
The Structure of Images of Career and Life Plans in University Students: Cognition of Their Roles and Gender Identity

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INTRODUCTION

Developmental Psychology and Career Education

Adolescence is the period when children step out of early primary social relations provided by the parents or caregivers, search for their unique identity, and face a developmental challenge to construct relationships without the involvement of their caregivers. Adolescents must solve problems independently for themselves, while they refer to the social attitudes of their parents or caregivers. It is also a developmental challenge to observe what their peers are doing and try to seek their uniqueness similar to but not exactly the same as their peers. In a modern urban society, job hunting and the choices in its preparation have become a great part of identity acquisition in adolescence. Although career inheritance within a family still exists in some professions, the system is already rare in urban society. Young people today enjoy the advantage of broadened job options, but they face a grave “risk” when preparing and choosing the job to take and the way to become independent. In university education, career courses across departments and majors have recently been made compulsory as they provide realistic information on how to live after graduation as well as interpersonal communication skill training to prepare students for the future.

In the introduction of career education programs for university freshmen as leading students to have a vision of their life and future career, the wheel track of the self-determination should be emphasized. Referring to Wakamatsu (2001) and others, Teramoto (2020) also argues that, whereas the term “career” has been used in relation to jobs and occupations as in the context of “job experience” and “individual job history”, “career” in the recent context of “career support” and “career education” has extended its meaning to include the “way of life”.

Teramoto (2020) also cites the five life stages that Super proposed using a developmental

approach (Super, 1985; Super et al, 1996). Super (1985) presented Growth (ages 0–14), Exploration (ages 15–24), Establishment (ages 25–44), Maintenance (ages 45–64), and Disengagement (65 years and over) as the “maxi-cycle” of a series of life stages.

Based on the characteristics of life roles of Super, Hansen (Hansen, 1996; Hansen, 2001) describes ILP (Integrative Life Planning) as a conceptual composite of complex social functions, which are comprised of the 4 Ls (Labor, Learning, Leisure and Love) and Citizenship (Hansen, 1996; Hansen, 2001). Hansen argues that work should be recognized in relation to various life roles and regarded as an issue of a person’s whole life, emphasizing the integration and wholeness of life roles.

While a developmental transition involving multiple roles in social life can impose a burden and social restrictions, it can also be acquiring new abilities. Accordingly, by engaging in various roles, individuals can acquire availability for multiple and multi-layered environments.

It is important to consider gender issues in this context. Career support toward women as the gender with the distinctive attributive characteristics of possible pregnancy, childbirth and child rearing cannot be discussed appropriately as equal to that for men in the present situation. Adachi (2019) points out that it is time to reexamine gender stereotypes, including expectations, biases, and beliefs based on biological sex, which emerge when deciding how to live, work and choose a career, the gender gap in work-life balance, and career images conventionally divided based on biological sex (i.e., manly versus womanly occupations).

In the research areas of developmental psychology and pedagogics among others, it is urgently requested that the conventional career education based on biological sex should be reviewed in light of new views of gender. Meanwhile, it should be noted that there is a discrepancy on the part of adolescent women between their attitude toward career, consciousness structure, and the current psychological social structure.

Current Gender Gap in Japan and Major Nations

According to the White Paper on Gender Equality 2014, 54.0% of adolescent boys and 45.6% of adolescent girls go to college (undergraduate course), showing a gap of 8%. The overall rate of girls advancing to higher education goes up to 55.2% (the 9.5% of girls attending to junior college are included). Those enrolling in graduate school right after completing an undergraduate program account for 15.0% of male students and 6.0% of female students as of the academic year 2013. In 2013, 25.6% of female students majored in social sciences, demonstrating that it is the most popular subject among female students. Women account for more than 30% of the students majoring in social sciences. While there are many female students majoring in

medicine, dentistry, pharmacy, nursing and education, which all lead up to state qualifications, the number of female students majoring in physical sciences and engineering is small. Thus, a gender imbalance according to university major has been reported. In addition, although the ratio of female researchers to the overall research community is gradually increasing, it is low at 14.4% as of March 31, 2013, which is smaller than that of many other nations.

In universities and other research institutions where most female researchers work, about half of the researchers are female in health-related fields such as pharmacy and nursing, whereas they account for only 9.7% in engineering and less than 20% in physical or agricultural sciences as of March 31, 2013. The affiliations of researchers also differ between male and female workers. More than 60% of male researchers belong to companies and 30% of them to universities, whereas the proportion is reversed among female researchers as it is reported that more than 60% of them belong to universities and about 30% to companies. The ratio of male students and researchers in physical sciences and engineering fields and that of female students and researchers in social sciences, medical and educational fields seem to be reflected in the gender difference in the number of researchers who belong to companies (White Paper on Gender Equality 2014).

The above empirical data implies that the gender gap may gradually decrease as society evolves. A typical turning point may be the Revised Equal Employment Act (March 2016). Major transitional life events such as child rearing in females and males as genders are not perfectly identical. In view of these premises, the implementation of the Revised Equal Employment Act should be evaluated because it clearly stipulates that women have equal legal rights to receive highly professional education and to pursue their careers at will.

Currently, the OECD report (2020) claims that Japan continues to exhibit an extremely low level in terms of the Gender Gap Index among major developed nations. Moreover, the Global Gender Gap Report 2020 published by the World Economic Forum in December 2019 ranked Japan 121st among 153 nations with the total Gender Gap Index (GGI) score of 0.652. Previously, Japan was ranked 110th among 149 nations. This index is calculated based on data in four different areas: economy, politics, education and health, where 0 indicates total inequality and 1 is total equality. In the meantime, the Gender Inequality Index (GII) of the United Nations Development Programme (UNDP), which comprises three dimensions (i.e., reproductive health, empowerment and labor market), indicates the possible loss of human development arising from gender inequality. The GII score varies from 0 to 1, and a score closer to 1 denotes greater inequality. The statistics updated in 2019 show that the GII score for Japan is 0.099, ranking it as low as 23rd among 162 nations worldwide.

