from each other becomes apparent when considering the link between peer pressure and IA.

Gender Differences in Egocentrism

Adolescent egocentrism is expressed somewhat differently for girls and boys. Differences by gender in egocentrism are thought to function in opposite ways for IA and PF, with boys scoring higher on measures of PF (FitzGerald, 1991; Lapsley, FitzGerald, Rice, & Jackson, 1989) and girls scoring higher on IA measures (e.g., Elkind & Bowen, 1979; Gray & Hudson, 1984; Walters et al., 1991). Others have reported that girls score higher on both IA and PF measures (e.g., Enright et al., 1980; Hudson & Gray, 1986). Interestingly, other researchers have reported no gender differences for PF or IA (e.g., Adams & Jones, 1981; Lechner & Rosenthal, 1983; Peterson, 1982).

Most researchers have refrained from discussing why these gender differences exist, but theories of sex-role socialization and/or women's epistemologies, particularly those drawing on gender schema theory (Martin & Halverson, 1981, 1983), may be useful in explaining these differences. According to theories of women's epistemologies (Belenky, Clinchy, Goldberger, & Tarule, 1986; Gilligan, 1982)—that is, women's ways of seeking and organizing information about the world—women tend to see the world in terms of connections and webs of interpersonal relationships, and men tend to see the world in impersonal categories.

Although this explanation may be useful, it has not received consistent empirical support. Until greater clarity for the form and explanation of the effects of gender on egocentrism have been obtained, it seems prudent for gender to be considered in investigations of the relation between egocentrism and health messages.

Age and Grade Differences in Egocentrism

Egocentrism has generally been found to be inversely related to age (within adolescent age ranges), both for IA and PF (e.g., Enright et al., 1980; Hudson & Gray, 1986; Lapsley, Jackson, Rice, & Shadid, 1988). Most researchers have reported the height of egocentrism in 8th or 9th grade (e.g., Elkind & Bowen, 1979; Hauck, Martens, & Wetzel, 1986; Lapsley et al., 1986), though one study reported it as early as 6th grade (Enright et al., 1980). Variations in these findings may be explained by the use of truncated samples or small samples that may contain unknown biases regarding rate of development of participants. Still, these studies are markedly similar, showing that egocentrism generally declines with age after peaking around eighth or ninth grade. Certainly, among the majority of adolescents, neither PF nor IA are expected to disappear before the end of the teen years.

To illustrate the utility of considering adolescent egocentrism in designing health promotion messages, data will be presented briefly. The context of HIV prevention will be used because it provides a good example of the application of the theory of egocentrism, though conceptually egocentrism has utility in promoting a wide range of health behaviors, for example, dental hygiene or smoking cessation. Scores on measures of IA and PF will be presented in relation to a range of variables considered in current health communication models and research.

METHOD

Participants and Procedure

To enable cross-sectional comparisons across later adolescence, three grade levels were sampled ($N = 492$): 8th-grade students ($n = 230$), 11th- and 12th-grade students ($n = 106$), and first- and second-year college students ($n = 156$). The junior high students ranged in age from 13 to 15 ($M = 14.5$), high school from 17 to 19 ($M = 17.7$), and college from 19 to 21 ($M = 20.3$). The sample included 290 female (58%) and 202 male (42%) students, and participants were 80% White. Schools in and around a mid-sized Southeastern community were contacted to recruit junior high and high school participants. College students were recruited from introductory communication courses at a large university. Participants responded to an anonymous survey that took approximately 25 min. to complete. This was part of a larger

study examining ways to reduce adolescents' risk for contracting HIV (Greene, Rubin, & Hale, 1995).

Measurement Instruments

Participants completed measures assessing IA, PF, knowledge of AIDS, sexual behavior, demographic information, attitude toward avoiding risk behavior, subjective norms, perceived susceptibility, and behavioral intention. Table 1 presents the means, standard deviations, and ranges for all variables.

PF. It is very difficult to assess the true thoughts and feelings of people who are worried about how they appear to others (Hudson & Gray, 1986). For this reason, it was important to measure egocentrism indirectly to be able to focus on the illogic of adolescent PF and distinguish it from a personality trait like risk-taking behavior or sensation seeking. Although different theories of egocentrism have been developed, operationalization of PF has been markedly similar across theories. The PF subscale used in the present research was developed by Lapsley (D. K. Lapsley, personal communication, October 18, 1991). Lapsley's measure is a Likert instrument that yields three proposed subscales (omnipotence, uniqueness, and invulnerability) that seem to capture PF as Elkind discussed it. Lapsley's measure also predated his new conceptualization of egocentrism.

