Quality of Life and Competitive Work Among Adults With Severe Mental Illness: Moderating Effects of Family Contact

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Objective: **Competitive employment may improve life quality for adults with severe mental illness, but it is not known for whom or under what circumstances. On the basis of previous research demonstrating benefits of family contact for African-American adults with severe mental illness, it was hypothesized that frequent family contact would moderate (enhance) a positive association between competitive employment and global quality of life for a rural sample of predominantly African-American adults.** ***Methods:*** **In a secondary analysis of data collected from a randomized trial of supported employment, a series of nested random regression analyses was conducted to test the hypothesized moderating effect of face-to-face family contact on the association between competitive employment and global quality of life, controlling for severity of psychiatric symptoms and satisfaction with family relations.** ***Results:*** **Most of the 143 study participants spent time with a family member at least once a month (80%)—and most at least weekly (60%). Participants who held a competitive job and had face-to-face contact with family members at least weekly reported higher global quality of life than all other study participants.** ***Conclusions:*** **In this rural sample of African-American adults with severe mental illness, competitive work was associated with higher global quality of life only for those who frequently spent time with family members. Research is needed to test the generalizability of this finding to other geographic settings and cultures, as well as the feasibility and effectiveness of formal inclusion of family members in psychosocial rehabilitation interventions. (*Psychiatric Services* 64:1218–1224, 2013; doi: 10.1176/appi.ps.201200553)**

To date, six randomized trials of supported employment for persons with severe mental illness have reported modest improvements in psychosocial outcomes associated with competitive work, such as global quality of life (1–4), self-esteem (1,3), social networks (5), overall functioning (3,6), and independent living (2). However, the types of psychosocial outcomes measured have varied across studies, and the magnitude of improvements in outcomes have been uneven in general (1,7) and for quality-of-life domains in particular (8). For instance, in a five-year follow-up of a randomized trial of assertive community treatment for persons with co-occurring severe mental illness and substance use disorders, McHugo and colleagues (2) found that participants who worked steadily in competitive jobs reported greater global improvement in quality of life than participants who did not work. In a two-year randomized trial of individualized placement and support, Kukla and colleagues (5) found that participants who worked in only noncompetitive jobs for at least 24 weeks improved their social networks more than competitively employed participants and more than participants who worked less than 24 total weeks, although the groups did not differ in overall quality of life.

Inconsistent findings on psychosocial outcomes across randomized trials might result from improvements that occur only under circumstances that are present in one study or present only for one sample subgroup but not for others, which raises the possibility that associations between work and psychosocial outcomes may be moderated by other measured or unmeasured variables (9). For example, Kukla and colleagues (5) suggested that social network development accompanying extended periods of noncompetitive employment (for example, work crews or enclaves) and concurrent attendance in programs that promote noncompetitive employment may increase opportunities to socialize in ways that competitive jobs do not. However, no prospective study has yet demonstrated that social contact with either friends or family members moderates (that is, enhances or reduces) associations between employment and various indicators of quality of life.

A small number of observational studies conducted with racial and ethnic minority populations have reported positive associations between family connectedness and well-being for persons with severe mental illness, particularly in African-American (10,11) and

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other U.S. minority communities (12,13), in which familism is a strong cultural value (14,15). There is also empirical evidence that familism can facilitate engagement in mental health services among African-American adults with mental illness (16,17) and promote young adult vocational achievement (18). In recognition of the frequent rate of family contact that has been documented for African-American adults with severe mental illness (10), a secondary analysis was undertaken of data from a randomized study of supported employment conducted in rural South Carolina (19). The study reported here tested the hypothesis that frequency of face-to-face family contact moderates the association between competitive employment and global quality of life for African-American adults with severe mental illness. The analysis statistically controlled for satisfaction with family relations and severity of psychiatric symptoms. In other words, it was hypothesized that global quality of life is greater for participants who work in competitive jobs and also interact frequently with family members, compared with participants who do not hold a competitive job or who report infrequent family contact.

