Correlates of Resilience in Adolescents and Adults

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Abstract: We sought to examine several positive and negative correlates of resilience (i.e., affect, gratitude, perceived stress, subjective happiness, mastery, and emotional reactivity) in a community sample of adolescents and adults and to determine whether these correlates of resilience differed between the groups. Seventy-nine community residents of an Upper Midwest community (48 adolescents aged 12-18 years and 31 adults aged 34-84 years) completed 8 validated self-report questionnaires, totaling 96 items, over an 8-week period. Bivariate analyses showed several moderate to large associations of the variables with resilience and several appeared to show differences in the magnitude of the associations by age group. Hierarchical regression models examining all psychosocial predictors of resilience showed that only positive affect and negative affect predicted unique variance in resilience. In addition, evaluation of hierarchical models showed evidence of interaction between age and positive affect, gratitude, and subjective happiness in predicting resilience. Associations between gratitude, positive affect, and happiness with resilience were consistently stronger for adults as compared to adolescents. These data provide preliminary evidence on potential differences to consider regarding psychosocial correlates of resilience in adolescents and adults and have implications for intervention and resilience promotion.

Keywords: Adults, affect, adolescents, emotional stress, happiness, psychological resilience.

Resilience is defined as a "dynamic process wherein individuals display positive adaptation despite experiences of significant adversity or trauma" [1]. In essence, it is the ability of a person to adapt to stress. Given the rising toll that high levels of stress take on our communities [2], successful adaptation to stress is critical to preserving and enhancing psychological well-being. Fostering resilience offers an attractive option for cultivating adaptability because it can be taught and encouraged to decrease stress and enhance quality of life.

Factors that may contribute to resilience have been studied and several psychosocial variables have showed correlations with resilience. Examples of these variables include optimism, humor, mental flexibility, self-efficacy, and social support [3, 4]. These correlates of resilience have never been concurrently examined in adolescents and adults, allowing for a direct comparison.

The aims of the present study are 2-fold. First, we sought to examine select psychosocial correlates of resilience (affect, gratitude, perceived stress, subjective happiness, mastery, and emotional reactivity) in a community sample of adolescents and adults. We expected that positive affect, gratitude, subjective happiness, and mastery would be associated positively with resilience and that negative affect, perceived stress, and emotional reactivity would be associated negatively. Second, we aimed to determine whether the psychosocial correlates of resilience differed in adolescents versus adults.

METHOD

Participants

Participants consisted of 79 residents of an Upper Midwest community: 48 adolescents (age, 15 [12-18] years) and 31 adults (age, 48 [34-84] years) who were invited to participate in a survey.

Measures

Connor Davidson Resilience Scale

The Connor Davidson Resilience Scale (CD-RISC) is a 25-item measure of the extent to which an individual is able to thrive under stressful circumstances. Example items include "Able to adapt to change" and "I like challenges." Respondents are asked to indicate how they have felt over the past month and respond on a Likert-type scale of 0 ("Not true at all") to 4 ("True nearly all of the time"). Scores can range from 0 to 100, with higher scores indicating greater resilience. The CD-RISC has been shown to be a reliable and valid measure of resilience [5].

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Positive Affect–Negative Affect Schedule

The Positive Affect–Negative Affect Schedule (PANAS) is a 20-item adjective rating measure of positive and negative affective experiences. Positive affect is assessed with ratings of adjectives such as *enthusiastic*, *interested*, and *excited*; negative affect is assessed with ratings of such adjectives as *scared*, *afraid*, and *hostile*. Respondents are asked to indicate how they have felt over the past month and respond on a Likert-type scale of 1 ("Very slightly or not at all") to 5 ("Extremely"). Scores range from 20 to 100, with higher scores indicating higher levels of positive and negative affect. The PANAS has been shown to be a reliable and valid measure of positive and negative affect [6].

