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Time perspective, psychological outcomes, and risky behavior among runaway adolescents

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ABSTRACT

In this study, we compared the time perspectives of runaway and nonrunaway adolescents by examining relationships among time perspective, psychological outcomes, and risky behavior within runaways. Participants included 163 runaway and 581 nonrunaway adolescents who completed a self-report survey. Several dimensions of time perspective were measured including positive and negative attitudes, orientations, and perceived relationships regarding the past, the present, and the future. Psychological outcomes included optimism, self-esteem, and hope; risky behavior was assessed with a composite scale. Results indicated that runaway adolescents reported less positive and more negative attitudes toward time and perceived time periods as less related than nonrunaways, even after controlling for differences in maternal education and academic achievement. Findings also showed that among runaways, psychological outcomes and risky behavior were associated with time perspective dimensions in expected directions. Results are discussed in light of implications for theory on time perspective and interventions with runaways.

“I used to be from somewhere, but I’m not from anywhere anymore” (McGeady, 1997, p. 63). Every year, between 1 million and 1.7 million adolescents run away from home (Fernandes-Alcantara, 2013). Compared to their counterparts, runaway adolescents have higher rates of tobacco, alcohol, and marijuana use (Thompson, Zittel-Palamara, & Forehand, 2005), simultaneous substance use (Sanders, Lankenau, Jackson-Bloom, & Hathazi, 2008), depression (Tucker, Edelen, Ellickson, & Klein, 2011), suicidal ideation (Thompson & Pollio, 2006), and suicide attempts (Yoder, 1999). Research shows that youth living on the street may trade sex for money, food, shelter, or drugs (Green, Ennett, & Ringwalt, 1999). In addition to these outcomes, runaway adolescents also experience difficulties with schooling. Reports indicate that 50% of runaways have dropped out of school or have been expelled (General Accounting Office, 1989). Importantly, challenges associated with running away in adolescence have long-term implications. Adults who have runaway report more depression and substance use (Tucker et al., 2011), more marijuana use and suicidal thoughts, and lower rates of school completion (Benoit-Bryan, 2011) than their counterparts.

Given these statistics and research findings, identifying psychological factors that may be used for prevention, intervention, or treatment for runaways is essential. Time perspective has been recognized as an important correlate of developmental outcomes in adolescence (Mello & Worrell, 2015), and may be a useful mechanism to promote health in runaways. Mello and Worrell proposed that time perspective includes thoughts and attitudes about the past, the present, and the future. Although limited, available research suggests that runaways may differ in time perspective from nonrunaway adolescents. Wood (1997) showed that adolescents who ran away from home tended to think less far into the future than those who had not run away. To contribute research toward this area, we sought to compare the time perspectives of adolescents who run away from those who do not. Further, we aimed to expand knowledge of time perspective in this population by including a more comprehensive assessment of the construct by examining multiple dimensions of time perspective and all three time periods. Finally, in an effort to identify information that may be used to foster health and adjustment in this population, we examined relationships among time perspective, psychological outcomes, and risky behaviors among runaways.

Time perspective

Time perspective is a broad psychological construct referring to individuals' thoughts and feelings toward the past, the present, and the future (Lewin, 1939; Mello & Worrell, 2015; Zimbardo & Boyd, 1999). It is conceptualized as a motivator of human behavior. Mello and Worrell presented a conceptual model that parses time perspective into several dimensions including attitudes, frequency of thought, orientation, and relationships, with each comprising three time periods. Time attitudes includes positive and negative feelings; time frequency refers to the number of thoughts; time orientation denotes the relative emphasis; and time relation, the perceived interconnectedness.

Mello and Worrell (2015) have argued that time perspective is a developmental phenomenon with relevance across the life-span. They have further articulated that it is particularly salient in adolescence, given cognitive capacities and identity concerns at this age (Erikson, 1968; Piaget, 1955). Although some evidence exists for age-related differences in time perspective, understanding how the construct changes with age is difficult due to the variations in how the construct is conceptualized and measured in different age groups. For example, Steinberg et al. (2009) examined future orientation in participants aged 10 to 30 and reported that an orientation toward the future increased with age. However, studies with measures that include all three time periods and multiple dimensions of time perspective are absent from the literature.

Researchers have also articulated how time perspectives may be indicative of resilience. For example, studies have shown that low-income adolescents who were more hopeful develop into healthier adults when compared to their counterparts (Werner, 1994). Worrell and Hale (2001) showed that hope for the future distinguished between adolescents who graduated from high school and those who dropped out. Seginer (2008) showed that future orientation is positively associated with resilience among adolescents facing political violence. Combined, there is some evidence that concepts about the future, such as hope, future expectations, and future orientation are tied to succeeding against challenges.