The New Personal Fable Scale (NPFS; D. K. Lapsley, personal communication, October 18, 1991) was used in this study. Alpha reliabilities for the subscales have been reported in a sample of 6th graders to range from .61 to .83 (D. K. Lapsley,

TABLE 1
Summary of Means and Standard Deviations for Variables

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
IA	2.37	.59	1.10-4.00
PF			
Omnipotence	3.13	.47	1.63-4.47
Uniqueness	3.41	.47	1.92-4.77
Invulnerability	2.89	.53	1.43-4.50
Behavioral intention	4.35	.57	1.00-5.00
Attitude	4.52	.54	1.80-5.00
Subjective norm	15.3	3.25	3.09-23.33
Knowledge	13.9	1.40	8.00-16.00
Perceived susceptibility	3.92	.76	1.00-5.00
Number of sexual partners	1.23	1.33	0-12
Age at intercourse	14.9	2.46	5-20
Age	16.8	2.42	13-21

Note. IA = imaginary audience, PF = personal fable.

personal communication, October 18, 1991); in a sample of 6th, 8th, 10th, and 12th graders to be .70 (omnipotence), .64 (uniqueness), and .69 (invulnerability; FitzGerald, 1991); and in a sample of 7th, 9th, and 11th graders to be .67 (omnipotence), .68 (uniqueness), and .37 (invulnerability; Milstead, in progress, according to D. K. Lapsley, personal communication, October 18, 1991). In this sample, alpha was estimated to be .81 (omnipotence), .65 (uniqueness), and .74 (invulnerability). The limited validity information was reported by Cole (1991), who obtained moderate correlations in the expected directions with measures of depression and parasuicidal ideation.

In response to NPFS items, participants are asked to rate statements using 5-point responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The instructions stated: "People believe different things about themselves. We would like you to read the questions below and rate how you feel about each of the questions." The items are listed in Table 2 by subscale. Items were summed and averaged to form three composite scales with a higher score indicating more PF.

IA. The IAS (Walters et al., 1991) was originally developed in response to psychometric problems with Elkind and Bowen's (1979) measure. Problems with the Elkind and Bowen measure included failure to find the proposed two factors of abiding and transient self, and the instrument appears to measure self-consciousness rather than IA (see Adams & Jones, 1981; Lapsley, 1991; Lapsley et al., 1989; Walters et al., 1991). Reliability reported for the Walters et al. scale was moderate, but increased over that reported by Elkind and Bowen. In addition, Walters et al. (in Study 2) used a multitrait-multimethod matrix to examine both convergent and discriminant validity of their measure of IA.

The IAS included 10 Likert items developed by Walters et al. (1991) with 4-point responses ranging from 4 (*always*) to 1 (*never*).¹ The 10-item scale was unidimensional, and the reliability was good ($\alpha = .83$). The items were summed and averaged to form a composite scale with a higher score indicating more IA.

¹The IA items were selected from Walters et al. (1991) on the basis of item loading on their first factor (.5 or above). The following 10 items were retained: "Feel uncomfortable because everyone is looking at you when something is wrong with the way you look"; "Feel nervous because you worry about whether people like you"; "Feel awful because you hair got soaked on the way to an important party"; "Feel embarrassed because your parents would not let you go to a party with older popular friends"; "Feel terribly embarrassed because of a big pimple on your nose"; "Feel embarrassed because when you arrived you found that you were dressed wrong for a party"; "Feel embarrassed because you think others are thinking about you because you do not have a date for an important party"; "Feel embarrassed at not being invited to a boy-girl party"; "Feel embarrassed because you think your friends feel sorry for you because you do not have enough money to pay a bill at a restaurant"; and "Wonder what other kids are thinking about you when you are a party where you don't know anyone."

TABLE 2
Items Measuring Personal Fable

Item

Uniqueness

3. No one has the same thoughts and feelings that I have.
6. I'm somehow different from everyone else.
9. I'm the only one that can understand me.
12. I believe that I am unique.
15. I think that deep down everybody is the same. (R)
18. I am just like everyone else. (R)
21. Everybody goes through the same things that I am going through. (R)
24. It's hard for me to tell if I am different from my friends. (R)
25. I often feel that I am insignificant and that I really don't matter. (R)
27. There isn't anything special about me. (R)
33. Nobody will ever really know what I am like.
34. No one sees the world the way that I do.
46. Sometimes I think that no one really understands me.