Gratitude Questionnaire

The Gratitude Questionnaire–6-Item Form (GQ-6) contains 6 items that index the extent to which a person feels thankfulness or appreciation for positive things in his or her life. Example items include "I have so much in life to be thankful for" and "I am grateful to a wide variety of people." Respondents are asked to indicate the extent to which they agree or disagree, using ratings on a Likert scale of 1 ("Strongly disagree") to 7 ("Strongly agree"). Scores range from 6 to 42, with higher scores indicating greater gratitude. The GQ-6 has been shown to be a reliable and valid measure of gratitude [7].

Perceived Stress Scale

The Perceived Stress Scale (PSS) is a 10-item scale that measures a person's perceptions of loss of control and unpredictability in his or her life. Example items include "How often have you been upset because of something that happened unexpectedly?" and "How often have you felt that you were unable to control the important things in your life?" Respondents are asked to indicate how often they have felt this way in the past month on a Likert-type scale of 0 ("Never") to 4 ("Very often"). Scores range from 0 to 40; higher scores indicate greater stress. The PSS is a proven reliable, valid measure of perceived stress [8, 9].

Subjective Happiness Scale

The Subjective Happiness Scale (SHS) contains 4 items that assesses a respondent's global subjective happiness. For example, one item asks respondents to rate how they generally consider themselves, using response options from 1 ("Not a very happy person") to 7 ("A very happy person"). A second example item asks, "Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?" Response options for this second item are 1 ("Not at all") to 7 ("A great deal"). Scores range from 4 to 28, with higher scores indicating higher levels of subjective happiness. The SHS has been proven a reliable and valid measure of subjective happiness [10].

The Personal Mastery Scale

The Personal Mastery Scale (PMS) is a 7-item scale that assesses a person's perception of control over the events of his or her life. Example items include "What happens to me in the future mostly depends on me" and "I can do just about anything I really set my mind to do." Respondents are asked to indicate the extent to which they agree or disagree, using a Likert scale of 1 ("Strongly disagree") to 4 ("Strongly agree"). Scores range from 7 to 28; higher scores indicate greater mastery. The PMS has been shown to be a reliable and valid measure of the respondent's mastery [11].

Emotional Reactivity Scale

The Emotional Reactivity Scale (ERS) has 21 items that assesses an individual's tendency to react emotionally to various situations, to have strong emotional reactions, and to experience prolonged emotional responses. Example items include "I tend to get very emotional very easily" and "I experience emotions very strongly." Respondents are asked to indicate the extent to which they agree or disagree on a Likert-type scale of 0 ("Not at all like me") to 4 ("Completely like me"). Scores range from 0 to 84, with higher scores indicating greater emotional reactivity. The ERS has been shown to be a reliable and valid measure [12].

Procedures

Participants were recruited through a local school and through door-to-door solicitation in community neighborhoods. All participants were required to provide written consent before participating. Adolescents younger than 18 years were required to also obtain parental consent. Participants received a battery of 8 validated self-report questionnaires totaling 96 items. Data were collected over 8 weeks.

Analysis

Pearson correlations were performed to determine relationships between resilience and the hypothesized

psychological and social factors. The analysis was conducted first for the group as a whole (aim 1) and then for 2 groups split by age (aim 2). Hierarchical multiple regression analyses were conducted that included 2 steps: 1) all psychosocial variables were entered simultaneously to determine the unique effects of each variable and 2) age × psychosocial predictor product terms were used to determine whether age moderated the association between any psychosocial correlate and resilience and, hence, whether any of the bivariate associations between a psychosocial variable and resilience were significantly different in adolescents versus adults.

RESULTS

The mean, standard deviation, and α value for the full sample and for adolescents and adults grouped separately are shown in Tables **1** and **2**. Examination of correlations between resilience and psychosocial variables for the full sample revealed that negative affect (r= –0.36; P<.01), positive affect (r=0.55; P<.01), gratitude (r=0.41; P<.01), perceived stress (r= –0.49; P<.01), subjective happiness (r=0.53; P<.01), sense of mastery (r=0.47; P<.01), and emotional reactivity (r=0.27; P<.05) all correlated significantly with resilience (Table **1**).