Judging from the fact that the GII of the UNDP is an index of reproductive health,

empowerment from the aspect of possible socio-economic self-decision and labor, compared to the Gender Gap Index of the World Economic Forum, which is comprised of economy and politics, the conditions of women in Japan concerning their right to life are not low at all. Still, Japan is, in fact, far behind in realizing full participation of women in the center of political, economic and educational organizations.

While Japan boasts a high advancement rate of female students to higher education, it shows a characteristically low rate of female promotion to managerial posts in corporate organizations compared to other major developed nations. Background factors of the gender gap as shown by the low rate of females who are employed full-time and continue to work after marriage and childbirth must be closely examined before reviewing their promotion to managerial posts in government and other public organizations. For example, there is obviously a small number of women who advance to a full professor post at universities and other research institutions. Promotion to a professor only requires a certain level of quantitative and qualitative research achievements. Consequently, a gender gap should not arise in this regard. However, it requires a tremendous amount of time and effort to complete graduate school, obtain a degree, and to continue research to produce further achievements. The time that young researchers devote to academic achievement precisely coincides with the time of child rearing, which is also a time of a developmental transit and a big life event, especially for women. Hence, men and women encounter a watershed moment where they must decide whether to choose and continue their job as a researcher. There have been many cases where female researchers discontinue their career as a researcher, opting instead for time with children.

Students' Career Image Encountered in Career Education Courses

When inviting female students to discussions in career education classes, we encounter many students who cannot step out of their fixed vision or stereotypes, which underlie the series of data shown above. In the unit of career education and development, we present some life plans, including lifetime earnings (although this is outside my field of psychology), and assign students to figure out what life events that they would like to encounter between the age of 30 to the retirement age of 65 and estimate their earnings and spending during that period based on their career image. Naturally, we get reactions from students as follows:

“I had thought that the conventional M-shaped curve work style would be hard to maintain in view of the current economic outlook of Japan, but I never knew that we would lose such a large amount of money and opportunities if we choose the M-shaped supplemental work style in which women retire at childbirth and start working part-time after child rearing.

“I am now keenly aware of the risk in maintaining the same level of urban life as our parents’ generation have had with the spouse’s income only.”

These reactions show that the career education course is on the right track. An educational program that assigns students to make an estimate based on realistic figures is expected to help female adolescents better understand the value of employment and enhance their involvement in the decision of their life choices.

Nevertheless, this may be over optimistic when assessing the realistic effects of these career education programs. Career educators see many female students who still hold a very narrow image of employment and are so obedient to conventional frameworks that they can only think of jobs with limited employment lengths or range of responsibilities, even after they have learned about many different career cases at a university. Students tend to positively talk about their vision to “work at a big organization long enough to be promoted to a managerial position and participate in management” or to “continue working and pursue my specialty to do what I find interesting” in Year 2 or 3 (the year is shifting earlier as companies have recently started to accept Year 3 student interns). However, as they come to reconcile the reality of the employment market, their comments often change to “I want to choose a life plan to retire upon marriage and stay at home to devote myself to child rearing” or “It seems difficult to work while raising children, so I will probably retire at childbirth. Therefore, I cannot choose to be on the managerial track with the prospect of mandatory transfer.” Thus, with a series of passive choices to downsize their life plans, female students may be inclined to opt for conventional M-shaped employment.

I have a chance to see my students again at an annual homecoming event. Sometimes I see students who graduated about ten years ago proudly reporting that they have been working after marriage and have been promoted to a managerial post to instruct many young employees. Surprisingly, such students happen to have been the ones who thought they were obliged to accept M-shaped employment as the only option they could choose. However, I have realized that the life plan, ideal goals, psychological and social environments that they have as a university student alone cannot determine whether they continue working or are promoted to a leader. There are other factors such as motivation and encouragement or an opportunity that they have while working after graduation. Both teachers and students often realize that there is an encounter, which no one could have imagined when they were preparing for their future career in a university class. Career developmental transitions extend over the whole life, and each one is surely an individual case.

Even considering these circumstances, we should examine the awareness structure of female university students who downsize their life plan in a nation like Japan, where the law

stipulates that the employment system does not discriminate based on gender (at least officially) and elucidate possible causes, which constitute their image about employment and gender roles that are so fixed as to be called stereotypes.

“Women will change the society and the world” (Jissen Women’s University, 2014). To realize this ideal, it is necessary to examine the primary gender image structure of female adolescents. This study reports the findings of an epidemiological survey involving female students in urban universities asking them about their gender images, including societal roles.

Hypothetical Models of This Study

This study intends to verify the hypotheses about the relations below on the basis of the preceding data collected to date about gender identity formation and life plans of female university students, including their career image (i.e., pursuing a career, marriage, child rearing, etc.):

- **Hypothesis 1 (H1)**
Female students’ perception of their gender identity affects their cognitive family roles.
- **Hypothesis 2 (H2)**
The cognitive family roles of female students affect their career images such as whether to have a life plan that includes quitting their job upon marriage or having a child/ children or returning to work after a certain interval.
- **Hypothesis 3 (H3)**
The female students’ life plans and career images (e.g, quitting their job upon marriage or having a child, etc.) are affected by their awareness of gender identity.

Fig. 1 shows the relations of the respective variables in a hypothetical model chart form.

