

The Adolescent Invulnerability Scale: Factor Structure and Construct Validity

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Abstract

This paper reports on the first examination of the factor structure and construct validity of the Adolescent Invulnerability Scale in a sample of young adolescents. Previous research (Duggan, Lapsley & Norman, 2000) using samples of older adolescents showed that the AIS consisted of two factors, “danger invulnerability” and “psychological invulnerability.” These factors also demonstrated adequate internal consistency and construct validity. In the present study we administered the AIS, along with indices of risk behaviors, use of substances, depressive symptomatology and positive adjustment, to 238 young adolescents ($M_{\text{age}} = 13.19$ years). Principal components factor analysis revealed three factors: general invulnerability, danger invulnerability, and interpersonal invulnerability. Each factor, and the total AIS, demonstrated strong internal consistency. The total AIS score, and each subscale, was positively correlated with delinquent risk behaviors. However, general and interpersonal invulnerability also counterindicated depressive symptoms, and each dimension of felt invulnerability was positively correlated with mastery and coping. Hence invulnerability plays a dual role in adolescent development. The appearance of third “interpersonal” factor in early adolescence is attributed to the relatively greater peer focus evident among younger than older adolescents.

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Introduction

Two theoretical traditions suggest that adolescence is marked by a heightened sense of felt invulnerability. The psychodynamic tradition holds that invulnerability is adopted as a defensive posture during separation-individuation (Blos, 1962). Similarly, the adolescent egocentrism theory suggests that teenagers entertain a personal fable of invulnerability as a result of cognitive egocentrism that attends the emergence of formal operations (Elkind, 1967). Both traditions assert that this “fable” impairs the judgement of adolescents in critical situations. Indeed, it is widely believed that teenagers engage in more risk behaviors, and take more risks, just because of their heightened sense of invulnerability (Arnett, 1992), although this view has also been contested (Furby & Beyth-Marom, 1992; Jacobs-Quadrel et al., 1993). Surprisingly, however, the widely assumed link between adolescent felt invulnerability and risk behavior has never been empirically evaluated, probably because there are no measurement options currently available for assessing the felt invulnerability of adolescents. To address this limitation we have conducted a series of studies in order to develop an Adolescent Invulnerability Scale (AIS)

The development of the AIS followed standard scale development procedures. In Phase I an item pool of 56 items was generated by a team of seven late adolescent volunteers. This list was edited for duplicates and grammatical consistency, yielding a final list of 25 candidate items. In Phase II, this list was evaluated by four expert raters, who included a general expert on adolescent development, two nationally visible experts on allied constructs (sensation-seeking and narcissism), and a pioneer in the assessment of personal fable ideation. On the basis of expert commentary three invulnerability items were deleted and 12 were re-written, yielding a 22-item scale.

In the third phase of scale development (Duggan, Lapsley & Norman, 2000) the revised AIS was administered to a sample of 228 late adolescents ($M_{\text{age}} = 21.85$) in order to determine a parsimonious factor structure, and to derive estimates of internal consistency and construct validity. Exploratory factor analysis (extracting principal components) revealed two factors. One factor ($= .85$, 12 items) appeared to represent felt invulnerability to external danger, and was therefore labeled “danger invulnerability.” The second factor ($= .79$, 9 items) appeared to represent an invulnerability to psychological distress, and was therefore labeled

“psychological invulnerability.” The total AIS scale also demonstrated strong internal consistency ($\alpha = .87$). Duggan et al. (2000) showed, too, that the total AIS score was significantly and positively correlated with risk behaviors ($r = .41$), as were the “danger invulnerability” ($r = .43$) and “psychological invulnerability” ($r = .26$) sub-scales. This supports, of course, the hypothesized relationship between felt invulnerability and the tendency to engage in risk behaviors. Moreover, males reported more feelings of invulnerability than did females. The scale items and factor loadings are reported in Table 1.

This first study showed, then, encouraging preliminary support for the psychometric integrity and construct validity of the Adolescent Invulnerability Scale. The fourth phase of research was an attempt to explore the measurement properties of the AIS in a sample of young adolescents. We also wanted to determine whether felt invulnerability would also predict risk behaviors in this sample, including use of substances, and whether felt invulnerability was associated with internalizing symptoms and indices of positive adjustment. This latter question was motivated by theoretical considerations. Lapsley (1993) has argued that “personal fable” ideation might play a dual role in adolescent development. Although such ideation might dispose the adolescent to engage in grandiose risk-behaviors, it might also fortify the adolescent against depressive affect, and even be associated with the sort of “positive illusions” that social psychologists have associated with positive mental health (e.g., Taylor & Brown, 1988).

Method

Participants. Participants included 248 early adolescents (117 males, 131 females) from a Midwestern suburban middle school. The mean age was 13.19 years ($SD = .82$).

