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Effects of Workplace Intervention on Affective Well-being in Employees’ Children

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Abstract

Using a group-randomized field experimental design, this study tested whether a workplace intervention – designed to reduce work-family conflict – buffered against potential age-related decreases in the affective well-being of employees’ children. Daily diary data were collected from 9-17 year old children of parents working in an information technology division of a U.S. Fortune 500 company prior to and 12-months after the implementation of the Support-Transform-Achieve-Results (STAR) workplace intervention. Youth (62 with parents in the STAR group, 41 in the Usual Practice group) participated in eight, consecutive, nightly phone calls during which they reported on their daily stressors and affect. Well-being was indexed by positive and negative affect and affective reactivity to daily stressful events. The randomized workplace intervention increased youth positive affect and buffered youth from age-related increases in negative affect and affective reactivity to daily stressors. Future research should test specific conditions of parents’ work that may penetrate family life and affect youth well-being.

Keywords

adolescence; affective reactivity; affective well-being; negative and positive affect; work-family; workplace intervention

The transition to adolescence is a period of dramatic change, which for some youth, includes declines in affective well-being. A body of work documents the effects of proximal factors such as peers, school and parenting on youth well-being (Steinberg, 2005), but we know much less about the role of the larger environments within which youth are embedded. In this study we examined exosystem influences on youth—that is, effects emanating from a context in which youth do not directly participate (Bronfenbrenner, 1979). Using a group-
randomized field experimental design, we tested whether a workplace intervention designed to reduce employees’ work-family conflict – Support-Transform-Achieve-Results (STAR) – buffered against potential age-related decreases in their adolescent-aged children’s positive affect and increases in their negative affect and affective reactivity to daily stressful events.

**Affective Well-being in Adolescence**

Affective well-being encompasses both positive (e.g., enthusiasm and alertness) and negative affect (e.g., overall perceived distress and anger; Watson, Clark, & Tellegen, 1988). Although mood disruptions and negative affect are not universal (Steinberg, 2005), cross-sectional data reveal that adolescence is the developmental period during which negative affect is most frequently experienced (Larson & Richards, 1994), and longitudinal studies document increases in negative affect and decreases in positive affect from late childhood to late adolescence (Larson & Richards, 1994). Affective well-being also includes stressor reactivity, or individuals’ emotional reactions to life or daily stressors (Compas et al., 2001). Research has examined youth’s expressed emotion in response to laboratory-induced stressors (Kudielka et al., 2004) and correlations between youth’s self-reported stressful life events (and less frequently, daily stressors) and both internalizing and externalizing behaviors (Moksnes et al., 2010). Taken together, findings suggest that youth become more emotionally reactive to stressful situations and experiences in adolescence (Larson & Richards, 1994; Spear, 2009). These developmental trends are of concern given that poorer affective well-being is associated with adolescent health problems and risk behaviors (Natsuaki et al., 2009; Wills et al., 1999).

In much of the research on affective reactivity to daily stressors, youth have been asked to report on everyday stressors that have occurred recently (e.g., during the past six months) – which allows for the examination of a between-person question: Do youth who experience more of these stressors also report more negative affect than other youth? Our design – which involved collecting data on 8 consecutive days – allowed us to also examine a within-person question: Do youth report more negative affect on days in which they experience a stressor – relative to their own experiences on non-stressor days? Daily diaries also increase ecological validity relative to laboratory stressor tasks and decrease memory demands that may characterize global survey data on stressors and adjustment (Almeida, 2005).

**Parents’ Workplace Effects on Youth’s Affective Well-Being**

Bronfenbrenner’s (1979) ecological model posits that youth development emerges within a multi-layered context, with most research on youth’s affective well-being focusing on macrosystem (e.g., culture, social class) and microsystem (e.g., family and school life) influences (Grotevant, 1998). Bronfenbrenner argued that systems that individuals do not directly experience can impact their development, and Larson and Almeida’s (1999) emotional transmission paradigm provides a model that demonstrates how such exosystem influences have implications for youth’s affective well-being: Family members influence each other, including in the contexts of their daily social exchanges, by transmitting emotions to one another.
Prior research is consistent with the idea that exosystem influences – specifically those emanating from parents’ workplaces – can indirectly impact youth’s affective well-being: Factors such as job demands have been linked to parents’ emotional states, parent-child interactions, and youth adjustment problems and health (Crouter & Bumpus, 2001; Lawson et al., 2014; Ransford, Crouter, & McHale, 2008). In contrast, schedule flexibility and supervisor support are associated with greater parental warmth (Ransford et al., 2008). We built on these correlational studies, using – to our knowledge – the first experimental design to document that parents’ workplace conditions have implications for youth’s affective well-being. Use of an experimental design advances the work-family literature because random assignment to groups allows investigators to rule out third variable explanations for patterns of results and to infer cause and effect relationships.