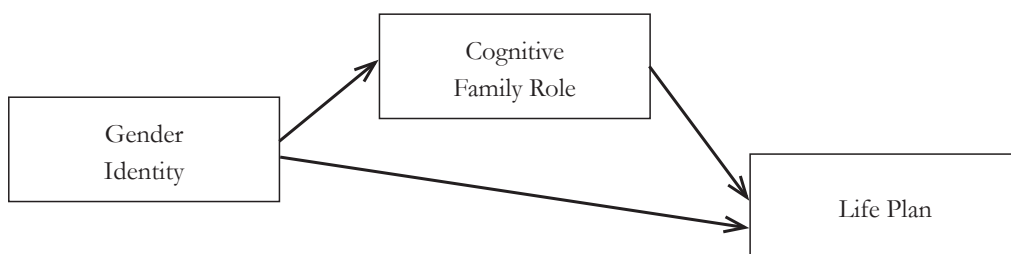


Fig. 1 Explanatory Diagram of a Hypothetical Causal Model of Gender Identity and Cognitive Family Roles That Affect the Life Plan Female Students Have in Mind

METHOD

Participants

A total of 773 female university students in Years 1 to 4 living in all 23 wards as well as in the suburban areas in Tokyo were asked to voluntarily respond to the questionnaire. The attributes of the respondents are shown in Table 1.

Measures

The following psychological and societal variables are incorporated in this study.

- The group of questions about general attributes: gender, age, family makeup, type of residence while studying at university (at home or outside home, dormitory, living alone, etc.), employment status of parents, etc.*
- The group of items related to gender identity: the gender-identity items quoted from Dohi (1996) are adjusted to expansively include biological gender and views on social roles. These are used for the scales.*
- The items of cognitive family roles: ratings of the “wife’s roles” and the “husband’s roles” as cognitive roles within a family**
- The images of “life plans”, which include career, housework and child rearing**

* The existing scale items of Dohi (1996) have been adjusted to suit the objective of this study.

** and 4) items have been sampled from actual situations of the respondents and itemized for this survey. For this survey, we formed new items based on the daily background of female students and the actual situation when choosing a career path.

Table 1 Basic Attributes of Respondents

N = 773				
age	19.95 (SD = 1.057)			
grade	1	2	3	4
n	171	311	232	59
%	22.10%	40.20%	30.00%	7.60%

RESULTS

Calculation of the Subscale Variables by Exploratory Factor Analysis and Two-variable Correlations

Exploratory factor analysis was performed to explore the commonality in behavioral choices and dimensions of cognition shared by female students.

Gender Identity

After excluding items with a marked selection bias from the responses of the 41 Gender Identity items, an exploratory factor analysis was performed using the maximum likelihood factor analysis with promax rotation (Table 2). Eliminating the items that did not converge in the first analysis, the second analysis conducted on 20 items obtained a cumulative attribution of 32.599% up to the third factor.

The first factor extracted 13 items. The attribution was 17.288%, and Cronbach's α was .855. Extracted items included: "Love is important in life", "I have a friend/friends whom I can ask for advice about the person I love", "I have a one-on-one date with a person I love", and "I have a life plan as far ahead as the stage of having a child/children". Therefore, we named it the factor of GI_1_Love and Life-plan.

Three items were extracted for the second factor. The attribution was 10.821%, and Cronbach's α was .757. The three items extracted were: "I was often scolded by my parents even more harshly simply because I am a female (or a male)", "My parents would always criticize my behaviors as unsuitable things for a female (or a male) to do", and "I believe that my parents would not have blamed me so much for my academic performances if I were a male (or a female)". Accordingly, the second factor was named GI_2_Parental gender framework.

Four items were extracted for the third factor. The attribution was 4.490% and Cronbach's α was .723. The items extracted were: "My parents are 'understanding'", "I wish I had been born into another family", "My parents were a happy couple" and "I harbor resentment against my parents". Therefore, we named it the factor of GI_3_Family dynamics.

We calculated the subscale scores by adding the raw scores of the items extracted for the first, second and third factors. Then we applied these subscale scores to the subsequent regression analysis.

**Table 2 Factor Analyses of Gender Identity Items
Using the Maximum Likelihood Factor Analysis Method with Promax Rotation**

No.	Gender Identity (GI) Items	Mean	SD	Factor		
				1 GI_1 Love and Life-plan	2 GI_2 Parental gender framework	3 GI_3 Family dynamics
27	Love is important in life.	3.152	0.737	.697	-.120	.173
28	I have a friend/friends whom I can ask for advice about a person I love.	3.276	0.831	.678	-.125	.177
21	I have a one-on-one date with a person I love.	3.014	0.991	.664	-.053	.105
7	I have never had tender feelings for someone.	1.372	0.706	-.615	.130	-.114
22	I have had a lot to talk about with the persons I have gone out with to date.	2.175	0.907	.591	.015	.087
23	I think I have a personality appealing to a person I love.	2.219	0.897	.575	-.068	.077
4	I do not intend to have a child.	1.526	0.803	-.558	.128	-.203
24	I speak to a person I love on my own initiative.	2.380	0.821	.532	.001	.030
34	I have a life plan as far ahead as the stage of having a child/children.	2.232	0.886	.522	.008	.075
32	I am interested in media information about love.	2.781	0.854	.514	-.058	.053
30	I show my real character to a person I love.	2.731	0.825	.496	-.077	.160
20	I hold an ideal of a person to be my lover or partner.	3.115	0.697	.444	-.048	.066
33	I want to find a joy in my life which can only be experienced with my present biological sex.	3.015	0.830	.405	-.030	-.012
5	I was often scolded by my parents even more harshly simply because I am a female (or a male).	1.405	0.761	-.028	.849	-.306
3	My parents would always criticize my behaviors as unsuitable things for a female (or a male) to do.	1.351	0.703	-.064	.758	-.290
6	I believe that my parents would not have blamed me so much for my academic performances if I were a male (or a female).	1.253	0.543	-.036	.555	-.255
12	My parents are "understanding".	3.056	0.807	.136	-.340	.776
36	I wish I had been born into another family.	1.605	0.820	-.132	.313	-.668
11	My parents were a happy couple.	2.971	0.980	.089	-.160	.581
35	I harbor resentments against my parents.	2.265	0.888	.033	.303	-.531
Mean of subscale (raw) score				34.462	4.008	12.158
SD				6.1242	1.6757	2.5914
% of attribution				17.288	10.821	4.490
% of cumulative attribution				17.288	28.109	32.599
Cronbach's α				.855	.757	.723
<i>F</i>				379.296	20.708	125.884
<i>Pr.</i>				.000	.000	.000