Invulnerability

2. Nothing seems to really bother me.
11. I don't believe in taking chances. (R)
14. I am a fragile person. (R)
17. I believe in knowing how something will turn out before I try it. (R)
20. I believe in taking risks.
29. There are times when I think that I'm indestructible.
31. I can get away with things that other people can't.
35. It is impossible for people to hurt my feelings.
39. My feelings are easily hurt. (R)
40. Special problems, like using drugs or becoming pregnant could never happen to me.
41. I enjoy taking risks.
42. It is easy to take risks because I never get hurt.
43. I don't take chances because I usually get in trouble. (R)
45. I am not afraid to do dangerous things.

Omnipotence

1. I believe I can do anything I set my mind to.
4. I think that I am more persuasive than my friends.
5. I believe that no one can stop me if I really want to do something.
7. It often seems like everything I do turns out great.
8. I don't think anything will stand in the way of my goals.
10. I believe that other people control my life. (R)
13. I think I can be anything I want to be.
16. I believe that everything I do is important.
19. I think I am a powerful person.
22. I think that I am better than my friends are at just about anything.
23. I tend to doubt myself. (R)
26. Other people don't influence me.
28. I often think that people listen to what I have to say. (R)
30. I honestly think I can do things no one else can.
32. Everyone knows that I am a leader.
36. People always do what I tell them to do.
37. People usually wait to hear my opinion before making a decision.
38. I usually let my friends decide what we are going to do. (R)
44. I am always in control.

Behavioral intention. This scale tapped participants' intention to behave in ways that could reduce risk of contracting AIDS through sexual contact and contained five Likert items. Each of the items was presented with responses ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). The items included the following: "I am likely to limit my number of sexual partners in the future"; "I am likely to ask my sexual partner about his/her past sexual experience"; "I am likely to be monogamous (have only one sexual partner) in the future"; "I am likely to use (have my partner use) condoms every time I have sex in the future"; and "I am likely to avoid sexual intercourse with people who may be at risk for AIDS." The scale was unidimensional, and the reliability was moderate ($\alpha = .69$) but improved within age group (college = .73; high school = .67; junior high = .77). These five items were summed and averaged to form a composite scale with a high score indicating more intention to reduce risk behaviors.

Attitude toward risk behavior. The measure of attitude toward avoiding risk behavior consisted of five Likert items that paralleled the measure of behavioral intention. The items included the following: "Avoiding sexual intercourse with people who may be at risk for AIDS is good"; "Limiting a person's number of sexual partners to a few is good"; "Being monogamous (having only one sexual partner) is good"; "Discussing a partner's past sexual experience is good"; and "Using (having a partner use) a condom every time someone has sex is good." The scale was unidimensional, and the reliability was moderate ($\alpha = .68$) but improved within age group (college = .74; high school = .68; junior high = .73). The five items were summed and averaged to form a composite scale with a high score indicating more positive attitudes toward risk-reducing behavior.

Knowledge of AIDS. The measure of knowledge of AIDS proposed in the present research was derived from previous research (e.g., DiClemente et al., 1987). Modifications from pretest results yielded an 11-item measure with responses of *true*, *false*, and *don't know*. Participants who responded *don't know* were scored as responding incorrectly to that item. The knowledge of AIDS items were examined by item difficulty and discrimination indices. The item difficulties ranged from .25 to .98 ($M = .73$). All of the discrimination scores were positive ($M = .30$) indicating that the high-knowledge group scored higher on each of the items than did the low-knowledge group. There were, however, three items that did not discriminate more than 10% between high- and low-knowledge groups and were deleted. The remaining eight items were summed to form a composite scale with a higher score indicating more accurate knowledge of AIDS.

Subjective norm. Subjective norm is calculated as a function of two components: (a) expectations of significant others and (b) motivation to comply (Ajzen

& Fishbein, 1980). Three targets for the measures of subjective norm were used in the present research: peers, parent(s), and a respected adult. For the respected adult, participants were asked to think about a specific adult they respected (other than parents).