**Present Study**

In sum, using daily diary data collected from 9-17 year old children of parents working in the informational technology (IT) division of a Fortune 500 company, we tested whether the STAR workplace intervention buffered against age-related decreases in youth’s affective well-being. We predicted that children of parents in the intervention condition would differ from those of parents in the usual practice (UP) condition at the 12 month post-test by exhibiting smaller decreases in positive affect and smaller increases in negative affect and affect reactivity.

**Method**

**Study Design and Participants**

The Work, Family and Health Study (WFHS) is a group-randomized field experiment conducted in an IT division of a U.S. Fortune 500 company. The WFHS examined the effectiveness of a workplace intervention, STAR, which was designed to promote a supportive work culture by increasing employees’ schedule control and family-supportive supervisor behaviors and ultimately reducing work-family conflict (author citation). IT workers with the same manager were identified, and prior to baseline data collection, 56 work units were randomized to either the UP or STAR conditions using an adaptive randomization approach (author citation). Readers are referred to (author citation) for more details about the study.

Trained interviewers, blind to participants’ condition assignment, conducted interviews at the workplace prior to STAR implementation (N = 823). Only 26.97% (n = 222; STAR n = 110, UP n = 112) had a child aged 9-17 who lived at home at least four days a week, and thus were eligible to participate in the daily diary. Eight consecutive nightly phone calls with youth were scheduled by trained personnel at the university’s survey research center. Interviewers used a computer-assisted telephone interview procedure. In interviews lasting about 15 minutes, youth reported on their daily experiences including affect and stressors. Families received $150 and $200 for participation at baseline and 12-months, respectively.

At baseline, 132 youth (STAR n = 78, UP n = 54) participated in the daily diary study (59.46% of eligible youths). Comparisons between those who did (n = 132) and did not (n =
90) participate indicated that the two groups did not significantly differ on most demographic variables (e.g., parents’ education) or parents’ work characteristics (e.g., schedule control), with the exceptions of youth age (participants were older, 13.39 v. 12.13, \( t(2, 220) = -3.81, p < .001 \)), income (participants’ parents earned less money, 8.69 v. 9.52, \( t(2, 201) = 2.04, p < .05 \)), and minority status (participants were less likely to be a minority, \( \chi^2 = 6.98, p < .01 \)). These variables were added as covariates in all preliminary models, but minority status was excluded in the final models because it did not predict affective well-being.

Of the 132 youth who participated at baseline, 103 youth (STAR \( n = 62 \), UP \( n = 41 \); 70.07%) also completed the 12-month follow-up assessment – the sample used in our analyses. Attriters did not significantly differ from non-attriters on demographic characteristics or the main targets of the intervention, and the rates of attrition did not significantly differ between the STAR and UP conditions (20.5% v. 24.1%). Youth averaged 13 years of age and just over half were female. The majority had well-educated parents with annual incomes over $100,000. Participation rates were high, with all 103 youth completing 6-8 diary interviews at both baseline and 12-months. The STAR and UP groups for the analysis sample did not significantly differ in any youth or parent demographic information at baseline (Table 1).

**Measurement of Primary Outcomes**

Negative and positive affect were assessed using the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), modified to assess daily affect. Using the prompt “How much of the time did you feel __ today,” youth rated six negative affect items (e.g., sad) and five positive affect items (e.g., excited) using a 5-point rating scale (1=None of the time, 5=All of the time). Items were averaged, with higher scores reflecting more negative and positive affect.

Daily stressful experiences were measured with an adapted version of the Daily Inventory of Stressful Events (DISE; Almeida et al., 2002). Youth were asked whether each of a list of stressful experiences had happened to them since the prior evening’s call (or 5 PM the prior day for the first call): arguments/disagreements with the parent or with anyone else, parent asked them to do more work than they thought they should have to, something stressful happened to a close friend/family member that turned out to be stressful for the youth, and anything else stressful. Youth responded yes or no, and the number of daily stressors was summed.

