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Assessing social relationships in adolescents and adults: Constructing and validating the Affective Relationships Scale

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We propose an Affective Relationships Scale (ARS), specifically constructed to describe core and relatively stable social relationships among people of both genders and of a wide range of ages, from adolescents to adults. The ARS assesses the personal frameworks within which individuals organise their multiple social relationships, by assigning psychological functions to significant others. In Study 1, the ARS among 279 female college students was examined for its factorial validity, to confirm that it reflected normative trends of social relationships that had been documented by previous research (e.g. affective needs toward friends would be stronger than towards parents; "Giving nurture" would be sought more strongly than "Seeking proximity"); and to classify individual patterns of personal frameworks. Study 2 examined the ARS's convergent and discriminant validity by correlating its scores with those of other psychological measures for 142 female college students. In Study 3, the examination of ARS among a total of 1399 participants of both genders from adolescence to middle-age showed its applicability to males and over a wide age range. Two salient characteristics of the ARS, the delineation of individual patterns of social relationships, and the applicability to different cultures, are discussed.

This article proposes a new instrument for assessing social relationships, an Affective Relationships Scale (ARS), and demonstrates its validity and usefulness among people of both genders and from adolescence to middle-age. After discussing the problems associated with previous instruments for assessing social relationships, we describe the rationale behind the ARS and present three studies that were conducted to establish its validity. In the first two studies, the validity of the ARS was examined among female college students, because through both Japan-based and Western research (e.g. Antonucci & Akiyama, 1987; Feiring & Lewis, 1989, 1991), it has been well documented that females are more concerned with social relationships, and more willing to disclose information about their relationships than are male students. We sought to show that this new measurement could not only reflect normative properties of social relationships, but that it can shed light on previously neglected aspects of social relationships, (i.e., individual configurations of relationships). In Study 3, we aimed to show whether the ARS could maintain its validity and other merits among males and subjects younger or older than college students.

Multiplicity of social relationships

Social by nature, human beings are assumed to have multiple significant others, who fulfil multiple socioemotional functions. Humans ask from and offer to others many kinds of psychological functions from the peripheral to those crucial for survival and/or the enhancement of everyday life (Bowlby, 1969/1982; Cohen & Wills, 1985; Henderson, Byrne, Duncan-Jones, Scott, & Adcock, 1980; Hinde, 1981; Kahn & Antonucci, 1980; Lewis, 1982; Pierce, Sarason, & Sarason, 1996; Sarason & Sarason, 1985; Weiss, 1974). This assumption of the multiplicity of social relationships naturally leads to at least two more assumptions, as follows.

First, there must be functional differentiation among the significant others. If we consider the mental costs, the distribution of psychological functions among different but limited numbers of significant others is essential to ensure that there will be appropriate figures for every expected situation. More concretely, there must be hierarchical differentiations among the significant others, as suggested by Antonucci and her colleagues (Antonucci & Akiyama, 1987; Antonucci, Fuhrer, & Dartigues, 1997; Antonucci & Jackson, 1987; Kahn & Antonucci, 1980). That is, first, it is assumed that each person has a focal figure who satisfies almost all of their psychological functions. The focal figure provides the scaffolding of being for each person. However, if a person attaches only to this figure, he/she may not have any substitutes who could be relied on if the focal figure is lost. Moreover, a person with only one focal figure may form too strong an attachment, becoming overly dependent on or too easily influenced by that one person. This creates an infantilised position that would impair his/her ability to live as an autonomous adult. Thus, it is reasonable to assume that, in addition to the focal figure, a person must have a limited but sufficient number of significant others to satisfy a variety of psychological functions for a stable and autonomous life, so that the focal figure's influence could be reduced by that of the others. Thus, functional differentiation among the figures enables a person to possess a simultaneous multiple relationships.

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Second, as individuals sometimes consciously select appropriate figures for themselves and assign one or more psychological functions to each of them, it may be assumed that there are individual differences in the configurations of a person's social relationships that can be described in terms of figure-function pairs.

Is the multiplicity measured?

These assumptions indicate that we need an assessing instrument that can describe an individual's complex system of social relationships in which the figures and functions are closely related to one another. However, a close examination of assessments of social relationships in previous research reveals that most measures of social relationships have been concerned, not with figure-function pairs, but with one of the following three aspects: (1) figures toward whom social behaviours are directed; (2) psychological functions of single figures; and (3) the intensity of need for social interactions.

To be specific, a majority of the representative studies on attachment (e.g. Ainsworth, Blehar, Waters, & Wall, 1978; Berman, 1988; Bretherton & Waters, 1985; Kobak & Hazan, 1991; Weiss, 1975), friendship (e.g. Dodge, Pettit, McClasky & Brown, 1986; Jones & Vaughan, 1990; Parker & Gottman, 1989; Urberg, Degirmencioglu, Tolson, & Halliday-Scher, 1995) and close relationships (Cohan & Bradbury, 1997) have focused on the dyadic relationships between the subject and a single target figure (such as the mother, a friend, a spouse, or an ex-spouse), who are salient in each developmental period, paying attention only to those psychological functions that are supposed to be critical for that figure.

Another group of studies, typically carried out under the rubrics of social networks and social supports (Barrera, Sandler, & Ramsay, 1981; Cohen, Kamarck, & Mermelstein, 1983; Gottlieb, 1983; Nestmann & Hurrelmann, 1994; Reis, 1984; Sarason, Levine, Basham, & Sarason, 1983; Newsom & Schulz, 1996), have focused on the total number of supporters or the total amount of interaction, without clearly specifying who fulfils which of the psychological functions. In addition, some researchers posit a relatively stable relational schema (Baldwin, 1992; Yee, Santoro, Paul, & Rosenbaum, 1996) that works as a personality variable and accordingly assesses a person's tendency to relate to unspecified others with a construct of, for example, attachment style (Davila, Burge, & Hammen, 1997; Hazan & Shaver, 1987, 1990; Scharfe & Bartholomew, 1994), internal working models (Bowlby, 1969/1982), a representational system of relationships (Bretherton, 1993), or trust (Rempel, Holmes, & Zanna, 1985).

Thus, most traditional assessments of social relationships have been mainly concerned with a person's single relationship with a figure such as the mother, a friend, or a spouse, or with a person's social competence in general. These relationship assessments are therefore not adequate to describe social relationships in terms of figure-function pairs. To understand the nature of the social relationships of a given person in more depth, we need to describe how the individual responds differentially to his/her significant others.

Innovations in assessments

Some researchers have gone beyond these conventional assessments and have introduced innovations. Efforts to describe the qualities of personal frameworks have been made (Armsden & Greenberg, 1987; Carstensen, 1987, 1992; Furman & Buhrmester, 1985, 1992; Henderson, Duncan-Jones, Byrne, & Scott, 1980; Youniss & Smollar, 1985), but many of these studies were limited to analysing each of the multiple figures separately, rather than treating all the figures as a related whole in each individual's social map.