Psychological outcomes

Extant research has shown that time perspective dimensions are associated with psychological outcomes. Studies have examined time attitudes, defined as positive and negative feelings about the past, the present, and the future. This concept has been measured

with time attitude scales in The Adolescent Time Inventory (Mello & Worrell, 2007) that includes items, such as “My past makes me sad” (past negative), “I am pleased with the present” (present positive), and “I doubt I will make something of myself” (future negative). For example, research with adolescents has shown that time attitudes were meaningfully associated with hope, perceived life chances, self-esteem, and perceived stress in theoretically-expected directions (Worrell & Mello, 2009). Researchers have also used cluster analysis to show that adolescents with more favorable time attitude profiles—higher positive and lower negative scores—reported higher self-esteem and lower perceived stress (Andretta, Worrell, & Mello, 2014). Findings about time orientation have indicated that emphasizing more than one time period was associated with higher self-esteem, as was perceiving that the three time periods were interrelated (Mello, Finan, & Worrell, 2013). Studies with other age groups show similar results. Specifically, positive and negative attitudes toward the past were associated with self-esteem in a study of adults (Zimbardo & Boyd, 1999). Furthermore, using a projective test, Cottle (1969) showed that adult participants who drew circles depicting the past, the present, and the future as discrete (nonoverlapping) reported higher anxiety than their counterparts who drew overlapping time periods. It is worth noting that the psychological outcomes included in these studies, including self-esteem, perceived life chances, perceived stress (Mello et al., 2013; Worrell & Mello, 2009) and anxiety (Cottle, 1969) are factors related to psychological well-being.

Risky behavior

Prior studies provide support for the relationship between time perspective and risky behavior. Among adolescents, reporting higher negative attitudes toward the past was associated with increased alcohol use (McKay, Andretta, Magee, & Worrell, 2014). Regarding time orientation, participants reporting an emphasis toward solely the present or the future was linked to greater risk-taking behavior compared to those who placed equal weight on both time periods in a study of adolescents (Mello et al., 2013). Mello et al. also showed that perceiving the three time periods as interrelated was associated with less risky behavior compared to participants who perceived time periods as unrelated. Finally, studies with adults have shown that negative attitudes toward the past were positively associated with novelty seeking and inversely associated with impulse control (Zimbardo & Boyd, 1999). And, Worrell et al. (2013) showed that risky behavior

was inversely associated with past, present, and future positive attitudes, whereas negative attitudes about the present were positively associated with risky behavior in a study that included young adult participants.

Time perspective and runaways

Our review of the literature identified very few studies that have examined conceptually-similar topics to time perspective among runaway adolescents. For example, Wood (1997) compared the time perspectives between runaway and nonrunaway adolescents aged 13 to 17. Runaways were identified through adolescent-serving agencies. Time perspective was measured by prompting adolescents to list 10 different events that would occur in their life and the age associated with the event. A difference score was then calculated based on their current age and the length of time to the listed event. Runaway adolescents reported events that were not as far into the future than their nonrunaway counterparts. However, key demographic group variables known to differ between runaways and nonrunaways, such as maternal education were not included.

Present study

In an effort to generate information about this important and understudied population, the present study addressed the following research questions. First, how do runaway and nonrunaway adolescents differ in time perspectives? Given prior empirical studies and time perspective theory (Mello & Worrell, 2015; Wood, 1997), we expected runaways to report (a) less positive time attitudes and more negative time attitudes, (b) fewer thoughts about time periods, (c) an emphasis toward fewer time periods, and (d) a perception that the past, the present, and the future were less related than their nonrunaway counterparts. The second and third research questions focused on examining patterns *within* adolescent runaways. Specifically, we asked, what are the relationships between time perspective and (a) psychological outcomes and (b) risky behavior? Based on available research (Andretta et al., 2014; McKay et al., 2014; Mello et al., 2013), we expected that meaningful relationships would be observed among time perspective dimensions, optimism, hope, self-esteem, and risky behavior in theoretically expected directions.

Method

Participants

Participants included 163 runaway adolescents and 581 nonrunaway adolescents. Runaways were identified by

the following question in a self-report survey: “Have you ever run away from home?” Response options included 1 (*never*), 2 (*rarely*), 3 (*sometimes*), 4 (*often*), and 5 (*very often*). The runaway group included those who responded with options two through five. Among the 748 study participants, 744 (99%) answered the question regarding running away.

Runaways were 47% ($n = 77$) female and had an average age of 15.90 ($SD = 1.46$) years. The following racial/ethnic groups were self-identified: 6% African American ($n = 9$), 21% American Indian ($n = 34$), 5% Asian American ($n = 8$), 36% European American ($n = 58$), 9% Hispanic ($n = 15$), 9% multi-ethnic ($n = 14$), 4% other ($n = 7$), and 11% ($n = 18$) who did not report a racial/ethnic group. Nonrunaways were 55% ($n = 321$) female and had an average age of 15.65 ($SD = 1.54$) years-old. The following racial/ethnic groups were self-identified: 4% African American ($n = 22$), 16% American Indian ($n = 94$), 15% Asian American ($n = 85$), 36% European American ($n = 207$), 11% Hispanic ($n = 61$), 7% multi-ethnic ($n = 43$), 8% other ($n = 48$), and 4% ($n = 21$) who did not report a racial/ethnic group.

The current data set contained missing data. To address the issue of incomplete data, the estimation maximization algorithm (25 iterations) method of multiple imputation was used. Approximately, 0.1–14.8% of the data was imputed for each variable used in analyses.