**Statistical Analyses**

Intent-to-treat, multi-level models (MLM) were conducted using SAS Proc Mixed. Prior to analyses, two variables were created: wave (0 = baseline, 1 = 12-month follow-up) and condition (0 = UP, 1 = STAR). The main effects, along with the wave X condition interaction – which indicates whether the change in experiences of positive and negative affect from baseline to 12-months differed significantly between the UP and STAR groups – were entered as predictors in all models. To examine intervention effects on youth’s reactivity to stressors, the total number of stressors (both the between-person variable indicating the average number of stressors experienced by youth across all eight days and
the within-person variable indicating deviation from the person-mean) were also added as predictors, along with the three-way interaction between wave, condition, and stressors and all lower-level interactions. In these models the strength of the association between stressors and affect (i.e., positive associations between stressors and negative affect, or negative reactivity, and/or negative associations between stressors and positive affect, or positive reactivity) reflect stressor reactivity, and the three-way interactions test whether the change in reactivity from baseline to 12-months differed between the UP and STAR conditions. To measure effect sizes for categorical variables, Cohen’s ds were calculated by dividing the gamma coefficient by the standard deviation of the outcome, then converting the d into $\beta$, which can be interpreted as a standardized regression weight.

Results are shown in Table 2. An example equation is provided below,

$$\text{Negative Affect}_{di} = \beta_0 + \gamma_{11}(\text{Wave})_{di} + \beta_2(\text{WP Stressors})_{di} + \beta_3(\text{Wave} \times \text{WP Stressors})_{di} + e_{di}$$

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{Condition})_i + \gamma_{02}(\text{BP Stressors})_i + \gamma_{03}(\text{Condition} \times \text{BP Stressors})_i$$

$$\beta_{11} = \gamma_{10} + \gamma_{11}(\text{Condition})_i + \gamma_{12}(\text{BP Stressors})_i + \gamma_{13}(\text{Condition} \times \text{BP Stressors})_i$$

$$\beta_2 = \gamma_{20} + \gamma_{21}(\text{Condition})_i$$

$$\beta_3 = \gamma_{30} + \gamma_{31}(\text{Condition})_i$$

with $\gamma_{11}$ capturing the intervention effect on negative affect, and $\gamma_{13}$ and $\gamma_{31}$ capturing the intervention effect on between-person and within-person reactivity, respectively. A different variance component was modeled for each effect, and thus errors were not allowed to correlate across days. All models included the covariates: day in study (0 = day 1 to 7 = day 8), youth/parent gender (0 = female, 1 = male), the average number of days youth attended school across the baseline and follow-up waves. We also included youth age (centered at the sample mean) and parents’ annual income to document the potential effect of STAR beyond these established correlates of youth affect (Gallo & Matthews, 2003; Larson & Richards, 1994).

**Results**

Trend-level main effects for study wave emerged for both positive and negative affect: Consistent with prior research, for the sample as a whole, experiences of positive affect tended to decline from baseline to the 12 month follow-up, and experiences of negative affect increased.

Results of the analyses focused on intervention effects on positive affect revealed the predicted significant wave X condition interaction (Figure 1; $B = .43$, $CI = .32$ to .55, effect size = .30). Follow-up tests indicated that youth whose parents were in the STAR condition significantly increased in positive affect from baseline to the 12-month follow-up, $B = .18$, $p < .001$, 95% CI = .11 to .25, effect size = .13, but youth whose parents were in the UP condition exhibited a significant decline, $B = -.25$, $p < .001$, 95% CI = -.35 to -.16, effect size = .18. Analyses of youth’s positive reactivity focus on whether or not stressors were linked to lower levels of positive affect. As predicted, findings revealed that, at the between-person level, the intervention buffered against age-related increases in the strength of the negative association between positive affect and stressors (Figure 2; $B = .68$, $p < .05$, 95%
CI = .12 to 1.24, effect size = .45): STAR youth exhibited no change in positive reactivity to stressful events from baseline to the 12-month follow-up, $B = .21, p > .05$, 95% CI = −.02 to .44, but in the UP group, the negative association between overall stressful experiences and positive affect was stronger at 12 months relative to baseline, $B = .89, p < .001$, 95% CI = .38 to 1.40, effect size = .55. Effects at the within-person level, however, were nonsignificant.