In one noteworthy attempt, Kahn and Antonucci (1980) hypothesised a hierarchical personal framework using the image of a convoy that surrounds a person over time, and proposed an assessment, a structured interview of Social Support Networks, to describe individual social relationships. These investigators first asked their subjects to map important persons in their lives and to classify them into three concentric circles. They then interviewed the subjects as to the supports the designated figures provided. Their own (Antonucci & Akiyama, 1987; Antonucci & Jackson, 1987; Antonucci et al., 1997) and others' studies using this technique of interviewing (Lang & Carstensen, 1994; Lang, Staudinger, & Carstensen, 1998; Levitt, Guacci-Franco, & Levitt, 1993; Levitt, Weber, & Guacci, 1993) have revealed features of social relationships more clearly than previous conventional research. For instance, they found that on average, adults designated about 8–10 figures in their convoy, that the percentage of family members mapped in the inner circle was higher than that of nonfamily members, and that the figures who were placed into the inner circle provided higher proportions of all kinds of support, such as confiding, reassurance, and caring. However, these researchers had not succeeded in proposing a way to summarise neatly the detailed descriptions of relationships to make the best use of such rich qualitative reports by their participants. It is true that Antonucci and her colleagues have devised a method to obtain the total network size to use as a simple indicator of individual differences in social relationships. One may claim that the number of social figures is a convenient summary of social relationships. However, it is still too general and abstract to depict the complexly organised significant relationships of individuals.

Another prominent contribution was made by Lewis (1982) and his colleagues (Feiring & Lewis, 1989, 1991; Lewis & Feiring, 1979), who proposed a description of the entire social map of a child in terms of a matrix of figure × function: a large lattice on which the y-axis represents an array of figures and the x-axis represents a variety of psychological functions. This device has succeeded in indicating that each child actually has a variety of social figures who fulfil different psychological functions. However, these analyses, which focus on normative tendencies in the proportion of appearance of each of the figures among different age groups, have not yet established any appropriate procedures by which to summarise the complicated facts about social relationships that they have found.

Thus, persistent problems in assessing social relationships have arisen from the lack of a measuring instrument that can fully describe and also summarise how figures and functions are related to each other in individual personal frameworks. We need an assessing instrument that allows us to describe the personal framework of social relationships, which consists of multiple significant others. Such an instrument should be able to describe social relationships in great detail and also summarise their characteristics neatly. These two requirements are often contradictory, but a useful system would be one that would allow us to see both the forest and the trees.

Rationale behind and construction of the ARS

In order to describe social relationships, we are proposing a new self-report type of assessing instrument, which we term the Affective Relationships Scale (ARS). The ARS is specifically constructed to measure social relationships as a complex set of figure-function pairs, using the same set of questions to ask about supposedly major social figures. The ARS differs from the Antonucci and Lewis measurements in that it focuses on close relationships with a limited number of significant others, and conveniently summarises an individual's configuration of social relationships in terms of a total score (or set of subscores) assigned to those significant others who constitute the personal frameworks.

Rationale behind the ARS

The ARS is based on the following three principles:

1. *Assessing affective relationships.* The ARS focuses on the core and relatively stable close relationships, termed "affective relationships", that are assumed to be important for the well-being and survival of human beings (Takahashi, 1974, 1990). The affective relationships are defined as those interpersonal relationships that satisfy our needs for emotional interactions with significant others, among them the needs for emotional support, exchanging warm attention, and giving nurture. Thus, the affective relationships include a variety of intimate relationships that have been studied under such rubrics as attachment, trust, love, close relationships, and romantic relationships. Because our previous research has indicated that purely instrumental supports, such as financial supports and those that provide help in urgent situations, are sometimes unaccompanied by any positive affection (Iida, under review; Takahashi & Ohara, 1997), these kinds of support are excluded in this measurement.
2. *Assessing a representation of relationships.* The ARS describes multiple social relationships in terms of a subjective representation of multiple interpersonal relationships. To assess this representation, the ARS requires a subject to give separate ratings on the same set of items for each of five to eight significant representative figures from different social categories, such as parents, siblings, friends of the same sex, a romantic partner, the spouse, children, and a respected person not falling into any other category, according to the demographic characteristics of the subjects. These categories were selected after college students and adults, in a preliminary study, had named such figures as the most important persons in their psychological lives. To be certain not to exclude most significant others, we sometimes asked participants to rate an additional person based on the following instruction: "If there is any other person who is more important for you than these persons you have considered, please identify who he or she is and rate him or her".
3. *Assessing a whole system of figure-function pairs.* The ARS describes social relationships as a whole system of figure-function pairs with the assumption of linkages between selections of figures and assignments of functions. For this purpose, each of the items of the ARS describes an affective behaviour that fulfils a particular psychological function. Based on a review of kinds of psychological functions that are involved in close social relationships (Barerra, 1986; Barerra & Ainsley, 1983; Belle, 1989; Hinde, 1981; Kahn & Antonucci, 1980; Lewis, 1982; Weiss, 1974), six positive functions were chosen to be included in the assessment: (1) seeking proximity; (2) receiving emotional support; (3) receiving reassurance for behaviour and/or being; (4) receiving encouragement and help; (5) sharing information and experience; and (6) giving nurture (see Takahashi, 1990, for a review).

Construction of the ARS

The ARS consists of 12 statements describing concrete affective behaviour which are grouped into the six functions stated earlier (see the instruction and items in the Appendix). These items were selected through a series of investigations (Takahashi, 1973, 1974, 1978, 1990). First, nearly 200 items, each of which describes a concrete affective behaviour, were collected from the literature on social relationships from Japan and Western countries. Then, through a variety of examinations and frequent refinements involving hundreds of participants (Takahashi, 1973, 1974, 1978, 1990), 24 items were selected. These 24 items were sorted by six Japanese developmental psychologists into the six psychological functions, then a total of 18 items (3 representing each of the six functions), for which there was perfect agreement by the psychologists, were selected. Finally, one item for each of the functions was deleted, based on correlations among the three items within the same function, to save administrative time and effort.

The ARS can be administered in a group. Participants are asked to give separate rating of the 12 items for each of their five to eight figures using a 5-point scale from 5 (I agree) to 1 (I disagree). These figures are selected from several social categories based on preliminary studies identifying the most important persons for adults. Usually, participants are asked to rate the mother, the father, the closest sibling, the closest same-sex friend, the most favoured opposite-sex agemate or romantic partner, and a respected person, in this order. For married people, the spouse (instead of a romantic partner) and the closest child are added. Because the ARS focuses on a limited number of significant others and only on major functions, it describes social relationships in less detail than Antonucci or Lewis, but the ARS requires much less time and effort for both the respondents and the researchers. Moreover, the ARS can be flexibly adjusted to other populations by including or excluding figures and/or psychological functions, depending on the respondents' cultures and the aims of the research.