Measures

Time perspective

Time perspective was measured using four sections of the Adolescent Time Inventory (ATI; Mello & Worrell, 2007): time attitudes, time frequency, time orientation, and time relation. Time attitudes were measured with the Adolescent Time Attitude Scale (ATI-TA) that includes six 5-item subscales that assess positive and negative attitudes toward the past, the present, and the future (see Figure 1). Sample items and corresponding subscales include the following: “I have very happy memories of my childhood” (Past Positive), “I am not satisfied with my past” (Past Negative), “I am happy with my current life” (Present Positive), “I am not happy with my present life” (Present Negative), “I look forward to my future” (Future Positive), “Thinking ahead is pointless” (Future Negative). Likert-type response options range from 1 (*Totally Disagree*) to 5 (*Totally Agree*). An average score was calculated for each subscale with higher scores indicating higher positive or negative attitudes toward the particular time period. Studies have shown that the ATI-TA yields reliable

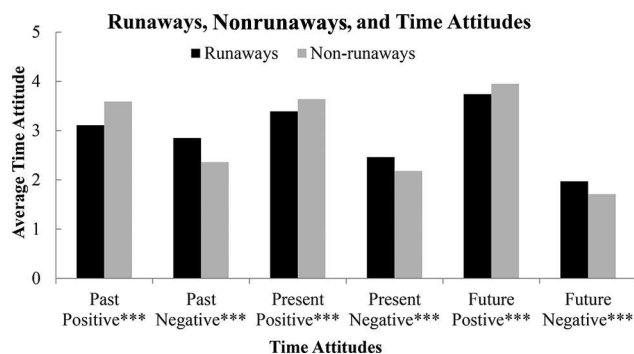


Figure 1. Time attitudes between runaways and nonrunaways, controlling for maternal education and academic achievement. *** $p < 0.001$.

and valid scores in adolescents (Worrell, Mello, & Buhl, 2013). In the current study, the following internal consistency estimates were observed for runaways and nonrunaways respectively: past positive ($\alpha = .85, .87$), past negative ($\alpha = .79, .81$), present positive ($\alpha = .78, .82$), present negative ($\alpha = .80, .84$), future positive ($\alpha = .85, .90$), and future negative ($\alpha = .78, .75$).

Time frequency was measured with three items that asked participants how frequently they thought about the past, the present, and the future, respectively. Response options ranged from 1 (*Never*) to 4 (*Daily*). Past research with adolescents has shown that participants who think more often about the past time period reported higher academic achievement than their counterparts (Mello, Worrell, & Andretta, 2009).

Time orientation and time relation were measured with two single-item scales that assess perceived importance and relationships among the time periods, respectively (see Figures 2 and 3 for representations). Each scale included several sets of circles. The participant selected a set of circles that reflected their time orientation and time relation. Specifically, time orientation included five sets of circles in varying sizes, with larger circles representing more important time

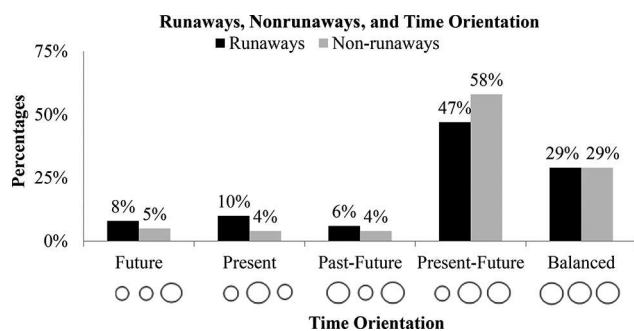


Figure 2. Runaways, nonrunaways, and time relation. Circles shown are for illustration; the time relation scale includes circles with past, present, and future labels.

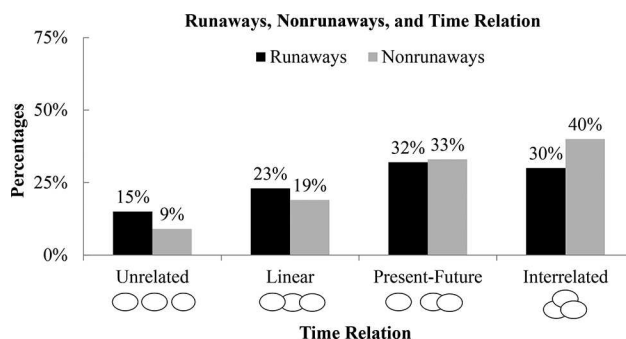


Figure 3. Runaways, nonrunaways, and time relation. Circles shown are for illustration; the time relation scale includes circles with past, present, and future labels.

periods. The five response options include an emphasis on the *future*, the *present*, the *past and future*, the *present and future*, and a *balanced* orientation toward the three time periods. Time relation included four sets of circles with varying degrees of overlap to indicate relationships among the time periods. The response options depicted an *unrelated*, *linear*, *present-future*, and *interrelated* view of the time periods. Past research has shown that time orientation and time relation responses are related to academic achievement, hope, self-esteem, and risky behaviors in adolescents (Mello et al., 2013).