Instruments. Participants responded to the Adolescent Invulnerability Scale. The AIS requires participants to rate 21 items along a 5-step Likert continuum (*strongly disagree* to *strongly agree*). We also utilized a measure developed by Rowe (1985) to assess risk behaviors and the use of substances. Participants were asked to rate the extent to which they engaged in a list of 20 risk behaviors, including fast driving, stealing, fighting and vandalism, along a 4-step continuum (no/never, one time/rarely, several times, often). In spite of the heterogeneity of content

the various delinquency items can be considered a single factor (Flannery, Rowe & Gulley, 1993; Rowe & Flannery, 1994). A total score is summed across the 20 items, with high scores representing a greater proclivity for delinquent behavior. This measure showed strong internal consistency, $\alpha = .93$. In addition to these items participants were also asked to indicate their lifetime usage and frequency of alcohol, drugs (inhalants, marijuana, hallucinogens, cocaine/crack, amphetamines) and tobacco. Finally, we administered the “mastery and coping” ($\alpha = .71$) and “superior adjustment” ($\alpha = .70$) subscale from the Self-Image Questionnaire for Young Adolescents. Each scale consists of 10 items which participants must evaluate along a six-step Likert continuum (*describes me very well* to *does not describe me at all*). Items were keyed so that higher scores indicate greater mastery and coping and superior adjustment.

Results

A principal components factor analysis was performed on the AIS. The scree criterion suggested two factors, but three factors were indicated by the parallel analysis method (Lautenschlager, 1989). A second factor analysis, with Varimax rotation, extracted three factors, accounting for 46% of the variance. The first factor ($\alpha = .83$, 9 items) appeared to represent “general invulnerability” to psychological distress. The second factor ($\alpha = .76$, 6 items) appeared to represent “danger invulnerability.” The third factor ($\alpha = .72$, 6 items) appeared to represent an invulnerability to social disappointment or threat, and was labeled “interpersonal invulnerability.” The total scale also showed strong internal consistency ($\alpha = .86$). Item factor loadings are reported in Table 2.

Table 3 reports the correlation among the AIS subscales and indices of risk behaviors, depressive symptomatology and positive adjustment. As might be expected, the total AIS score is positively correlated with risk behaviors ($r = .33$) and with the lifetime ($r = .18$) and frequency ($r = .17$) of substance use. But adolescent invulnerability is also positively correlated with mastery and coping ($r = .21$). Table 3 also suggests that it is “danger invulnerability” that is most associated with substance use, while delinquent risk behaviors are more associated with “general” and “interpersonal invulnerability.” Note, too, that all three subscales of the AIS are all positively correlated with mastery and coping to about the same degree. Finally, two aspects of adolescent invulnerability,

general and interpersonal, are negatively correlated with depressive affect, particularly interpersonal invulnerability ($r = -.22$).

Discussion

The present study reports encouraging new evidence for the psychometric integrity and construct validity of the Adolescent Invulnerability Scale. As in previous research (Duggan et al., 2000), the AIS demonstrated strong internal consistency. Moreover, the AIA was significantly correlated with risk behaviors, but also with certain aspects of positive adjustment as well, a pattern that also replicates findings reported by Duggan et al (2000).

An examination of the factor structure of the AIS revealed an interesting variation from previous research. In the Duggan et al. (2000) study, for example, the AIS was found to be composed of two factors, “danger” and “psychological” invulnerability. In the present study, however, three factors were evident. One factor was also denoted “danger” invulnerability, as in the previous study. But here a more “general” invulnerability was evident, denoting a pervasive belief in one’s inability to be hurt, injured, bothered or harmed, either for physical (“I’m unlikely to be injured in an accident;”) or psychological (“My feelings don’t get hurt”) reasons. The adolescent generally believes, too, that “the problems that happen to people my age are unlikely to happen to me.” In addition to danger and general invulnerability factors, the present study also revealed a third factor, denoted as “interpersonal invulnerability.” This factor reflected a belief that gossip, the opinions of others, and what “other people say” has no effect and cannot hurt the self. This factor was not evident in previous studies of older adolescents, and its presence here, among middle school youngsters, perhaps reflects the greater peer focus of younger teens relative to older adolescents.

The three invulnerability factors showed an interesting, differential pattern of correlations with risk behaviors, depression and positive adjustment. For example, lifetime usage of substances, and frequency of substance use, is significantly and positively correlated with “danger” invulnerability, but is uncorrelated with either “general” invulnerability or

“interpersonal” invulnerability. Moreover, delinquent risk behaviors is more strongly correlated with “general” invulnerability than with danger or interpersonal invulnerability, although the latter two dimensions also modestly predict the tendency to engage in risk behaviors. Finally, interpersonal invulnerability appears to counterindicate depressive affect more than the other invulnerability factors.

Hence this study shows that adolescent felt invulnerability is not a unidimensional construct. The three dimensions of invulnerability have different implications for understanding adolescent behavior and adjustment:

- Danger invulnerability is more uniformly predictive of drinking, drug use and smoking.
- General invulnerability is more strongly predictive of delinquent risk behaviors.
- Interpersonal invulnerability more strongly counterindicates depressive affect.