The ARS is designed to yield two kinds of score: The total score for all 12 items for each figure; and a set of subscores for each of the six functions for each figure. The former reflects the strength of the subject's need for affective behaviours from each figure, and the latter, the major functions of that figure.

Descriptions of individual patterns of relationships by the ARS

There are many potential ways to condense the rich information provided by the ARS. One possibility is to identify individual patterns of social relationships. In this paper we use the term "type" as a label to summarise each characteristic

pattern of relationships, although we have not yet applied such statistical analyses as Q-technique or cluster analysis.

In this paper, we suggest identifying individual types by focusing on the top figure. The top figure is the person who is given the highest total score among the significant others, and to whom is directed a strong affective need (operationally more than 36 points, i.e. 12 items × 3 points out of the 5-point scale). If an individual's affective need toward even the top figure is lower than this, we should differentiate such respondents from the others because they are not very interested in establishing close human relations. We have named these subjects the "Lone wolf" type, irrespective of the figure who had the highest score (Takahashi, Tamura, & Tokoro, 1997).

The top figure is a simple and convenient indicator of types of social relationships. Because the top figure would be a very powerful individual who is highly rated as the most important figure in almost all functions by each individual, we can assume that the top figures are focal figures in one's hierarchical framework of social relationships. In this vein, we could focus on the top figure as being representative of each personal framework using the total score without considering the six subscores of the functions. Moreover, by identifying the top figure, we can easily classify respondents into several types, such as the Mother type, Friend type, and Spouse type.

In fact, our previous studies among Japanese participants have indicated that affective relationships can be understood neatly in terms of the top figure (Inoue & Takahashi, in press; Takahashi, 1986, 1989; Takahashi & Majima, 1994; Takahashi et al., 1997; Takahashi & Yokosuka, 1997). For example, in the transition from home to college dormitory, first-year students who had constructed a mother-type social relationship adjusted more slowly to the new situation and showed more difficulty in the transition than their friend-type counterparts (Takahashi & Majima, 1994). Moreover, family-dominant college students described their life stories with a focus mostly on relationships with family members, whereas friend-type students highlighted their life stories with relationships with agemates from early childhood to the present (Takahashi, 1986). Thus, in this paper, we use the top figure to indicate a view of social relationships based on hypothesis and empirical evidence. It may be controversial whether we can always identify the individuality of social relationships by top figures. We will discuss this question in the General Discussion and elsewhere (Takahashi, in preparation).

In sum, the ARS is proposed to describe social relationships, depicting an individual's constellation of differentiated relationships with figure-function pairs using one and the same measurement. More concretely, the ARS can describe, by one measurement and with minimal difficulty on the part of participants and researchers, the important features of social relationships that are fragmentarily indicated and suggested by previous research: The multiplicity of social relationships, the differentiation of psychological functions among significant others, and the individual types of social relationships. In other words, we propose this measurement to describe critical features of social relationships from both distant and close perspectives.

Study 1

Study 1 aimed to reveal construct validity of the ARS. First, we aimed to confirm that the ARS had factorial validity, in other words, that it consisted of six separate functions even though all six items were concerned with affective relationships. Second, it was ascertained whether the ARS could reflect the normative trends of social relationships among college-aged females that had been documented in previous research. That is, we examined: (1) whether for college-aged people, socially acceptable support providers such as friends of both genders, would be assigned higher total scores than socially unpreferred figures, such as the parents (e.g. Hazen & Shaver, 1987; Lamborn & Steinberg, 1993; Youniss & Smollar, 1985); (2) whether the assignment of functions to the figures would be influenced by social norms for college-aged people, that is, socially acceptable functions, such as "Giving nurture", would be more strongly assigned to others than inappropriate functions, such as "Seeking proximity" (e.g. Hazen & Shaver, 1990; Youniss & Yates, 1997); and (3) whether there would be complicated as well as significant linkages between figures and functions among college students, as suggested by previous research (e.g. Antonucci & Akiyama, 1987; Furman & Buhrmester, 1985; Lewis & Feiring, 1979). That is, they would not equally distribute the six functions to others, but rather would assign the function of "Seeking proximity" more strongly to the romantic partner or a same-sex friend than family members, while broadly assigning the function of "Giving nurture" to almost all the figures, including family members. Third, we aimed to reveal types of social relationships by indicating the figure who was assigned the highest total score, the top ranking figure.

Method

Participants. The subjects were 279 college undergraduates, 19–23 years old, from introductory psychology courses in three private universities. The students were administered the ARS in their classrooms. Most of the participants were from intact, two-parent, middle or lower-middle class families from almost all areas of Japan.

Measuring social relationships by the ARS. For the ARS, all of the participants were asked to give separate 5-point ratings for each of five figures, if they could answer. The mother, the father, the closest sibling, the closest same-sex friend, and a romantic partner. That is, they were forced to choose one person from each category to rate. The ARS yields two kinds of score: (1) the strength of the need of affective behaviour for each of the five figures (i.e. the total score over all 12 items for each figure, ranging from 12 to 60), (1 point × 12 items to 5 points × 12 itmes); and (2) an intensity score for each of the six functions for each of the five figures, ranging from 2 to 10 (1 point × 2 items to 5 points × 2 items, per function for each figure).

Results

Factorial validity of the ARS. To test whether the ARS would fit the six-factor model, we conducted confirmatory factor analyses (CFA) for the total scores for each of the five figures separately. By CFA, we examined three models: (1) a simple structure model, which assumed one common factor; (2) a three-factor model, which assumed three different factors suggested by the exploratory factor analyses; and (3) a six-factor model, which assumed six separate dimensions of the six

Table 1
Goodness-of-fit indices for the ARS for the mother and the closest same-sex friend in Study 1

	df	χ^2	*GFI*	*RMSEA*	*CFI*
The mother					
Simple factor model	54	295.23	.83	.13	.80
Three-factor model	51	226.15	.87	.11	.86
Six-factor model	39	94.65	.95	.07	.95
The friend					
Simple factor model	54	386.83	.78	.15	.77
Three-factor model	51	285.01	.85	.13	.84
Six-factor model	39	175.74	.91	.11	.91

psychological functions. By this analysis, it was indicated that the six-factor model fits the ARS best for all of the five figures.

In Table 1, only the results for the mother and the closest same-sex friend are shown because of the limited space. Table 1 indicates that both for the mother and the friend, all goodness-of-fit indices of the six-factor model, GFI, RMSEA, and CFI were higher than for the other models and high enough to be an acceptable model of the ARS (Jaccard & Wan, 1996). Although the chi-squares were statistically significant, it has been suggested that, in cases of large sample sizes, high chi-squares do not detract from the goodness-of-fit of the model (Jaccard & Wan, 1996). In addition, tests of differences of chi-squares among the three models indicated that the differences between the scores in the six-factor model were highly significant. Thus, the ARS yields six subscores, with regard to each of the six functions.