Psychological outcomes

We included three measures to assess psychological outcomes. First, we included the Life Orientation Test (LOT; Scheier, Carver, & Bridges, 1994) to assess optimism. The eight-item questionnaire assesses the degree to which adolescents expect positive or negative outcomes. Items comprised four positive statements (e.g., “In uncertain times, I usually expect the best.”), and four negative items (e.g., “I hardly ever expect things to go my way.”). Response options ranged from 0 (*Strongly Disagree*) to 4 (*Strongly Agree*). Negatively worded options were reverse-coded. Together, the eight items yield an overall optimism score, with higher scores signifying higher levels of optimism. Cronbach’s alpha indicated that scores were internally consistent ($\alpha = .82$). Second, we used the Child Hope Scale (CHS; Snyder et al., 1997). The CHS is a six-item instrument comprised of items such as “When I have a problem, I can come up with lots of ways to solve it.” Responses range from 1 (*None of the time*) to 6 (*All of the time*). An average nonmissing score was generated, with greater scores indicating greater levels of hope. The CHS has been validated and scores from the measure were found to be internally consistent in past samples ($\alpha = .72-.86$, Snyder et al., 1997). In this

study, the following alpha was observed for runaways: $\alpha = .83$.

Third, the Rosenberg Self-Esteem Scale (Rosenberg, 1965) was employed. This 10-item scale assesses global self-esteem (e.g., “I feel that I have a number of good qualities”), with response options ranging from 1 (*Strongly Disagree*) to 4 (*Strongly Agree*). Five of the 10 items were reverse-coded. All items are summed such that composite scores indicated higher self-esteem. Strong internal consistency estimates have been reported in past samples ($\alpha = .91$; Sinclair et al., 2010) and were shown in this study (runaways: $\alpha = .83$).

Risky behavior

Risky behavior was assessed with a 13-item scale that measured the frequency with which an adolescent engaged in various risk-taking behaviors (e.g., “Have you ever gotten in trouble with the police?”). Response options ranged from 1 (*Never*) to 5 (*Very Often*). This instrument has been shown to yield valid scores in adolescent samples (Worrell & Hale, 2001). Internal consistency estimates were acceptable for runaways in this study ($\alpha = .86$).

Procedure

The data were collected in the fall of 2009 from several high schools and a summer academic program in the Western and the Midwestern United States. Students were given a packet that included an invitation letter, parental consent form, adolescent assent form, and the study survey. Students who returned the completed materials were given \$10 compensation. The data collection was approved by the University of California, Berkeley’s Committee on Human Subjects. The authors reported on these data in a prior study (Mello et al., 2013), although runaways were not explicitly examined.

Results

Preliminary analyses

Correlations among study variables are displayed in Table 1. Patterns were similar for both runaways and nonrunaways. Past, present, and future time frequency scores were positively related to one another with mostly medium effect sizes. Past and present time frequency scores were not associated with past or present time attitude scores. However, future time frequency scores were positively and negatively associated with future positive and future negative attitude scores,

Table 1. Correlations and descriptive statistics for time frequency, time attitudes, and study outcomes by runaways status.

	Runaways															Nonrunaways	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	M(SD)	M(SD)
1 Past time frequency	-	0.29***	0.14***	0.00	0.23***	-0.17*	0.15	0.16*	-0.11	0.10	0.04	0.05	-0.20*	0.14	0.02	2.99(.97)	2.93(.91)
2 Present time frequency	0.25***	-	0.38***	-0.06	0.11	-0.06	0.03	0.09	-0.22**	0.14	-0.02	0.14	-0.26**	0.09	-0.07	3.63(.70)	3.80(.50)
3 Future time frequency	0.28***	0.21***	-	0.01	-0.01	0.10	-0.15*	0.31***	-0.32***	0.33***	0.20*	0.24**	-0.18*	0.09	0.02	3.35(.82)	3.51(.69)
4 Past positive	0.12**	0.09*	0.08	-	-0.68***	0.30***	-0.22**	0.08	-0.14	0.26**	0.19*	0.22**	-0.18*	0.19*	-0.03	3.11(.87)	3.59(.80)
5 Past negative	0.02	-0.03	-0.05	-0.63***	-	-0.43***	0.47***	-0.15	0.30***	-0.28***	-0.22**	-0.31***	0.06	-0.09	0.01	2.85(.87)	2.36(.84)
6 Present positive	-0.09*	0.10*	0.09*	0.43***	-0.41***	-	-0.74***	0.39***	-0.46***	0.38***	-0.37***	0.38***	0.05	-0.03	0.03	3.39(.67)	3.64(.67)
7 Present negative	0.06	-0.09	-0.07	-0.39***	0.52***	-0.73	-	-0.37***	0.57***	-0.45***	-0.35***	-0.43***	0.05	0.01	-0.04	2.46(.77)	2.18(.75)
8 Future positive	-0.03	0.03	0.38***	0.30***	-0.19***	0.37***	-0.28***	-	-0.60***	0.28***	0.36***	0.23**	-0.07	-0.10	0.08	3.74(.73)	3.95(.74)
9 Future negative	-0.05	-0.07	-0.31***	-0.26***	0.30***	-0.37***	0.40***	-0.64***	-	-0.41***	-0.44***	-0.51***	0.15	0.07	0.02	1.97(.71)	1.71(.60)
10 Optimism	-0.07	0.13**	0.15***	0.41***	-0.41***	0.52***	-0.48***	0.42***	-0.41***	-	0.41***	0.67***	-0.23**	0.01	0.05	3.25(.46)	3.46(.48)
11 Hope	0.00	0.10*	0.18***	0.31***	-0.28***	0.47***	-0.35***	0.40***	-0.40***	0.53***	-	0.49***	-0.16*	0.17	0.26***	3.90(.97)	4.20(.85)
12 Self-esteem	-0.02	0.14**	0.06	0.35***	-0.45***	0.43***	-0.47***	0.28***	-0.47***	0.51***	0.51***	-	-0.28***	0.13	0.06	2.83(.53)	3.13(.52)
13 Risky behavior	0.12**	0.03	-0.03	-0.19***	0.17***	-0.15***	0.19***	-0.07	0.16***	-0.12**	-0.17***	-0.22***	-	-0.25**	-0.22**	2.26(.72)	1.58(.46)
14 Maternal education	0.03	0.10*	0.02	0.16***	-0.11**	0.04	-0.07	-0.01	-0.04	0.13**	0.11**	0.16**	-0.06	-	0.35***	2.53(1.27)	2.84(1.31)
15 Academic achievement	0.07*	0.08*	0.04	0.13**	-0.08	0.06	-0.13**	0.07	-0.16***	0.09*	0.27***	0.18***	-0.27***	0.28***	-	2.75(.86)	3.14(.77)