Examination of correlations between resilience and psychosocial variables in adolescents showed that positive affect (r=0.51; P<.01), gratitude (r=0.31; P<.05), perceived stress (r= –0.43; P<.01), subjective happiness (r=0.46; P<.01) and sense of mastery (r=0.58; P<.01) correlated significantly with resilience (Table **2**). Negative affect and emotional reactivity did not. Examination of correlations between resilience and psychosocial variables in adults revealed that negative affect (r= –0.40; P<.05), positive affect (r=0.61; P<.01), gratitude (r=0.48; P<.01), perceived stress (r= –0.52; P<.01), subjective happiness (r=0.60; P<.01), and emotional reactivity (r= –0.39; P<.05) correlated significantly with resilience. Sense of mastery did not.

Hierarchical multiple regression models were run using 2 steps. The first step examined simultaneous effects of all psychosocial predictors of resilience (Table **3**). The coefficients from this step of the model showed that only positive affect (β=0.28; P=.01) and negative affect (β= –0.32; P=.02) predicted unique variance in resilience. None of the other psychosocial variables were unique predictors. Variables included in the first step of the model accounted for 48.4% of the variance in resilience.

The second step of the hierarchical multiple regression models examined interactions between age and each psychosocial predictor, where each interaction term was entered in step 2 of a separate model. The interaction between age and gratitude was statistically significant (β=2.46; P<.05; see Figure **1**).

The association between gratitude and resilience was over twice as strong for adults (r^2 = .23) as for adolescents (r^2 = .08). Age × positive affect and age × happiness interactions approached statistical significance (P ≤ .10). Associations of positive affect and happiness with resilience were notably larger for adults as compared to adolescents (see Figures **2** and **3**).

Table 1: Pearson Correlation Matrix for Full Sample

Correlates	1	2	3	4	5	6	7	8	Mean (SD)	α Value
1. Resilience	1.0								73.63 (12.3)	.89
2. Negative affect	–0.36[a]	1.0							16.90 (5.3)	.73
3. Positive affect	0.55[a]	–0.06	1.0						33.79 (6.3)	.73
4. Gratitude	0.41[a]	–0.24[b]	0.44[a]	1.0					36.08 (5.6)	.79
5. Perceived stress	–0.49[a]	0.51[a]	–0.39[a]	–0.38[a]	1.0				15.12 (6.8)	.87
6. Subjective happiness	0.53[a]	–0.23[b]	0.57[a]	0.48[a]	–0.56[a]	1.0			20.58 (4.0)	.82
7. Mastery	0.47[a]	–0.35[a]	0.33[a]	0.33[a]	–0.62[a]	0.33[a]	1.0		18.53 (2.3)	.74
8. Emotional reactivity	–0.27[b]	0.62[a]	–0.20	–0.30[a]	0.61[a]	–0.31[a]	–0.37[a]	1.0	25.38 (16.0)	.94

[a]P<.01.
[b]P<.05.

Table 2: Pearson Correlation Matrix for Adolescents (Above Diagonal) and Adults (Below Diagonal)