Cognitive Family Role (CFR) Items

After excluding items with a marked selection bias from the 23 Cognitive Family Role (CFR) Items, an exploratory factor analysis was performed using the maximum likelihood factor analysis with promax rotation (Table 3). Eliminating items that did not converge in the first analysis, the second analysis obtained a cumulative attribution of 42.306% up to the third factor.

Five items were extracted for the first factor. The attribution was 28.017%, and Cronbach's α was .817. The items extracted included: "I work full-time including work in early morning hours, on holidays and overtime", "I will become a full-time worker", and "I will get a managerial post responsible for supervising many subordinates". Therefore, we named it the factor of CFR_1_external works.

Five items were also extracted for the second factor. The attribution was 8.497%, and Cronbach's α was .745. The items included: "I wash the clothes of my family members", "I prepare meals for my family members" and "I clean the house and tidy up rooms". Therefore, we named it the factor of CFR_2_inside works.

Three items were extracted for the third factor. The attribution was 5.793%, and Cronbach's α was .713. The extracted items were: "I make use of the nursing care leave system", "I make use of the childcare leave system" and "I take care of my elderly parents". Therefore, we named it the factor of CFR_3_family nursing.

We calculated the subscale scores by adding the raw scores of the items extracted for the first, second and third factors. Then we applied these subscale scores to the subsequent regression analysis.

Table 3 Exploratory Factor Analyses of Cognitive Family Role Items (CFR) Using the Maximum Likelihood Factor Analysis Method with Promax Rotation

No.	Cognitive Family Role (CFR) items	Mean	SD	Factor		
				1 CFR_1 external works	2 CFR_2 inside works	3 CFR_3 family nursing
19	I work full-time including work in early morning hours, on holidays and overtime.	5.557	1.126	.836	-.362	-.265
18	I will become a full-time worker.	5.564	1.244	.765	-.374	-.223
21	I will get a managerial post responsible for supervising many subordinates.	5.668	1.154	.697	-.406	-.303
20	I will relocate to a new post without taking my family if I receive an official announcement of transfer to a remote place.	5.844	1.052	.670	-.401	-.303
17	I will be the head of a family and the main earner of family income.	5.944	1.211	.484	-.298	-.189
4	I wash the clothes of my family members.	2.694	1.081	-.432	.781	.402
2	I prepare meals for my family members.	2.602	1.038	-.411	.668	.363
5	I clean the house and tidy up rooms	3.196	1.080	-.347	.659	.347
3	I go shopping for foodstuff and household items.	3.227	1.027	-.217	.524	.222
6	I attend on and support my family members when they fall ill.	3.409	1.019	-.236	.423	.378
14	I make use of the nursing care leave system.	3.208	1.109	-.254	.367	.890
13	I make use of the childcare leave system.	2.768	1.225	-.318	.359	.640
15	I take care of my elderly parents.	3.480	0.923	-.219	.412	.578
Mean of subscale (raw) score				28.577	15.128	9.455
SD				4.3861	3.6812	2.6182
% of attribution				28.017	8.497	5.793
% of cumulative attribution				28.017	36.513	42.306
Cronbach's α				.817	.745	.713
F				31.549	135.47	147.9
$Pr.$.000	.000	.000

Exploratory Factor Analysis of Life Plan: Work and Family

For the exploratory factor analysis of the group of nine items for the Life Plan: Work and Family, the maximum likelihood factor analysis with promax rotation was performed (Table 4). As a result, a cumulative attribution of 52.479% was obtained.

Four items were extracted for the first factor. The attribution was 38.753%, and Cronbach's α was .797. The items extracted included: "I will stop working temporarily until my child reaches the age of 13 and then find a new part-time job", "I will stop working temporarily until my child reaches the age of 13 and then find a new full-time job at the right time", "I will stop working temporarily until my child reaches the age of 3 and then find a new part-time job at the right time", "When I become pregnant or have a baby, I will change my workplace to a new

one with an easier working pattern and continue to work part-time while maintaining balance between housework, childcare and work”. Therefore, we named it the factor of Life_1_rework: full-time or part-time.

For the second factor, three items were extracted. The attribution was 13.726%, and Cronbach’s α was .770. The three items were: “I will continue to work after marriage, but I will quit my job when I have a baby and will concentrate on housework and child rearing”, “I will quit my job after marriage and concentrate on housework” and “I will continue working full-time regardless of my married, child rearing or single status”. Therefore, we named it the factor of Life_2_work quit/continue at married or childbirth. To confirm the independence of items, paired *t*-test was performed for the scores of the items extracted in the second factor. (The calculated *t*-scores are shown at the bottom of Table 4.) We calculated the subscale scores by adding the raw scores of the items extracted for the first and second factors. Then we applied these subscale scores to the subsequent regression analysis.