Note. Values below the line are for runaways and values above the line are for nonrunaways. Runaways and nonrunaways time frequency and time attitude means were adjusted by maternal education and academic achievement.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

respectively, and these effects were medium in size. Positive past, present, and future time attitudes were positively correlated with one another, as were associations among negative time attitudes. Positive and negative time attitudes were inversely correlated. Effects among the time attitudes ranged in size from small to medium.

Differences between runaways and nonrunaways in maternal education and academic achievement were examined. Results of a *t*-test indicated that runaways ($M = 2.53$, $SD = 1.27$) had mothers with significantly less education than nonrunaways ($M = 2.84$, $SD = 1.31$), $t(742) = 2.71$, $p < .01$, $d = .24$ (95% CI = .07–.41). Runaways ($M = 2.75$, $SD = .86$) also reported significantly lower academic achievement than nonrunaways ($M = 3.14$, $SD = .77$), $t(742) = 5.28$, $p < .001$, $d = .49$ (95% CI = .32–.67). Given that the size of these effects were small and medium, respectively, we controlled for maternal education and academic achievement in subsequent analyses comparing runaway and nonrunaway adolescents.

Primary analyses

Differences in time perspective between runaways and nonrunaways

In the first set of analyses, we examined the relationship between time perspective and runaway status. Time attitudes differed between runaways and nonrunaways, as indicated by a series of ANCOVAs. Runaways had lower past positive $F(3, 740) = 22.58$, $p < .001$, $\eta^2 = .05$ (95% CI = .02–.08), present positive $F(3, 740) = 6.27$, $p < .001$, $\eta^2 = .02$ (95% CI = .00–.04), and future positive $F(3, 740) = 5.66$, $p < .001$, $\eta^2 = .01$ (95% CI = .00–.03) scores, and higher past negative $F(3, 740) = 17.40$, $p < .001$, $\eta^2 = .05$ (95% CI = .02–.08), present negative $F(3, 740) = 9.31$, $p < .001$, $\eta^2 = .02$ (95% CI = .00–.04), and future negative $F(3, 740) = 10.10$, $p < .001$, $\eta^2 = .02$ (95% CI = .01–.05) scores than nonrunaways. These differences were observed after controlling for maternal education and academic achievement and are illustrated in [Figure 1](#). Effect sizes were generally small ($\eta^2 = .01$ | $\eta^2 = .05$). Overall, these findings indicated that runaways reported more negative and less positive feelings about the time periods than nonrunaways.

Regarding time frequency, ANCOVAs indicated runaways ($M = 3.63$, $SD = .05$) were less likely to think about the present than nonrunaways ($M = 3.80$, $SD = .05$) after controlling for maternal education and academic achievement, $F(3, 740) = 6.86$, $p < .001$. The effect size for this difference was small ($\eta^2 = .01$; 95% CI = .00–.04). However, they did not differ in how

frequently they thought about the past or the future ($p = .21$, $\eta^2 = .00$; $p = .06$, $\eta^2 = .01$, respectively).

Time orientation differences were examined using the chi-square statistic. Chi-square analyses indicated variation in time orientation response options between runaways and nonrunaways $\chi^2(4) = 11.20$, $p < .05$, with a small effect size ($\phi_{\text{Cramer}} = .12$). [Figure 2](#) shows that a greater proportion of runaways were oriented towards the future, the present, and the past-future than nonrunaways, with small differences ranging from 2% to 6%. There was not a difference in the balanced response options between runaway and nonrunaways. However, nonrunaways were more oriented toward the present-future than runaways, with a difference of 11%. Multinomial logistic regression analyses were used to examine these relations after controlling for maternal education and academic achievement. Results suggested that runaway status was not a significant predictor of time orientation, $\chi^2(12) = 16.00$, $p = .19$, $R^2 = .01$.