Moreover, the second order analysis was conducted for each of the five figures. The result indicated that for each figure the proportion of the first eigenvalue was much greater than others, occupying between 61% and 69%. Thus, we can assume that the ARS is construed with one global factor.

Accordingly, the ARS yields the total score as well as subscores: (a) from the total score over all 12 items for each figure, the strength of the need of affective behaviours toward each figure can be assessed; and (b) from the total for each of the six functions, an intensity of the need for each of the six functions for each figure (i.e. each pattern of functions for each figure, can also be determined).

Normative trends of social relationships. To reveal whether the ARS could reflect the normative tendencies of social relationships among college-aged females, the responses to the ARS, shown in Figure 1, were first subjected to a 5 × 6 (Figure × Function) ANOVA with both figure and function as within-

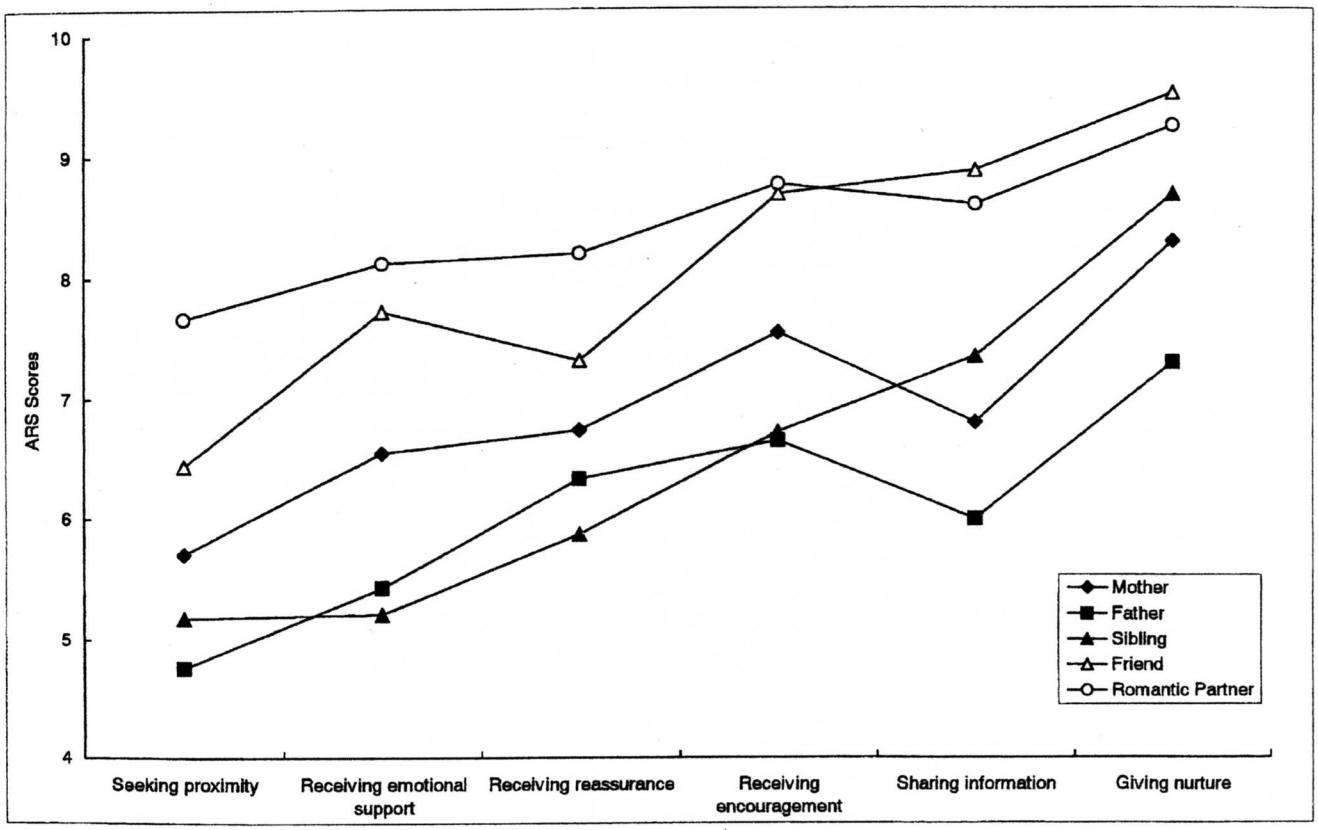

Figure 1. The ARS score for each of six functions toward each figure among female college students.

subject variables which indicated significant main effects of figure and function, [$F(4,7939) = 684.78$, $F(5,7939) = 478.88$, ($ps < .001$)], and a significant Figure × Function interaction [$F(20,7939) = 20.63$ ($p < .001$)]. A one-way ANOVA for the total score with the figure as the within-subject variable was conducted, and *post-hoc* analyses by Students–Newman–Keuls tests ($p = .05$) among the five figures indicated that, as expected, the romantic partner and the friend of the same sex were significantly more highly rated than family members (the parents and a sibling).

Next, one-way ANOVAs with function as the within-subject variable were conducted for each of the figures, and *post-hoc* analyses by Students–Newman–Keuls tests ($p = .05$) among the six functions indicated that the ARS score for "Giving nurture" function was the highest, whereas that for "Seeking proximity" was the lowest for all five figures.

Moreover, there were linkages between figures and functions. As expected, the participants assigned the "Seeking proximity" function more strongly to the romantic partner and the closest friend than to family members [$t(211) = 9.50$, $p < .001$, between the family and nonfamily members], and they rated "Giving nurture" highly, over the mid point, for all figures, including family members.

Individual types of affective relationships. We examined whether the ARS could describe individual types of social relationships in terms of the top figure, which was rated predominantly among the five. Because each individual has the opportunity to select appropriate figures and assign to them any of the functions, each figure has the potential to be selected as the top one.

In fact, all five figures were identified as the top, although nonfamily members were more often selected than family members. That is, although 37% and 33% of the students rated a romantic partner and a same-sex friend, respectively, as the top figure, 8% of them rated their mother as the dominant figure, going against the social standard for college students. Thus, it was suggested that under the normative trends of social relationships—and probably through negotiating such social constraints—each of the college students constructed her own framework of relationships, which consisted of figures significant for her, and that the ARS could reveal individual differences in such constructions.

In addition, correlations of the ARS scores for the various figures indicated that the *r*s among either family or nonfamily members were greater than those between family and nonfamily members. That is, the correlation coefficients between the mother and the father, and between a same-sex friend and a romantic partner were .71 and .54, respectively, whereas those between the mother and a friend, and between the mother and a romantic partner were .33 and .27. This observation suggested that individual types of preferences for figures fell into family-dominant or nonfamily dominant types (see General Discussion).