Correlates	1	2	3	4	5	6	7	8	Adolescents Mean (SD)	Adolescents α Value
1. Resilience	1.0	–0.27	0.51[a]	0.31[b]	–0.43[a]	0.46[a]	0.58[a]	–0.15	71.85 (12.0)	.88
2. Negative affect	–0.40[b]	1.0	–0.05	–0.03	0.47[a]	–0.18	–0.38[a]	0.62[a]	17.96 (5.0)	.71
3. Positive affect	0.61[a]	–0.06	1.0	0.54[a]	–0.36[b]	0.55[a]	0.41[a]	–0.16	33.61 (6.6)	.71
4. Gratitude	0.48[a]	–0.37[b]	0.30	1.0	–0.45[a]	0.58[a]	0.41[a]	–0.22	34.83 (5.2)	.73
5. Perceived stress	–0.52[a]	0.47[a]	–0.43[b]	–0.13	1.0	–0.49[a]	–0.68[a]	0.56[a]	16.67 (6.9)	.87
6. Subjective happiness	0.60[a]	–0.19	0.63[a]	0.20	–0.61[a]	1.0	0.39[a]	–0.20	19.72 (4.2)	.80
7. Mastery	0.26	–0.28	0.26	0.15	–0.44[a]	0.10	1.0	–0.38[a]	18.30 (2.6)	.76
8. Emotional reactivity	–0.39[b]	0.59[a]	–0.27	–0.32	0.64[a]	–0.40[b]	–0.29	1.0	27.81 (16.9)	.94
Adults Mean (SD)	76.32 (12.3)	15.34 (5.5)	34.06 (5.9)	37.97 (5.8)	12.81 (6.0)	21.87 (3.5)	18.87 (1.6)	21.69 (13.9)		
α Value	.91	.77	.77	.84	.85	.84	.70	.94		

[a]*P*<.01.
[b]*P*<.05.

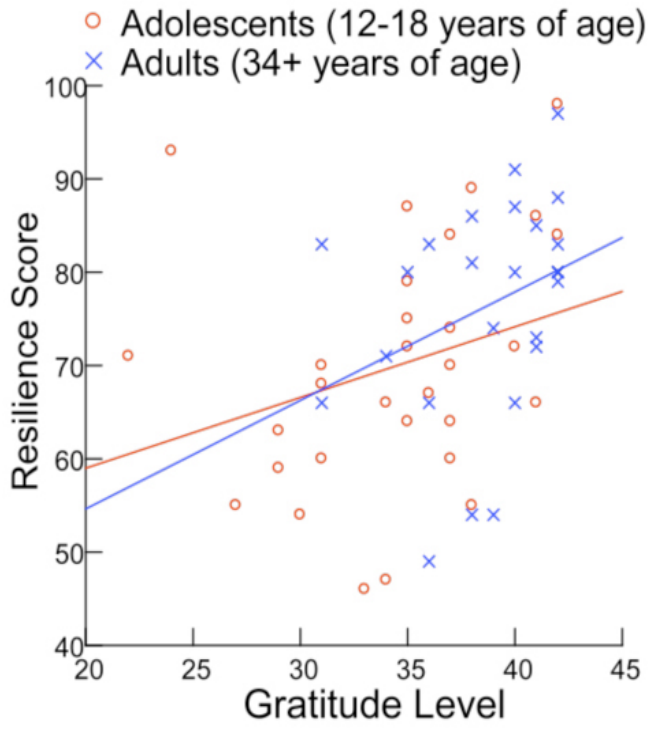

Figure 1: Interaction of Age with Gratitude in Predicting Resilience Score. Association for adults is stronger than for adolescents. This is evident in the scatterplot showing that the blue "X's" (data for adults) have an average steeper slope as compared to the red "O's" (data for adolescents).