Methods

Participants and setting

Data for this secondary analysis came from a randomized trial (19) conducted in rural South Carolina between 1995 and 2000 as part of the Substance Abuse and Mental Health Services Administration's eight-site Employment Intervention Demonstration Project (20,21). Participants were eligible if they had a diagnosis of a severe mental illness, a history of frequent or long-term psychiatric hospitalization, and difficulty living independently and were unemployed at study entry and interested in working. After complete description of the study to the participants, written informed consent was obtained. The full institutional review boards of both the South Carolina Department of Mental Health and the Medical University of South Carolina approved and monitored all research procedures. Participants were randomly assigned to receive vocational services from either an integrated assertive community treatment and individual placement and support program (N=66) or from a prevocational training program (N=77) that placed participants in time-limited noncompetitive jobs followed by brief assistance with searching for competitive jobs.

In this secondary analysis, random assignment to service programs could be ignored when testing the moderating hypothesis because the percentage of participants who were competitively employed and who also reported at least weekly contact with a family member was nearly identical across experimental and comparison interventions, both at baseline (61% and 57%, respectively) and at 24 months (56% and 60%, respectively).

Measures

Global quality of life was the criterion variable. Two explanatory variables were measured: competitive employment and frequency of family contact. Two control variables were measured: satisfaction with family relations and psychiatric symptoms.

Global quality of life. Trained interviewers administered Lehman's Quality of Life Interview (QOLI) (22) to participants at baseline and at six-month intervals (six, 12, 18, and 24 months) during the 24-month period. Following the QOLI manual instructions (23), global quality of life was the sum of the QOLI's first and last items, which are worded identically: "How do you feel about your life in general?" The question is asked at the beginning of the QOLI interview and again at the end, when the response may change. Each item is rated on a Likert scale ranging from 1, terrible, to 7, delighted. Possible scores range from 7 to 14, with higher scores indicating more satisfaction.

Competitive employment. A job was defined as competitive if it was contracted directly with the worker, not set aside for adults with disabilities, located in typical community settings, paid at least the federal minimum wage, and paid a wage comparable to wages earned by nondisabled workers holding similar jobs. Employment specialists from both experimental conditions submitted weekly reports to the research team of each participant's work activity. On the basis of McHugo and colleagues' logic (2), the entire sample was divided into two groups according to their competitive work activity over the 24-month study period: any competitive work (more than one week of competitive work; N=62) and no competitive work (less than one week of competitive work; N=81). The group with no competitive work consisted of two subgroups: those not working at all (N=44) and those who worked only noncompetitive jobs (N=37), such as sheltered work and agency-contracted jobs. The two subgroups were combined, because there was no expectation that they would differ in global quality of life.

Frequency of face-to-face family contact. Frequency of face-to-face family contact, a time-varying covariate, consisted of a single QOLI objective item: "In the past month, how often did you get together with a member of your family?" Response options are 1, not at all; 2, less than once a month; 3, at least once a month; 4, at least once a week; or 5, daily. For this study, scores of 4 and 5 were classified as frequent contact, and scores of 1 to 3 were classified as infrequent contact. This self-report measure of family contact is considered to be a behavioral indicator of the subjective cultural concept of familism (24). Similar measures have been used for this purpose in other studies of African-American individuals with severe mental illness (10,11).

Satisfaction with family relations. Satisfaction with family relations, a time-varying covariate, was measured as the mean score on a QOLI two-item subscale: "How do you feel about the way you and your family act toward each other?" and "How do you feel about the way things are in general between you and your family?" Each item is rated on a Likert scale from 1, terrible, to 7, delighted. Possible scores range from 1 to 7, with higher scores indicating more satisfaction; a score greater than 5 indicates positive family relations. The analysis adjusted for the effect of this covariate for a conceptual and a statistical reason. Conceptually, controlling for the effect of relations on global

Table 1

Baseline demographic and clinical characteristics of 143 participants, by competitive work status

Characteristic	Any competitive work[a] (N=62)		No competitive work[b] (N=81)		Test statistic[c]	p
	N	%	N	%		
Age (M±SD)	35.8±8.7		36.4±9.1		.21	.65
Female	23	37	31	38	.02	.88
African American	46	74	70	86	3.43	.064
High school diploma, GED, or some college	35	56	39	48	.97	.32
Not currently married or cohabitating	47	76	71	88	3.42	.064
Telephone family contact						
At least weekly	46	74	50	62	2.47	.12
At least monthly	52	84	58	72	2.98	.08
Face-to-face family contact						
At least weekly	40	64	44	54	1.50	.22
At least monthly	50	81	65	80	.00	.95
Schizophrenia	35	56	63	78	7.41	.006
Psychiatric symptoms (M±SD)[d]	69.1±16.3		69.9±15.5		.08	.78
Substance use disorder (current)	11	18	12	15	.22	.64
Prior work (≥12 months in past 5 years)[e]	24	42	18	22	6.02	.014
SSI or SSDI beneficiary[f]	31	51	56	72	6.43	.011