Study 2

The purpose of Study 2 was to obtain data for the convergent and discriminate validation of the ARS. We examined: (1) whether the ARS was independent from social desirability; and (2) whether the ARS was significantly correlated with four kinds of measures of social relationships and social competence that were theoretically related to it.

Method

Participants and procedure. The subjects were 142 female undergraduates, 18–20 years old, from an introductory psychology class. In the first assessment, the subjects were asked to complete the ARS and to answer social network questions, all of which were designed to yield a hierarchical map of each subject's sources of social support, and in the second, one week later, the same students were administered several kinds of psychological measures that were conceptually related to the ARS.

Measures

Social desirability scale. This scale (4 items on a 4-point rating scale, 4 = often true to 1 = not at all true, from MMPI; Hathaway & McKinley, 1966) was used to ascertain whether the ARS score was independent of the value of social desirability.

Social relationships. The following four measures were examined. (1) The UCLA loneliness scale (20 items on a 4-point rating scale, 4 = often true to 1 = not at all true; Russel, Peplau, & Cutrona, 1980): Validity of the ARS would be supported if the Loneliness score negatively correlated with the ARS score for each of the figures. (2) The Social Support Networks Questionnaire (Antonucci, 1985; Kahn & Antonucci, 1980): In this test, the participants are asked to map those social supporters who are most important to them into three concentric circles. Each of the figures named is given a score from 3 points (in the innermost circle) to 1 point (in the third, outermost circle). A positive correlation between these scores and the ARS scores would support the validity of the ARS. (3) The Affiliation scale of the mother and of a friend (each of 9 items on a 4-point rating scale, 4 = very true to 1 = not at all true, from the EPPS; Edwards, 1953). A positive correlation between the ARS score for the mother or a friend and the Affiliation score of the mother or a friend would validate the ARS. (4) The Self-efficacy scale, which assesses interactions with friends (14 items on a 5-point rating scale, 5 = very true to 1 = not at all true, from the Self-efficacy scale; Sherer et al., 1982). Support for the ARS would be shown if the ARS score for a friend was positively correlated with the Self-efficacy score for the same friend.

Results

Correlations between the ARS scores and all the psychological measures were calculated (see Table 2).

Social desirability. The ARS appeared to be independent of social desirability. That is, there were no significant correlations between the ARS and social desirability scores for any of the five figures.

Table 2
Correlations between the ARS scores and psychological measures and appearance in the first circle of convoy in Study 2

	ARS Score				
Measure	*Mother*	*Father*	*Sibling*	*Friend*	*Romantic Partner*
Psychological measure					
Social desirability	.03	.18	−.00	−.06	−.00
Loneliness	−.26*	−.27*	−.21*	−.32***	−.23*
Affiliation to:					
Mother	.70***	.50***	.38**	.24**	.22*
Friend	.22*	.25*	.20*	.46***	.17
Self-efficacy with Friend	.17	.10	.20*	.33***	.21*
Appearance in the 1st circle of convoy					
Mother	.35***	.10	.17	.17	.11
Father	.14	.33***	.17	.10	.09
Sibling	.06	.14	.26**	.20*	.23*
Friend	−.03	−.02	−.05	.13	.05
Romantic partner	−.19*	−.17*	−.11	.01	.20*

*$p < .05$; **$p < .01$; ***$p < .001$.

Measures of social relationships. First, all *r*s between the Loneliness score and the ARS scores of the five figures were negative and significant (*p*s < .01). Moreover, the Loneliness and ARS scores for the top figure among the five were negatively and significantly correlated ($r = -.30$, $p < .001$).

Second, comparison between the ARS scores and the figures assigned to the three concentric circles of the Social Network Questionnaire indicated that the more highly the figures were rated by the ARS, the closer to the centre they were placed in the convoy circles. That is, 99% of the top figures were placed in the innermost circle. In addition, the correlations between the ARS scores for each figure and that figure's appearance in the three circles (scores of 3, 2, and 1 were given, from the innermost circle to the third circle) were significantly higher for the mother ($r = .35$, $p < .001$) and the father ($r = .33$, $p < .001$), and not as high but still positive for a romantic partner ($r = 20$, $p < .05$) and a sibling ($r = 26$ $p < .01$). However, the same-sex friend who was rated highly by the ARS was not necessarily designated to the innermost circle ($r = .13$). These apparently inconsistent results between the ARS and the Support Networks Questionnaire for some of the figures can be attributed to different characteristics of the two measurements. In the Social Networks Questionnaire, as the subjects were asked to classify significant others using three spatial, concentric circles, they were not perfectly free from the influence of physical proximity to figures such as those with whom they were living and/or interacting frequently.

Finally, correlations between the ARS scores for the mother or a friend and the two psychological measures indicated positive or negative relations in the direction expected to support the validity of the ARS. That is, for the mother, the correlation between the ARS and the Affiliation scores was high and significant ($r = .70$, $p < .001$), but, as expected, for friends of both genders the correlation was not as high (female friend, 24; male friend, 22). Moreover, the correlation between the ARS and the Affiliation scores for a friend of the same sex was positive and significant ($r = .46$, $p < .001$), but it was not as high for the remaining figures (*r*s = .17 −.25). The correlation between the Self-efficacy score of agemates and the ARS score of a friend was significantly high ($r = .33$, $p <$ .001), but lower when compared with the ARS scores of other agemates (romantic partner, .21; sibling, .20), and the parents (mother, .17; father, .10).

Study 3

Study 3 had two aims. First, we examined whether the ARS could be applied to males and to a wider range of age, from adolescence to middle-age, replicating normative trends among them that had already been documented in the literature. Second, we hoped to show that the ARS could indicate individual types of social relationships for males and for people of various ages.

Specifically, we first investigated: (1) whether females were more strongly assigned the affective need toward others than males, because previous research had suggested different cultural standards for females and males (e.g. Antonucci & Akiyama, 1987; Lewis & Feiring, 1979); (2) whether participants assigned lower affective scores to members of the natural family than to the same-sex friend or a romantic partner or spouse; (3) whether there would be developmentally related changes in the selections of figures, as suggested by previous studies. That is, family members would be rated moderately highly and consistently by participants of all ages, whereas a romantic partner or spouse would be more highly rated by the older participants than by adolescents (e.g. Hazen & Shaver, 1990; Youniss & Smollar, 1985). Moreover, the ARS score of a friend of the same sex should decrease after a romantic partner or marriage partner entered the picture, because the partner would step into that friend's role (e.g. Carstensen, 1992; Weiss, 1975); (4) we investigated whether the ARS would reflect age-related changes in dominance for the functions assigned to each of the figures. Theoretically, we assumed that there would be complex linkages between functions and figures, and that the patterns of the linkages would change with ageing (Takahashi, in preparation). Empirical evidence on lifespan changes of linkages was very limited, because previous researchers did not focus on this issue. However, the existing findings allowed us to assume, as normative trends, that adolescents would more strongly assign a function of "Seeking proximity" to their parents than older participants would,

whereas adults would assign higher scores to the "Giving nurture" function for their parents than the younger persons would.