Chi-square analyses indicated variation in time relation response options between runaways and nonrunaways, $\chi^2(3) = 8.97$, $p < .05$, with a small effect size ($\phi_{\text{Cramer}} = .11$). [Figure 3](#) illustrates that runaways were more likely to select the unrelated (6% difference) or linear response (4% difference) option compared to nonrunaways, who were more likely to endorse the interrelated response option (10% difference). Both groups similarly selected the present-future option. Multinomial logistic regression analyses were used to examine these relationships after controlling for maternal education and academic achievement, and results indicated that significant differences persisted, $\chi^2(9) = 40.29$, $p < .001$, $R^2 = .02$. These findings suggest that runaways and nonrunaways have different perceptions about the ways in which the past, the present, and the future are related.

Time perspective and psychological outcomes within runaways

The second research question examined relationships among time perspective and optimism, hope, and self-esteem within adolescent runaways specifically (see [Table 1](#)). Correlations suggested that past, present, and future positive time attitudes positively predicted optimism ($r = .26$, $p < .01$; $r = .38$, $p < .001$; $r = .28$, $p < .001$, respectively), hope ($r = .18$, $p < .05$; $r = .37$, $p < .001$; $r = .39$, $p < .001$, respectively), and self-esteem ($r = .22$, $p < .01$; $r = .38$, $p < .001$; $r = .23$, $p < .01$, respectively). Conversely, past, present, and future negative time attitudes inversely predicted optimism ($r = -.28$, $p < .001$; $r = -.45$, $p < .001$; $r = -.41$, $p < .001$, respectively), hope ($r = -.22$, $p < .01$; $r = -.34$, $p < .001$; $r = -.45$, $p < .001$,

respectively), and self-esteem ($r = -.31, p < .001$; $r = -.43, p < .001$; $r = -.51, p < .001$, respectively). These effects were generally medium in size ($r = .19 | .51, M = .34$). Correlations also indicated that thinking more frequently about the future was positively associated with optimism ($r = .33, p < .001$), hope ($r = .20, p < .01$), and self-esteem ($r = .24, p < .01$). These associations were small to medium in effect size ($M_r = .26$). Thinking more frequently about the past and the present were not predictors of runaways' optimism, hope, or self-esteem ($p > .05$).

Relationships between time orientation and psychological outcomes in runaway adolescents were examined with ANOVAs. Results showed that time orientation predicted runaways' optimism, $F(4, 152) = 3.98, p < .01, \eta^2 = .09$ (95% CI = .01–.17). Bonferroni *post hoc* analyses indicated that runaways who viewed the present and future as important were more optimistic ($M = 3.38, SD = .42$) than those who only viewed the future as most important ($M = 2.94, SD = .38, p < .05$). This difference was a large effect ($d = 1.06$ [95% CI = .45–1.67]). Time orientation did not predict runaways' hope ($p = .68, \eta^2 = .02$) or self-esteem ($p = .16, \eta^2 = .04$).

We also examined associations among time relation and runaways' psychological outcomes with ANOVAs. Time relation was a significant predictor of runaways' optimism $F(3, 150) = 2.93, p < .05, \eta^2 = .06$, hope $F(3, 150) = 4.42, p < .01, \eta^2 = .08$, and self-esteem $F(3, 150) = 2.67, p < .05, \eta^2 = .05$. For optimism, Bonferroni *post hoc* analyses indicated no significant difference among the time relation groups. For hope, those who viewed time as interrelated ($M = 4.29, SD = .95$) were more hopeful than those who viewed time as linear ($M = 3.64, SD = .95; p < .05, d = .68$ [95% CI = 1.14–.23]) and unrelated ($M = 3.59, SD = .86, p < .05, d = .76$ [95% CI = 1.28–.24]). Finally, for self-esteem, those who viewed time as interrelated ($M = 2.96, SD = .56$) reported higher self-esteem than those who viewed time as unrelated ($M = 2.58, SD = .36, p < .05, d = .76$ [95% CI = 1.27–.24]). These findings included medium to large effect sizes ($d = .68 | .76$).

Time perspective and risky behavior within runaways

The third and final research question examined the relationships among time perspective and adolescent runaways' risky behavior. Relationships among time attitudes and risky behavior were less evident (see Table 1). Correlations suggested that only past positive time attitudes were predictive of risky behavior ($r = -.18, p < .05$). For time frequency, results suggested thinking about the past ($r = -.20, p < .05$), the present ($r = -.26, p < .01$), and the future ($r = -.18, p < .05$) inversely predicted risky behavior

among runaways (see Table 1). Effects for time attitudes and time frequency and risky behavior were generally small ($r = .18 | r = .26$).