Table 4 Factor Analysis of Life Plan: Work and Family Using the Maximum Likelihood Factor Analysis Method with Promax Rotation

No.	Life Plan: Work and Family	Mean	SD	Factor	
				1 Life_1 rework: full-time or part-time	2 Life_2 work quit/continue at married or childbirth
9	I will stop working temporarily until my child reaches the age of 13 and then find a new part-time job.	2.946	1.394	.854	.484
8	I will stop working temporarily until my child reaches the age of 13 and then find a new full-time job at the right time.	2.719	1.288	.724	.274
7	I will stop working temporarily until my child reaches the age of 3 and then find a new part-time job at the right time.	3.304	1.318	.648	.312
5	When I become pregnant or have a baby, I will change my workplace to a new one with easier working pattern and continue to work part-time while maintaining balance between housework, childcare and work.	3.595	1.318	.574	.249
3	I will continue to work after marriage, but I will quit my job when I have a baby and will concentrate on housework and child rearing.	b c 3.315	1.404	.459	.801
2	I will quit my job after marriage and concentrate on housework.	a c 2.813	1.347	.289	.794
1	I will continue working full-time regardless of my married, child rearing or single status.	a b 3.219	1.435	-.289	-.605
Mean of subscale (raw) score				12.564	9.909
SD				4.1999	3.4702
% of attribution				38.753	13.726
% of cumulative attribution				38.753	52.479
Cronbach's α				.797	.770
<i>F</i>				131.901	190.67
<i>Pr.</i>				.000	.000
a	<i>item No. 1 > No. 2</i>			<i>t</i> = 4.605 (df = 735)	<i>Pr.</i> < .000
b	<i>item No. 1 - No. 3</i>			<i>t</i> = -1.069 (df = 735)	<i>Pr.</i> = .285 N.S.
c	<i>item No. 2 < No. 3</i>			<i>t</i> = -11.510 (df = 735)	<i>Pr.</i> < .000

Sub-scale Score Means and Two-variable Correlations of Extracted Sub-scale Items

We confirmed simple two-variable correlations of the added scores of the sub-scales extracted from three scales. Table 5 highlights the significant correlations between the sub-scale scores extracted from different scales. Between the sub-scale scores from different scales, CFR_1_external works from Cognitive Family Role shows a significant correlation with Life_2_work quit/continue at married or childbirth ($r = .302, Pr. < .000$) and Life_1_rework: full-time or part-time ($r = .199, Pr. < .000$) from Life Plan: Work and Family. Meanwhile, CFR_2_inside works from Cognitive Family Role shows a weak negative significant correlation with Life_2_work quit/continue at married or childbirth ($r = -.200, Pr. < .000$) GI_1_Love and Life-plan shows a low significant correlation ($r = .139, Pr. < .000$) with Life_2_work quit/continue at married or childbirth. GI_1_Love and Life-plan also shows low negative correlations ($r = -.146, Pr. < .000$) with CFR_3_family nursing, ($r = -.098, Pr. = .008$) with CFR_2_inside works, and a weak correlation ($r = .127, Pr. = .001$) with CFR_1_external works from Cognitive Family Role. CFR_1_external works from Cognitive Family Role shows a weak negative correlation ($r = -.092, Pr. = .013$) with GI_2_Parental gender framework and a weak correlation ($r = .075, Pr. = .043$) with GI_3_family dynamics.

These weak correlation coefficients suggest that female students' gender identity is not established because their awareness structure is strong enough to correlate with the responses to the Life Plan items asking what family roles they would take while going through life events, including employment after graduation from university and child rearing. It seems difficult for female students to adopt work and family life images as explanatory factors of their gender identity. Still, it is worth noting that although extremely weak, the scores of “work inside and outside home” and “family nursing, including child rearing” show both positive and negative significant correlations.

Table 5 Descriptives and Correlations Between Sub-scale Scores

sub-scales	Gender Identity			Cognitive Family Role			Life Plan: Work and Family	
	GI_1_ Love and Life-plan	GI_2_ Parental gender framework	GI_3_ Family dynamics	CFR_1_ external works	CFR_2_ inside works	CFR_3_ family nursing	Life_1_ re-work: full-time or part-time	Life_2_ work quit/continue at married or childbirth
GI_2_ Parental gender framework	<i>r</i>	-.059						
	<i>Pr.</i>	.112						
GI_3_ Family dynamics	<i>r</i>	.090	-.328					
	<i>Pr.</i>	.014	.000					
CFR_1_ external works	<i>r</i>	.127	-.092	.075				
	<i>Pr.</i>	.001	.013	.043				
CFR_2_ inside works	<i>r</i>	-.098	-.052	-.432				
	<i>Pr.</i>	.008	.159	.000				
CFR_3_ family nursing	<i>r</i>	-.146	-.009	-.315	.450			
	<i>Pr.</i>	.000	.816	.000	.000			
Life_1_ re-work: full-time or part-time	<i>r</i>	.070	-.011	.199	-.070	-.021		
	<i>Pr.</i>	.058	.768	.000	.057	.565		
Life_2_ work quit/continue at married or childbirth	<i>r</i>	.139	.060	.302	-.200	-.022	.371	
	<i>Pr.</i>	.000	.104	.000	.000	.552	.000	

*Path Analysis of Variables Contributing to Life Plans:
Work and Family by Covariance Structure Analysis*

Although the two-variable correlation coefficients between the respective sub-scales do not show high values, we performed covariance structure analysis to confirm the complex regression relation structure. Although time series relations of developmental transitions are assumed between the variables, this study obtained cross-sectional data. Accordingly, during the covariance structure analysis, we tried several variations until we found an extremely similar path model, assuming diverse possibilities. The path model in Fig. 2 shows a good fit, but we have confirmed that no significant structural equation coefficient can be obtained if a slight change is made in the direction or the magnitude of a related vector. The Covariance Structure Analysis resulted in a good fit model, showing $\chi^2 = 51.918$ (df = 16), *Pr.* < .000, CFI = .946, RMSEA = .055. We describe the relations among the conceptual variables below.