Second, we asked whether there would be different kinds of affective relationship types in terms of the top figure within each age group. Although social expectations with respect to gender and age would constrain people's selections of figures, it was hypothesised that every figure would have the possibility of occupying the top position. In addition, we proposed that, as Study 1 revealed, these subjects might be classified into family-dominant and nonfamily-dominant types.

Method

Participants. As Table 3 shows, a total of 1399 subjects from four different age groups, 13–45 years old, that is, junior high school (13–14 years old), high school (16–17), college (19–23), and middle-aged (35–45) groups of both genders were asked to respond to the ARS. Those in the three younger groups were selected from among a student population who shared similar social backgrounds; the middle-aged participants were selected from a list of female college graduates for which female college-aged data had been collected. This group included these college graduates and their spouses, thus, most of the middle-aged particpants were university graduates.

Procedure. All the students filled out the ARS in their classrooms, and the middle-aged subjects were asked to participate by mail. All the students were asked to rate as many of the five figures as they could: The mother, the father, the closest sibling, the closest same-sex friend, and the most intimate opposite-sex agemate (i.e. a romantic partner). The middle-aged participants were asked to rate their spouse or romantic partner instead of the opposite-sex friend, and, in addition, they were asked to rate their closest child if they were parents; however, the ratings for subjects' children were excluded from this paper.

Results

Gender differences of affective relationships. The data shown in Figures 2a, b were subjected to a 2 × 4 × 5 × 6 (Gender × Age group × Figure × Function) ANOVA, with figure and function as within-subject variables, and gender and age group as between-subject variables, to affirm gender differences. The main effect of gender was highly significant, with higher mean scores for females than males, consistent with previous research [$F(1,942) = 120.83$, $P < .001$]. Thus, further analyses were conducted for females and males separately.

Developmental changes in strength of affective needs for each figure. To simplify analyses, we analysed the data for three out of the five or six figures (i.e. the mother as representative of family members, and a friend of the same sex and a romantic partner as representatives of nonfamily members).

Separately, female and male, 4 × 3 (Age group × Figure) ANOVAs with figure as the within-subject variable and age group as the between-subject variable were conducted, and indicated significant main effects of age group [$F(3,652) = 6.07$, $p < .001$; $F(3,381) = 3.19$, $p < .05$], and figure [$F(2,1304) = 298.23$; $F(2,762) = 334.19$, $ps < .001$] for females and males, respectively. Interactions of Age group × Figure were also significant [$F(6,1304) = 21.13$; $F(6,762) = 14.29$, $ps < .001$] for females and males, respectively. As expected, among both genders, nonfamily members were rated more strongly than family members (see Figures 2a, b).

In addition, there were developmental changes as we expected: The ARS score of a romantic partner increased with age, whereas that of a same-sex friend significantly decreased among middle-aged people. Separate ANOVAs with age group as the between-subject variable for three figures and *post-hoc* analyses by Students–Newman–Keuls tests ($p = .05$) for each of the three figures were conducted. These analyses indicated that there were no significant differences in the ARS score for the mother among any of the four age groups of either gender. However, with respect to the ARS scores of a romantic partner, among females, those of middle-aged and college-aged people were significantly higher than those of junior high and high schoolers, and among males, only those of junior high schoolers were significantly lower than those of the older participants. In contrast, the same-sex friend scores of the middle-aged subjects of both genders were significantly lower than those of other age groups.

Changes in linkages between figures and functions with ageing. The data of the mother were subjected to a 4 × 6 (Age group × Function) ANOVA with function as the within-subject variable. The analyses indicated a significant main effect of age group for females [$F(3,799) = 3.00$, $p < .05$], but nonsignificant for males [$F(3,561) = 1.43$], and a significant effect of function for females [$F(5,799) = 278.57$], and for males [$F(5,561) = 279.65$, $ps < .001$], and Age group × Function interactions; for females [$F(15,799) = 25.23$], and for males [$F(15,561) = 26.56$, $ps < .001$]. *Post-hoc* analyses by Students–Newman–Keuls tests ($p = .05$) among age groups for the mother in each of the functions, indicated that, as expected, for both female and male subjects, the ARS scores of junior high schoolers were significantly higher for the function of "Seeking proximity" than those of their older

Table 3
Participants of four age groups in Study 3

Age Group	*Females*	*Males*	*Participants*
Junior high	130	131	2nd year students at a public school in a city near Tokyo. They were 13–14 years old.
High school	250	205	2nd year students at two public schools in a city near Tokyo. They were 16–17 years old.
College	279	137	2nd and 3rd year students at three private universitites. They were 19–23 years old.
Middle-aged	157	110	35–45 years old, married people. Either the subject or spouse was a graduate of a university attended by the college-age participants.
Total	816	583	