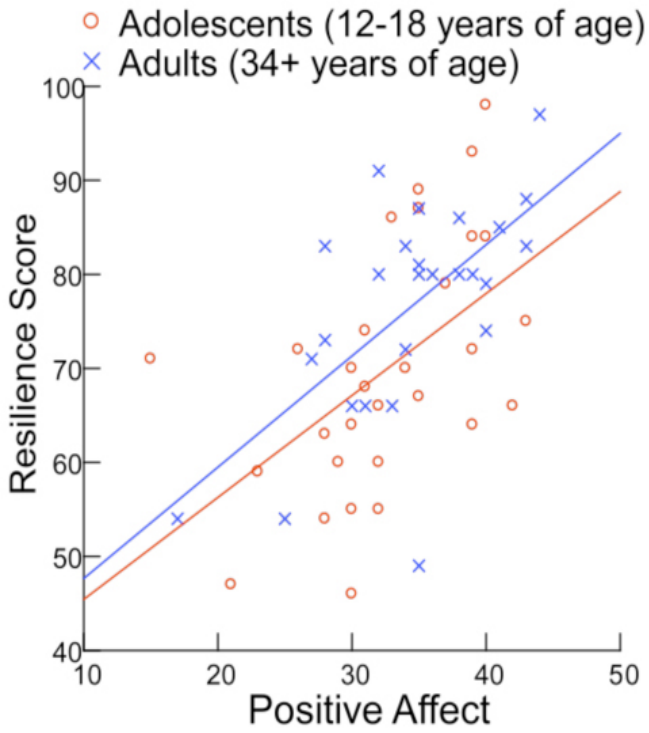

Figure 2: Interaction of Age with Positive Affect in Predicting Resilience Score. Association for adults is stronger than for adolescents. This is evident in the scatterplot showing that the blue "X's" (data for adults) have an average steeper slope as compared to the red "O's" (data for adolescents).

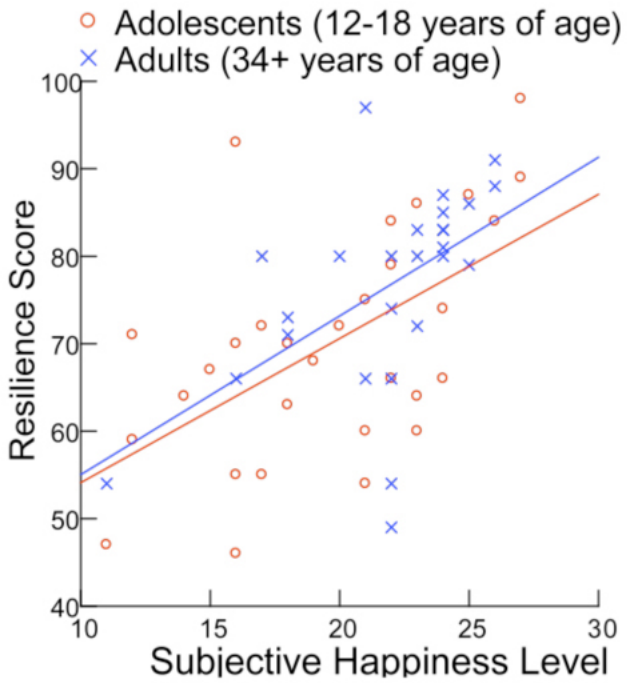

Figure 3: Interaction of Age with Happiness in Predicting Resilience Score. Association for adults is stronger than for adolescents. This is evident in the scatterplot showing that the blue "X's" (data for adults) have an average steeper slope as compared to the red "O's" (data for adolescents).

Interaction terms for age × negative affect, age × stress, age × mastery, and age × emotional reactivity were not statistically significant (all *P* values > .10) (Table **3**). Hence, the associations of negative affect, stress, mastery, and emotional reactivity with resilience were not significantly different between adolescents and adults.

DISCUSSION

Resilience in a Community Sample

The present study was designed to examine multiple psychosocial correlates of resilience in community-dwelling adolescents and adults. Each of the psychosocial predictors showed a statistically significant bivariate association with resilience. This finding is encouraging because the importance of several different psychosocial correlates suggests that there are multiple pathways to building resilience. For lonely adolescents or adults, resilience might be best fostered by building support networks. For those who struggle with negative mood, resilience might be best promoted through gratitude and happiness enhancement. Several studies support the use of

Table 3: Regression Coefficients for Resilience Predicted by All Study Variables (Step 1) and Age × Variable Interactions (Step 2)

Variable Name	B	SE	β	*P* Value
Step 1[a]				
Age	-.00	.07	.00	.99
Negative affect	-.65	.25	-.32	.02
Positive affect	.65	.28	.28	.01
Gratitude	.14	.24	.07	.56
Perceived stress	-.12	.27	-.07	.67
Subjective happiness	.58	.39	.19	.14
Mastery	1.09	.62	.21	.08
Emotional reactivity	.13	.10	.17	.19
Step 2[b]				
Age × Negative affect	–.01	.01	.24	.47
Age × Positive affect	.02	.01	.92	.07
Age × Gratitude	.03	.02	2.46	.02
Age × Perceived stress	–.01	.01	–.30	.21
Age × Happiness	.03	.02	.95	.10
Age × Mastery	–.02	.03	–.61	.51
Age × Emotional reactivity	–.01	.01	–.19	.37