The measure of expectations of significant others contained 15 five-point Likert items that paralleled the measures of behavioral intention and attitude (e.g., "My friends think that using (having partners use) a condom every time someone has sex is good"). These items were repeated, changing the target from friends to parent(s), then to a respected adult. These scales were unidimensional and were summed and averaged to form three composite scales (friends, parents, and respected adult) with higher scores indicating expectation of more positive attitudes toward avoiding risk behavior.

The measure of motivation to comply with significant others contained six Likert items (two items repeated for three target groups). The items included the following: "What my friends think is important to me"; "It is important for me to do what my friends think I should do." These items were repeated for parent(s) and a respected adult. These pairs of items were unidimensional and were summed and averaged to form three composite scales with higher scores indicating more motivation to comply with the target.

To create the scores for subjective norm, three product variables were created. This procedure is consistent with ones reported by Ajzen and Fishbein (1980). The score for motivation to comply for friends was multiplied by the score for expectations of friends, producing a possible range of 1 to 25. This procedure was repeated for parents and then for the respected adult scores. These three scores were then summed and averaged to form a single indicator with a higher score indicating more subjective norm. The reliability was moderate ($\alpha = .61$) but improved within age group (college = .66; high school = .67; junior high = .60).

Perceived susceptibility. Perceived susceptibility was measured by three Likert-type items utilized in previous research ("I worry that I might catch AIDS;" "AIDS is a big concern to me;" and "AIDS is not as big a problem as the media suggests"). The scale was unidimensional, and the reliability was moderate ($\alpha = .73$). The three items were summed and averaged to create a composite scale with a higher score indicating more concern about contracting HIV.

Sexual behavior. Two additional behavioral items were measured with free response questions. The first asked, "How old were you when you first had sexual intercourse?" and the second asked, "How many different sexual partners have you had in the past two years?" For these two items, the number was entered as the response.

RESULTS

Correlations between the egocentrism measures (PF and IA) and other variables are presented in Table 3 along with subscale reliabilities.

IA

Looking at Table 3, IA functioned as expected based on theory and past research—that is, it was significantly related only to gender, age, and subjective norm. Women ($M = 2.46$) scored significantly higher, $t(490) = -4.93, p < .001$, on IA than men ($M = 2.23$) consistent with others' findings (e.g., Lapsley et al., 1989; Pesce & Harding, 1986; Riley, Adams, & Nielsen, 1984; Walters et al., 1991). This would support the contention that different messages should be developed for girls and boys. Health promotion campaigns using a normative approach sensitive to adolescents' IA are likely to be especially effective for women.

IA was negatively correlated with age, as reported by Enright, Lapsley, and Shukla (1979), Enright et al. (1980), Hudson and Gray (1986), and Lapsley et al. (1988). Additionally, mean differences revealed that scores of junior high students ($M = 2.45, SD = .64$) were significantly higher, $F(2, 489) = 9.24, p < .001$, than scores of high school students ($M = 2.17, SD = .54$). The high score for junior high school students supported findings of numerous researchers (e.g., Elkind & Bowen, 1979; Gray & Hudson, 1984; Pesce & Harding, 1986). The peak of egocentrism has been reported to be around 8th or 9th grade, and this sample included eighth graders toward the end of the school year.

IA was positively correlated with the subjective norm variable such that people high in IA were more susceptible to norms. This relation was hypothesized but moderate in size ($r = .20$). As a follow up, IA was found to be more strongly correlated with motivation to comply ($r = .20$) than with expectations of others ($r = .11$). This relation is logical considering IA is worry about others, but especially worry about what others are thinking about oneself. This finding is significant because it provides evidence for increasing focus on norms in health messages directed toward early adolescents.

PF

The findings for PF were more complex than for IA, likely because of PF's multidimensional nature. According to these results, feelings of omnipotence may be a positive thing for adolescents as it was positively correlated with intention to avoid risk behavior and attitude toward risk behavior. The invulnerability measure,

TABLE 3
Correlation Matrix for Egocentrism Measures

Variable	IA	PF		
		Omnipotence	Uniqueness	Invulnerability
Behavioral intention	.03	.13*	-.01	-.15**
Attitude toward behavior	-.01	.18**	-.07	-.01
Subjective norm	.20**	.05	-.13*	-.25**
Knowledge of AIDS	-.02	.08	-.01	.05
Perceived susceptibility	.10	-.01	-.04	-.19**
Number of sexual partners	-.09	.13	.11	.18*
Age at first intercourse	.07	.10	-.04	-.08
Age	-.12*	.19**	.04	.08
Cronbach's alpha	.83	.81	.65	.74

Note. IA = imaginary audience, PF = personal fable.