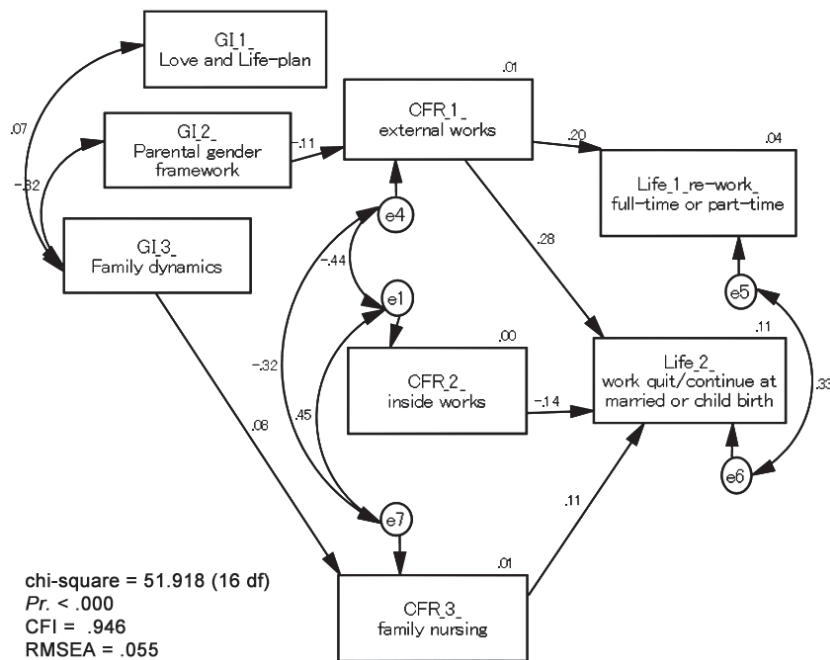


Fig. 2 Paths of Variables Contributing to Life Plan: Work and Family by Covariance Structure Analysis

Table 6 Path Coefficients of Variables Contributing to Life Plan: Work and Family by Covariance Structure Analysis

		standard value	standard error	test statistic	Pr.	CMIN	DF	CMIN/DF	CFI	RMSEA
CFR_1_ external works	<-- GI_2_ parental gender framework	-.108	.029	-3.311	***					
CFR_3_ family nursing	<-- GI_3_ family dynamics	.080	.035	2.474	.013					
Life_2_ work quit/continue at married or childbirth	<-- CFR_2_ inside works	-.135	.051	-3.451	***					
Life_2_ work quit/continue at married or childbirth	<-- CFR_3_ family nursing	.114	.041	3.059	.002	51.918	16	3.245	.946	.055
Life_1_ re-work: full-time or part-time	<-- CFR_1_ external works	.200	.050	5.523	***					
Life_2_ work quit/continue at married or childbirth	<-- CFR_1_ external works	.280	.059	7.239	***					

*** Pr. < .000

Gender Identity and Cognitive Family Role

Items related to Love and Life-plan were extracted for the first factor of Gender Identity. As these items converged for the first factor, they are estimated to be highly important for female adolescents. It also shows the path coefficient that directly explains Life_2_work quit/continue at married or childbirth is the second factor for Life Plan: Work and Family.

As for GI_2_Parental Gender Framework, items related to “social values and framework of female gender” given by caregivers converged, and are clearly independent of GI_1_Love and Life-plan. GI_1 and GI_2 make significant predictions about a group of items “External-work,” which are related to work outside of home, namely in social settings, from the items of Cognitive Family Role. The fact that GI_2 shows an especially negative path coefficient suggests the possibility that the path goes in the counter direction from a given gender framework toward external work.

For GI_3, on the other hand, items referring to the relationship with parents at home converge, so it is named GI_3_Family Dynamics factor. The factor suggests that family dynamics and relations as an upbringing environment may be reflected in the formation of gender identity. Thus, family relations are factors separate from the gender framework given by

parents. GI_3_Family Dynamics shows the path coefficients to be noted in the second and third factors of the Cognitive Family Role, namely CFR_2_Inside Works and CFR_3_Family Nursing.

Cognitive Family Roles and Images of Employment and Retirement for Child Rearing

Items referring to “external works” such as engagement in responsible work as a full-time worker and/or in a managerial position outside home in the social settings converge for CFR_1_External Works, which is one of the Cognitive Family Role items. The score of CFR_1_External Works shows the path coefficient predicted by GI_1_Love and Life-plan, and it has a path coefficient toward Life_1_Rework: Full-time or Part-time, the first factor for Life Plan: Work and Family. CFR_1_External Works also shows a path coefficient that explains Life_2_work quit/continue at married or childbirth through Life_1_Rework: Full-time or Part-time. CFR_2_Inside Works and CFR_3_Family Nursing show a path coefficient meaningful to Life_2_Retirement: Childbirth or Married.

Life Plan, Gender Identity and Cognitive Family Roles

The theme of Life_2_work quit/continue at married or childbirth, which converges as the second factor for Life Plan: Work and Family shows that GI_3_Family Dynamics has a significant influence on CFR_2_Inside Works and CFR_3_Family Nursing. It also indicates that Cognitive Family Role has a path coefficient, which can be a significant explanatory factor for Life Plan concerning discontinuing work for childbirth and returning to work after child rearing.

Hypothesis and Results

The following is a summary of the results, along with the research hypotheses.

- **Hypothesis 1 (H1).**

Female students’ perception of their gender identity affects their cognitive family roles.