Abbreviations: B, unstandardized regression coefficient; SE, standard error.
[a]All variables entered simultaneously.
[b]Interaction terms modeled in separate regression models, with all variables in Step 1 included in the model.

different methods of gratitude, happiness, and support development [7, 13-17]. The present data offer hope that through the enhancement of these aspects of psychological and social experience, resilience might be fostered.

Affect as a Mediator?

How our results changed when examining the multiple regression models is interesting to note. On simultaneous entry of all psychosocial predictors, only positive and negative affect emerge as significant unique predictors of resilience. Although we did not set out to test mediation models, the effects of each of the other psychosocial variables may be acting indirectly through their influence on either positive or negative affect. In fact, recent research suggests that positive and negative affect mediate similar associations between neuroticism and stress [18]. The results of the first step of our hierarchical multiple regression model confirm this type of conceptual mediation model where positive and negative affect may be the key mediators between psychosocial predictors and resilience. Of course, studies designed to assess mediation specifically should be conducted.

Resilience Correlates for Adolescents vs Adults: Same or Different?

Our moderation analyses provide an interesting picture of direct comparisons of psychosocial resilience correlates and how they differ between adolescents and adults. The age × gratitude effect showed a statistically significant interaction and age × positive affect and age × happiness effects approached statistical significance ($P \leq .10$). These results are suggestive of potentially important differences in associations between psychosocial predictors and resilience. In each case, the psychosocial predictor appears to be more strongly associated for adults than for adolescents. Though this finding could be simply the result of the assessments being designed for adults more than for adolescents, we do not favor this explanation because reliability estimates are roughly equivalent for both groups. Rather, there may be something about positive affect, gratitude, and happiness that is especially important for fostering resilience in adults more than in adolescents. Yet, negative affect, stress, mastery, and emotional reactivity continue to be equally predictive in both adolescents and adults. This conclusion might suggest that these factors are equally important for resilience development and should be points of intervention irrespective of age. High levels of mastery and low levels of negative affect, stress, and emotional reactivity may be resilience promoters that have constant positive impact across the life span. In summary, low negative affect, high mastery, low stress, and low emotional reactivity might form a core set of avenues through which to positively impact resilience development; positive affect, gratitude, and happiness might offer avenues for adults slightly more than for adolescents.

Limitations

This study has two main limitations. First, there appears to have been a selection bias in those participating in the study. That is, the mean resilience score for the sample as a whole was approximately 74 (out of 100 possible points). This demonstrates that the sample of participants choosing to participate tended to be very resilient and, moreover, that the sample did not have many people who were not resilient. This may have resulted in restriction of range on the resilience variable and attenuated its association with other variables. Future work should include community samples from a greater assortment of race/ethnicity and socioeconomic locations, to assess peoples of differing resilience levels. Second, this study used a convenience sample. Future work would do well to examine a representative community sample, which would offer the opportunity to draw broader generalizations.

CONCLUSION

The present study provides confirming evidence of multiple avenues through which resilience might be fostered. These data also offer the possibility that effects of psychosocial variables might act largely through affect as a mediating mechanism. Finally, the present data provide suggestive evidence that there may be some important differences to consider regarding psychosocial correlates of resilience in adolescents and adults. That said, this is a modest community-based, convenience sample and future research is needed to replicate and confirm these findings with larger, representative population-based studies. With continued attention to resilience, its correlates, and mediating and moderating mechanisms, the ability of health care professionals to offer resilience-building resources and to promote adjustment in the face of adversity will undoubtedly grow and positively impact community residents young and old.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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