With respect to negative affect, the significant wave X condition interaction in combination with follow-up tests, revealed that the intervention buffered youth whose parents participated in STAR from age-related increases in negative affect between baseline and the 12-month follow-up (Figure 1; $B = −.11$; CI = −.18 to −.03, effect size = .24): STAR youth showed no change in negative affect, $B = .01, p > .05$, 95% CI = −.07 to .21, but UP youth increased significantly, $B = .11, p < .001$, 95% CI = .05 to .17, effect size = .24. Finally, with respect to negative reactivity, the 3-way interaction at the between-person level (wave X stressor X condition) indicated that, as predicted, the STAR intervention buffered youth from age-related increases in negative reactivity (Figure 2; $B = −.69, p < .001$, 95% CI = −.94 to −.30, effect size = .81).

### Discussion

Grounded in an ecological model that highlights the role of exosystem influences in youth development and well-being (Bronfenbrenner, 1979) and in the emotional transmission paradigm that explains how experiences of stress are transmitted through the family (Larson & Almeida, 1999), we tested whether the effects of a workplace intervention crossed over to affect the affective well-being of employees’ children. We extended both the work-family and youth affective well-being literatures by using an experimental design and daily diary data. Our findings showed that the intervention – which did not include components focused on parenting—increased youth positive affect and buffered youth from normative age-related increases in negative affect and affective reactivity to stressors (Larson & Richards, 1994).

Our findings of crossover effects of the workplace intervention to employees’ children are consistent with ecological models (Bronfenbrenner, 1979), which hold that youth development and adjustment are influenced by contexts beyond their own daily experiences —such as their parents’ workplaces. Although prior correlational research documents links between parents’ work experiences and youth well-being (Lawson et al., 2014), this study is the first to use an experimental design to document the implications of parents’ experiences at work for youth well-being. Our design allowed us to rule out third variable explanations of the group differences that emerged, providing strong evidence of the role of parents’ work on their children.

Most research on youth affective well-being has used laboratory-induced stressors, examined stressful life events (e.g., parental divorce), or measured daily stressors using...
youth’s global reports across time scales ranging from weeks to months. We contributed to the literature by using a daily diary method, capitalizing on its benefits, including the ability to capture reactivity by comparing well-being on stressor versus non-stressor days (Almeida, 2005). The intervention effect on reactivity, however, occurred at the between-person level, indicating that the intervention buffered youth from increases in the associations between overall stressors and affect averaged across the 8 diary days. Preliminary research on the effects of stressor reactivity has indicated it has implications for physical health (Natsuaki et al., 2009). As such, our findings may have important implications for promoting the future health and well-being of youth.

This study has several limitations that suggest directions for future research. First, research should identify mediators of the links between parents’ workplace conditions and youth’s affective well-being. Our research team’s prior work has demonstrated that the intervention has had a positive effect on both employees and their families, including reduced work-family conflict (author citation), better employee sleep (author citations), and increased family time adequacy (author citation) and parent-child time together (author citation). From an emotion transmission perspective (Larson & Almeida, 1999), parents’ improved psychological well-being and increased temporal availability may increase opportunities for positive parent-child interactions, with implications for youth. Consistent with this idea, we found that STAR positively influenced youth sleep patterns (author citation).

The study also focused on youth from economically advantaged families with parents in the IT industry, and replication in the context of other types of industries and families is needed. Many service oriented jobs (e.g., hotel managers) may not benefit from STAR given that control over work time and location is less feasible and more difficult to implement. In addition, due to a small sample size, we were unable to test whether intervention effects were more or less pronounced based on youth gender, age, and parent gender.

**Conclusion**

Workplace policies and practices can positively impact the health and well-being of employees as well as their work organizations (Crouter & Booth, 2009). And, given that 88% of U.S. families with dependent children currently have at least one employed parent (Bureau of Labor Statistics, 2014), parents’ workplaces are also relevant contexts for their children’s development and adjustment. Using daily diary data in the context of an experimental design, this study demonstrated that an intervention to reduce employees’ work-family conflict by increasing family-supportive supervisor behaviors and employees’ schedule control also had positive implications for the daily well-being of employees’ children. More generally, this research demonstrated that exosystem influences have implications for youth, and the findings imply that changing workplace policies and culture may have important benefits for youth.