[a] Participants who worked at least one week in a competitive job over 24 months

[b] Participants who worked less than one week in a competitive job over 24 months

[c] Proportions were compared with chi square tests (df=1), and means were compared by F tests (df=1 and 141).

[d] Positive and Negative Syndrome Scale total score. Possible scores range from 30 to 210, with higher scores indicating greater severity of symptoms.

[e] Data were missing for five participants with any competitive work and for one participant with no competitive work.

[f] SSI, Supplemental Security Income; SSDI, Social Security Disability Insurance. Data were missing for one participant with any competitive work and for three participants with no competitive work.

quality of life allowed interpretation of a positive correlation between family contact and global quality of life as more of a cultural obligation to spend time with a disabled relative than an emotional desire to do so. Statistically, across all measurement time points, family relations were significantly correlated with both the criterion variable, global quality of life (r values ranged from .39 to .52), and the focal predictor, frequency of family contact (r values ranged from .32 to .40); therefore, control was required to remove the confounding effect of family relations on the association of the focal interaction effect (work × family contact) with global quality of life.

Psychiatric symptoms. Interviewers assessed participants' psychiatric symptoms, specified as a time-varying covariate, by using the 30-item Positive and Negative Syndrome Scale (PANSS) (25). Each symptom is rated on a scale from 1, not applicable, to 7, extreme. Possible total scores range from 30 to 210, with higher scores indicating more severe symptoms. Conceptually, controlling for the effect of psychiatric symptoms on global quality of life allowed for the removal of the confounding effect of psychological distress on the association of the focal interaction effect with global quality of life. Statistically, symptoms correlated significantly with global quality of life at all time points (r values ranged from –.20 to –.36) and with frequency of family contact at two of five time points (r values ranged from –.03 to –.23).

The analysis did not control for other participant characteristics because there was no theoretical or statistical rationale to do so. Prior empirical evidence with which to identify covariates as necessary and sufficient to eliminate selection bias was lacking. In addition, the objective was to avoid specifying complex models yielding adjusted parameter estimates that would be difficult to replicate in future studies of other samples from the same or different population (26–29).

Statistical analysis

The study hypothesis was tested in a series of seven nested random regression models. The first four of the seven models estimated the effects of time and the two control variables on variation in global quality of life: model 1, unconditional means with no fixed effects and one random intercept for global quality of life; model 2, unconditional growth with one fixed effect and one random effect for linear time; and models 3 and 4, one fixed effect for each of the two time-varying control variables of psychiatric symptoms and satisfaction with family relations. The three models in the second set tested the hypothesis: model 5, one fixed effect for the time-varying explanatory variable of face-to-face family contact; model 6, one fixed effect for the time-invariant explanatory variable of competitive work group status; and model 7, one fixed effect for the interaction of the face-to-face family contact and competitive work group status.

Study retention was high, with 80% of participants completing the entire 24-month participation period. Before running the regression models, the raw data were examined for evidence of differential attrition as

a function of explanatory and control variables. Finding none of substance, it was assumed that data were missing at random. Analyses were carried out with SAS PROC MIXED, version 9.3 (30).

Results

Characteristics of the two groups

Forty-three percent (N=62) of the participants worked at a competitive job during the 24-month participation period. Among these participants, the mean±SD number of weeks worked in the period was 33.1±26.7 (total hours, 823±963). The mean number of hours worked per week was 21.5± 11.5. The mean wage rate across jobs was $5.60±.91 per hour, which exceeded the federal minimum wage rate of $4.50 in force when the study was conducted (1995–2000).