Time orientation was associated with risky behavior for runaways, as indicated by ANOVA, $F(4, 152) = 3.96, p < .01, \eta^2 = .09$. Bonferroni *post hoc* analyses indicated that runaways oriented toward the future ($M = 2.92, SD = .65$) reported more risky behavior than those oriented toward the past and the future ($M = 1.93, SD = .64, p < .05, d = 1.53$ [95% CI = 2.50–.57]), the present and future ($M = 2.20, SD = .62, p < .01, d = 1.15$ [95% CI = 1.77–.54]), and the past, the present, and the future ($M = 2.20, SD = .77, p < .05, d = 1.0$ [95% CI = 1.60–.33]), with large effect sizes ($M_{Cohen's} d = 1.23$). Time relation was not a significant predictor of runaways' risky behavior ($p = .55, \eta^2 = .01$).

Discussion

In this study, we sought to generate new information about adolescent runaways, given the myriad adverse outcomes associated with this group. Studies have shown alarming rates of substance use (Sanders et al., 2008; Thompson et al., 2005), mental health issues (Thompson & Pollio, 2006; Tucker et al., 2011; Yoder, 1999), and educational disengagement (General Accounting Office, 1989). Furthermore, evidence indicates these challenges persist into adulthood for runaways (Benoit-Bryan, 2011; Tucker et al., 2011). The need for knowledge regarding psychological factors that could alleviate these trends is critical. Thus, as a framework for this study, we drew from extant theory and research suggesting that time perspective may be a fruitful mechanism for promoting health in adolescents (e.g., Mello & Worrell, 2015). First, we examined differences between runaways and nonrunaways in how they thought and felt about the past, the present, and the future. Second, within runaways, we investigated how time perspective was related to psychological outcomes and risky behaviors.

Time perspective differences in runaways and nonrunaways

Adolescents who ran away from home reported several different ways of thinking about the time periods when compared to those who did not run away. Specifically, findings indicated that runaways had less positive and more negative attitudes toward the past, the present, and the future; thought less often about the present; were oriented toward fewer time periods; and perceived time as less related than nonrunaways. Importantly, almost all of these differences remained after controlling for maternal education and academic achievement.

Runaways reported lower positive and higher negative attitudes toward the past, the present, and the future than nonrunaways. This result complements prior research with research on young adults (Mello et al., 2017). Our findings also indicated that the largest differences in time attitudes were for the past. This result aligns with reports showing that the severity and intensity of adverse familial experiences often precedes an adolescent running away from home (Benoit-Bryan, 2015; Tyler & Cauce, 2002). Regarding time frequency, runaways thought less often about the present than nonrunaways, although the size of this difference was small. Furthermore, there were no differences in the frequency with which runaways' thought about the past and the future compared to their counterparts. Although we expected runaways to think less often about all time periods than nonrunaways given available theory (Mello & Worrell, 2015), the lack of an observed difference may be explained by the measure. The response options were not in a typical Likert-type form, but rather denoted chronological time (i.e., never, monthly, weekly, daily). Future research that includes a more traditional assessment format may yield more interpretable differences.

Runaways were more likely to be oriented solely toward the past, the present, or the future compared to nonrunaways, who viewed multiple time periods simultaneously as important. Although this finding is consistent with our expectations, the pattern was not maintained when controlling for maternal education and academic achievement. It may be that the reduction in sample size due to missing data on control variables affected this result, or that there are interactions between runaways and the control variables. However, results provided support for differences in time relation between runaways and nonrunaways. Specifically, a higher percentage of runaways perceived that the time periods were unrelated or linearly related than nonrunaways, who more likely to endorse the interrelated response option. Overall, these results extend our understanding of how adolescent runaways view time. To date, there has only been one study that examined this topic and group specifically. Wood (1997) reported how runaways thought less far into the future than nonrunaways, but did not include covariates. In this study, we were able to control for some characteristics and to broaden the conceptualization of time perspective to include other dimensions, such as attitudes, frequency, orientation, and relation.

Time perspective and psychological outcomes within runaways

Results suggested that time perspective dimensions were related to psychological outcomes among runaways.

Positive and negative attitudes toward the past, the present, and the future were associated with optimism, hope, and self-esteem in theoretically-expected directions. These findings are consistent with prior studies of adolescents (Andretta et al., 2014; Worrell & Mello, 2009) and adults (Zimbardo & Boyd, 1999). The strongest associations were observed for negative attitudes toward the future and self-esteem. These findings may suggest that the current feelings runaways have about themselves may be tied to the degree to which they have negative feelings about themselves in the future. It is possible that programs focused explicitly on reducing runaways' future negative attitudes may result in an increase in their self-esteem. It will be important for additional studies to determine the direction of this relationship with a longitudinal research design.

Findings also indicated that runaways who thought more often about the future reported higher optimism, hope, and self-esteem. This outcome is similar to one from a prior study showing that adolescents who thought more frequently about the past also had higher academic achievement (Mello et al., 2009). Results also suggested that both time orientation and time relation were related to psychological outcomes in runaways. Specifically, those who viewed the present *and* the future as important were more optimistic than those who only viewed the future as important. This finding is consistent with prior research that has shown valuing these two periods was associated with higher self-esteem in adolescents (Mello et al., 2013). Regarding time relation, analyses indicated that runaways who viewed time as more interrelated reported higher hope and self-esteem than runaways who viewed time as unrelated. These patterns are similar to research with adolescents (Mello et al., 2013), and to a study of adults that showed that participants who drew unrelated depictions of time periods had higher anxiety than those who drew related time periods (Cottle, 1969). Thus, focusing on *multiple* time periods simultaneously and seeing them as interrelated have positive associations with psychological outcomes.