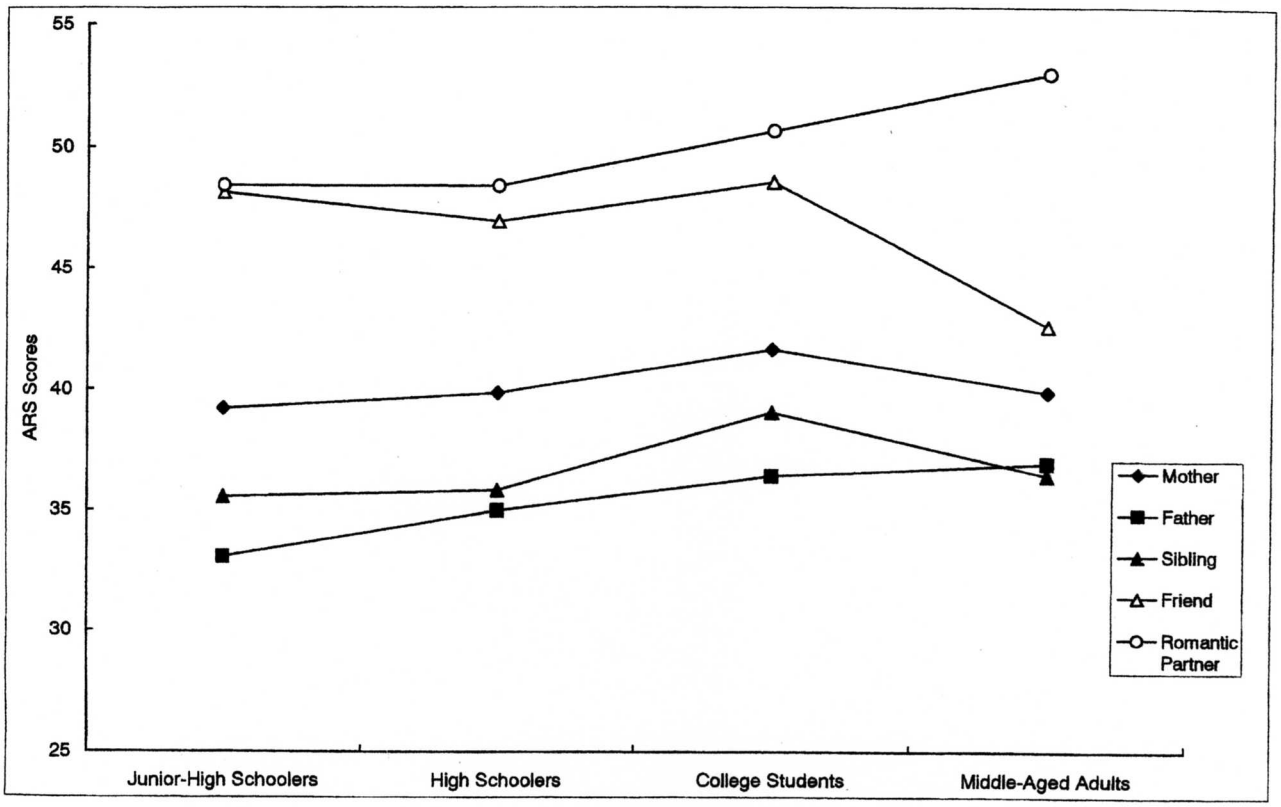

Figure 2A. The ARS score toward each figure among four age groups (females).

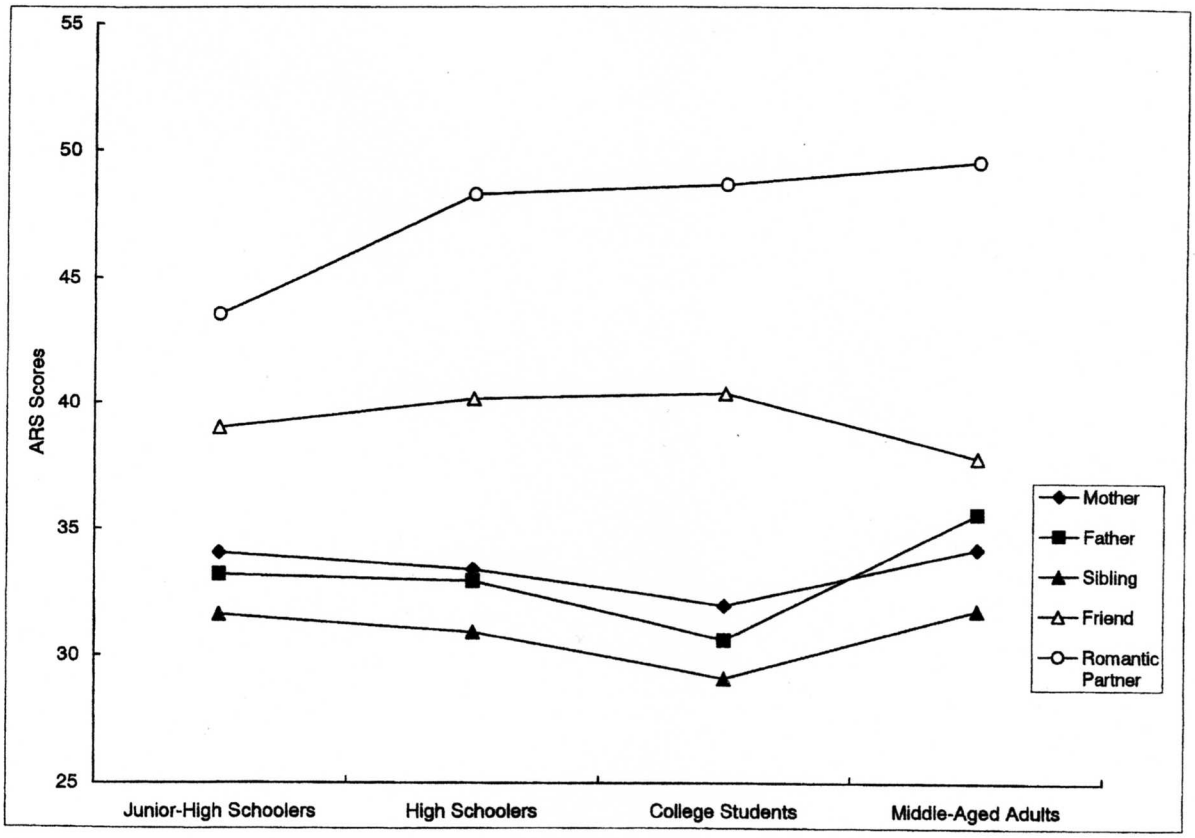

Figure 2B. The ARS score toward each figure among four age groups (males).

counterparts. In contrast, middle-aged and college-aged subjects gave significantly higher scores to the mother for the function of "Giving nurture" than did their younger counterparts.

Individual types of affective relationships across genders and age groups. We examined whether the ARS could describe individual types of social relationships in terms of the top figure across genders and age groups. As shown in Table 4, although nonfamily members, such as friends, occupied the first position among both genders in every age group, family members such as parents and siblings were nominated even by some of the middle-aged participants. Thus, as expected from Study 1, under modal tendencies in selections of figures, subjects of all age groups studied constructed their own affective types according to their own preferences.

In addition, consistent with findings obtained from the female students in Study 1, there were two groups of types of affective relationships, family vs. nonfamily. That is, correlation coefficients of the ARS scores among family members and among nonfamily members were greater than those between family members and nonfamily members and this result was consistent across genders and age groups. Specifically, the average *r*s between the mother and the father were .69 and .81, and between a same-sex friend and a romantic partner were .46 and .39, for females and males, respectively. In contrast, the average *r*s between the mother and a romantic partner were .28 and .23 and those between the father and a romantic partner were .27 and .21, for females and males, respectively.

General discussion

In this paper, we propose the ARS as a self-report type assessment of core and relatively stable close relationships among young adolescents and adults. Based on empirical data from hundreds of Japanese adolescent and young adult subjects (Takahashi, 1973, 1974, 1978, 1990), the ARS is constructed to describe affective relationships with several significant others separately, and, through a set of figure-function pairs, reveal hierarchical personal frameworks. The ARS is able not only to replicate detailed aspects of social relationships that previous studies have revealed, but also to classify the participants into types, in terms of their chosen top figure. That is, using the ARS we can obtain both a detailed and a more broad view of social relationships.