* $p < .01$. ** $p < .001$.

however, had the most negative implications for adolescents maintaining healthy behaviors as it was negatively correlated with perceived susceptibility, subjective norm, and intention to avoid risk behaviors and positively correlated with number of past sexual partners. The uniqueness subscale was the least useful indicator, and the low reliability may indicate some measurement problems.

PF and gender. As predicted by theory and past research, there were significant differences in scores on PF by gender. Boys ($M = 3.06$) scored higher on the measure of invulnerability, $t(490) = 6.41$, $p < .001$, than girls ($M = 2.76$). Boys ($M = 3.19$) also scored higher on the measure of omnipotence, $t(490) = 2.43$, $p = .015$, than girls ($M = 3.08$). There were, however, no differences on the measure of uniqueness between boys ($M = 3.44$) and girls ($M = 3.40$). These gender differences support the findings reported by Lapsley et al. (1989). Boys have been reported to be more susceptible to peer influence, but only for antisocial behavior (Foster-Clark & Blyth, 1991). It appears that this type of belief in invulnerability and omnipotence is more associated with boys than girls, but these gender differences are still not well explained in any theoretical framework.

PF was related to other variables as well. Both uniqueness and invulnerability were negatively correlated with subjective norm, and this shows that PF reflects extreme individuation, an inability to see the self as the same as others. Adolescents high in uniqueness or invulnerability scored significantly lower on subjective norm. Omnipotence was positively correlated with attitude toward risk behavior, and this could be useful for message designers, much like omnipotence was positively correlated with behavioral intention. Invulnerability, however, was inversely correlated with both behavioral intention and perceived susceptibility, but positively

correlated with number of sexual partners, indicating that those adolescents high in invulnerability are especially at risk. Interestingly, none of the measures of PF were significantly correlated with knowledge, leading one to again question the utility of such a widely used variable in health message design.

PF and age. The relation between PF and age was not as expected. Omnipotence was correlated with age, but this relation was positive rather than negative. Thus, adolescents who were older reported significantly higher omnipotence. Invulnerability and uniqueness, however, were not significantly correlated with age. Several researchers have also reported no difference in PF by age or grade (e.g., Hudson & Gray, 1986; Lapsley et al., 1989). The peak of PF has been reported to be around the eighth or ninth grade (e.g., Elkind & Bowen, 1979; Lapsley et al., 1986; Pesce & Harding, 1986), with a steady decrease in PF scores.

The evidence related to PF (especially uniqueness) in this study is similar to research findings concerning the relation between fear or threat appeals and age. Specifically, meta-analytic evidence shows that fear or threat appeals are ineffective for younger audiences (Boster & Mongeau, 1984). Young people, because of feelings of uniqueness or invulnerability, believe that they are not susceptible to the negative consequences enumerated in the appeal (perhaps believing the message may be relevant for others but not for themselves). As audiences grow older, their perceived vulnerability to risks increases and fear or threat appeals become more effective (Boster & Mongeau, 1984). Thus, theories explaining PF are consistent with these fear or threat appeal findings.

Summary. IA and PF were both related to subjective norm with different signs as expected given the self and other orientations of the variables. Again, this difference points to how IA and PF, both manifestations of egocentrism, function quite differently. Adolescents who are high in PF do not focus on others, therefore they are not especially susceptible to external norms. These inverse relations are consistent with Elkind's description of differences in the constructs.

Limitations

The results of this study provide important, initial support for the relevance of considering adolescent egocentrism when developing health messages for adolescents. Results would have been more convincing if data had been collected from all ages, and even more convincing if data had been collected over time from the same sample. However, as those who study adolescents are well aware, access to this population for data collection purposes is difficult. Likewise, this study, like

others in the area of AIDS and risk behavior, suffers from the difficulty of obtaining measures of actual behavior, for example, of condom use. Still, these results provide an initial indication of the importance of this kind of developmental change on acceptance of health messages.