Moreover, the present data also shows that adolescent invulnerability, in all of its forms, is positively associated with mastery and coping, as measured by the Self-Image Questionnaire for Young Adolescents (but not to its “superior adjustment” scale). Hence, not only is adolescent invulnerability differentially related to problematic aspects of adolescent development (risk behaviors, drinking, drugs and smoking, depressive affect), it also appears to be related to positive aspects of development as well. This supports the claim that certain kinds of “personal fables” have a differentiated relationship to mental health and adjustment in adolescence. It has been argued, for example, that personal fables of felt invulnerability and omnipotence are part of family of “positive illusions” that have been found to be associated with positive mental health.

In sum, the present study shows that the AIS is a promising measure of adolescent felt invulnerability. It shows strong evidence of internal consistency and, within the limits of the measures used to date, evidence of construct validity as well. The present study shows, too, that felt invulnerability is not a unidimensional variable with uniform implications for mental health. It would be inappropriate, for example, to conclude that adolescent invulnerability is invariably a menace to the adjustment of teenagers. Indeed, the present study shows that the various

dimensions of invulnerability either counterindicate depression or else predict an orientation towards mastery and coping. Nor should one conclude, on the basis of this study, that teenagers report more or greater feelings of invulnerability than do older adolescents or adults. Future research will need to examine the construct validity of the AIS casting a wider nomological net of measures and by charting possible developmental variations in invulnerability from early to late adolescence.

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Table 1

Adolescent Invulnerability Scale: Factor Loadings and Scale Reliability Reported by Duggan, Lapsley and Norman (2000)

Scale Items	Danger Invulnerability $\alpha = .85$	Psychological Invulnerability $\alpha = .79$
Safety rules to not apply to me.	.732	.104
Taking safety precautions is far more important for other people than it is for me.	.699	.099
I'm unlikely to get hurt if I did a dangerous thing.	.698	.037
Driving very fast wouldn't be very dangerous if I were driving	.676	.086
Nothing can harm me.	.658	.190
I could probably drink and drive without getting into an accident	.592	-.008
There are times when I think I am indestructible	.587	.080
Special problems, like getting an illness or disease, are not likely to happen to me.	.568	.216
The problems that happen to people my age are unlikely to happen to me.	.564	.264
It is not necessary for me to worry about being injured or harmed.	.548	.307
I'm unlikely to be injured in an accident.	.528	.186
Nothing bad will happen to me when I go to a place by myself.	.457	.331
The opinions of other people just don't bother me.	.147	.773
What people say about me has no effect on me at all.	.103	.748
Nothing seems to bother me.	.205	.722
My feelings don't get hurt.	.257	.705
It is just impossible for people to hurt my feelings.	.019	.610
I feel very badly when I know there is gossip about me (R)	-.035	.478
I'm a fragile person (R)	.188	.477
I don't get hurt.	.448	.449
My feelings are easily hurt (R)	.091	.413

Table 2
Rotated Component Matrix: Adolescent Invulnerability Scale

Scale Item	Factors		
	1	2	3
I don't get hurt	.758	.005	.175
I'm unlikely to be injured in an accident	.705	.000	-.194
Nothing bad will happen to me when I go to a place by myself	.621	.206	.131
Nothing can harm me.	.613	.367	.192
Nothing seems to bother me.	.604	.002	.373
My feelings don't get hurt.	.595	.004	.464
It is not necessary for me to worry about being injured or harmed	.593	.340	.132
The problems that happen to people my age are unlikely to happen to me.	.578	.182	.003
There are times when I think I am indestructible.	.446	.207	.133
Safety rules do not apply to me.	.003	.712	.208
I could probably drink and drive without getting into an accident	.115	.708	-.002
Driving very fast wouldn't be dangerous if I were driving.	.006	.677	.003
Taking safety precautions is far more important for other people than it is for me.	.168	.652	0
I'm unlikely to get hurt if I did a dangerous thing.	.243	.544	.149
Special problems, like getting an illness or disease, are not likely to happen to me	.418	.437	.001
My feelings are easily hurt (R)	.007	.008	.719
I'm a fragile person (R)	.002	.005	.648
What people say about me has no effect at all.	.324	.005	.627
I feel badly when I know there is gossip about me (R)	-.005	.001	.611
The opinions of other people just don't bother me.	.383	.003	.496
It is just impossible for people to hurt my feelings.	.321	.315	.452

Adolescent Invulnerability Scale (21 items): $\alpha = .86$
 Factor 1: General Invulnerability (9 items): $\alpha = .83$
 Factor 2: Danger Invulnerability (6 items): $\alpha = .74$
 Factor 3: Interpersonal Invulnerability (6 items): $\alpha = .72$

Table 3
 Correlation Among Indices of Invulnerability, Risk Behaviors, Depression and Positive Adjustment

Other Measures	Total AIS Scale	AIS Subscales		
	Adolescent Invulnerability Scale	General	Danger	Interpersonal
Depression	.12	-.13*	.07	-.22**
Risk Behaviors	.33**	.29**	.16*	.20**
Lifetime Substance Use	.18**	.11	.36**	.06
Frequency Substance Use	.17**	.10	.28**	.03
Mastery and Coping	.21**	.23**	.28**	.24**
Superior Adjustment	.01	-.01	-.06	.08

* p < .05

**p < .01