Table 1 shows that at baseline the group that had any competitive employment and the group that had none resembled each other on most demographic, clinical, and employment characteristics. However, as would be expected, a larger proportion of participants in the competitive work group had worked for more than 12 months during the five years before study participation, and a smaller proportion was receiving Social Security benefits. The latter finding may partially explain the higher rate of schizophrenia diagnoses among participants in the group with no competitive work, because most participants with schizophrenia were Social Security beneficiaries. When participants were divided into two groups based on family contact (at least weekly, N=84; less than weekly, N=59), no differences were found on any demographic, clinical, or employment characteristic.

Variables entered into the regression analyses

Table 2 presents descriptive statistics by measurement time point (baseline and six, 12, 18, and 24 months) for the dependent, explanatory, and control variables entered into the regression analyses. For the dependent variable of global quality of life, mean satisfaction scores for participants in the competitive work group ranged from 8.52 and 9.30 over the study period, whereas participants in the group with no competitive work reported slightly higher mean satisfaction scores, ranging between 9.14 and 9.52.

Table 2

Measures at baseline and four time points for 143 participants, by competitive work status

Variable and time point	Any competitive work (N=62)[a]			No competitive work (N=81)[b]		
	N[c]	M	SD	N[c]	M	SD
Global quality of life[d]						
Baseline	62	8.52	3.25	81	9.48	3.35
6 months	53	8.83	2.71	68	9.29	3.30
12 months	53	8.87	2.93	61	9.23	3.18
18 months	56	9.30	3.15	60	9.52	2.82
24 months	55	8.91	2.82	63	9.14	2.87
Psychiatric symptoms[e]						
Baseline	62	69.1	16.3	81	69.9	15.5
6 months	53	69.2	18.5	67	71.7	17.8
12 months	53	64.9	14.8	61	70.0	13.2
18 months	56	66.4	13.6	60	70.8	16.4
24 months	55	62.0	14.1	63	69.7	13.0
Satisfaction with family relations[f]						
Baseline	62	4.77	1.58	81	4.44	1.84
6 months	53	4.40	1.79	68	4.32	1.77
12 months	53	4.52	1.64	61	4.47	1.55
18 months	56	4.63	1.70	60	4.93	1.54
24 months	55	4.94	1.77	63	4.90	1.44
Face-to-face family contact[g]						
Baseline	62	3.56	1.25	81	3.46	1.35
6 months	53	3.30	1.32	68	3.44	1.44
12 months	53	3.60	1.20	61	3.23	1.42
18 months	56	3.36	1.30	60	3.55	1.25
24 months	55	3.38	1.24	63	3.60	1.39

[a] Participants who worked at least one week in a competitive job over 24 months
[b] Participants who worked less than one week in a competitive job over 24 months
[c] Number of observations available at each time point
[d] Measured by the sum of two items from Lehman's Quality of Life Interview (QOLI). Possible scores range from 7 to 14, with higher scores indicating more satisfaction.
[e] Positive and Negative Syndrome Scale total score. Possible scores range from 30 to 210, with higher scores indicating greater severity of symptoms.
[f] Measured by the mean of two items from the QOLI. Possible scores range from 1 to 7, with higher scores indicating more satisfaction.
[g] Measured by one item from the QOLI: "In the past month, how often did you get together with a member of your family?" Possible scores range from 1 to 5, with higher scores indicating more frequent contact.

For the explanatory variable of face-to-face family contact, the entire sample of participants reported stable mean scores over the study period, ranging between 3.23 and 3.60. These scores indicate contact ranging from once per week to once per month. A remarkably large proportion of participants reported contact at least once per week (50%−70% at each time point; data not shown).

For the control variable of psychiatric symptoms, as measured by the PANSS total score, both groups' mean scores ranged from 62.0 to 71.7, indicating mild symptoms. For the control variable of satisfaction with family relations, both groups' mean satisfaction scores ranged from 4.32 and 4.94 over the study period.