Among the female students’ perceptions of their gender identity, GI_2_parental gender framework had a negative impact on CFR_1_external works, and GI_3_family dynamics had a weak impact on CFR_3_family nursing.

- **Hypothesis 2 (H2)**

The cognitive family roles of female students affect their career images such as whether to have a life plan that includes quitting their job upon marriage or

having a child/children or returning to work after a certain interval.

CFR_1_external works calculated nearly equivalent positive predictive values for Life_1_rework: full-time or part-time and Life_2_work quit/continue at married or childbirth for female students. The career image of female students also includes the possibility of interrupting “working outside the home” to get married, have a baby, and raise children, as well as rework after raising children. Also GI_3_family dynamics is a weak estimate of CFR_3_family nursing, and CFR_3 calculates a positive estimate for Life_2_work quit/continue at married or childbirth.

- **Hypothesis 3 (H3)**

The female students' life plans and career images (e.g., quitting their job upon marriage or having a child, etc.) are affected by their awareness of gender identity

All gender identity (GI) variables were not directly related to life plan(Life_1 or Life_2). The effect of GI values were indirect: GI_2 and GI_3 were significant partial estimators of CFR_1_external works and CFR_3_family nursing, and CFR_1 was the main significant estimate of Life_1 and Life_2.

DISCUSSION

Examination of a Hypothetical Model

At the beginning of this study, we formed a hypothesis. In this section, we examine the findings concerning this hypothesis. The survey data indicates that there are several points of caution with respect to supporting career education.

Female students' perception of their gender identity mildly affects their cognitive family roles. Cognitive family role was one concept in the hypothesis, and three dimensions were extracted from the group of items. GI_3_family dynamics, which is a Gender Identity item, shows a significant path to explain CFR_3_family nursing. The path structure suggests that gender identity of female adolescents includes the dimension of family dynamics and is related to family roles from an early stage, although the theme of cognitive family roles and who takes care of family still seems unrelated to them.

The Cognitive Family Roles of Female Students Affect Their Life Plan or Career Images and Continuous Employment

Fig. 3 illustrates the results of the covariance structure analysis. The external work employment prospects of female students show two directions, including the possibility of rework after raising children or retirement after marriage or childbirth. The relationship between external work employment and the possibility of rework after child rearing or retirement for marriage or childbirth is not antithetical.

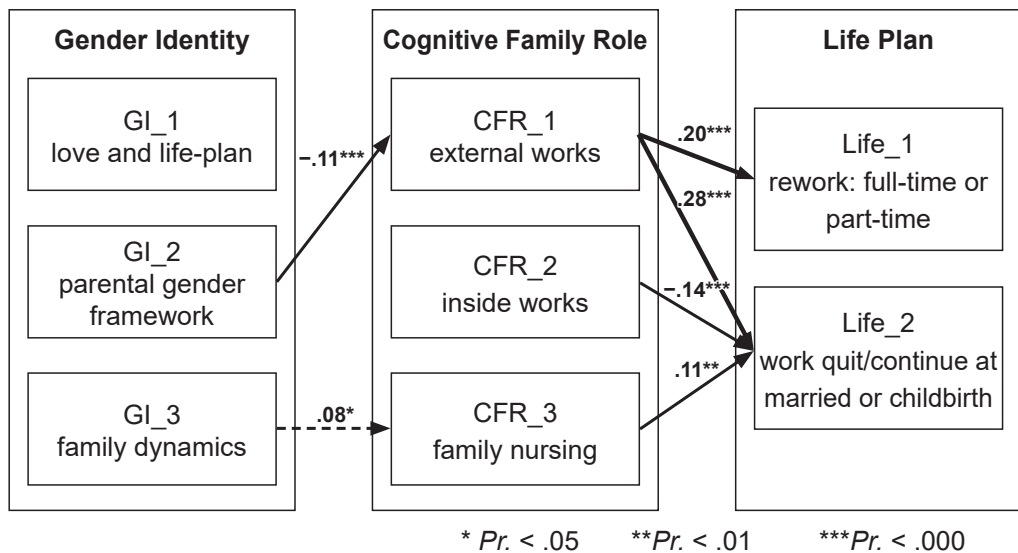


Fig. 3 Summary Illustration of Analysis of Covariance Structure

Female students stepped out of the parental framework of gender identity and aim to work, but they are aware that their future employment will be interrupted or reworked due to marriage/child rearing.

Life_2_Interruption of work for marriage or child rearing has more presumed factors than Life_1_rework after child rearing. GI_3_family dynamics estimates CFR_3_family nursing with weak relationship, and CFR_3 estimates Life_2 significantly. External work employment is also important for female students, but in their minds, marriage, child rearing, and continuing to work seem to be even more difficult issues. As for interruptions in work due to marriage or childbirth (Life_2), they are related to GI_3 formation of family dynamics and CFR_3 (care roles in the home), which are slightly different from the future prospects of rework after child

rearing (Life_1).

The responses seem to indicate that female students have a vague image of life events that occur after they become adults, as if they are laid out on rails. It is likely that every female student has at one time or another been aware of the process of marriage, child rearing, and rework after child rearing. GI_3_family dynamics leads to CFR_3_family nursing, and CFR_3_family nursing leads to Life_2_work quit/continue at married or childbirth. This relationship may also represent the rails of a woman's life as imagined by female students.

For female students who grasp their identity itself in their adolescence at university, which is a scene of a life transition stage, their life plan and long-term vision of career for the whole life span is uncertain and ambiguous. Indeed, only an ambiguous correlation is observed between the two simple variables. However, we would probably be able to analyze the awareness structure in the background involved in adolescents (especially women) if the data was modeled as a structural equation model to verify the complex and regressive relations.

We also see that female adolescents build up their gender identity within their family dynamics, and by the time they prepare for employment, they have already visualized their position within the family as their own plan.