Time perspective and risky behavior within runaways

Among runaways, time perspective dimensions predicted risky behaviors. More frequent thinking about the past, the present, and the future was associated with fewer risky behaviors. This finding is supported by Mello et al.'s (2009) study that indicated thinking about the past more regularly is positively associated with academic achievement. Regarding time orientation, analyses showed that runaways who focused solely on

the future reported engaging in substantially *more* risky behaviors than those who were oriented to two or more time periods. Thus, recognizing that the future is, to some extent, dependent on behaviors in the past and present seems to be adaptive. This finding is also consistent with past research (Mello et al., 2013).

Regarding time attitudes, past positive scores were inversely associated with risky behaviors, although the effect was small. The remaining time attitudes were not related to risk behaviors. Time perspective scores have had stronger relationships with risky behaviors when combined into time attitude profiles (e.g., McKay et al., 2014). Also, time relation was not associated with risky-behaviors, even though prior research with adolescents has shown an association (e.g., Mello et al., 2013). Specifically, the Mello et al. (2013) study demonstrated that adolescents who perceived time periods to be unrelated had higher risk scores. Risk was measured with a composite instrument that included behaviors, such as school absence, smoking, and shoplifting. It may be that among runaways, time perspective has more meaningful relationships with the types of behaviors that pose risks to this group in particular, such as sexual behaviors. For example, Green et al. (1999) conducted a study with runaways and reported that almost a third (28%) had participated in survival sex.

Implications

These findings support the notion that examining all three time periods and multiple dimensions provides a more comprehensive understanding of time perspective than research that examines the past, the present, and the future solely (Mello & Worrell, 2015). Several results of this study indicated that time perspective dimensions vary in their relationship with psychological outcomes and risky behaviors. For example, attitudes toward time were related to psychological outcomes, whereas the frequency with which participants thought about time and their time orientation were associated with risky behaviors. These observations were possible because the instrument employed was designed to provide such distinct patterns (i.e., ATI; Mello & Worrell, 2007). This conceptualization of time perspective builds on the literature that has shown how positive future expectations predict resiliency in youth (Wyman, Cowen, Work, & Kerley, 1993). It is possible that the ATI will reveal additional ways that resilient individuals think about the past, the present, and the future.

Studies on time perspective have implications for the development of prevention, intervention, and treatment programs for runaway adolescents. In a review of research, Altena, Brilleslijper-Kater, and Wolf (2010)

highlighted how limited the extant evidence is for programs to successfully promote health among the runaway population. A fruitful area of research would be to determine if the ATI (Mello & Worrell, 2007) may be a nonintrusive way to identify adolescents who are at-risk of running away from home or to examine how running away affects time perspectives. Such research has implications for clinicians and educational professionals who are in direct contact with adolescents and who hope to explore ways to reduce runaway behaviors.

Limitations and conclusion

Although this study provides new information about runaway adolescents, it has several limitations. The primary disadvantage concerns the absence of information about the duration, intensity, or reason for running away which has implications for the generalizability of study findings. Furthermore, in the current study, runaway adolescents were recruited from schools and required to obtain parental consent. Although this sampling technique may limit findings to populations of runaways who do not attend school, past research has also employed school-based sampling procedures that included parental consent (Benoit-Bryan, 2011; Pollio, Thompson, Tobias, Reid, & Spitznagel, 2006). Studies also show that many runaways attend school on a regular basis (Benoit-Bryan, 2015; Pollio et al., 2006).

Researchers have highlighted the challenge with generating reliable information on this group, given the variation in their runaway experiences and the precarious nature of their legal status (Benoit-Bryan, 2011). Collecting information about the antecedents of running away and the experiences while away from home in relationship to time perspective is an important direction of research. Qualitative methods may be particularly useful to illuminate these relationships. A second and related limitation includes the survey research design used in the current study. Although it provided anonymity for the participants to report their runaway status, scholars have found it especially useful to employ interview methods to collect information from runaways (Tyler & Cauce, 2002). Future research may benefit from employing mixed-methods approaches to draw from the strengths of survey and interview methodologies. A third limitation includes the cross-sectional nature of the data. Longitudinal research would greatly add to our knowledge about the directionality of the relationships between time perspective, psychological outcomes, and risky behavior in runaways.

In summary, this study examined self-reported data on time perspectives between runaway and nonrunaway adolescents. Findings indicated that adolescents who ran away from home reported different ways of thinking and feeling about time than their nonrunaway counterparts after controlling for maternal education and academic achievement. Specifically, runaways reported less positive and more negative attitudes toward the time periods and perceived time as less related than nonrunaways. Examining time perspective *within* runaways indicated that those who had (a) more favorable attitudes, (b) frequent thoughts about the present, (c) placed importance on multiple periods, and (d) a more related perspective about time also had better psychological outcomes. Findings on risk-taking behavior showed that runaways who thought more frequently about time periods and viewed more time periods as important engaged in fewer risky behaviors than their counterparts.

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