Family contact, quality of life, and work

Results of the statistical modeling are presented in Table 3. The nonsignificant fixed effect for time in model 2 indicates that for the entire sample, the mean score for global quality of life did not change over time. However, the statistically significant random effect for time indicates modest temporal variation between individuals. Both control variables, psychiatric symptoms (model 3) and satisfaction

Table 3

Random regression analyses estimating the effects of family contact and competitive work group status on global quality of life for 143 participants[a]

	Model 2: time[b]			Model 3: PANSS[c]			Model 4: family relations[d]			Model 5: family contact[e]			Model 6: competitive work[f]			Model 7: work × contact[g]		
Variable	B	SE	p	B	SE	p	B	SE	p	b	SE	p	b	SE	p	b	SE	p
Fixed effects																		
Intercept	9.16	.26	<.001	12.20	.55	<.001	10.05	.66	<.001	10.00	.68	<.001	10.39	.71	<.001	10.83	.74	<.001
Time[h]	.03	.06	.55	–.00	.06	.99	–.03	.06	.64	–.02	.06	.65	–.02	.06	.67	–.02	.06	.72
PANSS				–.04	.01	<.001	–.04	.01	<.001	–.04	.01	<.001	–.04	.01	<.001	–.04	.01	<.001
Family relations							.38	.06	<.001	.37	.07	<.001	.38	.07	<.001	.39	.07	<.001
Family contact										.03	.08	.71	.03	.08	.72	–.11	.10	.28
Competitive work													–.73	.38	.059	–1.79	.63	.005
Work × contact																.31	.15	.036
Random effects[i]																		
Within person	3.02	.23	<.001	2.92	.22	<.001	2.92	.23	<.001	2.91	.23	<.001	2.92	.23	<.001	2.90	.23	<.001
Initial status	7.35	1.12	<.001	6.41	1.00	<.001	5.29	.89	<.001	5.31	.89	<.001	5.06	.86	<.001	4.95	.85	<.001
Rate of change	.12	.06	.02	.10	.06	.04	.09	.05	.06	.09	.06	.05	.09	.05	.06	.09	.06	.06
Covariance	–.41	.21	.04	–.31	.19	.10	–.28	.18	.11	–.29	.18	.10	–.26	.17	.14	–.25	.18	.14

[a] The analysis controlled for psychiatric symptoms and family relations over 24 months. Model 1 (unconditional means) not shown; intraclass coefficient=.65; deviance (–2LL [minus twice log-likelihood difference])=2,781; Bayesian information criterion (BIC)=2,976

[b] Model 2: deviance=2,774; BIC=2,804

[c] Model 3: PANSS, Positive and Negative Syndrome Scale. Deviance=2,736; BIC=2,770

[d] Model 4: deviance=2,701; BIC=2,740

[e] Model 5: deviance=2,701; BIC=2,745

[f] Model 6: deviance=2,697; BIC=2,747

[g] Model 7: deviance=2,693; BIC=2,747

[h] Denoted as 5 time points of measurement (baseline and 6, 12, 18, and 24 months)

[i] The error covariance structure of all models was specified with a block-diagonal unstructured variance-covariance matrix; all models were fitted using restricted maximum likelihood estimation.

with family relations (model 4), accounted for considerable variation in global quality of life and substantially improved the model fit. The variable psychiatric symptoms was negatively correlated with global quality of life, indicating that more symptomatic participants reported poorer quality of life. Neither explanatory variable, face-to-face family contact (model 5) and competitive work group (model 6), was associated with global quality of life after the analysis controlled for psychiatric symptoms and satisfaction with family relations.

In the final model 7, the interaction of competitive work group status with face-to-face family contact was significantly associated with global quality of life, supporting the hypothesis that frequent family contact positively moderates the association between global quality of life and competitive work. That is, across all time points of measurement, the more frequent the face-to-face family contact, the stronger the positive association between competitive employment group status and self-ratings of global quality of life.

Table 4 presents data showing the moderating effect of family contact on the correlation between competitive work and global quality of life. The analysis employed a categorical measure of family contact and did not control for satisfaction with family relations or psychiatric symptoms. The subgroup that reported any competitive work as well as a high frequency of family contact had the highest self-ratings of global quality of life of any of the four subgroups at the 18- and 24-month interviews—points in time when most or all participants in this subgroup had begun their first competitive job. Of interest, participants in the competitive work group who reported relatively infrequent contact with a family member rated their global quality of life considerably lower than all other subgroups at every time point.