DISCUSSION

These results indicate clearly that egocentrism, both IA and PF, can be useful in predicting adolescents' intentions to behave in ways that would reduce their risk behavior. PF, especially invulnerability, is negatively associated with adolescents' perceived susceptibility, intention to avoid risk behaviors, and subjective norm. IA may, however, have a constructive effect on behavior, perhaps through subjective norm. That is, high IA is associated with increased inclination to comply with others that may affect behavior in a positive way, perhaps making adolescents more cautious. As such, IA might be a "helpful" form of egocentric distortion. However, those who are involved in groups where the peer norm promotes rather than discourages risky behavior may be at substantially greater risk. For example, adolescent girls who live in a culture where young adolescents routinely become pregnant and give birth understand that sexual activity is expected and early pregnancy is normal. If their mentally constructed audience is consistent with what they see and hear in their immediate environment, we should expect that they will perceive some pressure from peers to be sexually active and possibly to bear children whether or not there is any objective reality to such peer pressure.

One of the particular values of the present study is that it proposes a developmental component to explain risk behavior. Consideration of developmental factors could add significantly to message design for groups of adolescents. PF and IA are similar to some individual difference variables used previously in communication research (e.g., risk taking, sensation seeking, self-consciousness, and subjective norm). Use of individual difference variables has certain advantages, particularly in message selection at the interpersonal level where messages can be tailored for a single subject. What is markedly different about egocentrism is that it provides specific recommendations for message design by developmental group because it provides information about how adolescents think or reason about health risks. Previously, message design has incorporated a chronological variable (age). Although age may serve as a proxy for development, age provides no specific information about content or delivery of health messages.

There are also problems of definition that should be addressed in this area, and examination of egocentrism—PF in particular—may assist in this process. For example, Sheer and Cline (1994) stated that risk taking is synonymous with sensation seeking (Sheer, 1995, later contended that "risk taking is directly related to sensation seeking," p. 213), though others propose that sensation seeking (and

risk taking) is indicated by preference for arousing stimuli (Zuckerman, 1979). Further work to clarify these constructs will be useful because they have been used in models predicting risk behavior (e.g., Gillis, Meyer-Baulburg, & Exner, 1992). In one widely used measure of sensation seeking (Ferguson & Valenti, 1991; Ferguson, Valenti, & Melwani, 1992), some items are markedly similar to Lapsley's NPFS (especially Factor 1); they propose three factors, including adventurousness ("I enjoy taking risks"), impulsiveness ("I often get into a jam because I do things without thinking"), and rebelliousness ("I enjoy the company of real partiers"). Sensation seeking (and risk taking) indeed looks like PF and is likely related, but it is different because sensation seeking does not increase across all adolescents and diminish as does PF. The cognitive egocentrism variables explored here, if anything, have more profound explanatory power than more superficial attentional preferences that have been the focus of some health message research. The reason is that the cognitive processes underlie and are prior to stimulus seeking behaviors.

Certain message and language variables studied in the field of communication can also be explained according to this egocentrism model. For example, research on effects of age on fear appeals is consistent with theoretical models of egocentrism (Boster & Mongeau, 1984). It is also possible that the effects of message variables such as sensation value (e.g., Donohew, 1990; Palmgreen et al., 1991), immediacy (Weiner & Mehrebian, 1968), or language intensity (Bradac, Bowers, & Courtright, 1979) could be better understood by utilizing egocentric constructs. Greene et al. (1995), in fact, reported that it was possible to change the relation between attitude and PF using the message variable explicitness. Specifically, Greene and colleagues showed that, by manipulating the use of explicit language, it was possible to decrease the negative effect of PF on attitude toward risk behavior. A finding such as this provides considerable support for considering egocentrism when developing persuasive messages for adolescents.

Implications for Using Egocentrism in Health Promotion Message Design

An understanding of IA leads us to expect that an educational campaign that includes discussions with peers with some adult guidance will facilitate a decrease in IA ideation. As adolescents learn more about what their peers think and as they place their thoughts in the objective context of a discussion, they gain a better perspective on the ways in which they are like and different from others. Also, they accrue evidence that assures them that others are not always thinking about them. This is particularly important for gaining strength to behave in ways that appear to be different than the expectations of their friends.

Interventions that require the use of formal operational thought may be more useful than messages that are intended to provide answers, increase knowledge, or

scare adolescents. Engaging in discussions that promote practice of generating alternatives along with evaluating and choosing alternatives, imagining what is possible in the future, hypothesizing relations between behaviors and outcomes, and so forth, will facilitate independence of thought and strength of character that we expect to guide mature decision making of adults.