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Figure 1.
Intervention Effect on Youth’s Average Daily Affect

*Simple slopes estimated using multi-level modeling while controlling for all covariates are significantly different from zero at the $p < .05$ level. UP = usual practice; STAR = intervention condition. Affect scores range from 1-5, with higher scores reflecting more positive and negative affect.
Figure 2.
Intervention Effect on Youth Reactivity to Stressors

*Note.* Y-axis represents the between-person stressor-affect associations (unstandardized betas) from the multi-level regression models. STAR = intervention. UP = usual practice. STAR youth did not change in reactivity from baseline to the 12-month follow-up. UP youth became significantly more reactive at 12-months, compared to baseline (i.e., stressors were associated with less positive affect and more negative affect).
Table 1

Participant Demographic Information (N = 103)

|                | STAR Group (N = 62) | UP Group (N = 41) |
|----------------|---------------------|-------------------|
| **Youth**      |                     |                   |
| Age            | 13.23 (2.17)        | 13.51 (2.43)      |
| Female         | 33 (53.23%)         | 23 (56.10%)       |
| **Employee**   |                     |                   |
| Age            | 45.66 (5.99)        | 44.59 (5.78)      |
| Female         | 32 (51.61%)         | 15 (36.59%)       |
| College Graduate | 49 (79.03%)   | 33 (80.49%)       |
| Income         | 9.07 (2.90)         | 7.97 (3.07)       |
| Number of children living in household | 1.92 (.89) | 2.20 (1.15) |
| Married/cohabitating | 54 (87.10%) | 37 (90.24%) |

Note. Mean (standard deviation) or frequency (percent) reported. The STAR and UP groups did not significantly differ in youth or employee demographics. Income was reported on a scale from 1 (annual income of less than $49,999) to 12 (more than $150,000).
### Table 2

Multi-Level Model Results of Intervention Effect on Youth Affective Well-Being

| Covariates                  | Positive Affect | Negative Affect |
|-----------------------------|-----------------|-----------------|
| **Covariates**              |                 |                 |
| Day in Study                | −.03 (.01)***   | .004 (.004)     |
| Youth Gender                | .04 (.14)       | −.03 (.04)      |
| Youth Age                   | −.06 (.03)†     | .01 (.01)†      |
| Parent Gender               | .03 (.14)       | .02 (.04)       |
| Wave Mean School Days       | .26 (.08)**     | −.02 (.04)      |
| Income                      | .05 (.02)†      | −.004 (.01)     |
| **Intervention Effect on Affective Well-Being** |                 |                 |
| Intercept                   | 3.03 (.26)***   | 1.23 (.06)***   |
| Wave                        | −.25 (.05)***   | .11 (.03)***    |
| Condition                   | −.24 (.15)      | .04 (.04)       |
| Wave * Condition            | .43 (.06)***    | −.11 (.04)**    |
| BP Stressor                 | −.58 (.66)      | .27 (.19)       |
| BP Stressor * Wave          | −.89 (.26)***   | .62 (.16)***    |
| BP Stressor * Condition     | −.07 (.73)      | .32 (.21)       |
| BP Stressor * Wave * Condition | .68 (.28)†   | −.69 (.18)***   |
| WP Stressor                 | −.04 (.06)      | .16 (.04)***    |
| WP Stressor * Wave          | −.09 (.09)      | .04 (.06)       |
| WP Stressor * Condition     | .001 (.07)      | −.01 (.05)      |
| **WP Stressor * Wave * Condition** | .004 (.11)*** | −.08 (.07) *** |
| **Random Effects**          |                 |                 |
| Intercept                   | .42 (.07)***    | .02 (.004)***   |
| Residual                    | .27 (.01)***    | .11 (.004)***   |

†Note. p<.10, *p < .05, **p < .01, ***p < .001. Intervention effects are bolded. Wave is coded as baseline = 0, 12-month follow-up = 1. Condition is coded as UP = 0, STAR = 1. Youth/parent gender are coded as female = 0, male = 1. BP = between-person. WP = within-person.