Which Should Be Changed by Career Education? Social Frameworks or Career Stereotypes of Female Students?

Choices and transitions are encountered and continuously questioned in the course of our lifetime. Whatever life plan or career path students choose, every student, who is also in the midst of adolescence, must tackle this challenge. Choices and transitions are encountered and continuously questioned in the course of our lifetime. We consider that this concept needs to be shared in the career education class. As long as the objective of career education programs is to widen the view of students for life-long development and diverse possibilities of transitions, it is necessary and worthwhile to question and unravel the paths of the “commonly accepted awareness structure” extracted in this study.

The data showed that while female students are oriented to work, they have a career image structure that interrupts work due to marriage, childbirth, and childcare. This may be due to the fact that female students still do not have enough information about the availability of social resources to cope with life events in their future. The role and function of career education should be aimed at promoting the preparation and use of social mutual support systems. Such career education should be necessary for all genders.

What motivated this study was, as mentioned at the beginning, the unique situation of

the current gender gap in Japan. Indeed, the key to solving this problem is, “**When women change society, they change the world**”, but at the same time, we think the process of “women change” is also necessary.

Limitations

This study employed a cross-sectional survey. A cross-sectional survey differs from a causal model obtained through longitudinal tracking, which could explain the career decision rate and the satisfaction rate as an outcome of career decision and effect. Additional research using the longitudinal method should be conducted.

Author Note

- ※ This research was supported by the Research Center of Women’s Career Development, which is one of the research projects of Jissen Women’s University. We have a review of Ethical Review Board of our university and got an ethical approval issued on 16th, Oct. in 2015.
- ※ There’s no Conflict of Interest (COI) on the research procedures. The authors have declared that no competing interest exist.

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The Structure of Images of Career and Life Plans in University Students:
Cognition of Their Roles and Gender Identity

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ABSTRACT

Background: Female university students generally tend to be so obedient to conventional frameworks of career and life plans, even after they have learned about many different career cases. The purpose of this study was to examine the structure of images of career and life plans formed by female university students.

Methods: Female adolescents (N = 772), in Years 1 to 4 at universities in suburban Tokyo, Japan with an average age of 19.95 and SD of 1.058. The survey asked about gender identity, cognitive family roles, and career image that they have as a life plan (i.e., whether to continue working or leave their job for child rearing and resume working after).

Results: In the exploratory factor analysis, three subscale items were extracted regarding Gender identity: 1) A love and life-plan (GI_1), 2) gender framework given by parents (GI_2), and 3) family dynamics (GI_3). From the Cognitive Family Role (CFR) Items, 1) work outside home (CFR_1), 2) work at home (CFR_2), and 3) family care and nursing (CFR_3) were extracted, whereas from the Life Plan: Work and Family, two subscale items: 1) rework: full-time or part-time after child rearing (Life_1), and 2) work quit/continue at married or childbirth (Life_2) were extracted.

Covariance structure analysis among the scores of the subscale items extracted a model with adequately relevant values of CFI = .946, *Pr.* < .000, RMSEA = .055. The most applicable causal path constitutes the gender identity and career image as a commonly accepted idea or a stereotype among female university students. The path starts from the gender structure within the family dynamics, goes through “family care and nursing”, which is a cognitive family role, and finally reaches quit/continue a work at marriage or child rearing.

Conclusions: This path dynamically reflects the common idea or stereotypical image activated in response to the risk of their developmental transition when they must choose what to do after graduation. While higher education is meant to broaden future options, the first things that career counselors at school likely encounter are students’ self-underestimation, a mood of resignation, and inclination to narrow down the horizon by themselves. The results of this study suggest that an overall structure exists. Accordingly, career education for adolescent girls requires a program that makes them aware of their fixed vision of careers and arouses their sense of self-efficacy to face future career choices squarely.

Keywords:

gender identity, cognitive family role, continue working, career stereotype, adolescent, female student

大学生の就業とライフプランのイメージの構造：役割の認知とジェンダー・アイデンティティ

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背景：就業継続の生涯発達と経済的な価値を学ぶ女子大学生も、近未来のライフプランから出産育児と家族介護に従事する前提を切り離すことを難しいと感じている。本研究では、女子大学生の就業とライフプランに関するイメージ構造を検討する。

方法：東京都下の通学課程の女子大学生、計772名（平均年齢19.95歳，SD 1.058）を対象に調査を行った。

結果：探索的因子分析では 1) 恋愛観とライフプラン、2) 親から受けるジェンダーの枠組み、3) 家族内力動、4) 家庭外の仕事、5) 家庭内の仕事、6) 家族の世話・介護、7) 子育て後のリワーク、8) 出産・結婚退職という変数が抽出された。共分散構造分析により許容できる適合性を示すモデルが抽出された(CFI = .946, *Pr*: < .000, RMSEA = .055)。

結論：統計的に許容できる適合度をもつ因果的パスは、家族内ダイナミクスの中でのジェンダー構造を起点とし、認知的な家族内役割のうち「家族の世話・介護」を経由し「結婚・子育てに伴う退職」に帰着するモデルを示した。青年期の女子のキャリア教育においては、自身のキャリア・ステレオタイプに対する気づきを与え進路選択に向き合うための自己効力感を醸成するプログラムが必要である。

Keywords

ジェンダー・アイデンティティ、認知的家庭内役割、就業継続、キャリア・ステレオタイプ、青年期、女子学生

本研究の背景

2015-2017年度プロジェクト研究所「女性キャリア形成研究所」の基金を受けて、本学学生および都下の大学生を対象に調査を実施したデータについてまとめた成果の一つが本論文である。2019年度刊行の年報に次ぐ、第二報。