Study 1 indicated that the ARS consists of six psychological functions that are correlated positively to constitute one global factor, as hypothesised, among female college students. In addition, it was shown that this instrument can describe individual relationships in terms of the top figure as well as critical characteristics of social relationships among young adults that have been indicated in previous research. Study 2 confirmed that the ARS is independent from social desirability, and that it has fairly high and significant agreement with other measures of social relationships among young females. Study 3 indicated that the ARS possesses a similar degree of construct validity among males and for a wider range of ages. Thus, the three studies together suggest that the ARS successfully describes the following features of social relationships for adolescents and adults: (1) gender and age differences; (2) multiple relationships, by figure-function pairs; and (3) individual types of personal frameworks, in terms of the top, focal figure.

Individual types of affective relationships

The ARS shows that affective needs do not tend to decrease with ageing. Rather, ageing is accompanied by changes in the choice of figures that are relatively highly rated, as suggested by Carstensen's analyses of the longitudinal data from the Berkeley longitudinal study at the Institute of Human Development (1992). Consistent with previous studies (e.g. Furman & Buhrmester, 1985; Youniss & Smollar, 1985), the ARS shows that a majority of young adolescents direct their affective needs more strongly toward friends than toward parents, and that many people of both genders gradually shift their focal relationships from a same-sex friend to a romantic partner or spouse.

However, the pictures of social relationships are not uniform. As the ARS reveals, they are coloured by the individuality in people's selections of significant others and assignments of functions to each figure, although individuals are living under social norms and ennvironmental constraints. The ARS describes individual differences in configurations of social relationships across genders and age.

First, regardless of social norms with respect to changes in the appropriateness of identifying particular figures as promi-

Table 4
Distributions of the top figure among four age groups

	Age Group							
	Junior High School		*High School*		*College*		*Middle-aged*	
	F	M	F	M	F	M	F	M
Mother	5	10	22	5	19	5	5	2
Father	5	1	4	12	2	7	2	1
Sibling	3	5	5	6	8	1	2	1
Friend	41	50	108	36	66	26	6	3
Romantic partner	57	46	80	95	146	81	111	83
Others[a]	19	19	31	51	38	17	31	20
Total	130	131	250	205	279	137	157	110

[a] In the "Others" group, other types, such as Cousin-, Uncle-, Respected person- and Child-type, and also Tie-type (i.e. a participant rated two or more top figures with the same affective scores) were included.

nent, every figure sometimes occupies the first rank, irrespective of the social category to which that figure belongs. This observation led us to focus on the rankings of the figures to delineate individual differences in social relationships. Second, the correlation coefficients among the ARS scores of the five figures suggest two clusters of figures (i.e. family vs. nonfamily). Consequently, we tentatively conclude that there are preferences for one cluster or the other when individuals select significant figures. Third, the figure ranked as the top, according to the total score of the ARS, is special for each individual, because that figure is more strongly assigned all of the psychological functions and especially those of providing emotional support and proximal interactions, even against cultural norms, than the second figure.

Thus, it is assumed that the top figure is special for each person and maps to the core of a hierarchical structure in that individual's framework of social relationships. Therefore, we conclude that by establishing the top figure we can neatly summarise the nature of an individual's framework of social relationships. In other words, for the establishment of a stable psychological scaffolding, each person should have a clearly structured framework that is identified in terms of the most reliable figure, the focal figure who supports most functions including critical functions of being.

We agree that the top figure does not always necessarily represent the nature of an individual's framework of social relationships. Rather, we propose the top figure as a simple and heuristic indicator of individual types of social relationships. To date, our studies among adolescents and adults have indicated that affective relationships could be neatly understood in terms of the top figure. Each type of participant behaved differently, but consistently with his/her personal framework, which had been identified by the top figure (Inoue & Takahashi, in press; Takahashi, 1986, 1989; Takahashi & Majima, 1994; Takahashi et al., 1997; Takahashi & Yokosuka, 1997). Further research will help us understand these structural differences among types (Takahashi, in preparation).

Cultural universality vs. diversity

To date, social scientists have concluded that it is universal for human beings to need social interactions with others throughout their lives. At the same time, it is well documented that there are diverse social relationships across cultures and subcultures, because the cultures and/or subcultures surrounding people encourage and sometimes demand that their norms of social behaviour be followed. Consequently, as the ARS indicates, we can find the modal tendency of social relationships in every social group.

Can we apply the ARS, which was constructed and validated in Japan, to different cultures? As the two studies indicate, the ARS reveals that the nature of the social relationships of Japanese participants is similar to that described in the literature for Western subjects. That is, the participants—from adolescence to adulthood—directed affective needs toward others, and reported their frameworks of social relationships, which were capable of being described by figure-function pairs. In this vein, we can conclude that the ARS reveals universal aspects of close relationships. In other words, the rationale of the ARS, which is to describe social relationships as a whole system of figure-function pairs and to classify them into individual types in terms of the top figure, can be applied to different cultures.

In addition to the universality of social relationships, our recent cross-cultural study between Japan and the United States, using a shorter version of the ARS found cultural differences in the selections of figures (Takahashi & Ohara, 1997). The proportions of choices for the top figure varied with different cultures, especially in the presence of friends among middle-aged females. This result suggests that we must consider broadening the ARS to include other potentially important figures for subjects in a given culture or subculture. Moreover, we should consider whether the psychological functions addressed by the present version of the ARS are sufficient and appropriate for a given sample. We believe that, with modifications of both figures and functions, the ARS could shed unique light on normative tendencies as well as both cultural and individual differences in social relationships. How we should modify the ARS will be an interesting empirical question in designing further research.

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Appendix

Items of the ARS

The first series of statements is about your relationship with your mother. For each of the statements, please choose one of the alternatives that best describes how much you agree. (Alternatives and score: 5. Agree; 4. Agree somewhat; 3. Neither agree nor disagree; 2. Disagree somewhat; or 1. Disagree.)

1. I would like to be emotionally supported by my mother (Receiving emotional support).
2. I would miss my mother if she was away (Seeking proximity).
3. I would like to be with my mother when I feel sad (Receiving emotional support).
4. I would like to be understood by my mother when I have a hard time (Receiving encouragement).
5. I would like my mother and me to share our difficulties (Sharing experience).
6. I would like to encourage my mother when she has difficulties (Giving nurture).
7. I would like to be with my mother when I need a boost in my self-confidence (Receiving reassurance).
8. I would like my mother and me to share each other's happiness (Sharing experience).
9. I would like to be encouraged by my mother when I do something (Receiving encouragement).
10. I would like to be with my mother if possible (Seeking proximity).
11. I would like my mother to agree with me if I am doing the right thing (Receiving reassurance).
12. I would like my mother to ask me to help when she has difficulties (Giving nurture).