Discussion

The regression analyses supported the study hypothesis that global quality of life would be greater for participants who both work in competitive jobs and interact frequently with family members, compared with participants who do not work in a competitive job or who report infrequent family contact or both. Because the analyses statistically controlled for satisfaction with family relations and severity of psychiatric symptoms, it can plausibly be inferred that the positive relationship between global quality of life and

Table 4

Unadjusted global quality of life scores over 24 months, by face-to-face contact with family and competitive work status[a]

	High frequency of family contact[b]						Low frequency of family contact[c]					
	Any competitive work[d]			No competitive work[e]			Any competitive work[d]			No competitive work[e]		
Time	N[f]	M	SD	N[f]	M	SD	N[f]	M	SD	N[f]	M	SD
Baseline	40	9.13	2.95	44	9.73	3.19	22	7.41	3.54	37	9.19	3.56
6 months	29	9.48	2.64	41	9.76	2.88	24	8.04	2.63	27	8.59	3.80
12 months	37	9.08	2.60	32	9.50	2.72	16	8.38	3.63	29	8.93	3.65
18 months	31	9.90	2.83	35	9.83	2.54	25	8.56	3.42	25	9.08	3.19
24 months	30	9.77	2.67	39	8.95	2.65	25	7.88	2.70	24	9.46	3.23

[a] Global quality of life was measured with the sum of two items from Lehman's Quality of Life Interview (QOLI). Possible scores range from 7 to 14, with higher scores indicating more satisfaction. Face-to-face family contact was measured with one item from the QOLI: "In the past month, how often did you get together with a member of your family?" Possible scores range from 1 to 5, with higher scores indicating more frequent contact.

[b] More than once per week (scale score ≥4)

[c] Less than once per week (scale score ≤3)

[d] Worked at least one week in a competitive job over 24 months

[e] Worked less than one week in a competitive job over 24 months

[f] Number of respondents at each time point

competitive work for participants who saw family members frequently might be attributable to family dynamics other than simple mutual likeability or tolerance of psychiatric symptoms. Cultural theories suggest that the observed findings for this predominantly rural, African-American sample may reflect family acceptance of and responsibility for adults with severe mental illness and a corresponding appreciation of their work achievements (10,11). Research is needed to identify family responses to competitive employment (for example, praise, stigma reduction, and lower financial burden) that might account for the higher global quality of life among competitively employed participants who saw family members frequently.

Two caveats must be noted. First, the temporal stability observed in both quality of life and family contact suggests reciprocal causality. It is likely that frequent family contact increased the likelihood of work success and that work success enhanced family relationships and encouraged contact with family members. Second, participants who worked competitively and who reported infrequent family contact reported the lowest levels of global quality of life. This finding might be interpreted in several ways. For example, entry into the competitive labor force after years of limited participation can be stressful unless buffered by family support. Alternatively, because this group's self-ratings of global quality of life were lower than those of other groups at baseline, these participants may have entered competitive work to compensate for a lack of family contact.

The overall percentage of participants reporting at least weekly telephone or face-to-face family contact in this predominantly rural sample of African-American adults with severe mental illness approaches the very high rate of daily telephone or face-to-face contact reported by an urban sample of African Americans in Los Angeles (10), and it greatly exceeds the rate of family contact reported for a predominantly non-Hispanic white sample of older adults with severe mental illness in urban Massachusetts (31). Reports are needed from other U.S. geographic regions and other racial-ethnic communities to estimate the extent to which adults with severe mental illness maintain strong ties to their families.

The study had several limitations that prevent generalizing findings to other samples that represent the population of persons with severe mental illnesses receiving psychiatric rehabilitation services. First, as a general matter, findings from a study with an observational design, post hoc hypotheses, small sample sizes, and small subgroup differences may be difficult to replicate with other samples from the same population. Second, and specifically, because the study was conducted in a rural region with a predominantly African-American population, findings may not generalize to urban locations or to other racial-ethnic groups. Third, interview data were not collected at time points associated with the timing of job starts and endings, so no inferences can be made about immediate or lagged impact of competitive employment on either frequency of family contact or global quality of life. Fourth, the simple self-report measures of family contact and family relations did not allow an exploration of the historical and cultural dynamics of reasons for the higher global quality of life among participants who worked in competitive jobs and saw family often.

Conclusions

Competitive employment appeared to be positively associated with global quality of life for individuals with severe mental illness if they also had frequent face-to-face contact with one or more family members. On the basis of these observational study findings, providers should consider more formal inclusion of family members in psychosocial rehabilitation interventions for adults with severe mental illness in rural or African-American communities.

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