It might be possible to depict role plays that encourage adolescents to weigh alternatives. Chandler (1973) used a role-playing manipulation with delinquent adolescent boys (required them to make a video) and found it was possible to significantly reduce delinquent behavior by increasing social perspective taking. One approach similar to this would be to use media messages that present alternative solutions but allow the audience to internalize (engage in the thought process) by drawing their own conclusions rather than depicting a "right" response that could look to adolescents like forced compliance.

Specific health messages for junior high students (high in both IA and PF) must be focused on either reinforcing or changing normative beliefs. Adolescents who are in an environment where they perceive that peers, parents, and important adults support their risk avoidance should be reinforced. It is possible, however, that adolescents may perceive peer or parental attitudes that would not support risk avoidance behavior. Targeting of norms might also lead to campaigns specifically focused on parental and peer attitudes toward risk behaviors. The campaign "Friends Don't Let Friends Drive Drunk" is an example of an approach that encourages people to become involved in peers' risk decisions. This campaign, however, fails to reinforce people for encouraging peer risk reduction (e.g., a friend's choice not to drink or not to drink and drive). There are also campaigns that focus on parents talking with their kids about drugs or alcohol, for example, but these messages do not provide guidance for what content or approach might be successful. One such campaign asks "When's a good time to talk to your kids about drugs/alcohol?... How about now?", but it does not provide specific recommendations for how to engage adolescents in these difficult discussions.

Health messages directed toward high school students or college students (lower in egocentrism), in contrast, must target individual attitude change. These messages should target individuals' attitudes rather than norms; these adolescents are not vulnerable to norms in the same way as junior high students. It would also be important to consider perceived susceptibility in these messages to personalize the message, but, for these adolescents, risk-taking behavior is less of an illogic or thought problem. Messages could increase the cognitive awareness of risks and decrease the attractiveness of short-term benefits of risk-taking behavior (Melton, 1988). The salience of short-term rewards (e.g., pleasure and independence) must be weighed against the largely invisible and future oriented risks (Melton, 1988) for adolescents to change risk behavior.

Although current health messages, for example, AIDS prevention messages, are better, they are not enough. Current messages often are focused on providing information (increasing knowledge) rather than involving adolescents in decision-making processes. An example is the America Responds to AIDS message, created by the Centers for Disease Control, that begins by showing a young couple in bed; a condom then jumps out of the dresser drawer and skips across the room (past the cat), into the bed. The ad cautions that condoms are not automatic, but if you are sexually active you should use condoms correctly and consistently. Although the groundbreaking depiction of condoms on a national Public Service Announcement is an advancement in terms of content, it is not enough. It is necessary to go beyond this type of message to those that cause adolescents to question what they believe, what they think those around them believe, or both. Active involvement in thought processes about risky behaviors is an important step toward the ability to make a decision because it is judged to be the healthiest decision for oneself.

Future Research on Egocentrism

There is still much work needed in the area of egocentrism. There are fundamental measurement problems that must be resolved before theory can be advanced. This study is one step in that process. It is relatively simple to tap risk-taking behavioral tendency or self-consciousness but much more difficult to assess the kind of illogic that is critical for measurement of both PF and IA. There is promise in the measures proposed by Lapsley (D. K. Lapsley, personal communication, October 18, 1991) and Walters et al. (1991). It is also plausible that the PF and IA constructs might explain adolescents' responses to other message variables, quite possibly fear appeals, explicit conclusions, or sensation value.

There has been little research available on developmental trends in risk perception. The role of egocentrism in adolescents' processing of health messages has not been utilized by previous researchers. Communication scholars have additional information based on egocentrism that would be useful in shaping messages to change risk behavior. If there is an important message such as protection from risk behavior, it is useful to know how adolescents think about this behavior. This thought process is likely related to where adolescents are developmentally. The construct of egocentrism, both IA and PF, can help explain why some types of health messages directed toward adolescents have been ineffective. Focusing on a recipient's sophistication of processing and understanding information is very different from furnishing information and facts, as is found in most current health campaigns. It will be necessary to focus on the process of decision making for risk-prevention programs to succeed (Melton, 1988). It will be fruitful to continue

to explore the utility of egocentrism as a construct in developing health promotion messages directed toward adolescents.

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